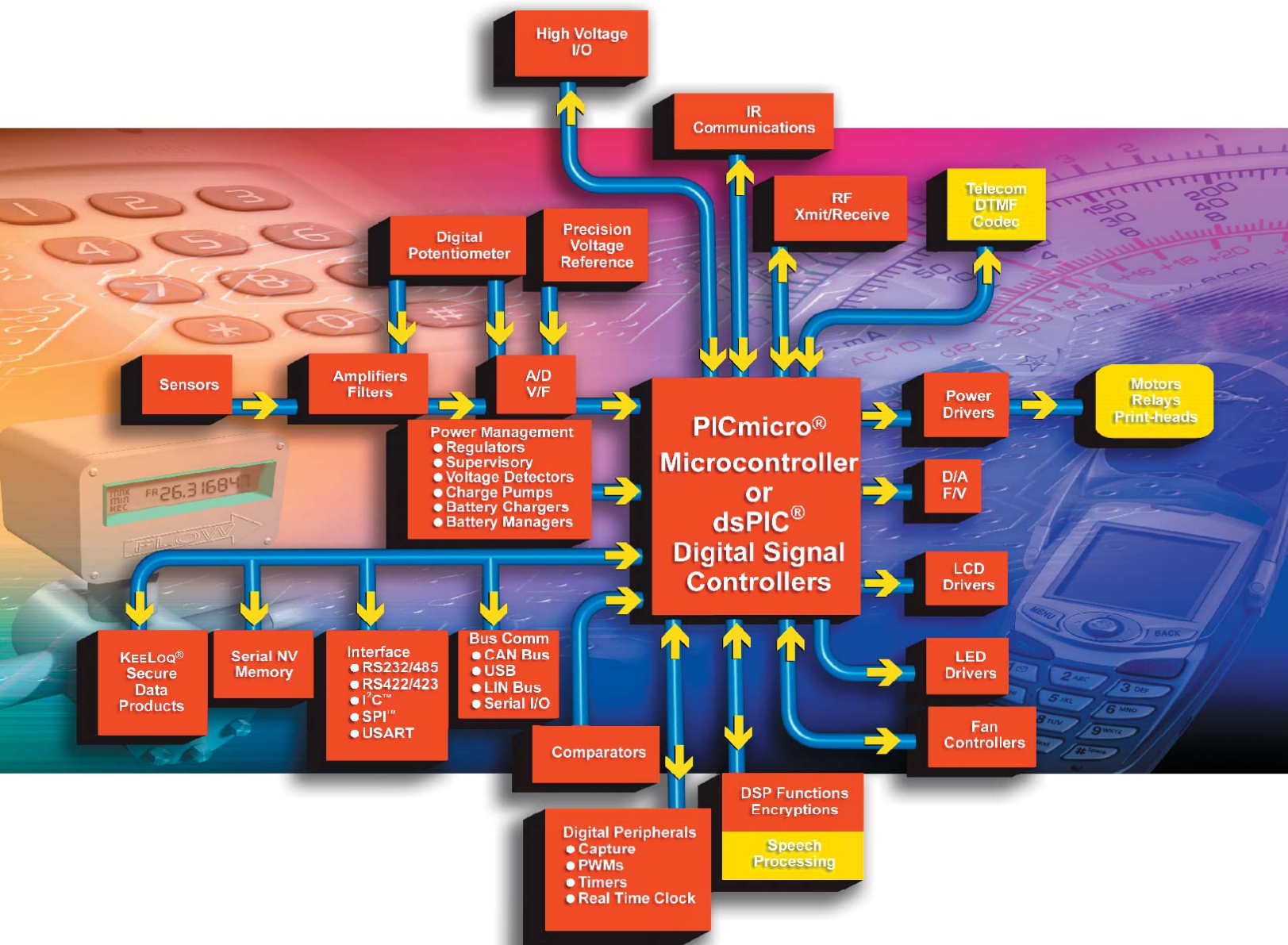




## 2004 Product Selector Guide



# Product Profile

## **PICmicro® Microcontrollers**

Microchip's PICmicro® family of microcontrollers combine high performance, low cost and small package size to offer the best price/performance ratio in the industry. Based on a powerful RISC core, the PICmicro architecture provides users an easy migration path from 8 to 84 pins among all families with little or no code change required. Advanced features available are:

- sophisticated timing peripherals
- embedded analog-to-digital converters (ADCs) and digital-to-analog converters (DACs)
- extended instruction/data memory
- communications peripherals (I<sup>2</sup>C™/SPI™/USB/CAN and USARTs)
- In-Circuit Serial Programming™ technology (ICSP™)
- memory technology including one-time programmable (OTP), reprogrammable (FLASH) and read-only memory (ROM)
- advanced analog features (PBOR, PLVD, DAC, V<sub>REF</sub>, Op Amps and PSMC)

## **Analog & Interface Products**

Microchip offers a wide range of analog and related products:

- *Linear and Mixed-Signal.* ADCs/DACs, digital potentiometers, op amps and comparators.
- *Power Management.* LDO and switching regulators, charge pumps, voltage references, CPU/system supervisors and voltage detectors, battery chargers and power MOSFET drivers.
- *Thermal Management.* Temperature sensors (logic output, voltage output, and serial output), brushless DC fan controllers, and fan fault detectors.
- *Interface.* Peripheral products supporting industry-standard networking protocols like CAN, LIN and infrared (including IrDA® Standard infrared), as well as products that provide embedded system input/output expansion capability.

## **Secure Data Products**

Microchip's KEELoQ® family of code hopping devices provides "rock solid" security for remote-keyless-entry (RKE) and authentication applications. Devices using the KEELoQ code hopping algorithm combine high security, a small package outline and a very low cost to make this an ideal solution for unidirectional RKE systems. The KEELoQ code hopping technology creates a high degree of security using a long code word length together with encryption and synchronization techniques.

## **Memory Products**

- Microchip offers one of the broadest selections of serial EEPROMs in densities from 128 bits to 512 Kbits, with operating voltages down to 1.8V, in all popular bus protocols (I<sup>2</sup>C™, Microwire and SPI™ compatible). They are available in all standard temperature ranges from -40°C to +125°C and packaged in the world's smallest standard packaging; up to 16 Kbits in 5-lead SOT-23 and up to 256 Kbits in 8-lead MSOP. With high-speed buses, low power consumption, the highest E/W endurance and the longest data retention in the industry, Microchip's serial EEPROMs are used for virtually every application in the automotive, PC, consumer electronics, communications and industrial markets.

## **dsPIC® Digital Signal Controllers**

The dsPIC® family of Digital Signal Controllers features a fully-implemented digital signal processor (DSP) engine, 30 MIPS non-pipe lined performance, C compiler friendly design, and a familiar microcontroller architecture and design environment. These 20 new dsPIC30FXXX 16-bit FLASH microcontrollers provide the industry's highest performance and target motor control and power conversion, sensor processing, and general-purpose applications.

## **rfPIC® Microcontrollers and rfHCS Devices**

The rfPIC® family significantly eases the radio frequency (RF) design process while reducing component count and board space. The first devices feature an integrated 315/433 MHz ASK/FSK transmitter. These low-power single-chip RF solutions are the first of many planned devices in the new family which targets RF connectivity for high-volume embedded control applications, such as remote sensing, remote control, toys, security and access control.

## **Development Systems**

Microchip offers a full range of microcontroller development systems, including the MPLAB® ICE 2000 and ICE 9000 in-circuit emulators; MPLAB Integrated Development Environment; MPLAB C18 and C30 Compiler; the MPLAB ICD In-Circuit Debugger, MPLAB PM3 full-featured device programmer; PICSTART® low-cost development system; the PICkit™ 1 Flash Starter Kit, SEEVAL® Serial EEPROM Evaluation Kit and various demonstration boards. Microchip has shipped more than 300,000+ development systems worldwide.

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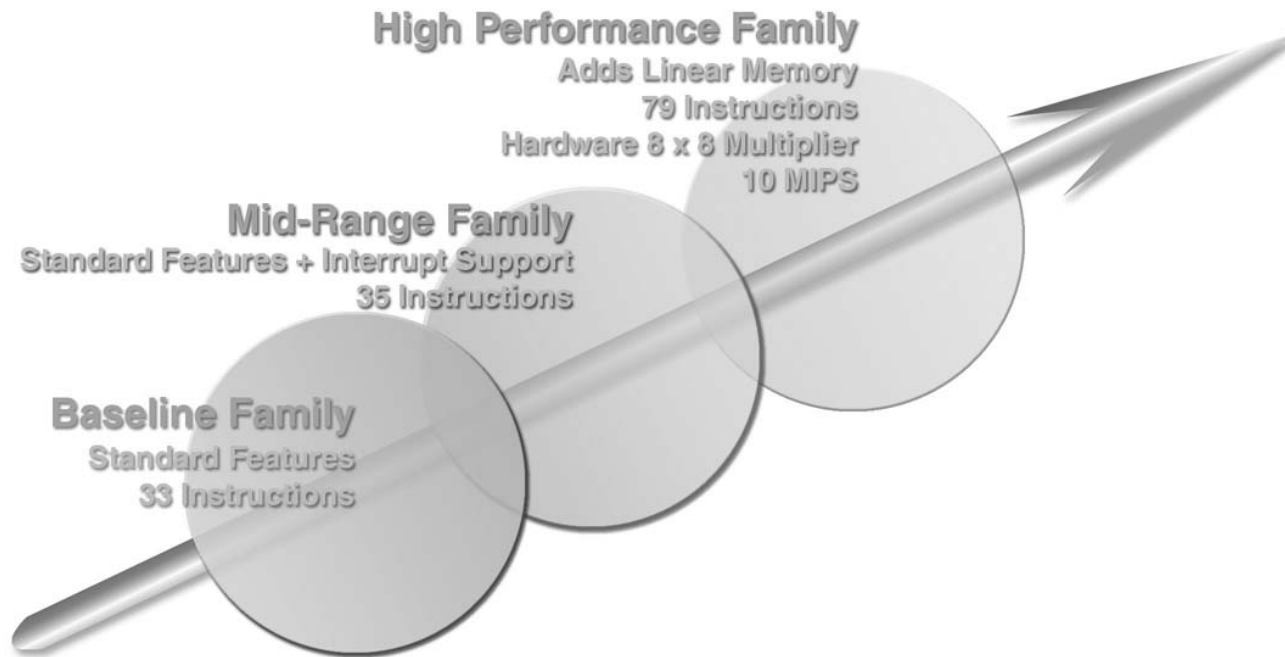
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## PICmicro<sup>®</sup> MICROCONTROLLER FAMILIES



### Baseline Product Family:

The Baseline product family is comprised of the PIC10 family and portions of the PIC12 and PIC16 families. These devices utilize a 12-bit program word architecture with 6- to 28-pin package options.

### Mid-Range Product Family:

The Mid-Range product family is comprised of portions of the PIC12 and PIC16 families. These devices feature a 14-bit program word architecture with 8- to 64-pin package options.

### High Performance Product Family:

The High Performance product family features the PIC18 family of devices. These microcontrollers utilize a 16-bit program word architecture with 18- to 80-pin package options.

## CURRENT MICROCONTROLLER FAMILY PRODUCTS

| Baseline 8-Bit PICmicro® Microcontroller Family                                                                                                |                        |           |          |                             |        |       |                |                |        |       |                 |                      |                       |                                                                        |
|------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|-----------|----------|-----------------------------|--------|-------|----------------|----------------|--------|-------|-----------------|----------------------|-----------------------|------------------------------------------------------------------------|
| Product                                                                                                                                        | Program Memory (Bytes) | RAM Bytes | I/O Pins | Packages                    | Analog |       | Digital        | Max. Speed MHz | IntOSC | ICSP™ | BOR/ PBOR/ PLVD | ICD # of Breakpoints | Operating Voltage (V) | Other Features                                                         |
|                                                                                                                                                |                        |           |          |                             | ADC    | Comp. | Timers/WDT     |                |        |       |                 |                      |                       |                                                                        |
| PIC10FXXX: 200 ns Instruction Execution, 33 Instructions                                                                                       |                        |           |          |                             |        |       |                |                |        |       |                 |                      |                       |                                                                        |
| PIC10F200                                                                                                                                      | 384 StdFI              | 16        | 4        | 6OT, 8P                     | —      | —     | 1-8 bit, 1-WDT | 4              | 4 MHz  | ✓     | —               | 1**                  | 2.0 - 5.5             |                                                                        |
| PIC10F202                                                                                                                                      | 768 StdFI              | 24        | 4        | 6OT, 8P                     | —      | —     | 1-8 bit, 1-WDT | 4              | 4 MHz  | ✓     | —               | 1**                  | 2.0 - 5.5             |                                                                        |
| PIC10F204                                                                                                                                      | 384 StdFI              | 16        | 4        | 6OT, 8P                     | —      | 1     | 1-8 bit, 1-WDT | 4              | 4 MHz  | ✓     | —               | 1**                  | 2.0 - 5.5             | Bandgap reference                                                      |
| PIC10F206                                                                                                                                      | 768 StdFI              | 24        | 4        | 6OT, 8P                     | —      | 1     | 1-8 bit, 1-WDT | 4              | 4 MHz  | ✓     | —               | 1**                  | 2.0 - 5.5             | Bandgap reference                                                      |
| PIC12C/FXXX (x12):1 μs Instruction Execution, 33 Instructions, 4 Oscillator Selections                                                         |                        |           |          |                             |        |       |                |                |        |       |                 |                      |                       |                                                                        |
| PIC12C508A                                                                                                                                     | 768 OTP                | 25        | 6        | 8P, 8SM, 8JW, 8SN, 8MF      | —      | —     | 1-8 bit, 1-WDT | 4              | 4 MHz  | ✓     | —               | —                    | 2.5 - 5.5             |                                                                        |
| PIC12C509A                                                                                                                                     | 1536 OTP               | 41        | 6        | 8P, 8SM, 8JW, 8SN, 8MF      | —      | —     | 1-8 bit, 1-WDT | 4              | 4 MHz  | ✓     | —               | —                    | 2.5 - 5.5             |                                                                        |
| PIC12F508                                                                                                                                      | 768 StdFI              | 25        | 6        | 8P, 8SN, 8MS                | —      | —     | 1-8 bit, 1-WDT | 4              | 4 MHz  | ✓     | —               | 1**                  | 2.0 - 5.5             |                                                                        |
| PIC12F509                                                                                                                                      | 1536 StdFI             | 41        | 6        | 8P, 8SN, 8MS                | —      | —     | 1-8 bit, 1-WDT | 4              | 4 MHz  | ✓     | —               | 1**                  | 2.0 - 5.5             |                                                                        |
| PIC16C/F5X (x12): Upwardly Compatible with PIC16C5X/PIC12CXXX, 100-200 ns Instruction Execution, 33/35 Instructions, 4/5 Oscillator Selections |                        |           |          |                             |        |       |                |                |        |       |                 |                      |                       |                                                                        |
| PIC16C55A                                                                                                                                      | 768 OTP                | 24        | 20       | 28P, 28JW, 28SP, 28SO, 28SS | —      | —     | 1-8 bit, 1-WDT | 40             | —      | —     | —               | —                    | 2.5 - 5.5             |                                                                        |
| PIC16C56A                                                                                                                                      | 1536 OTP               | 25        | 12       | 18P, 18JW, 18SO, 20SS       | —      | —     | 1-8 bit, 1-WDT | 40             | —      | —     | —               | —                    | 2.5 - 5.5             |                                                                        |
| PIC16CR56A                                                                                                                                     | 1536 ROM               | 25        | 12       | 18P, 18SO, 20SS             | —      | —     | 1-8 bit, 1-WDT | 20             | —      | —     | —               | —                    | 2.5 - 5.5             |                                                                        |
| PIC16C58B                                                                                                                                      | 3072 OTP               | 73        | 12       | 18P, 18JW, 18SO, 20SS       | —      | —     | 1-8 bit, 1-WDT | 40             | —      | —     | —               | —                    | 2.5 - 5.5             |                                                                        |
| PIC16CR58B                                                                                                                                     | 3072 ROM               | 73        | 12       | 18P, 18SO, 20SS             | —      | —     | 1-8 bit, 1-WDT | 20             | —      | —     | —               | —                    | 2.5 - 5.5             |                                                                        |
| PIC16HV540                                                                                                                                     | 768 OTP                | 25        | 12       | 18P, 18JW, 18SO, 20SS       | —      | —     | 1-8 bit, 1-WDT | 20             | —      | —     | BOR             | —                    | 3.5 - 15              | 8 high-voltage (15V) I/Os, 4 deep stack, 5 I/Os with wake-up-on-change |
| PIC16F505                                                                                                                                      | 1536 StdFI             | 72        | 12       | 14P, 14JW, 14SL             | —      | —     | 1-8 bit, 1-WDT | 20             | 4 MHz  | ✓     | —               | 1**                  | 2.0 - 5.5             |                                                                        |
| PIC16F54                                                                                                                                       | 768 StdFI              | 25        | 12       | 18P, 18SO, 20SS             | —      | —     | 1-8 bit, 1-WDT | 20             | —      | ✓     | —               | —                    | 2.0 - 5.5             |                                                                        |
| PIC16F57                                                                                                                                       | 3072 StdFI             | 72        | 20       | 28P, 28SO, 28SS, 28SP       | —      | —     | 1-8 bit, 1-WDT | 20             | —      | ✓     | —               | —                    | 2.0 - 5.5             |                                                                        |
| PIC16F59                                                                                                                                       | 3072 StdFI             | 134       | 32       | 40P, 44PT                   | —      | —     | 1-8 bit, 1-WDT | 20             | —      | ✓     | —               | —                    | 2.0 - 5.5             |                                                                        |

\*Contact Microchip Technology for availability date.

\*\* Requires ICD specific device with header module – refer to Development Tools.



## Mid-Range 8-Bit PICmicro® Microcontroller Family

| Product                                                                                                                                                                          | Program Memory (Bytes) | EEPROM Data Memory Bytes | RAM Bytes | I/O Pins | Packages                     | Analog   |       | Digital                  |                      | Max. Speed MHz | IntOSC | BOR/ PBOR /PLVD | ICD # of Breakpoints | CCP/ ECCP | nW | Other Features                                |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|--------------------------|-----------|----------|------------------------------|----------|-------|--------------------------|----------------------|----------------|--------|-----------------|----------------------|-----------|----|-----------------------------------------------|
|                                                                                                                                                                                  |                        |                          |           |          |                              | ADC Ch   | Comp. | Timers/WDT               | Serial I/O           |                |        |                 |                      |           |    |                                               |
| PIC12FXXX (x14): Upwardly Compatible with PIC12CXXX, 200 ns – 1 μs Instruction Execution, 35 Instructions, 4/5 Oscillator Selections, ICSP™                                      |                        |                          |           |          |                              |          |       |                          |                      |                |        |                 |                      |           |    |                                               |
| PIC12F629                                                                                                                                                                        | 1792 StdFI             | 128                      | 64        | 6        | 8P, 8SN, 8MF                 | —        | 1     | 1-8 bit, 1-16 bit, 1-WDT | —                    | 20             | 4 MHz  | BOR             | 1**                  | —         | —  |                                               |
| PIC12F635                                                                                                                                                                        | 1792 StdFI             | 128                      | 64        | 6        | 8P, 8SN, 8MF                 | —        | 1     | 1-8 bit, 1-16 bit, 1-WDT | —                    | 20             | 8 MHz  | BOR/ PLVD       | 1**                  | —         | ✓  | KEELOQ® Functionality                         |
| PIC12F675                                                                                                                                                                        | 1792 StdFI             | 128                      | 64        | 6        | 8P, 8SN, 8MF                 | 4x10-bit | 1     | 1-8 bit, 1-16 bit, 1-WDT | —                    | 20             | 4 MHz  | BOR             | 1**                  | —         | —  |                                               |
| PIC12F683                                                                                                                                                                        | 3584 StdFI             | 256                      | 128       | 6        | 8P, 8SN, 8MF                 | 4x10-bit | 1     | 1-16 bit, 2-8 bit, 1-WDT | —                    | 20             | 8 MHz  | BOR             | 1**                  | 1/0       | ✓  |                                               |
| PIC16CXXX (x14): Upwardly Compatible with PIC16C5X/PIC12CXXX, 4-12 Interrupts, 100-200 ns Instruction Executions, 35 Instructions, 4/5 Oscillator Selections, ICSP™ (except ROM) |                        |                          |           |          |                              |          |       |                          |                      |                |        |                 |                      |           |    |                                               |
| PIC14000                                                                                                                                                                         | 7168 OTP               | —                        | 192       | 20       | 28SP, 28SO, 28SS, 28JW       | 8 SLAC   | 2     | 1-8 bit, 1-16 bit, 1-WDT | I²C™/SMB             | 20             | 4 MHz  | —               | —                    | —         | —  | Temperature Sensor, Prog. Reference Generator |
| PIC16C432                                                                                                                                                                        | 3584 OTP               | —                        | 128       | 12       | 20SS, 20P, 20JW              | —        | 2     | 1-8 bit, 1-WDT           | LIN                  | 20             | —      | BOR             | —                    | —         | —  | LIN XCVR, 18V/40 mA                           |
| PIC16C433                                                                                                                                                                        | 3584 OTP               | —                        | 128       | 6        | 18SO, 18P, 18JW              | 4x8-bit  | —     | 1-8 bit, 1-WDT           | LIN                  | 10             | 4 MHz  | —               | —                    | —         | —  | LIN XCVR, 18V/40 mA                           |
| PIC16C554                                                                                                                                                                        | 896 OTP                | —                        | 80        | 13       | 18P, 18SO, 18JW, 20SS        | —        | —     | 1-8 bit, 1-WDT           | —                    | 20             | —      | —               | —                    | —         | —  |                                               |
| PIC16C558                                                                                                                                                                        | 3584 OTP               | —                        | 128       | 13       | 18P, 18SO, 18JW, 20SS        | —        | —     | 1-8 bit, 1-WDT           | —                    | 20             | —      | —               | —                    | —         | —  |                                               |
| PIC16C62B                                                                                                                                                                        | 3584 OTP               | —                        | 128       | 22       | 28SP, 28SO, 28SS, 28JW, 28ML | —        | —     | 1-16 bit, 2-8 bit, 1-WDT | I²C/SPI™             | 20             | —      | BOR             | —                    | 1/0       | —  |                                               |
| PIC16C620A                                                                                                                                                                       | 896 OTP                | —                        | 96        | 13       | 18P, 18SO, 18JW, 20SS        | —        | 2     | 1-8 bit, 1-WDT           | —                    | 40             | —      | BOR             | —                    | —         | —  |                                               |
| PIC16CR620A                                                                                                                                                                      | 896 OTP                | —                        | 96        | 13       | 18P, 18SO, 20SS              | —        | 2     | 1-8 bit, 1-WDT           | —                    | 20             | —      | BOR             | —                    | —         | —  |                                               |
| PIC16C621A                                                                                                                                                                       | 1792 OTP               | —                        | 96        | 13       | 18P, 18SO, 18JW, 20SS        | —        | 2     | 1-8 bit, 1-WDT           | —                    | 40             | —      | BOR             | —                    | —         | —  |                                               |
| PIC16C622A                                                                                                                                                                       | 3584 OTP               | —                        | 128       | 13       | 18P, 18SO, 18JW, 20SS        | —        | 2     | 1-8 bit, 1-WDT           | —                    | 40             | —      | BOR             | —                    | —         | —  |                                               |
| PIC16C63A                                                                                                                                                                        | 7168 OTP               | —                        | 192       | 22       | 28SP, 28SO, 28SS, 28JW, 28ML | —        | —     | 1-16 bit, 2-8 bit, 1-WDT | USART, I²C/SPI       | 20             | —      | BOR             | —                    | 2/0       | —  |                                               |
| PIC16CR63                                                                                                                                                                        | 7168 OTP               | —                        | 192       | 22       | 28SP, 28SO, 28SS             | —        | —     | 1-16 bit, 2-8 bit, 1-WDT | USART, I²C/SPI       | 20             | —      | BOR             | —                    | 2/0       | —  |                                               |
| PIC16C65B                                                                                                                                                                        | 7168 OTP               | —                        | 192       | 33       | 40P, 40JW, 44L, 44PQ, 44PT   | —        | —     | 1-16 bit, 2-8 bit, 1-WDT | USART, I²C/SPI       | 20             | —      | BOR             | —                    | 2/0       | —  | PSP                                           |
| PIC16CR65                                                                                                                                                                        | 7168 OTP               | —                        | 192       | 33       | 40P, 44L, 44PQ, 44PT         | —        | —     | 1-16 bit, 2-8 bit, 1-WDT | USART, I²C/SPI       | 20             | —      | BOR             | —                    | 2/0       | —  | PSP                                           |
| PIC16C717                                                                                                                                                                        | 3584 OTP               | —                        | 256       | 16       | 18P, 18SO, 18JW, 20SS        | 6x10-bit | —     | 1-16 bit, 2-8 bit, 1-WDT | MI²C/SPI             | 20             | 4 MHz  | PBOR /PLVD      | —                    | 0/1       | —  |                                               |
| PIC16C72A                                                                                                                                                                        | 3584 OTP               | —                        | 128       | 22       | 28SP, 28SO, 28JW, 28SS, 28ML | 5x8-bit  | —     | 1-16 bit, 2-8 bit, 1-WDT | I²C/SPI              | 20             | —      | BOR             | —                    | 1/0       | —  |                                               |
| PIC16CR72                                                                                                                                                                        | 3584 OTP               | —                        | 128       | 22       | 28SP, 28SO, 28SS             | 5x8-bit  | —     | 1-16 bit, 2-8 bit, 1-WDT | I²C/SPI              | 20             | —      | BOR             | —                    | 1/0       | —  |                                               |
| PIC16C73B                                                                                                                                                                        | 7168 OTP               | —                        | 192       | 22       | 28SP, 28SO, 28JW, 28SS, 28ML | 5x8-bit  | —     | 1-16 bit, 2-8 bit, 1-WDT | USART, I²C/SPI       | 20             | —      | BOR             | —                    | 2/0       | —  |                                               |
| PIC16C74B                                                                                                                                                                        | 7168 OTP               | —                        | 192       | 33       | 40P, 40JW, 44L, 44PQ, 44PT   | 8x8-bit  | —     | 1-16 bit, 2-8 bit, 1-WDT | USART, I²C/SPI       | 20             | —      | BOR             | —                    | 2/0       | —  | PSP                                           |
| PIC16C745                                                                                                                                                                        | 14336 OTP              | —                        | 256       | 22       | 28SP, 28SO, 28JW             | 5x8-bit  | —     | 1-16 bit, 2-8 bit, 1-WDT | USART, low speed USB | 24             | —      | BOR             | —                    | 2/0       | —  | USB 1.1, 64 bytes dual port RAM               |

**Mid-Range 8-Bit PICmicro® Microcontroller Family**

| Product                                                                                                                                                                                      | Program Memory (Bytes) | EEPROM Data Memory Bytes | RAM Bytes | I/O Pins | Packages                   | Analog    |       | Digital                  |                      | Max. Speed MHz | IntOSC | BOR/ PBOR /PLVD | ICD # of Breakpoints | CCP/ ECCP | nW | Other Features                              |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|--------------------------|-----------|----------|----------------------------|-----------|-------|--------------------------|----------------------|----------------|--------|-----------------|----------------------|-----------|----|---------------------------------------------|
|                                                                                                                                                                                              |                        |                          |           |          |                            | ADC Ch    | Comp. | Timers/WDT               | Serial I/O           |                |        |                 |                      |           |    |                                             |
| PIC16CXXX (x14): Upwardly Compatible with PIC16C5X/PIC12CXXX, 4-12 Interrupts, 100-200 ns Instruction Executions, 35 Instructions, 4/5 Oscillator Selections, ICSP™ (except ROM) (continued) |                        |                          |           |          |                            |           |       |                          |                      |                |        |                 |                      |           |    |                                             |
| PIC16C765                                                                                                                                                                                    | 14336 OTP              | —                        | 256       | 33       | 40P, 40JW, 44L, 44PT       | 8x8-bit   | —     | 1-16 bit, 2-8 bit, 1-WDT | USART, low speed USB | 24             | —      | BOR             | —                    | 2/0       | —  | USB 1.1, 64 bytes dual port RAM, PSP        |
| PIC16C770                                                                                                                                                                                    | 3584 OTP               | —                        | 256       | 16       | 20P, 20SO, 20JW, 20SS      | 6x12-bit  | —     | 1-16 bit, 2-8 bit, 1-WDT | MI²C/SPI             | 20             | 4 MHz  | PBOR /PLVD      | —                    | 0/1       | —  |                                             |
| PIC16C771                                                                                                                                                                                    | 7168 OTP               | —                        | 256       | 16       | 20P, 20SO, 20JW, 20SS      | 6x12-bit  | —     | 1-16 bit, 2-8 bit, 1-WDT | MI²C/SPI             | 20             | 4 MHz  | PBOR /PLVD      | —                    | 0/1       | —  |                                             |
| PIC16C773                                                                                                                                                                                    | 7168 OTP               | —                        | 256       | 22       | 28SP, 28SO, 28SS, 28JW     | 6x12-bit  | —     | 1-16 bit, 2-8 bit, 1-WDT | AUSART, MI²C/SPI     | 20             | —      | PBOR /PLVD      | —                    | 2/0       | —  |                                             |
| PIC16C774                                                                                                                                                                                    | 7168 OTP               | —                        | 256       | 33       | 40P, 40JW, 44L, 44PQ, 44PT | 10x12-bit | —     | 1-16 bit, 2-8 bit, 1-WDT | AUSART, MI²C/SPI     | 20             | —      | PBOR /PLVD      | —                    | 2/0       | —  | PSP                                         |
| PIC16C781                                                                                                                                                                                    | 1792 OTP               | —                        | 128       | 16       | 20P, 20SO, 20SS, 20JW      | 8x8-bit   | 2     | 1-16 bit, 2-8 bit, 1-WDT | —                    | 20             | 4 MHz  | PBOR            | —                    | —         | —  | Op Amp, PSMC, DAC                           |
| PIC16C782                                                                                                                                                                                    | 3584 OTP               | —                        | 128       | 16       | 20P, 20SO, 20SS, 20JW      | 8x8-bit   | 2     | 1-16 bit, 2-8 bit, 1-WDT | —                    | 20             | 4 MHz  | PBOR /PLVD      | —                    | —         | —  | Op Amp, PSMC, DAC                           |
| PIC16C925                                                                                                                                                                                    | 7168 OTP               | —                        | 176       | 52       | 68CL, 68L, 64PT            | 5x10-bit  | —     | 1-16 bit, 2-8 bit, 1-WDT | I²C/SPI              | 20             | —      | BOR             | —                    | 1/0       | —  | LCD module, static, 1/2, 1/3, 1/4 multiplex |
| PIC16C926                                                                                                                                                                                    | 14336 OTP              | —                        | 336       | 52       | 68CL, 68L, 64PT            | 5x10-bit  | —     | 1-16 bit, 2-8 bit, 1-WDT | I²C/SPI              | 20             | —      | BOR             | —                    | 1/0       | —  | LCD module, static, 1/2, 1/3, 1/4 multiplex |
| PIC16FXXX (x14): Migration to PIC16CXXX/PIC16C5X/PIC12CXXX, 17 Interrupts, 200 ns Instruction Execution, 33/35 Instructions, 4 Oscillator Selections, ICSP™ (except ROM)                     |                        |                          |           |          |                            |           |       |                          |                      |                |        |                 |                      |           |    |                                             |
| PIC16F627A                                                                                                                                                                                   | 1792 StdFI             | 128                      | 224       | 16       | 18P, 18SO, 20SS, 28ML      | —         | 2     | 1-16 bit, 2-8 bit, 1-WDT | AUSART               | 20             | 4 MHz  | BOR             | 1**                  | 1/0       | ✓  |                                             |
| PIC16F628A                                                                                                                                                                                   | 3584 StdFI             | 128                      | 224       | 16       | 18P, 18SO, 20SS, 28ML      | —         | 2     | 1-16 bit, 2-8 bit, 1-WDT | AUSART               | 20             | 4 MHz  | BOR             | 1**                  | 1/0       | ✓  |                                             |
| PIC16F630                                                                                                                                                                                    | 1792 StdFI             | 128                      | 64        | 12       | 14P, 14SL, 14ST            | —         | 1     | 1-8 bit, 1-16 bit, 1-WDT | —                    | 20             | 4 MHz  | BOR             | 1**                  | —         | —  |                                             |
| PIC16F636                                                                                                                                                                                    | 3584 StdFI             | 256                      | 128       | 12       | 14P, 14SL, 14ST            | —         | 2     | 1-8 bit, 1-16 bit, 1-WDT | —                    | 20             | 8 MHz  | BOR/ PLVD       | 1**                  | —         | ✓  | KEELOQ® Functionality                       |
| PIC16F684                                                                                                                                                                                    | 3584 StdFI             | 256                      | 128       | 12       | 14P, 14SL, 14ST            | 8x10-bit  | 2     | 1-16 bit, 2-8 bit, 1-WDT | —                    | 20             | 8 MHz  | BOR             | 1**                  | 0/1       | ✓  |                                             |
| PIC16F648A                                                                                                                                                                                   | 7168 StdFI             | 256                      | 256       | 16       | 18P, 18SO, 20SS, 28ML      | —         | 2     | 1-16 bit, 2-8 bit, 1-WDT | AUSART               | 20             | 4 MHz  | BOR             | 1**                  | 1/0       | ✓  |                                             |
| PIC16F676                                                                                                                                                                                    | 1792 StdFI             | 128                      | 64        | 12       | 14P, 14SL, 14ST            | 8x10-bit  | 1     | 1-8 bit, 1-16 bit, 1-WDT | —                    | 20             | 4 MHz  | BOR             | 1**                  | —         | —  |                                             |
| PIC16F688                                                                                                                                                                                    | 7168 StdFI             | 256                      | 256       | 12       | 14P, 14SL, 14ST            | 8x10-bit  | 2     | 1-8 bit, 1-16 bit, 1-WDT | EUSART               | 20             | 8 MHz  | BOR             | 1**                  | —         | ✓  |                                             |
| PIC16F716                                                                                                                                                                                    | 3584 StdFI             | —                        | 128       | 13       | 18P, 18SO, 20SS            | 4x8-bit   | —     | 1-16 bit, 2-8 bit, 1-WDT | —                    | 20             | —      | BOR             | 1**                  | 0/1       | —  |                                             |
| PIC16F72                                                                                                                                                                                     | 3584 StdFI             | —                        | 128       | 22       | 28SP, 28SO, 28SS, 28ML     | 5x8-bit   | —     | 1-16 bit, 2-8 bit, 1-WDT | I²C/SPI              | 20             | —      | BOR             | —                    | 1/0       | —  |                                             |
| PIC16F73                                                                                                                                                                                     | 7168 StdFI             | —                        | 192       | 22       | 28SP, 28SO, 28SS, 28ML     | 5x8-bit   | —     | 1-16 bit, 2-8 bit, 1-WDT | USART, I²C/SPI       | 20             | —      | BOR             | —                    | 2/0       | —  |                                             |
| PIC16F737                                                                                                                                                                                    | 7168 StdFI             | —                        | 368       | 25       | 28SP, 28SO, 28SS, 28ML     | 11x10-bit | 2     | 1-16 bit, 2-8 bit, 1-WDT | AUSART, MI²C/SPI     | 20             | 8 MHz  | PBOR /PLVD      | 1                    | 3/0       | ✓  |                                             |
| PIC16F74                                                                                                                                                                                     | 7168 StdFI             | —                        | 192       | 33       | 40P, 44ML, 44L, 44PT       | 8x8-bit   | —     | 1-16 bit, 2-8 bit, 1-WDT | USART, I²C/SPI       | 20             | —      | BOR             | —                    | 2/0       | —  | PSP                                         |

## Mid-Range 8-Bit PICmicro® Microcontroller Family

| Product                                                                                                                                                                              | Program Memory (Bytes) | EEPROM Data Memory Bytes | RAM Bytes | I/O Pins | Packages               | Analog    |       | Digital                  |                               | Max. Speed MHz | IntOSC | BOR/ PBOR /PLVD | ICD # of Breakpoints | CCP/ ECCP | nW | Other Features |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|--------------------------|-----------|----------|------------------------|-----------|-------|--------------------------|-------------------------------|----------------|--------|-----------------|----------------------|-----------|----|----------------|
|                                                                                                                                                                                      |                        |                          |           |          |                        | ADC Ch    | Comp. | Timers/WDT               | Serial I/O                    |                |        |                 |                      |           |    |                |
| PIC16FXXX (x14): Migration to PIC16CXXX/PIC16C5X/PIC12CXXX, 17 Interrupts, 200 ns Instruction Execution, 33/35 Instructions, 4 Oscillator Selections, ICSP™ (except ROM) (continued) |                        |                          |           |          |                        |           |       |                          |                               |                |        |                 |                      |           |    |                |
| PIC16F747                                                                                                                                                                            | 7168 StdFI             | —                        | 368       | 36       | 40P, 44PT, 44ML        | 14x10-bit | 2     | 1-16 bit, 2-8 bit, 1-WDT | AUSART, Mi <sup>2</sup> C/SPI | 20             | 8 MHz  | PBOR /PLVD      | 1                    | 3/0       | ✓  | PSP            |
| PIC16F76                                                                                                                                                                             | 14336 StdFI            | —                        | 368       | 22       | 28SP, 28SO, 28SS, 28ML | 5x8-bit   | —     | 1-16 bit, 2-8 bit, 1-WDT | USART, I <sup>2</sup> C/SPI   | 20             | —      | BOR             | —                    | 2/0       | —  |                |
| PIC16F767                                                                                                                                                                            | 14336 StdFI            | —                        | 368       | 25       | 28SP, 28SO, 28SS, 28ML | 11x10-bit | 2     | 1-16 bit, 2-8 bit, 1-WDT | AUSART, Mi <sup>2</sup> C/SPI | 20             | 8 MHz  | PBOR /PLVD      | 1                    | 3/0       | ✓  |                |
| PIC16F77                                                                                                                                                                             | 14336 StdFI            | —                        | 368       | 33       | 40P, 44ML, 44L, 44PT   | 8x8-bit   | —     | 1-16 bit, 2-8 bit, 1-WDT | USART, I <sup>2</sup> C/SPI   | 20             | —      | BOR             | —                    | 2/0       | —  | PSP            |
| PIC16F777                                                                                                                                                                            | 14336 StdFI            | —                        | 368       | 36       | 40P, 44PT, 44ML        | 14x10-bit | 2     | 1-16 bit, 2-8 bit, 1-WDT | AUSART, Mi <sup>2</sup> C/SPI | 20             | 8 MHz  | PBOR /PLVD      | 1                    | 3/0       | ✓  | PSP            |
| PIC16F818                                                                                                                                                                            | 1792 EnhFI             | 128                      | 128       | 16       | 18P, 18SO, 20SS, 28ML  | 5x10-bit  | —     | 1-16 bit, 2-8 bit, 1-WDT | I <sup>2</sup> C/SPI          | 20             | 8 MHz  | BOR             | 1                    | 1/0       | ✓  |                |
| PIC16F819                                                                                                                                                                            | 3584 EnhFI             | 256                      | 256       | 16       | 18P, 18SO, 20SS, 28ML  | 5x10-bit  | —     | 1-16 bit, 2-8 bit, 1-WDT | I <sup>2</sup> C/SPI          | 20             | 8 MHz  | BOR             | 1                    | 1/0       | ✓  |                |
| PIC16F84A                                                                                                                                                                            | 1792 StdFI             | 64                       | 68        | 13       | 18P, 18SO, 20SS        | —         | —     | 1-8 bit, 1-WDT           | —                             | 20             | —      | —               | —                    | —         | —  |                |
| PIC16F87                                                                                                                                                                             | 7168 EnhFI             | 256                      | 368       | 16       | 18P, 18SO, 20SS, 28ML  | —         | 2     | 1-16 bit, 2-8 bit, 1-WDT | AUSART, I <sup>2</sup> C/SPI  | 20             | 8 MHz  | BOR             | 1                    | 1/0       | ✓  |                |
| PIC16F870                                                                                                                                                                            | 3584 EnhFI             | 64                       | 128       | 22       | 28SP, 28SO, 28SS       | 5x10-bit  | —     | 1-16 bit, 2-8 bit, 1-WDT | AUSART                        | 20             | —      | BOR             | 1                    | 1/0       | —  |                |
| PIC16F871                                                                                                                                                                            | 3584 EnhFI             | 64                       | 128       | 33       | 40P, 44L, 44PT         | 8x10-bit  | —     | 1-16 bit, 2-8 bit, 1-WDT | AUSART                        | 20             | —      | BOR             | 1                    | 1/0       | —  | PSP            |
| PIC16F872                                                                                                                                                                            | 3584 EnhFI             | 64                       | 128       | 22       | 28SP, 28SO, 28SS       | 5x10-bit  | —     | 1-16 bit, 2-8 bit, 1-WDT | Mi <sup>2</sup> C/SPI         | 20             | —      | BOR             | 1                    | 1/0       | —  |                |
| PIC16F873A                                                                                                                                                                           | 7168 EnhFI             | 128                      | 192       | 22       | 28SP, 28SO, 28SS, 28ML | 5x10-bit  | 2     | 1-16 bit, 2-8 bit, 1-WDT | AUSART, Mi <sup>2</sup> C/SPI | 20             | —      | BOR             | 1                    | 2/0       | —  |                |
| PIC16F874A                                                                                                                                                                           | 7168 EnhFI             | 128                      | 192       | 33       | 40P, 44ML, 44L, 44PT   | 8x10-bit  | 2     | 1-16 bit, 2-8 bit, 1-WDT | AUSART, Mi <sup>2</sup> C/SPI | 20             | —      | BOR             | 1                    | 2/0       | —  | PSP            |
| PIC16F876A                                                                                                                                                                           | 14336 EnhFI            | 256                      | 368       | 22       | 28SP, 28SO, 28SS, 28ML | 5x10-bit  | 2     | 1-16 bit, 2-8 bit, 1-WDT | AUSART, Mi <sup>2</sup> C/SPI | 20             | —      | BOR             | 1                    | 2/0       | —  |                |
| PIC16F877A                                                                                                                                                                           | 14336 EnhFI            | 256                      | 368       | 33       | 40P, 44ML, 44L, 44PT   | 8x10-bit  | 2     | 1-16 bit, 2-8 bit, 1-WDT | AUSART, Mi <sup>2</sup> C/SPI | 20             | —      | BOR             | 1                    | 2/0       | —  | PSP            |
| PIC16F88                                                                                                                                                                             | 7168 EnhFI             | 256                      | 368       | 16       | 18P, 18SO, 20SS, 28ML  | 7x10-bit  | 2     | 1-16 bit, 2-8 bit, 1-WDT | AUSART, I <sup>2</sup> C/SPI  | 20             | 8 MHz  | BOR             | 1                    | 1/0       | ✓  |                |

\*Contact Microchip Technology for availability date.

\*\* Requires ICD specific device with header module – refer to Development Tools.

**High Performance 8-Bit PICmicro® Microcontroller Family**

| Product                                                                                                                                                                                                                                                                                                 | Program Memory (Bytes) | EEPROM Data Memory Bytes | RAM Bytes | I/O Pins | Packages              | Analog             |       | Digital                  |                                         | Max. Speed MHz | IntOSC | BOR/ PBOR/ PLVD | ICD # of Breakpoints | CCP/ECCP | nW | Other Features                                                                             |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|--------------------------|-----------|----------|-----------------------|--------------------|-------|--------------------------|-----------------------------------------|----------------|--------|-----------------|----------------------|----------|----|--------------------------------------------------------------------------------------------|
|                                                                                                                                                                                                                                                                                                         |                        |                          |           |          |                       | ADC Ch             | Comp. | Timers/WDT               | Serial I/O                              |                |        |                 |                      |          |    |                                                                                            |
| PIC18FXXX Flash MCUs (x16): Upwardly Compatible with PIC18CXXX/PIC17C7XX/PIC16CXX/PIC16C5X/PIC12CXXX, 77 Instructions, C Compiler Efficient Instruction Set, Software Stack Capability, Table Read/Write, 10 MIPS, 4x PLL, Switchable Oscillator Sources, 25 mA Source/Sink per I/O, ICSP™ (except ROM) |                        |                          |           |          |                       |                    |       |                          |                                         |                |        |                 |                      |          |    |                                                                                            |
| PIC18C601                                                                                                                                                                                                                                                                                               | ROM-less               | —                        | 1536      | 26       | 64PT, 68L             | 8x10-bit           | —     | 3-16 bit, 1-8 bit, 1-WDT | AUSART, MI <sup>2</sup> C/SPI           | 25             | —      | —               | —                    | 2/0      | —  | 256KB EMA, Bootloader RAM                                                                  |
| PIC18C801                                                                                                                                                                                                                                                                                               | ROM-less               | —                        | 1536      | 37       | 80PT, 84L             | 12x10-bit          | —     | 3-16 bit, 1-8 bit, 1-WDT | AUSART, MI <sup>2</sup> C/SPI           | 25             | —      | —               | —                    | 2/0      | —  | 2MB EMA, Bootloader RAM                                                                    |
| PIC18F1220                                                                                                                                                                                                                                                                                              | 4096 EnhFI             | 256                      | 256       | 16       | 18P, 18SO, 20SS, 28ML | 7x10-bit           | —     | 3-16 bit, 1-8 bit, 1-WDT | EUSART                                  | 40             | 8 MHz  | PBOR/ PLVD      | 1                    | 0/1      | ✓  |                                                                                            |
| PIC18F1320                                                                                                                                                                                                                                                                                              | 8192 EnhFI             | 256                      | 256       | 16       | 18P, 18SO, 20SS, 28ML | 7x10-bit           | —     | 3-16 bit, 1-8 bit, 1-WDT | EUSART                                  | 40             | 8 MHz  | PBOR/ PLVD      | 1                    | 0/1      | ✓  |                                                                                            |
| PIC18F2220                                                                                                                                                                                                                                                                                              | 4096 EnhFI             | 256                      | 512       | 25       | 28SP, 28SO            | 10x10-bit          | 2     | 3-16 bit, 1-8 bit, 1-WDT | AUSART, MI <sup>2</sup> C/SPI           | 40             | 8 MHz  | PBOR/ PLVD      | 1                    | 2/0      | ✓  |                                                                                            |
| PIC18F2320                                                                                                                                                                                                                                                                                              | 8192 EnhFI             | 256                      | 512       | 25       | 28SP, 28SO            | 10x10-bit          | 2     | 3-16 bit, 1-8 bit, 1-WDT | AUSART, MI <sup>2</sup> C/SPI           | 40             | 8 MHz  | PBOR/ PLVD      | 1                    | 2/0      | ✓  |                                                                                            |
| PIC18F2331                                                                                                                                                                                                                                                                                              | 8192 EnhFI             | 256                      | 768       | 24       | 28SP, 28SO            | 5x10-bit, 200 ksps | —     | 3-16 bit, 1-8 bit, 1-WDT | EUSART, I <sup>2</sup> C/SPI            | 40             | 8 MHz  | PBOR/ PLVD      | 1                    | 2/0      | —  | 6 14-bit Motor Control PWMs, 2-ch Quadrature Encoder                                       |
| PIC18F2410                                                                                                                                                                                                                                                                                              | 16384 StdFI            | —                        | 768       | 25       | 28SP, 28SO, 28ML      | 10x10-bit          | 2     | 3-16 bit, 1-8 bit, 1-WDT | EUSART, MI <sup>2</sup> C/SPI           | 40             | 8 MHz  | PBOR/ PLVD      | 3                    | 2/0      | ✓  |                                                                                            |
| PIC18F2420                                                                                                                                                                                                                                                                                              | 16384 EnhFI            | 256                      | 768       | 25       | 28SP, 28SO, 28ML      | 10x10-bit          | 2     | 3-16 bit, 1-8 bit, 1-WDT | EUSART, MI <sup>2</sup> C/SPI           | 40             | 8 MHz  | PBOR/ PLVD      | 3                    | 2/0      | ✓  |                                                                                            |
| PIC18F2431                                                                                                                                                                                                                                                                                              | 16384 EnhFI            | 256                      | 768       | 24       | 28SP, 28SO            | 5x10-bit, 200 ksps | —     | 3-16 bit, 1-8 bit, 1-WDT | EUSART, I <sup>2</sup> C/SPI            | 40             | 8 MHz  | PBOR/ PLVD      | 1                    | 2/0      | —  | 6 14-bit Motor Control PWMs, 2-ch Quadrature Encoder                                       |
| PIC18F2439                                                                                                                                                                                                                                                                                              | 12288 EnhFI            | 256                      | 640       | 21       | 28SP, 28SO            | 5x10-bit           | —     | 3-16 bit, 1-8 bit, 1-WDT | AUSART, MI <sup>2</sup> C/SPI           | 40             | —      | PBOR/ PLVD      | 1                    | —        | —  | Motor Control Kernel                                                                       |
| PIC18F2455*                                                                                                                                                                                                                                                                                             | 24576 EnhFI            | 256                      | 2048      | 24       | 28SP, 28SO            | 11x10-bit          | 2     | 3-16 bit, 1-8 bit, 1-WDT | USB 2.0, MI <sup>2</sup> C/SPI, EUSART  | 48             | 8 MHz  | PBOR/ PLVD      | 3                    | 1/1      | ✓  | Full Speed USB 2.0 Compliant                                                               |
| PIC18F248                                                                                                                                                                                                                                                                                               | 16384 EnhFI            | 256                      | 768       | 23       | 28SP, 28SO            | 5x10-bit           | —     | 3-16 bit, 1-8 bit, 1-WDT | AUSART, MI <sup>2</sup> C/SPI, CAN 2.0B | 40             | —      | PBOR/ PLVD      | 1                    | 1/0      | —  | Full CAN 2.0B, 3 transmit buffers, 2 receive buffers, 6 acceptable filters, 2 filter masks |
| PIC18F2480*                                                                                                                                                                                                                                                                                             | 16384 EnhFI            | 256                      | 768       | 25       | 28SP, 28SO, 28ML      | 8x10-bit           | —     | 3-16 bit, 1-8 bit, 1-WDT | CAN 2.0B, MI <sup>2</sup> C/SPI, EUSART | 40             | 8 MHz  | PBOR/ PLVD      | 3                    | 1/0      | ✓  | ECAN                                                                                       |
| PIC18F2510                                                                                                                                                                                                                                                                                              | 32768 StdFI            | —                        | 1536      | 25       | 28SP, 28SO, 28ML      | 10x10-bit          | 2     | 3-16 bit, 1-8 bit, 1-WDT | EUSART, MI <sup>2</sup> C/SPI           | 40             | 8 MHz  | PBOR/ PLVD      | 3                    | 2/0      | ✓  |                                                                                            |
| PIC18F2515                                                                                                                                                                                                                                                                                              | 49152 StdFI            | —                        | 3968      | 25       | 28SP, 28SO            | 10x10-bit          | 2     | 3-16 bit, 1-8 bit, 1-WDT | EUSART, MI <sup>2</sup> C/SPI           | 40             | 8 MHz  | PBOR/ PLVD      | 3                    | 2/0      | ✓  |                                                                                            |
| PIC18F2520                                                                                                                                                                                                                                                                                              | 32768 EnhFI            | 256                      | 1536      | 25       | 28SP, 28SO, 28ML      | 10x10-bit          | 2     | 3-16 bit, 1-8 bit, 1-WDT | EUSART, MI <sup>2</sup> C/SPI           | 40             | 8 MHz  | PBOR/ PLVD      | 3                    | 2/0      | ✓  |                                                                                            |
| PIC18F2525                                                                                                                                                                                                                                                                                              | 49152 EnhFI            | 1024                     | 3968      | 25       | 28SP, 28SO            | 10x10-bit          | 2     | 3-16 bit, 1-8 bit, 1-WDT | EUSART, MI <sup>2</sup> C/SPI           | 40             | 8 MHz  | PBOR/ PLVD      | 3                    | 2/0      | ✓  |                                                                                            |
| PIC18F2539                                                                                                                                                                                                                                                                                              | 24576 EnhFI            | 256                      | 1408      | 21       | 28SP, 28SO            | 5x10-bit           | —     | 3-16 bit, 1-8 bit, 1-WDT | EUSART, MI <sup>2</sup> C/SPI           | 40             | —      | PBOR/ PLVD      | 1                    | —        | —  | Motor Control Kernel                                                                       |

## High Performance 8-Bit PICmicro® Microcontroller Family

| Product                                                                                                                                                                                                                                                                                                             | Program Memory (Bytes) | EEPROM Data Memory Bytes | RAM Bytes | I/O Pins | Packages         | Analog            |       | Digital                  |                                         | Max. Speed MHz | IntOSC | BOR/ PBOR/ PLVD | ICD # of Breakpoints | CCP/ECCP | nW | Other Features                                                                                  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|--------------------------|-----------|----------|------------------|-------------------|-------|--------------------------|-----------------------------------------|----------------|--------|-----------------|----------------------|----------|----|-------------------------------------------------------------------------------------------------|
|                                                                                                                                                                                                                                                                                                                     |                        |                          |           |          |                  | ADC Ch            | Comp. | Timers/WDT               | Serial I/O                              |                |        |                 |                      |          |    |                                                                                                 |
| PIC18FXXX Flash MCUs (x16): Upwardly Compatible with PIC18CXXX/PIC17C7XX/PIC16CXX/PIC16C5X/PIC12CXXX, 77 Instructions, C Compiler Efficient Instruction Set, Software Stack Capability, Table Read/Write, 10 MIPS, 4x PLL, Switchable Oscillator Sources, 25 mA Source/Sink per I/O, ICSP™ (except ROM) (continued) |                        |                          |           |          |                  |                   |       |                          |                                         |                |        |                 |                      |          |    |                                                                                                 |
| PIC18F2550*                                                                                                                                                                                                                                                                                                         | 32768 EnhFI            | 256                      | 2048      | 24       | 28SP, 28SO       | 11x10-bit         | 2     | 3-16 bit, 1-8 bit, 1-WDT | USB 2.0, MI <sup>2</sup> C/SPI, EUSART  | 48             | 8 MHz  | PBOR/ PLVD      | 3                    | 1/1      | ✓  | Full Speed USB 2.0 Compliant                                                                    |
| PIC18F258                                                                                                                                                                                                                                                                                                           | 32768 EnhFI            | 256                      | 1536      | 23       | 28SP, 28SO       | 5x10-bit          | —     | 3-16 bit, 1-8 bit, 1-WDT | AUSART, MI <sup>2</sup> C/SPI, CAN 2.0B | 40             | —      | PBOR/ PLVD      | 1                    | 1/0      | —  | Full CAN 2.0B, 3 transmit buffers, 2 receive buffers, 6 acceptance filters, 2 filter masks      |
| PIC18F2580*                                                                                                                                                                                                                                                                                                         | 32768 EnhFI            | 256                      | 1536      | 25       | 28SP, 28SO, 28ML | 8x10-bit          | —     | 3-16 bit, 1-8 bit, 1-WDT | CAN 2.0B, MI <sup>2</sup> C/SPI, EUSART | 40             | 8 MHz  | PBOR/ PLVD      | 3                    | 1/0      | ✓  | ECAN                                                                                            |
| PIC18F2585                                                                                                                                                                                                                                                                                                          | 49152 EnhFI            | 1024                     | 3328      | 25       | 28SP, 28SO       | 8x10-bit          | —     | 3-16 bit, 1-8 bit, 1-WDT | EUSART, MI <sup>2</sup> C/SPI           | 40             | 8 MHz  | PBOR/ PLVD      | 3                    | 1/0      | —  | ECAN                                                                                            |
| PIC18F2610                                                                                                                                                                                                                                                                                                          | 65536 StdFI            | —                        | 3968      | 25       | 28SP, 28SO       | 10x10-bit         | 2     | 3-16 bit, 1-8 bit, 1-WDT | EUSART, MI <sup>2</sup> C/SPI           | 40             | 8 MHz  | PBOR/ PLVD      | 3                    | 2/0      | ✓  |                                                                                                 |
| PIC18F2620                                                                                                                                                                                                                                                                                                          | 65536 EnhFI            | 1024                     | 3968      | 25       | 28SP, 28SO       | 10x10-bit         | 2     | 3-16 bit, 1-8 bit, 1-WDT | EUSART, MI <sup>2</sup> C/SPI           | 40             | 8 MHz  | PBOR/ PLVD      | 3                    | 2/0      | ✓  |                                                                                                 |
| PIC18F2680                                                                                                                                                                                                                                                                                                          | 65536 EnhFI            | 1024                     | 3328      | 25       | 28SP, 28SO       | 8x10-bit          | —     | 3-16 bit, 1-8 bit, 1-WDT | CAN 2.0B, MI <sup>2</sup> C/SPI, EUSART | 40             | 8 MHz  | PBOR/ PLVD      | 3                    | 1/0      | —  | ECAN                                                                                            |
| PIC18F4220                                                                                                                                                                                                                                                                                                          | 4096 EnhFI             | 256                      | 512       | 36       | 40P, 44ML, 44PT  | 13x10-bit         | 2     | 3-16 bit, 1-8 bit, 1-WDT | AUSART, MI <sup>2</sup> C/SPI           | 40             | 8 MHz  | PBOR/ PLVD      | 1                    | 1/1      | ✓  | PSP                                                                                             |
| PIC18F4320                                                                                                                                                                                                                                                                                                          | 8192 EnhFI             | 256                      | 512       | 36       | 40P, 44ML, 44PT  | 13x10-bit         | 2     | 3-16 bit, 1-8 bit, 1-WDT | AUSART, MI <sup>2</sup> C/SPI           | 40             | 8 MHz  | PBOR/ PLVD      | 1                    | 1/1      | ✓  | PSP                                                                                             |
| PIC18F4331                                                                                                                                                                                                                                                                                                          | 8192 EnhFI             | 256                      | 768       | 36       | 40P, 44ML, 44PT  | 9x10-bit 200 ksps | —     | 3-16 bit, 1-8 bit, 1-WDT | EUSART, I <sup>2</sup> C/SPI            | 40             | 8 MHz  | PBOR/ PLVD      | 1                    | 2/0      | —  | 8 14-bit Motor Control PWMs, 2-ch Quadrature Encoder                                            |
| PIC18F4410                                                                                                                                                                                                                                                                                                          | 16384 StdFI            | —                        | 768       | 36       | 40P, 44ML, 44PT  | 13x10-bit         | 2     | 3-16 bit, 1-8 bit, 1-WDT | EUSART, MI <sup>2</sup> C/SPI           | 40             | 8 MHz  | PBOR/ PLVD      | 3                    | 1/1      | ✓  | PSP                                                                                             |
| PIC18F4420                                                                                                                                                                                                                                                                                                          | 16384 EnhFI            | 256                      | 768       | 36       | 40P, 44ML, 44PT  | 13x10-bit         | 2     | 3-16 bit, 1-8 bit, 1-WDT | EUSART, MI <sup>2</sup> C/SPI           | 40             | 8 MHz  | PBOR/ PLVD      | 3                    | 1/1      | ✓  | PSP                                                                                             |
| PIC18F4431                                                                                                                                                                                                                                                                                                          | 16384 EnhFI            | 256                      | 768       | 36       | 40P, 44ML, 44PT  | 9x10-bit 200 ksps | —     | 3-16 bit, 1-8 bit, 1-WDT | EUSART, I <sup>2</sup> C/SPI            | 40             | 8 MHz  | PBOR/ PLVD      | 1                    | 2/0      | —  | 8 14-bit Motor Control PWMs, 2-ch Quadrature Encoder                                            |
| PIC18F4439                                                                                                                                                                                                                                                                                                          | 12288 EnhFI            | 256                      | 640       | 32       | 40P, 44ML, 44PT  | 8x10-bit          | —     | 3-16 bit, 1-8 bit, 1-WDT | AUSART, MI <sup>2</sup> C/SPI           | 40             | —      | PBOR/ PLVD      | 1                    | —        | —  | Motor Control Kernel                                                                            |
| PIC18F4455*                                                                                                                                                                                                                                                                                                         | 24576 EnhFI            | 256                      | 2048      | 35       | 40P, 44ML, 44PT  | 13x10-bit         | 2     | 3-16 bit, 1-8 bit, 1-WDT | USB 2.0, MI <sup>2</sup> C/SPI, EUSART  | 48             | 8 MHz  | PBOR/ PLVD      | 3                    | 2/0      | ✓  | Full Speed USB 2.0 Compliant, Streaming Port                                                    |
| PIC18F448                                                                                                                                                                                                                                                                                                           | 16384 EnhFI            | 256                      | 768       | 34       | 40P, 44L, 44PT   | 8x10-bit          | 2     | 3-16 bit, 1-8 bit, 1-WDT | AUSART, MI <sup>2</sup> C/SPI, CAN 2.0B | 40             | —      | PBOR/ PLVD      | 1                    | 1/1      | —  | Full CAN 2.0B, 3 transmit buffers, 2 receive buffers, 6 acceptable filters, 2 filter masks, PSP |
| PIC18F4480*                                                                                                                                                                                                                                                                                                         | 16384 EnhFI            | 256                      | 768       | 36       | 40P, 44ML, 44PT  | 11x10-bit         | 2     | 3-16 bit, 1-8 bit, 1-WDT | CAN 2.0B, MI <sup>2</sup> C/SPI, EUSART | 40             | 8 MHz  | PBOR/ PLVD      | 3                    | 1/1      | ✓  | ECAN                                                                                            |
| PIC18F4520                                                                                                                                                                                                                                                                                                          | 32768 EnhFI            | 256                      | 1536      | 36       | 40P, 44ML, 44PT  | 13x10-bit         | 2     | 3-16 bit, 1-8 bit, 1-WDT | EUSART, MI <sup>2</sup> C/SPI           | 40             | 8 MHz  | PBOR/ PLVD      | 3                    | 1/1      | ✓  | PSP                                                                                             |

**High Performance 8-Bit PICmicro® Microcontroller Family**

| Product                                                                                                                                                                                                                                                                                                             | Program Memory (Bytes) | EEPROM Data Memory Bytes | RAM Bytes | I/O Pins | Packages        | Analog    |       | Digital                  |                                         | Max. Speed MHz | IntOSC | BOR/ PBOR/ PLVD | ICD # of Breakpoints | CCP/ECCP | nW | Other Features                                                                                  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|--------------------------|-----------|----------|-----------------|-----------|-------|--------------------------|-----------------------------------------|----------------|--------|-----------------|----------------------|----------|----|-------------------------------------------------------------------------------------------------|
|                                                                                                                                                                                                                                                                                                                     |                        |                          |           |          |                 | ADC Ch    | Comp. | Timers/WDT               | Serial I/O                              |                |        |                 |                      |          |    |                                                                                                 |
| PIC18FXXX Flash MCUs (x16): Upwardly Compatible with PIC18CXXX/PIC17C7XX/PIC16CXX/PIC16C5X/PIC12CXXX, 77 Instructions, C Compiler Efficient Instruction Set, Software Stack Capability, Table Read/Write, 10 MIPS, 4x PLL, Switchable Oscillator Sources, 25 mA Source/Sink per I/O, ICSP™ (except ROM) (continued) |                        |                          |           |          |                 |           |       |                          |                                         |                |        |                 |                      |          |    |                                                                                                 |
| PIC18F4510                                                                                                                                                                                                                                                                                                          | 32768 StdFI            | —                        | 1536      | 36       | 40P, 44ML, 44PT | 13x10-bit | 2     | 3-16 bit, 1-8 bit, 1-WDT | EUSART, MI <sup>2</sup> C/SPI           | 40             | 8 MHz  | PBOR/ PLVD      | 3                    | 1/1      | ✓  | PSP                                                                                             |
| PIC18F4515                                                                                                                                                                                                                                                                                                          | 49152 StdFI            | —                        | 3968      | 36       | 40P, 44ML, 44PT | 13x10-bit | 2     | 3-16 bit, 1-8 bit, 1-WDT | EUSART, MI <sup>2</sup> C/SPI           | 40             | 8 MHz  | PBOR/ PLVD      | 3                    | 1/1      | ✓  | PSP                                                                                             |
| PIC18F4525                                                                                                                                                                                                                                                                                                          | 49152 EnhFI            | 1024                     | 3968      | 36       | 40P, 44ML, 44PT | 13x10-bit | 2     | 3-16 bit, 1-8 bit, 1-WDT | EUSART, MI <sup>2</sup> C/SPI           | 40             | 8 MHz  | PBOR/ PLVD      | 3                    | 1/1      | ✓  | PSP                                                                                             |
| PIC18F4539                                                                                                                                                                                                                                                                                                          | 24576 EnhFI            | 256                      | 1408      | 32       | 40P, 44ML, 44PT | 8x10-bit  | —     | 3-16 bit, 1-8 bit, 1-WDT | AUSART, MI <sup>2</sup> C/SPI           | 40             | —      | PBOR/ PLVD      | 1                    | —        | —  | Motor Control Kernel                                                                            |
| PIC18F458                                                                                                                                                                                                                                                                                                           | 32768 EnhFI            | 256                      | 1536      | 34       | 40P, 44L, 44PT  | 8x10-bit  | 2     | 3-16 bit, 1-8 bit, 1-WDT | AUSART, MI <sup>2</sup> C/SPI, CAN 2.0B | 40             | —      | PBOR/ PLVD      | 1                    | 1/1      | —  | Full CAN 2.0B, 3 transmit buffers, 2 receive buffers, 6 acceptance filters, 2 filter masks, PSP |
| PIC18F4580*                                                                                                                                                                                                                                                                                                         | 32768 EnhFI            | 256                      | 1536      | 36       | 40P, 44ML, 44PT | 11x10-bit | 2     | 3-16 bit, 1-8 bit, 1-WDT | CAN 2.0B, MI <sup>2</sup> C/SPI, EUSART | 40             | 8 MHz  | PBOR/ PLVD      | 3                    | 1/1      | ✓  | ECAN                                                                                            |
| PIC18F4550*                                                                                                                                                                                                                                                                                                         | 32768 EnhFI            | 256                      | 2048      | 35       | 40P, 44ML, 44PT | 13x10-bit | 2     | 3-16 bit, 1-8 bit, 1-WDT | USB 2.0, MI <sup>2</sup> C/SPI, EUSART  | 48             | 8 MHz  | PBOR/ PLVD      | 3                    | 1/1      | ✓  | Full Speed USB 2.0 Compliant, Streaming Port                                                    |
| PIC18F4585                                                                                                                                                                                                                                                                                                          | 49152 EnhFI            | 1024                     | 3328      | 36       | 40P, 44ML, 44PT | 11x10-bit | 2     | 3-16 bit, 1-8 bit, 1-WDT | CAN 2.0B, MI <sup>2</sup> C/SPI, EUSART | 40             | 8 MHz  | PBOR/ PLVD      | 3                    | 1/1      | —  | ECAN                                                                                            |
| PIC18F4610                                                                                                                                                                                                                                                                                                          | 65536 StdFI            | —                        | 3968      | 36       | 40P, 44ML, 44PT | 13x10-bit | 2     | 3-16 bit, 1-8 bit, 1-WDT | EUSART, MI <sup>2</sup> C/SPI           | 40             | 8 MHz  | PBOR/ PLVD      | 3                    | 1/1      | ✓  | PSP                                                                                             |
| PIC18F4620                                                                                                                                                                                                                                                                                                          | 65536 EnhFI            | 1024                     | 3968      | 36       | 40P, 44ML, 44PT | 13x10-bit | 2     | 3-16 bit, 1-8 bit, 1-WDT | EUSART, MI <sup>2</sup> C/SPI           | 40             | 8 MHz  | PBOR/ PLVD      | 3                    | 1/1      | ✓  | PSP                                                                                             |
| PIC18F4680                                                                                                                                                                                                                                                                                                          | 65536 EnhFI            | 1024                     | 3328      | 36       | 40P, 44ML, 44PT | 11x10-bit | 2     | 3-16 bit, 1-8 bit, 1-WDT | CAN 2.0B, MI <sup>2</sup> C/SPI, EUSART | 40             | 8 MHz  | PBOR/ PLVD      | 3                    | 1/1      | ✓  | ECAN                                                                                            |
| PIC18F6310                                                                                                                                                                                                                                                                                                          | 8192 StdFI             | —                        | 768       | 54       | 64PT            | 12x10-bit | 2     | 3-16 bit, 1-8 bit, 1-WDT | MI <sup>2</sup> C/SPI, EUSART, AUSART   | 40             | 8 MHz  | PBOR/ PLVD      | 3                    | 3/0      | ✓  | EMA                                                                                             |
| PIC18F6410                                                                                                                                                                                                                                                                                                          | 16384 StdFI            | —                        | 768       | 54       | 64PT            | 12x10-bit | 2     | 3-16 bit, 1-8 bit, 1-WDT | MI <sup>2</sup> C/SPI, EUSART, AUSART   | 40             | 8 MHz  | PBOR/ PLVD      | 3                    | 3/0      | ✓  | EMA                                                                                             |
| PIC18F6390                                                                                                                                                                                                                                                                                                          | 8192 StdFI             | —                        | 768       | 50       | 64PT            | 12x10-bit | 2     | 3-16 bit, 1-8 bit, 1-WDT | MI <sup>2</sup> C/SPI, EUSART, AUSART   | 40             | 8 MHz  | PBOR/ PLVD      | 3                    | 2/0      | ✓  | LCD: up to 128 Segments                                                                         |
| PIC18F6490                                                                                                                                                                                                                                                                                                          | 16384 StdFI            | —                        | 768       | 50       | 64PT            | 12x10-bit | 2     | 3-16 bit, 1-8 bit, 1-WDT | MI <sup>2</sup> C/SPI, EUSART, AUSART   | 40             | 8 MHz  | PBOR/ PLVD      | 3                    | 2/0      | ✓  | LCD: up to 128 Segments                                                                         |
| PIC18F6520                                                                                                                                                                                                                                                                                                          | 32768 EnhFI            | 1024                     | 2048      | 52       | 64PT            | 12x10-bit | 2     | 3-16 bit, 2-8 bit, 1-WDT | 2x AUSART, MI <sup>2</sup> C/SPI        | 40             | —      | PBOR/ PLVD      | 1                    | 5/0      | —  | PSP                                                                                             |
| PIC18F6525                                                                                                                                                                                                                                                                                                          | 49152 EnhFI            | 1024                     | 3840      | 53       | 64PT            | 12x10-bit | 2     | 3-16 bit, 2-8 bit, 1-WDT | 2x EUSART, MI <sup>2</sup> C/SPI        | 40             | —      | PBOR/ PLVD      | 1                    | 2/3      | —  | PSP                                                                                             |

## High Performance 8-Bit PICmicro® Microcontroller Family

| Product                                                                                                                                                                                                                                                                                                             | Program Memory (Bytes) | EEPROM Data Memory Bytes | RAM Bytes | I/O Pins | Packages  | Analog    |       | Digital                  |                                         | Max. Speed MHz | IntOSC | BOR/ PBOR/ PLVD | ICD # of Breakpoints | CCP/ECCP | nW | Other Features          |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|--------------------------|-----------|----------|-----------|-----------|-------|--------------------------|-----------------------------------------|----------------|--------|-----------------|----------------------|----------|----|-------------------------|
|                                                                                                                                                                                                                                                                                                                     |                        |                          |           |          |           | ADC Ch    | Comp. | Timers/WDT               | Serial I/O                              |                |        |                 |                      |          |    |                         |
| PIC18FXXX Flash MCUs (x16): Upwardly Compatible with PIC18CXXX/PIC17C7XX/PIC16CXX/PIC16C5X/PIC12CXXX, 77 Instructions, C Compiler Efficient Instruction Set, Software Stack Capability, Table Read/Write, 10 MIPS, 4x PLL, Switchable Oscillator Sources, 25 mA Source/Sink per I/O, ICSP™ (except ROM) (continued) |                        |                          |           |          |           |           |       |                          |                                         |                |        |                 |                      |          |    |                         |
| PIC18F6585                                                                                                                                                                                                                                                                                                          | 49152 EnhFI            | 1024                     | 3328      | 53       | 64PT, 68L | 12x10-bit | 2     | 3-16 bit, 1-8 bit, 1-WDT | EUSART, Mi <sup>2</sup> C/SPI, CAN 2.0B | 40             | —      | PBOR/ PLVD      | 1                    | 1/1      | —  | ECAN                    |
| PIC18F6621                                                                                                                                                                                                                                                                                                          | 65536 EnhFI            | 1024                     | 3840      | 53       | 64PT      | 12x10-bit | 2     | 3-16 bit, 2-8 bit, 1-WDT | 2x EUSART, Mi <sup>2</sup> C/SPI        | 40             | —      | PBOR/ PLVD      | 1                    | 2/3      | —  | PSP                     |
| PIC18F6627*                                                                                                                                                                                                                                                                                                         | 98304 EnhFI            | 1024                     | 3936      | 54       | 64PT      | 12x10-bit | 2     | 3-16 bit, 2-8 bit, 1-WDT | 2x EUSART, 2x Mi <sup>2</sup> C/SPI     | 40             | 8 MHz  | PBOR/ PLVD      | 3                    | 2/3      | ✓  | PSP                     |
| PIC18F6680                                                                                                                                                                                                                                                                                                          | 65536 EnhFI            | 1024                     | 3328      | 53       | 64PT, 68L | 12x10-bit | 2     | 3-16 bit, 1-8 bit, 1-WDT | EUSART, Mi <sup>2</sup> C/SPI, CAN 2.0B | 40             | —      | PBOR/ PLVD      | 1                    | 1/1      | —  | ECAN                    |
| PIC18F6720                                                                                                                                                                                                                                                                                                          | 131072 EnhFI           | 1024                     | 3840      | 52       | 64PT      | 12x10-bit | 2     | 3-16 bit, 2-8 bit, 1-WDT | 2x AUSART, Mi <sup>2</sup> C/SPI        | 25             | —      | PBOR/ PLVD      | 1                    | 5/0      | —  | PSP                     |
| PIC18F6722*                                                                                                                                                                                                                                                                                                         | 131072 EnhFI           | 1024                     | 3936      | 54       | 64PT      | 12x10-bit | 2     | 3-16 bit, 2-8 bit, 1-WDT | 2x EUSART, 2x Mi <sup>2</sup> C/SPI     | 40             | 8 MHz  | PBOR/ PLVD      | 3                    | 2/3      | ✓  | PSP                     |
| PIC18F8310                                                                                                                                                                                                                                                                                                          | 8192 StdFI             | —                        | 768       | 70       | 80PT      | 12x10-bit | 2     | 3-16 bit, 1-8 bit, 1-WDT | Mi <sup>2</sup> C/SPI, EUSART, AUSART   | 40             | 8 MHz  | PBOR/ PLVD      | 3                    | 3/0      | ✓  | EMA                     |
| PIC18F8410                                                                                                                                                                                                                                                                                                          | 16384 StdFI            | —                        | 768       | 70       | 80PT      | 12x10-bit | 2     | 3-16 bit, 2-8 bit, 1-WDT | Mi <sup>2</sup> C/SPI, EUSART, AUSART   | 40             | 8 MHz  | PBOR/ PLVD      | 3                    | 3/0      | ✓  | EMA                     |
| PIC18F8390                                                                                                                                                                                                                                                                                                          | 8192 StdFI             | —                        | 768       | 66       | 80PT      | 12x10-bit | 2     | 3-16 bit, 1-8 bit, 1-WDT | Mi <sup>2</sup> C/SPI, EUSART, AUSART   | 40             | 8 MHz  | PBOR/ PLVD      | 3                    | 2/0      | ✓  | LCD: up to 192 Segments |
| PIC18F8490                                                                                                                                                                                                                                                                                                          | 16384 StdFI            | —                        | 768       | 66       | 80PT      | 12x10-bit | 2     | 3-16 bit, 2-8 bit, 1-WDT | Mi <sup>2</sup> C/SPI, EUSART, AUSART   | 40             | 8 MHz  | PBOR/ PLVD      | 3                    | 2/0      | ✓  | LCD: up to 192 Segments |
| PIC18F8520                                                                                                                                                                                                                                                                                                          | 32768 EnhFI            | 1024                     | 2048      | 68       | 80PT      | 16x10-bit | 2     | 2-8 bit, 3-16 bit, 1-WDT | 2x AUSART, Mi <sup>2</sup> C/SPI        | 40             | —      | PBOR/ PLVD      | 1                    | 5/0      | —  | PSP, EMA                |
| PIC18F8525                                                                                                                                                                                                                                                                                                          | 49152 EnhFI            | 1024                     | 3840      | 69       | 80PT      | 16x10-bit | 2     | 3-16 bit, 2-8 bit, 1-WDT | 2x EUSART, Mi <sup>2</sup> C/SPI        | 40             | —      | PBOR/ PLVD      | 1                    | 2/3      | —  | PSP, EMA                |
| PIC18F8585                                                                                                                                                                                                                                                                                                          | 49152 EnhFI            | 1024                     | 3328      | 69       | 80PT      | 16x10-bit | 2     | 3-16 bit, 1-8 bit, 1-WDT | EUSART, Mi <sup>2</sup> C/SPI, CAN2.0B  | 40             | —      | PBOR/ PLVD      | 1                    | 1/1      | —  | ECAN, EMA               |
| PIC18F8621                                                                                                                                                                                                                                                                                                          | 65536 EnhFI            | 1024                     | 3840      | 69       | 80PT      | 16x10-bit | 2     | 3-16 bit, 2-8 bit, 1-WDT | 2x EUSART, Mi <sup>2</sup> C/SPI        | 40             | —      | PBOR/ PLVD      | 1                    | 2/3      | —  | PSP, EMA                |
| PIC18F8627*                                                                                                                                                                                                                                                                                                         | 98304 EnhFI            | 1024                     | 3936      | 70       | 80PT      | 16x10-bit | 2     | 3-16 bit, 2-8 bit, 1-WDT | 2x EUSART, 2x Mi <sup>2</sup> C/SPI     | 40             | 8 MHz  | PBOR/ PLVD      | 3                    | 2/3      | ✓  | PSP, EMA                |
| PIC18F8680                                                                                                                                                                                                                                                                                                          | 65536 EnhFI            | 1024                     | 3328      | 69       | 80PT      | 16x10-bit | 2     | 3-16 bit, 1-8 bit, 1-WDT | EUSART, Mi <sup>2</sup> C/SPI, CAN2.0B  | 40             | —      | PBOR/ PLVD      | 1                    | 1/1      | —  | ECAN, EMA               |
| PIC18F8720                                                                                                                                                                                                                                                                                                          | 131072 EnhFI           | 1024                     | 3840      | 68       | 80PT      | 16x10-bit | 2     | 3-16 bit, 2-8 bit, 1-WDT | 2x AUSART, Mi <sup>2</sup> C/SPI        | 25             | —      | PBOR/ PLVD      | 1                    | 5/0      | —  | PSP, EMA                |
| PIC18F8722*                                                                                                                                                                                                                                                                                                         | 131072 EnhFI           | 1024                     | 3936      | 70       | 80PT      | 16x10-bit | 2     | 3-16 bit, 2-8 bit, 1-WDT | 2x EUSART, 2x Mi <sup>2</sup> C/SPI     | 40             | 8 MHz  | PBOR/ PLVD      | 3                    | 2/3      | ✓  | PSP, EMA                |

\*Contact Microchip Technology for availability date.

## FOCUSED SOLUTIONS - PICmicro® MICROCONTROLLER FAMILY PRODUCTS

| Product                      | Program Memory (Bytes) | EEPROM Data Memory Bytes | RAM Bytes | I/O Pins | Packages         | Analog Peripherals | Digital Peripherals | Max. Speed MHz | ICD # of Breakpoints | Function-Specific Features |                  |                 |                    |                         | Development Boards         |
|------------------------------|------------------------|--------------------------|-----------|----------|------------------|--------------------|---------------------|----------------|----------------------|----------------------------|------------------|-----------------|--------------------|-------------------------|----------------------------|
|                              |                        |                          |           |          |                  |                    |                     |                |                      | ISO-16845 Tested           | Transmit Buffers | Receive Buffers | Configurable RX/TX | Acceptance Filters/Mask |                            |
| Connectivity Solutions - CAN |                        |                          |           |          |                  |                    |                     |                |                      |                            |                  |                 |                    |                         |                            |
| PIC18F248                    | 16384 EnhFI            | 256                      | 768       | 23       | 28SP, 28SO       | ADC                | AUSART, CCP         | 40             | 1                    | Yes                        | 3                | 2               | —                  | 6/2                     | DM163011 PICDEM™ CAN-LIN 2 |
| PIC18F2480*                  | 16384 EnhFI            | 256                      | 768       | 25       | 28SP, 28SO, 28ML | ADC                | EUSART, CCP         | 40             | 3                    | Planned                    | 3                | 2               | 6                  | 16/2                    | DM163011 PICDEM™ CAN-LIN 2 |
| PIC18F258                    | 32768 EnhFI            | 256                      | 1536      | 23       | 28SP, 28SO       | ADC                | AUSART, CCP         | 40             | 1                    | Yes                        | 3                | 2               | —                  | 6/2                     | DM163011 PICDEM™ CAN-LIN 2 |
| PIC18F2580*                  | 32768 EnhFI            | 256                      | 1536      | 25       | 28SP, 28SO, 28ML | ADC                | EUSART, CCP         | 40             | 3                    | Planned                    | 3                | 2               | 6                  | 16/2                    | DM163011 PICDEM™ CAN-LIN 2 |
| PIC18F2585                   | 49152 EnhFI            | 1024                     | 3328      | 25       | 28SP, 28SO       | ADC                | EUSART, CCP         | 40             | 3                    | Planned                    | 3                | 2               | 6                  | 16/2                    | DM163011 PICDEM™ CAN-LIN 2 |
| PIC18F2680                   | 65536 EnhFI            | 1024                     | 3328      | 25       | 28SP, 28SO       | ADC                | EUSART, CCP         | 40             | 3                    | Planned                    | 3                | 2               | 6                  | 16/2                    | DM163011 PICDEM™ CAN-LIN 2 |
| PIC18F448                    | 16384 EnhFI            | 256                      | 768       | 34       | 40P, 44PT, 44L   | ADC/Comp           | EUSART, CCP/ECCP    | 40             | 1                    | Yes                        | 3                | 2               | —                  | 6/2                     | DM163011 PICDEM™ CAN-LIN 2 |
| PIC18F4480*                  | 16384 EnhFI            | 256                      | 768       | 36       | 44PT, 44ML       | ADC/Comp           | EUSART, CCP/ECCP    | 40             | 3                    | Planned                    | 3                | 2               | 6                  | 16/2                    | DM163011 PICDEM™ CAN-LIN 2 |
| PIC18F458                    | 32768 EnhFI            | 256                      | 1536      | 34       | 40P, 44PT, 44L   | ADC/Comp           | EUSART, CCP/ECCP    | 40             | 1                    | Yes                        | 3                | 2               | —                  | 6/2                     | DM163011 PICDEM™ CAN-LIN 2 |
| PIC18F4580*                  | 32768 EnhFI            | 256                      | 1536      | 36       | 44PT, 44ML       | ADC/Comp           | EUSART, CCP/ECCP    | 40             | 3                    | Planned                    | 3                | 2               | 6                  | 16/2                    | DM163011 PICDEM™ CAN-LIN 2 |
| PIC18F4585                   | 49152 EnhFI            | 1024                     | 3328      | 36       | 40P, 44PT, 44ML  | ADC/Comp           | EUSART, CCP/ECCP    | 40             | 3                    | Planned                    | 3                | 2               | 6                  | 16/2                    | DM163011 PICDEM™ CAN-LIN 2 |
| PIC18F4680                   | 65536 EnhFI            | 1024                     | 3328      | 36       | 40P, 44PT, 44ML  | ADC/Comp           | EUSART, CCP/ECCP    | 40             | 3                    | Planned                    | 3                | 2               | 6                  | 16/2                    | DM163011 PICDEM™ CAN-LIN 2 |
| PIC18F6585                   | 49152 EnhFI            | 1024                     | 3328      | 53       | 64PT, 68L        | ADC/Comp           | EUSART, CCP/ECCP    | 40             | 1                    | Yes                        | 3                | 2               | 6                  | 16/2                    | DM163015 PICDEM™ CAN-LIN 3 |
| PIC18F6680                   | 65536 EnhFI            | 1024                     | 3328      | 53       | 64PT, 68L        | ADC/Comp           | EUSART, CCP/ECCP    | 40             | 1                    | Yes                        | 3                | 2               | 6                  | 16/2                    | DM163015 PICDEM™ CAN-LIN 3 |
| PIC18F8585                   | 49152 EnhFI            | 1024                     | 3328      | 69       | 80PT             | ADC/Comp           | EUSART, CCP/ECCP    | 40             | 1                    | Yes                        | 3                | 2               | 6                  | 16/2                    | DM163015 PICDEM™ CAN-LIN 3 |
| PIC18F8680                   | 65536 EnhFI            | 1024                     | 3328      | 69       | 80PT             | ACD/Comp           | EUSART, CCP/ECCP    | 40             | 1                    | Yes                        | 3                | 2               | 6                  | 16/2                    | DM163015 PICDEM™ CAN-LIN 3 |

Refer to Design pages on [www.microchip.com](http://www.microchip.com) for further detail.

| Product         | MAC | PHY | TX/RX Dual Port RAM Buffer | Interrupts | LEDs | Operating Voltage (V) | Temp. Range (°C) | Max. Speed MHz | Serial | Features                            | Package                         | Development Boards |
|-----------------|-----|-----|----------------------------|------------|------|-----------------------|------------------|----------------|--------|-------------------------------------|---------------------------------|--------------------|
| <b>Ethernet</b> |     |     |                            |            |      |                       |                  |                |        |                                     |                                 |                    |
| MCP22S80*       | Yes | Yes | 8KB                        | 2          | 2    | 3.3                   | -40 to +85       | 25             | SPI    | Loop back test modes, auto-polarity | 28-Pin SO, 28-Pin SS, 28-Pin ML |                    |

\*Contact Microchip Technology Inc. for availability.



| Product                      | Program Memory (Bytes) | EEPROM Data Memory Bytes | RAM Bytes | I/O Pins | Packages             | Analog Peripherals | Digital Peripherals           | Max. Speed MHz | ICD # of Breakpoints | Function-Specific Features |                       |                |                    |                | Development Boards    |
|------------------------------|------------------------|--------------------------|-----------|----------|----------------------|--------------------|-------------------------------|----------------|----------------------|----------------------------|-----------------------|----------------|--------------------|----------------|-----------------------|
|                              |                        |                          |           |          |                      |                    |                               |                |                      | Compliant                  | Speed                 | # of Endpoints | USB Buffer (bytes) | Streaming Port |                       |
| Connectivity Solutions - USB |                        |                          |           |          |                      |                    |                               |                |                      |                            |                       |                |                    |                |                       |
| PIC16C745                    | 14336 OTP              | —                        | 256       | 22       | 28SP, 28SO, 28JW     | ADC                | UART                          | 24             | —                    | USB 1.1                    | Low Speed (1.5Mbit/s) | 16             | 64                 | —              | DM163010, PICDEM™ USB |
| PIC16C765                    | 14336 OTP              | —                        | 256       | 33       | 40P, 40JW, 44L, 44PT | ADC                | UART                          | 24             | —                    | USB 1.1                    | Low Speed (1.5Mbit/s) | 16             | 64                 | —              | DM163010, PICDEM™ USB |
| PIC18F2455*                  | 24576 EnhFI            | 256                      | 2048      | 24       | 28SP, 28SO, 28ML     | ADC/Comp           | EUSART, Mi <sup>2</sup> C/SPI | 48             | 3                    | USB 2.0                    | Full Speed (12Mbit/s) | 16             | 1024               | —              |                       |
| PIC18F2550*                  | 32768 EnhFI            | 256                      | 2048      | 24       | 28SP, 28SO, 28ML     | ADC/Comp           | EUSART, Mi <sup>2</sup> C/SPI | 48             | 3                    | USB 2.0                    | Full Speed (12Mbit/s) | 16             | 1024               | —              |                       |
| PIC18F4455*                  | 24576 EnhFI            | 256                      | 2048      | 36       | 40P, 44PT, 44ML      | ADC/Comp           | EUSART, Mi <sup>2</sup> C/SPI | 48             | 3                    | USB 2.0                    | Full Speed (12Mbit/s) | 16             | 1024               | Yes            |                       |
| PIC18F4550*                  | 32768 EnhFI            | 256                      | 2048      | 36       | 40P, 44PT, 44ML      | ADC/Comp           | EUSART, Mi <sup>2</sup> C/SPI | 48             | 3                    | USB 2.0                    | Full Speed (12Mbit/s) | 16             | 1024               | Yes            |                       |

\*Contact Microchip Technology Inc. for availability.  
Refer to Design pages on [www.microchip.com](http://www.microchip.com) for further details.

| Connectivity Solutions - ACTIVE RF                     |                               |                          |                                  |                       |                          |                       |                              |                                  |                                  |                    |                       |                       |                                     |                                  |
|--------------------------------------------------------|-------------------------------|--------------------------|----------------------------------|-----------------------|--------------------------|-----------------------|------------------------------|----------------------------------|----------------------------------|--------------------|-----------------------|-----------------------|-------------------------------------|----------------------------------|
| rfPIC® Microcontrollers with UHF RF Transmitter, ICSP™ |                               |                          |                                  |                       |                          |                       |                              |                                  |                                  |                    |                       |                       |                                     |                                  |
| Product                                                | Program Memory (Bytes)        | EEPROM Data Memory Bytes | RAM Bytes                        | I/O Pins              | Packages                 | Analog Peripherals    | Digital Peripherals          | Max. Speed (MHz)                 | Function-Specific Specifications |                    |                       |                       |                                     | Development Boards               |
|                                                        |                               |                          |                                  |                       |                          |                       |                              |                                  | Modulation                       | Data Rate (kbps)   | Output Power (dBm)    | Operating Voltage (V) | Frequency Range (MHz)               |                                  |
| rfPIC12C509AF                                          | 1536 OTP                      | —                        | 41                               | 6                     | 20JW, 20SS               | —                     | 1-8 bit Timer, WDT           | 4                                | FSK, ASK                         | 40                 | 2                     | 2.5-5.5               | 310-440                             |                                  |
| rfPIC12C509AG                                          | 1536 OTP                      | —                        | 41                               | 6                     | 18JW, 18SO               | —                     | 1-8 bit Timer, WDT           | 4                                | ASK                              | 40                 | 2                     | 2.5-5.5               | 310-440                             |                                  |
| rfPIC12F675F                                           | 1792 StdFI                    | 128                      | 64                               | 6                     | 20SS                     | 4x10-bit A/D, Comp    | 1-8 bit, 1-16 bit Timer, WDT | 20                               | FSK, ASK                         | 40                 | 10                    | 2.0-5.5               | 380-450                             | DV164102, rfPIC® Development Kit |
| rfPIC12F675H                                           | 1792 StdFI                    | 128                      | 64                               | 6                     | 20SS                     | 4x10-bit A/D, Comp    | 1-8 bit, 1-16 bit Timer, WDT | 20                               | FSK, ASK                         | 40                 | 10                    | 2.0-5.5               | 850-930                             | DV164102, rfPIC® Development Kit |
| rfPIC12F675K                                           | 1792 StdFI                    | 128                      | 64                               | 6                     | 20SS                     | 4x10-bit A/D, Comp    | 1-8 bit, 1-16 bit Timer, WDT | 20                               | FSK, ASK                         | 40                 | 10                    | 2.0-5.5               | 290-350                             | DV164102, rfPIC® Development Kit |
| rfHCS KEELOQ® Encoders with UHF RF Transmitter         |                               |                          |                                  |                       |                          |                       |                              |                                  |                                  |                    |                       |                       |                                     |                                  |
| Product                                                | Transmission Code Length Bits | Code Hopping Bits        | Programmable Encryption Key Bits | Packages              | Protocols                | Function Codes        | Tunable OSC                  | CRC                              | Function-Specific Specifications |                    |                       |                       | Development Boards                  |                                  |
|                                                        |                               |                          |                                  |                       |                          |                       |                              |                                  | Modulation                       | Output Power (dBm) | Operating Voltage (V) | Frequency Range (MHz) |                                     |                                  |
| rfHCS362F                                              | 69                            | 32                       | 2 x 64                           | 20SS                  | PWM, Manchester          | 4 x 15                | ✓                            | ✓                                | FSK, ASK                         | 2                  | 2.2-5.5               | 310-440               | DM303006, KEELOQ® Evaluation Kit II |                                  |
| rfHCS362G                                              | 69                            | 32                       | 2 x 64                           | 18SO                  | PWM, Manchester          | 4 x 15                | ✓                            | ✓                                | ASK                              | 2                  | 2.2-5.5               | 310-440               | DM303006, KEELOQ® Evaluation Kit II |                                  |
| UHF RF Receiver                                        |                               |                          |                                  |                       |                          |                       |                              |                                  |                                  |                    |                       |                       |                                     |                                  |
| Product                                                | Modulation                    | Data Rate (kbps)         | Frequency Range (MHz)            | Sensitivity dBm (FSK) | IF Frequency Range (MHz) | Operating Voltage (V) | Package                      | Development Boards               |                                  |                    |                       |                       |                                     |                                  |
| rfRXD0420                                              | ASK, FSK, FM                  | 80                       | 300-450                          | -111                  | 0.455-21.4               | 2.5-5.5               | 32LQ                         | DV164102, rfPIC® Development Kit |                                  |                    |                       |                       |                                     |                                  |
| rfRXD0920                                              | ASK, FSK, FM                  | 80                       | 800-930                          | -109                  | 0.455-21.4               | 2.5-5.5               | 32LQ                         | DV164102, rfPIC® Development Kit |                                  |                    |                       |                       |                                     |                                  |

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**Focused Solutions**  
**PICmicro® MCU Products**

| Product       | Program Memory Bytes | EEPROM Data Memory Bytes | RAM Bytes | I/O Pins | Packages               | Analog Peripherals | Digital Peripherals                   | Max. Speed MHz | ICD # of Breakpoints | LCD Function-Specific Features |                |                                   |              |                   | Development Boards               |
|---------------|----------------------|--------------------------|-----------|----------|------------------------|--------------------|---------------------------------------|----------------|----------------------|--------------------------------|----------------|-----------------------------------|--------------|-------------------|----------------------------------|
|               |                      |                          |           |          |                        |                    |                                       |                |                      | COMxSegment = # Segments       | Drive in Sleep | Software Configurable Driver Pins | Direct Drive | Intl. Charge Pump |                                  |
| LCD Solutions |                      |                          |           |          |                        |                    |                                       |                |                      |                                |                |                                   |              |                   |                                  |
| PIC16C925     | 7168 OTP             | —                        | 176       | 52       | 64PT, 68CL, 68L        | ADC                | I <sup>2</sup> C/SPI                  | 20             | —                    | 4x29 (116)                     | Yes            | No                                | Yes          | Yes               | DM163003, PICDEM™ 3 LCD          |
| PIC16C926     | 14336 OTP            | —                        | 336       | 52       | 64PT, 68CL, 68L        | ADC                | I <sup>2</sup> C/SPI                  | 20             | —                    | 4x29 (116)                     | Yes            | No                                | Yes          | Yes               | DM163003, PICDEM™ 3 LCD          |
| PIC16F913*    | 7168 EnhFI           | 256                      | 256       | 25       | 28P, 28SO, 28SS, 28QFN | ADC/Comp           | AUSART, I <sup>2</sup> C/SPI          | 20             | 1                    | 4x15 (60)                      | Yes            | Yes                               | Yes          | No                |                                  |
| PIC16F914*    | 7168 EnhFI           | 256                      | 256       | 36       | 40P, 44TQFP, 44QFN     | ADC/Comp           | AUSART, I <sup>2</sup> C/SPI          | 20             | 1                    | 4x24 (96)                      | Yes            | Yes                               | Yes          | No                |                                  |
| PIC16F916*    | 14336 EnhFI          | 256                      | 352       | 25       | 28P, 28SO, 28SS, 28QFN | ADC/Comp           | AUSART, I <sup>2</sup> C/SPI          | 20             | 1                    | 4x15 (60)                      | Yes            | Yes                               | Yes          | No                |                                  |
| PIC16F917*    | 14336 EnhFI          | 256                      | 352       | 36       | 40P, 44TQFP, 44QFN     | ADC/Comp           | AUSART, I <sup>2</sup> C/SPI          | 20             | 1                    | 4x24 (96)                      | Yes            | Yes                               | Yes          | No                |                                  |
| PIC18F6390    | 8192 StdFI           | —                        | 768       | 50       | 64PT                   | ADC/Comp           | EUSART, AUSART, MI <sup>2</sup> C/SPI | 40             | 3                    | 4x32 (128)                     | Yes            | Yes                               | Yes          | No                | DM163028, PICDEM™ LCD Demo Board |
| PIC18F6490    | 16384 StdFI          | —                        | 768       | 50       | 64PT                   | ADC/Comp           | EUSART, AUSART, MI <sup>2</sup> C/SPI | 40             | 3                    | 4x32 (128)                     | Yes            | Yes                               | Yes          | No                | DM163028, PICDEM™ LCD Demo Board |
| PIC18F8390    | 8192 StdFI           | —                        | 768       | 66       | 80PT                   | ADC/Comp           | EUSART, AUSART, MI <sup>2</sup> C/SPI | 40             | 3                    | 4x48 (192)                     | Yes            | Yes                               | Yes          | No                | DM163028, PICDEM™ LCD Demo Board |
| PIC18F8490    | 16384 StdFI          | —                        | 768       | 66       | 80PT                   | ADC/Comp           | EUSART, AUSART, MI <sup>2</sup> C/SPI | 40             | 3                    | 4x48 (192)                     | Yes            | Yes                               | Yes          | No                | DM163028, PICDEM™ LCD Demo Board |

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| Product                 | Program Memory Bytes | EEPROM Data Memory Bytes | RAM Bytes | I/O Pins | Packages               | Analog Peripherals | Digital Peripherals | Max. Speed MHz | ICD # of Breakpoints | Function-Specific Features |               |                     |                   |                    | Other Features              |
|-------------------------|----------------------|--------------------------|-----------|----------|------------------------|--------------------|---------------------|----------------|----------------------|----------------------------|---------------|---------------------|-------------------|--------------------|-----------------------------|
|                         |                      |                          |           |          |                        |                    |                     |                |                      | Timers                     | Input Capture | Output Comp/Std PWM | Motor Control PWM | Quadrature Encoder |                             |
| Motor Control Solutions |                      |                          |           |          |                        |                    |                     |                |                      |                            |               |                     |                   |                    |                             |
| PIC12F683               | 3584 StdFI           | 256                      | 128       | 6        | 8P, 8SN, 8MF           | ADC/Comp           | —                   | 20             | 1                    | 1-16 bit, 2-8 bit, WDT     | 1             | 1x10 bit            | —                 | —                  | PICkit™ 1                   |
| PIC16F684               | 3584 EnhFI           | 256                      | 128       | 12       | 14P, 14SL, 14ST        | ADC/Comp           | —                   | 20             | 1                    | 1-16 bit, 2-8 bit, WDT     | 1             | 4x10 bit            | —                 | —                  | PICkit™ 1                   |
| PIC16F716               | 3584 StdFI           | —                        | 128       | 13       | 18P, 18SO, 20SS        | ADC                | —                   | 20             | 1                    | 1-16 bit, 2-8 bit, WDT     | 1             | 4x10 bit            | —                 | —                  | DM163022, PICDEM™ 2 Plus    |
| PIC16F737               | 7168 StdFI           | —                        | 368       | 25       | 28SP, 28SO, 28SS, 28ML | ADC/Comp           | USART, MI²C/SPI     | 20             | 1                    | 1-16 bit, 2-8 bit, WDT     | 3             | 3x10 bit            | —                 | —                  | DM163022, PICDEM™ 2 Plus    |
| PIC16F747               | 7168 StdFI           | —                        | 368       | 36       | 40P, 44PT, 44ML        | ADC/Comp           | USART, MI²C/SPI     | 20             | 1                    | 1-16 bit, 2-8 bit, WDT     | 3             | 3x10 bit            | —                 | —                  | DM163022, PICDEM™ 2 Plus    |
| PIC16F767               | 14336 StdFI          | —                        | 368       | 25       | 28SP, 28SO, 28SS, 28ML | ADC/Comp           | USART, MI²C/SPI     | 20             | 1                    | 1-16 bit, 2-8 bit, WDT     | 3             | 3x10 bit            | —                 | —                  | DM163022, PICDEM™ 2 Plus    |
| PIC16F777               | 14336 StdFI          | —                        | 368       | 36       | 40P, 44PT, 44ML        | ADC/Comp           | USART, MI²C/SPI     | 20             | 1                    | 1-16 bit, 2-8 bit, WDT     | 3             | 3x10 bit            | —                 | —                  | DM163022, PICDEM™ 2 Plus    |
| PIC18F1230*             | 4096 EnhFI           | 128                      | 256       | 16       | 18P, 18SO, 20SS, 28ML  | ADC/Comp           | EUSART              | 40             | 3                    | 2-16 bit, WDT              | —             | —                   | 6                 | —                  | DM183011 PICDEM™ MC         |
| PIC18F1330*             | 8192 EnhFI           | 128                      | 256       | 16       | 18P, 18SO, 20SS, 28ML  | ADC/Comp           | EUSART              | 40             | 3                    | 2-16 bit, WDT              | —             | —                   | 6                 | —                  | DM183011 PICDEM™ MC         |
| PIC18F2331              | 8192 EnhFI           | 256                      | 768       | 22       | 28SP, 28SO             | 200 ksps ADC       | EUSART, I²C/SPI     | 40             | 1                    | 3-16 bit, 1-8 bit, WDT     | 3             | 2x10 bit            | 6                 | Yes                | DM183011, PICDEM™ MC        |
| PIC18F2431              | 16384 EnhFI          | 256                      | 768       | 22       | 28SP, 28SO             | 200 ksps ADC       | EUSART, I²C/SPI     | 40             | 1                    | 3-16 bit, 1-8 bit, WDT     | 3             | 2x10 bit            | 6                 | Yes                | DM183011, PICDEM™ MC        |
| PIC18F2439              | 12288 EnhFI          | 256                      | 640       | 21       | 28SP, 28SO             | ADC                | AUSART, MI²C/SPI    | 40             | 1                    | 3-16 bit, WDT              | —             | 2x10 bit            | —                 | —                  | DM183010, Motor Control Kit |
| PIC18F2539              | 24576 EnhFI          | 256                      | 1408      | 21       | 28SP, 28SO             | ADC                | AUSART, MI²C/SPI    | 40             | 1                    | 3-16 bit, WDT              | —             | 2x10 bit            | —                 | —                  | DM183010, Motor Control Kit |
| PIC18F4331              | 8192 EnhFI           | 256                      | 768       | 34       | 40P, 44PT, 44ML        | 200 ksps ADC       | EUSART, I²C/SPI     | 40             | 1                    | 3-16 bit, 1-8 bit, WDT     | 3             | 2x10 bit            | 8                 | Yes                | DM183011, PICDEM™ MC        |
| PIC18F4431              | 16384 EnhFI          | 256                      | 768       | 34       | 40P, 44PT, 44ML        | 200 ksps ADC       | EUSART, I²C/SPI     | 40             | 1                    | 3-16 bit, 1-8 bit, WDT     | 3             | 2x10 bit            | 8                 | Yes                | DM183011, PICDEM™ MC        |
| PIC18F4439              | 12228 EnhFI          | 256                      | 640       | 32       | 40P, 44PT, 44ML        | ADC                | AUSART, MI²C/SPI    | 40             | 1                    | 3-16 bit, WDT              | —             | 2x10 bit            | —                 | —                  | DM183010, Motor Control Kit |
| PIC18F4539              | 24576 EnhFI          | 256                      | 1408      | 32       | 40P, 44PT, 44ML        | ADC                | AUSART, MI²C/SPI    | 40             | 1                    | 3-16 bit, WDT              | —             | 2x10 bit            | —                 | —                  | DM183010, Motor Control Kit |

\*Contact Microchip Technology Inc. for availability.  
Refer to Design pages on [www.microchip.com](http://www.microchip.com) for further details.

| <b>Power Managed Solutions Featuring <i>nanoWatt</i> Technology</b>                                                                                                                                  |                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                      |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Minimum nanoWatt Feature Set                                                                                                                                                                         | 6-20 Pin                                                            | 28-40 Pin                                                                                                                                                                                                                                                                                                                                                                                                                                               | 60-80 Pin                                                                                                                                                                                                                                            |
| Internal Oscillator                                                                                                                                                                                  | PIC16F627A, PIC16F628A, PIC16F648A                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                      |
| Quick Start-up (4 MHz)                                                                                                                                                                               |                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                      |
| Power Managed Modes                                                                                                                                                                                  |                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                      |
| Sleep                                                                                                                                                                                                |                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                      |
| Low Power Timer1                                                                                                                                                                                     |                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                      |
| Low Power Watchdog                                                                                                                                                                                   |                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                      |
| Additional Features to Minimum                                                                                                                                                                       |                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                      |
| IntOSC: Quick Start-up (Two-speed) and Clock Divide (8 MHz)<br>BOR                                                                                                                                   | PIC16F818, PIC16F819                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                      |
| IntOSC: Quick Start-up (Two-speed), Fail-safe Clock Monitor and Clock Divide (8 MHz)<br>Ultra Low Power Wake-up                                                                                      | PIC12F683<br>PIC16F684, PIC16F688                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                      |
| IntOSC: Quick Start-up (Two-speed), Fail-safe Clock Monitor and Clock Divide (8 MHz)<br>Ultra Low Power Wake-up<br>Low Power Watchdog – Enhanced<br>Software Controlled BOR                          | PIC16F631, PIC16F677, PIC16F685,<br>PIC16F687, PIC16F689, PIC16F785 |                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                      |
| IntOSC: Quick Start-up (Two-speed), Fail-safe Clock Monitor and Clock Divide (8 MHz)<br>Ultra Low Power Wake-up<br>Wake-up Reset<br>Low Power Watchdog – Enhanced<br>PLVD<br>Software Controlled BOR | PIC12F635<br>PIC16F636, PIC16F639                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                      |
| IntOSC: Quick Start-up (Two-speed), Fail-safe Clock Monitor and Selectable Clock (31 kHz-8 MHz)<br>Power Managed Modes: RC Run Modes<br>PLVD<br>PBOR                                                 | PIC16F88, PIC16F87                                                  | PIC16F777, PIC16F767, PIC16F747,<br>PIC16F737, PIC16F917, PIC16F916,<br>PIC16F914, PIC16F913                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                      |
| IntOSC: Quick Start-up (Two-speed), Fail-safe clock monitor and Selectable Clock (31 kHz-8 MHz)<br>Power Managed Modes: Multiple Idle Modes and RC Run Modes<br>PLVD<br>PBOR                         | PIC18F1320, PIC18F1220                                              | PIC18F4220, PIC18F4320, PIC18F2220,<br>PIC18F2320, PIC18F4620, PIC18F4610,<br>PIC18F4525, PIC18F4515, PIC18F2620,<br>PIC18F2610, PIC18F2525, PIC18F2515,<br>PIC18F4520, PIC18F4510, PIC18F2520,<br>PIC18F2510, PIC18F4420, PIC18F4410,<br>PIC18F2420, PIC18F2410, PIC18F2331,<br>PIC18F2431, PIC18F4431, PIC18F4331,<br>PIC18F2550, PIC18F2585, PIC18F2680,<br>PIC18F4455, PIC18F4550, PIC18F4585,<br>PIC18F4680, PIC18F4580, PIC18F2680,<br>PIC18F2580 | PIC18F8490, PIC18F8410, PIC18F8390,<br>PIC18F8310, PIC18F6490, PIC18F6410,<br>PIC18F6390, PIC18F6310, PIC18F8722,<br>PIC18F8627, PIC18F8622, PIC18F8527,<br>PIC18F8522, PIC18F8410, PIC18F8310,<br>PIC18F6722, PIC18F6622, PIC18F6527,<br>PIC18F6522 |

For additional details, please refer to device data sheets and design pages on [www.microchip.com](http://www.microchip.com).

# MATURE – PICmicro<sup>®</sup> MICROCONTROLLER FAMILY PRODUCTS

Not recommended for new designs.

Please use a device from the recommended column for new designs.

| Product     | Program Memory (Bytes) | Package Size | Recommended Design-In Device |
|-------------|------------------------|--------------|------------------------------|
| PIC12C508   | 768                    | 8            | PIC12F508                    |
| PIC12C509   | 1536                   | 8            | PIC12F509                    |
| PIC12C671   | 1536                   | 8            | PIC12F675                    |
| PIC12C672   | 3584                   | 8            | PIC12F683                    |
| PIC12CE673  | 1792                   | 8            | PIC12F675                    |
| PIC12CE674  | 3584                   | 8            | PIC12F683                    |
| PIC12CE518  | 768                    | 8            | PIC12F629                    |
| PIC12CE519  | 1536                   | 8            | PIC12F629                    |
| PIC12CR509A | 1536                   | 8            | PIC12F509                    |
| PIC16C54    | 768                    | 18           | PIC16F54                     |
| PIC16C54A   | 768                    | 18           | PIC16F54                     |
| PIC16C55    | 768                    | 28           | PIC16C55A                    |
| PIC16C56    | 1536                   | 18           | PIC16C56A                    |
| PIC16C57    | 3072                   | 28           | PIC16F57                     |
| PIC16C62A   | 3584                   | 28           | PIC16C62B or PIC16F72        |
| PIC16C620   | 896                    | 18           | PIC16C620A                   |
| PIC16C621   | 1792                   | 18           | PIC16C621A                   |
| PIC16C622   | 3584                   | 18           | PIC16C622A                   |
| PIC16C63    | 7168                   | 28           | PIC16C63B or PIC16F73        |
| PIC16C64A   | 3584                   | 40           | PIC16F74                     |
| PIC16C642   | 7168                   | 28           | PIC16F72                     |
| PIC16C65A   | 7168                   | 40           | PIC16C65B or PIC16F74        |
| PIC16C66    | 14336                  | 28           | PIC16F76                     |
| PIC16C662   | 7168                   | 40           | PIC16F74                     |
| PIC16C67    | 14336                  | 40           | PIC16F77                     |
| PIC16C71    | 1792                   | 18           | PIC16F716                    |
| PIC16C72    | 3584                   | 28           | PIC16C72A or PIC16F72        |
| PIC16C710   | 896                    | 18           | PIC16F716                    |
| PIC16C711   | 1792                   | 18           | PIC16F716                    |
| PIC16C712   | 1792                   | 18           | PIC16F716                    |
| PIC16C715   | 3584                   | 18           | PIC16F716                    |
| PIC16C716   | 3584                   | 18           | PIC16F716                    |
| PIC16C73A   | 7168                   | 28           | PIC16C73B or PIC16F73        |
| PIC16C74A   | 7168                   | 40           | PIC16C74B or PIC16F74        |
| PIC16C76    | 14336                  | 28           | PIC16F76                     |
| PIC16C505   | 1536                   | 14           | PIC16F505                    |
| PIC16C54C   | 768                    | 18           | PIC16F54                     |
| PIC16C57C   | 3072                   | 28           | PIC16F57                     |

| Product    | Program Memory (Bytes) | Package Size | Recommended Design-In Device |
|------------|------------------------|--------------|------------------------------|
| PIC16C77   | 14336                  | 40           | PIC16F77                     |
| PIC16C923  | 7168                   | 68           | PIC16C925                    |
| PIC16C924  | 7168                   | 68           | PIC16C925                    |
| PIC16CE623 | 896                    | 18           | PIC16F627A                   |
| PIC16CE624 | 1792                   | 18           | PIC16F627A                   |
| PIC16CE625 | 3584                   | 18           | PIC16F628A                   |
| PIC16CR54A | 768                    | 18           | PIC16CR54C                   |
| PIC16CR54C | 768                    | 18           | PIC16F54                     |
| PIC16CR57C | 3072                   | 28           | PIC16F57                     |
| PIC16CR83  | 896                    | 18           | PIC16F84A                    |
| PIC16CR84  | 1792                   | 18           | PIC16F84A                    |
| PIC16F627  | 1792                   | 18           | PIC16F627A                   |
| PIC16F628  | 3584                   | 18           | PIC16F628A                   |
| PIC16F83   | 896                    | 18           | PIC16F84A                    |
| PIC16F84   | 1792                   | 18           | PIC16F84A                    |
| PIC16F873  | 7168                   | 28           | PIC16F873A                   |
| PIC16F874  | 7168                   | 28           | PIC16F874A                   |
| PIC16F876  | 14336                  | 40           | PIC16F876A                   |
| PIC16F877  | 14336                  | 40           | PIC16F877A                   |
| PIC17C42A  | 4096                   | 40           | PIC18F4220                   |
| PIC17C43   | 8192                   | 40           | PIC18F4320                   |
| PIC17C44   | 16384                  | 40           | PIC18F442                    |
| PIC17C752  | 16384                  | 68           | PIC18F6520                   |
| PIC17C756A | 32768                  | 68           | PIC18F6520                   |
| PIC17C762  | 16384                  | 84           | PIC18F8520                   |
| PIC17C766  | 32768                  | 84           | PIC18F8520                   |
| PIC18C242  | 16384                  | 28           | PIC18F2420                   |
| PIC18C252  | 32768                  | 28           | PIC18F2520                   |
| PIC18C442  | 16384                  | 40           | PIC18F4420                   |
| PIC18C452  | 32768                  | 40           | PIC18F4520                   |
| PIC18C658  | 32768                  | 68           | PIC18F6585                   |
| PIC18C858  | 32768                  | 84           | PIC18F8585                   |
| PIC18F6620 | 65536                  | 64           | PIC18F6621                   |
| PIC18F8620 | 65536                  | 80           | PIC18F8621                   |
| PIC18F242  | 16384                  | 28           | PIC18F2420                   |
| PIC18F252  | 32768                  | 28           | PIC18F2520                   |
| PIC18F442  | 16384                  | 40           | PIC18F4420                   |
| PIC18F452  | 32768                  | 40           | PIC18F4520                   |

## BATTERY MANAGEMENT FAMILY PRODUCTS

| Battery Fuel Gauge ICs |                   |             |            |          |                       |                                      |                                                                   |          |           |                         |             |                                                                                                                                                                                       |
|------------------------|-------------------|-------------|------------|----------|-----------------------|--------------------------------------|-------------------------------------------------------------------|----------|-----------|-------------------------|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Product                | Battery Chemistry | # of Cells  | Interface  | Data Set | A/D Converter         | Programmable Memory                  | Programmable I/O Functions                                        | Accuracy | Time Base | Temp. Sensor            | Packaging   | Description                                                                                                                                                                           |
| PS501                  | Li-Ion<br>NimH    | 2-4<br>6-12 | SMBus      | > 1%     | 16-bit<br>Sigma-Delta | 16-Kbytes Flash, 256<br>bytes EEPROM | 12 GPIO                                                           | N/A      | On-chip   | On-chip<br>external     | 28-pin SSOP | Single chip reprogrammable battery manager IC reports capacity, current, temperature, voltage and other status for Li-Ion or Nickel batteries.                                        |
| PS700                  | Li-Ion            | 1 - 2       | SMBus v1.1 | > 1%     | 16-bit<br>Sigma-Delta | 512 bytes EEPROM                     | 1 A/D input,<br>2 inputs configurable<br>as GPIO or A/D<br>inputs | N/A      | On-chip   | On-chip and<br>external | 8-pin TSOP  | Highly accurate analog front end that measures, stores and reports all of the critical parameters required for rechargeable battery monitoring with a minimum of external components. |

Supporting Development Tools are listed in the Development Systems Products Section.

## dsPIC® DIGITAL SIGNAL CONTROLLER (DSC) PRODUCTS

| Product                                                   | Program (FLASH) KBytes | Memory (FLASH) KWords | EE Bytes | SRAM Bytes | Packages            | A/D 12-bit 100 KSPS | A/D 10-bit 500 KSPS | Timer 16-bit | Input Cap | Output Comp/ Std PWM | Motor Control PWM | Quad Enc. | UART | SPI™ | I²C™ | CAN | Codec Interface |
|-----------------------------------------------------------|------------------------|-----------------------|----------|------------|---------------------|---------------------|---------------------|--------------|-----------|----------------------|-------------------|-----------|------|------|------|-----|-----------------|
| <b>dsPIC30F Motor Control and Power Conversion Family</b> |                        |                       |          |            |                     |                     |                     |              |           |                      |                   |           |      |      |      |     |                 |
| dsPIC30F2010                                              | 12                     | 4                     | 1024     | 512        | 28SOG, 28SPG, 28MMG | —                   | 6 ch                | 3            | 4         | 2                    | 6                 | ✓         | 1    | 1    | 1    | —   |                 |
| dsPIC30F4011                                              | 48                     | 16                    | 1024     | 2048       | 40PG, 44PTG, 44MMG  | —                   | 6 ch                | 5            | 4         | 4                    | 6                 | ✓         | 2    | 1    | 1    | 1   |                 |
| dsPIC30F4012                                              | 48                     | 16                    | 1024     | 2048       | 28SOG, 28SPG        | —                   | 6 ch                | 5            | 4         | 2                    | 6                 | ✓         | 1    | 1    | 1    | 1   |                 |
| dsPIC30F6010                                              | 144                    | 48                    | 4096     | 8192       | 80PF                | —                   | 16 ch               | 5            | 8         | 8                    | 8                 | ✓         | 2    | 2    | 1    | 2   |                 |
| <b>dsPIC30F General Purpose Family</b>                    |                        |                       |          |            |                     |                     |                     |              |           |                      |                   |           |      |      |      |     |                 |
| dsPIC30F3014                                              | 24                     | 8                     | 1024     | 2048       | 40PG, 44PTG         | 13 ch               | —                   | 3            | 2         | 2                    | No                | No        | 2    | 1    | 1    | —   |                 |
| dsPIC30F4013                                              | 48                     | 16                    | 1024     | 2048       | 40PG, 44PTG         | 13 ch               | —                   | 5            | 4         | 4                    | No                | No        | 2    | 1    | 1    | 1   | AC97, I²S       |
| dsPIC30F5011                                              | 66                     | 22                    | 1024     | 4096       | 64PTG               | 16 ch               | —                   | 5            | 8         | 8                    | No                | No        | 2    | 2    | 1    | 2   | AC97, I²S       |
| dsPIC30F5013                                              | 66                     | 22                    | 1024     | 4096       | 80PTG               | 16 ch               | —                   | 5            | 8         | 8                    | No                | No        | 2    | 2    | 1    | 2   | AC97, I²S       |
| dsPIC30F6011                                              | 132                    | 44                    | 2048     | 6144       | 64PF                | 16 ch               | —                   | 5            | 8         | 8                    | No                | No        | 2    | 2    | 1    | 2   |                 |
| dsPIC30F6012                                              | 144                    | 48                    | 4096     | 8192       | 64PF                | 16 ch               | —                   | 5            | 8         | 8                    | No                | No        | 2    | 2    | 1    | 2   | AC97, I²S       |
| dsPIC30F6013                                              | 132                    | 44                    | 2048     | 6144       | 80PF                | 16 ch               | —                   | 5            | 8         | 8                    | No                | No        | 2    | 2    | 1    | 2   |                 |
| dsPIC30F6014                                              | 144                    | 48                    | 4096     | 8192       | 80PF                | 16 ch               | —                   | 5            | 8         | 8                    | No                | No        | 2    | 2    | 1    | 2   | AC97, I²S       |
| <b>dsPIC30F Sensor Family</b>                             |                        |                       |          |            |                     |                     |                     |              |           |                      |                   |           |      |      |      |     |                 |
| dsPIC30F2011                                              | 12                     | 4                     | 0        | 1024       | 18SOG, 18PG         | 8 ch                | —                   | 3            | 2         | 2                    | No                | No        | 1    | 1    | 1    | —   |                 |
| dsPIC30F2012                                              | 12                     | 4                     | 0        | 1024       | 28SOG, 28SPG        | 10 ch               | —                   | 3            | 2         | 2                    | No                | No        | 1    | 1    | 1    | —   |                 |
| dsPIC30F3012                                              | 24                     | 8                     | 1024     | 2048       | 18SOG, 18PG         | 8 ch                | —                   | 3            | 2         | 2                    | No                | No        | 1    | 1    | 1    | —   |                 |
| dsPIC30F3013                                              | 24                     | 8                     | 1024     | 2048       | 28SOG, 28SPG        | 10 ch               | —                   | 3            | 2         | 2                    | No                | No        | 2    | 1    | 1    | —   |                 |

## RADIO FREQUENCY PRODUCTS

| PASSIVE<br>microID® RFID Tagging Devices |                   |                 |               |             |             |                                          |                                      |                                             |
|------------------------------------------|-------------------|-----------------|---------------|-------------|-------------|------------------------------------------|--------------------------------------|---------------------------------------------|
| Product                                  | Carrier Frequency | Programming     | Anticollision | Memory Type | Memory Size | Protocols                                | Packages                             | Other                                       |
| MCRF200                                  | 100-150 kHz       | Factory         | No            | OTP         | 96/128 bits | PSK, FSK, ASK, bi-phase, Manchester, NRZ | W, WF, S, WB, WFB, SB, 1M, 3M, P, SN | –                                           |
| MCRF202                                  | 100-150 kHz       | Factory         | Yes           | OTP         | 96/128 bits | FSK, ASK, bi-phase, Manchester, NRZ      | W, WF, S, WB, WFB, SB, P, SN         | Sensor input                                |
| MCRF250                                  | 100-150 kHz       | Factory         | Yes           | OTP         | 96/128 bits | PSK, FSK, ASK, bi-phase, Manchester, NRZ | W, WF, S, WB, WFB, SB, 1M, 3M, P, SN | –                                           |
| MCRF355                                  | 13.56 MHz         | Contact/Factory | Yes           | R/W         | 154 bits    | ASK Manchester                           | W, WF, S, WB, WFB, SB, P, SN, 7M     | –                                           |
| MCRF360                                  | 13.56 MHz         | Contact/Factory | Yes           | R/W         | 154 bits    | ASK Manchester                           | W, WF, S, WB, WFB, SB, P, SN         | 100 pF res cap                              |
| MCRF450                                  | 13.56 MHz         | Contactless     | Yes           | R/W         | 1 Kbit      | PPM, ASK Manchester                      | W, WF, S, WB, WFB, SB, P, SN, 7M     | 32-bit unique ID user lock control by block |
| MCRF451                                  | 13.56 MHz         | Contactless     | Yes           | R/W         | 1 Kbit      | PPM, ASK Manchester                      | W, WF, S, WB, WFB, SB, P, SN, 7M     | 100 pF res cap                              |
| MCRF452                                  | 13.56 MHz         | Contactless     | Yes           | R/W         | 1 Kbit      | PPM, ASK Manchester                      | W, WF, S, WB, WFB, SB, P, SN, 7M     | Dual 50 pF res cap                          |
| MCRF455                                  | 13.56 MHz         | Contactless     | Yes           | R/W         | 1 Kbit      | PPM, ASK Manchester                      | W, WF, S, WB, WFB, SB, P, SN, 7M     | 50 pF res cap                               |



## SECURE DATA PRODUCTS

| KEELOQ® Encoder Devices |                               |                                                                                                        |                                  |                        |                       |                                           |                |                                                                                                      |                              |                                                                                                |              |
|-------------------------|-------------------------------|--------------------------------------------------------------------------------------------------------|----------------------------------|------------------------|-----------------------|-------------------------------------------|----------------|------------------------------------------------------------------------------------------------------|------------------------------|------------------------------------------------------------------------------------------------|--------------|
| Product                 | Transmission Code Length Bits | Code Hopping Bits                                                                                      | Programmable Encryption Key Bits | Seed Length            | Operating Voltage (V) | Turnable OSC                              | Function Codes | CRC                                                                                                  | Protocols                    | Other Features                                                                                 | Packages     |
| HCS101                  | 66                            | —                                                                                                      | —                                | —                      | 3.5 to 13.0           | ✓                                         | 7              | No                                                                                                   | PWM                          | Fixed code support for non-secure applications, up to 28-bit serial numbers                    | 8P, 8SN      |
| HCS200                  | 66                            | 32                                                                                                     | 64                               | 32                     | 3.5 to 13.0           | No                                        | 7              | No                                                                                                   | PWM                          | Entry level, Fixed code support, Battery low indicator                                         | 8P, 8SN      |
| HCS201                  | 66                            | 32                                                                                                     | 64                               | 32                     | 3.5 to 13.0           | ✓                                         | 7              | No                                                                                                   | PWM                          | Entry level, Fixed code support, Battery low indicator, Step-up voltage operation              | 8P, 8SN      |
| HCS300                  | 66                            | 32                                                                                                     | 64                               | 32                     | 2.0 to 6.3            | No                                        | 15             | No                                                                                                   | PWM                          | LED Drive, Overflow bits, Time-out, Battery low indicator                                      | 8P, 8SN      |
| HCS301                  | 66                            | 32                                                                                                     | 64                               | 32                     | 3.5 to 13.0           | No                                        | 15             | No                                                                                                   | PWM                          | LED Drive, Overflow bits, Time-out, Battery low indicator                                      | 8P, 8SN      |
| HCS320                  | 66                            | 32                                                                                                     | 64                               | 32                     | 3.5 to 13.0           | No                                        | 16             | No                                                                                                   | PWM                          | Shift Operation, LED Drive, Overflow bits, Time-out, Battery low indicator                     | 8P, 8SN      |
| HCS360                  | 67                            | 32                                                                                                     | 64                               | 48                     | 2.0 to 6.3            | No                                        | 15             | ✓                                                                                                    | IR Mode, PWM and Manchester  | 2 independent counters                                                                         | 8P, 8SN      |
| HCS361                  | 67                            | 32                                                                                                     | 64                               | 48                     | 2.0 to 6.3            | No                                        | 15             | ✓                                                                                                    | IR Mode, PWM and VPWM        | 2 independent counters                                                                         | 8P, 8SN      |
| HCS362                  | 69                            | 32                                                                                                     | 2 x 64                           | 60                     | 2.0 to 6.3            | ✓                                         | 15             | ✓                                                                                                    | PWM and Manchester           | Queue counter, PLL interface, Timer bits, Programmable time-out                                | 8P, 8SN, 8ST |
| HCS365                  | 69                            | 32                                                                                                     | 2 x 64                           | 2 x 60                 | 2.05 to 5.5           | Factory                                   | 15             | ✓                                                                                                    | PWM, VPWM PPM and Manchester | Dual Encoder Operation, 4 inputs, Queue counter                                                | 8P, 8SM      |
| HCS370                  | 69                            | 32                                                                                                     | 2 x 64                           | 2 x 60                 | 2.05 to 5.5           | Factory                                   | 15             | ✓                                                                                                    | PWM, VPWM PPM and Manchester | Step-up voltage regulation, Dual Encoder Operation, 6 inputs, Queue counter                    | 14P, 14SL    |
| HCS410                  | 69                            | 32                                                                                                     | 2 x 64                           | 60                     | 2.0 to 6.6            | ✓                                         | 7              | ✓                                                                                                    | PWM and Manchester           | Self-powered transponder and encoder, Bidirectional authentication, User EEPROM, Queue counter | 8P, 8SN, 8ST |
| KEELOQ® Decoder Devices |                               |                                                                                                        |                                  |                        |                       |                                           |                |                                                                                                      |                              |                                                                                                |              |
| Product                 | Reception Length Bits         | Encoders Supported**                                                                                   |                                  | Transmitters Supported | Operating Voltage (V) | Functions                                 |                | Other Features                                                                                       |                              | Packages                                                                                       |              |
| HCS500                  | 66                            | HCS200, HCS201, HCS300, HCS301, HCS320, HCS360, HCS361, HCS362, HCS365, HCS370, HCS410, HCS412, HCS473 |                                  | Up to 7                | 3.0 to 5.5            | S0, 15 Serial Functions                   |                | Full-featured decoder with serial interface to microcontrollers                                      |                              | 8P, 8SM                                                                                        |              |
| HCS512                  | 66                            | HCS200, HCS201, HCS300, HCS301, HCS320, HCS360, HCS361, HCS362, HCS365, HCS370, HCS410, HCS412, HCS473 |                                  | Up to 4                | 4.0 to 6.0            | S0, S1, S2, S3; VLow, 15 Serial Functions |                | Single-chip decoder with secure learning                                                             |                              | 18P, 18SO                                                                                      |              |
| HCS515                  | 66                            | HCS200, HCS201, HCS300, HCS301, HCS320, HCS360, HCS361, HCS362, HCS365, HCS370, HCS410, HCS412, HCS473 |                                  | Up to 7                | 4.5 to 5.5            | S0, S1, 15 Serial Functions               |                | Full-featured decoder with serial and parallel interface. On-chip 1K transmitter and 1K user EEPROM. |                              | 14P, 14SL                                                                                      |              |

\* Contact Microchip Technology for availability date.

\*\* Requires ICD specific device with header module – refer to Development Tools.

## KEELOQ® Secure Data Products

| KEELOQ® Programmable Encoder/Decoder Flash Devices (x14), ICSP™ |                        |                            |           |          |              |             |                          |            |                |        |                 |                      |    |                              |                 |
|-----------------------------------------------------------------|------------------------|----------------------------|-----------|----------|--------------|-------------|--------------------------|------------|----------------|--------|-----------------|----------------------|----|------------------------------|-----------------|
| Product                                                         | Program Memory (Bytes) | EEPROM Data Memory (Bytes) | RAM Bytes | I/O Pins | Analog       |             | Digital                  |            | Max. Speed MHz | IntOSC | BOR/ PBOR/ PLVD | ICD # of Breakpoints | nW | Other Features               | Packages        |
|                                                                 |                        |                            |           |          | ADC Channels | Comparators | Timers/WDT               | Serial I/O |                |        |                 |                      |    |                              |                 |
| PIC12F635                                                       | 1792 EnhFI             | 128                        | 64        | 6        | —            | 1           | 1-16 bit, 1-8 bit, 1-WDT | —          | 20             | 8 MHz  | BOR/ PLVD       | 1**                  | ✓  |                              | 8P, 8SN, 8MF    |
| PIC16F636                                                       | 3584 EnhFI             | 256                        | 128       | 12       | —            | 2           | 1-16 bit, 1-8 bit, 1-WDT | —          | 20             | 8 MHz  | BOR/ PLVD       | 1**                  | ✓  |                              | 14P, 14SL, 14ST |
| PIC16F639*                                                      | 3584 EnhFI             | 256                        | 128       | 12       | —            | 2           | 1-16 bit, 1-8 bit, 1-WDT | —          | 20             | 8 MHz  | BOR/ PLVD       | 1**                  | ✓  | Transponder Analog Front End | 20P, 20SO, 20SS |

\* Contact Microchip Technology for availability date.

\*\* Requires ICD specific device with header module – refer to Development Tools.

## ANALOG/INTERFACE PRODUCTS

Lead-free versions of many devices are currently offered. Check Microchip's website for availability.

| THERMAL MANAGEMENT PRODUCTS – Temperature Sensors |                       |                              |                                |               |                             |                                                                                                                                                       |                                      |
|---------------------------------------------------|-----------------------|------------------------------|--------------------------------|---------------|-----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|
| Part #                                            | Typical Accuracy (°C) | Maximum Accuracy @ 25°C (°C) | Maximum Temperature Range (°C) | Vcc Range (V) | Maximum Supply Current (μA) | Features                                                                                                                                              | Packages                             |
| <b>Logic Output Temperature Sensors</b>           |                       |                              |                                |               |                             |                                                                                                                                                       |                                      |
| TC6501                                            | ±0.5                  | ±3                           | -55 to +125                    | +2.7 to +5.5  | 40                          | Cross to MAX6501, Open-drain                                                                                                                          | 5-Pin SOT-23A                        |
| TC6502                                            | ±0.5                  | ±3                           | -55 to +125                    | +2.7 to +5.5  | 40                          | Cross to MAX6502, Push-pull                                                                                                                           | 5-Pin SOT-23A                        |
| TC6503                                            | ±0.5                  | ±3                           | -55 to +125                    | +2.7 to +5.5  | 40                          | Cross to MAX6503, Open-drain                                                                                                                          | 5-Pin SOT-23A                        |
| TC6504                                            | ±0.5                  | ±3                           | -55 to +125                    | +2.7 to +5.5  | 40                          | Cross to MAX6504, Push-pull                                                                                                                           | 5-Pin SOT-23A                        |
| TC620                                             | ±1                    | ±3                           | -40 to +125                    | +4.5 to +18   | 400                         | Two resistor-programmable trip points                                                                                                                 | 8-Pin PDIP, 8-Pin SOIC               |
| TC621                                             | <b>Note 1</b>         | <b>Note 1</b>                | -40 to +85                     | +4.5 to +18   | 400                         | Uses external temperature sensor, resistor-programmable trip points                                                                                   | 8-Pin PDIP, 8-Pin SOIC               |
| TC622                                             | ±1                    | ±5                           | -40 to +125                    | +4.5 to +18   | 600                         | Dual output, TO-220 for heat sink mounting, resistor-programmable trip points                                                                         | 8-Pin PDIP, 8-Pin SOIC, 5-Pin TO-220 |
| TC623                                             | ±1                    | ±3                           | -40 to +125                    | +2.7 to +4.5  | 250                         | Two resistor-programmable trip points                                                                                                                 | 8-Pin PDIP, 8-Pin SOIC               |
| TC624                                             | ±1                    | ±5                           | -40 to +125                    | +2.7 to +4.5  | 300                         | Dual output, resistor-programmable trip points                                                                                                        | 8-Pin PDIP, 8-Pin SOIC               |
| <b>Voltage Output Temperature Sensors</b>         |                       |                              |                                |               |                             |                                                                                                                                                       |                                      |
| TC1046                                            | ±0.5                  | ±2                           | -40 to +125                    | +2.7 to +4.4  | 60                          | High precision temperature-to-voltage converter, 6.25 mV/°C                                                                                           | 3-Pin SOT-23B                        |
| TC1047                                            | ±0.5                  | ±2                           | -40 to +125                    | +2.7 to +4.4  | 60                          | High precision temperature-to-voltage converter, 10 mV/°C                                                                                             | 3-Pin SOT-23B                        |
| TC1047A                                           | ±0.5                  | ±2                           | -40 to +125                    | +2.5 to +5.5  | 60                          | High precision temperature-to-voltage converter, 10 mV/°C                                                                                             | 3-Pin SOT-23B                        |
| <b>Serial Output Temperature Sensors</b>          |                       |                              |                                |               |                             |                                                                                                                                                       |                                      |
| MCP9800                                           | ±0.5                  | ±1                           | -55 to +125                    | +2.7 to +5.5  | 400                         | SMBus/I <sup>2</sup> C™ compatible interface, 0.0625°C to 0.5°C adj. resolution, power-saving one-shot temperature measurement                        | 5-Pin SOT-23                         |
| MCP9801                                           | ±0.5                  | ±1                           | -55 to +125                    | +2.7 to +5.5  | 400                         | SMBus/I <sup>2</sup> C™ compatible interface, 0.0625°C to 0.5°C adj. resolution, power-saving one-shot temperature measurement, multi-drop capability | 8-Pin MSOP, 8-pin SOIC               |
| MCP9802                                           | ±0.5                  | ±1                           | -55 to +125                    | +2.7 to +5.5  | 400                         | SMBus/I <sup>2</sup> C™ compatible interface with time out, 0.0625°C to 0.5°C adj. resolution, power-saving one-shot temperature measurement          | 5-Pin SOT-23                         |

**NOTE 1:** These devices use an external temperature sensor. Accuracy of the total solution is a function of the accuracy of the external sensor.  
**NOTE 2:** TCN75 idle current is 250 μA. This device also has a Software Shutdown mode that reduces supply current to <1 μA.

### THERMAL MANAGEMENT PRODUCTS – Temperature Sensors

| Part #                                               | Typical Accuracy (°C) | Maximum Accuracy @ 25°C (°C) | Maximum Temperature Range (°C) | Vcc Range (V) | Maximum Supply Current (μA) | Features                                                                                                                                                            | Packages                    |
|------------------------------------------------------|-----------------------|------------------------------|--------------------------------|---------------|-----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|
| <b>Serial Output Temperature Sensors (continued)</b> |                       |                              |                                |               |                             |                                                                                                                                                                     |                             |
| MCP9803                                              | ±0.5                  | ±1                           | -55 to +125                    | +2.7 to +5.5  | 400                         | SMBus/I <sup>2</sup> C™ compatible interface with time out, 0.0625°C to 0.5°C adj. resolution, power-saving one-shot temperature measurement, multi-drop capability | 8-Pin MSOP, 8-Pin SOIC      |
| TC77                                                 | ±0.5                  | ±1                           | -55 to +125                    | +2.7 to +5.5  | 400                         | SPI™ compatible interface, 0.0625°C temperature resolution                                                                                                          | 5-Pin SOT-23A, 8-Pin SOIC   |
| TC72                                                 | ±0.5                  | ±1                           | -55 to +125                    | +2.65 to +5.5 | 400                         | SPI™ compatible interface, power saving one-shot temperature measurement, 0.25°C temperature resolution                                                             | 8-Pin MSOP, 8-Pin 3x3 DFN   |
| TC74                                                 | ±0.5                  | ±2                           | -40 to +125                    | +2.7 to +5.5  | 350                         | SMBus/I <sup>2</sup> C™ compatible interface, 1°C temperature resolution                                                                                            | 5-Pin SOT-23A, 5-Pin TO-220 |
| TCN75                                                | ±0.5                  | ±2                           | -55 to +125                    | +2.7 to +5.5  | 1,000 <sup>(2)</sup>        | SMBus/I <sup>2</sup> C™ compatible interface, multi-drop capability, interrupt output, 0.5°C temperature resolution                                                 | 8-Pin MSOP, 8-Pin SOIC      |

**NOTE 1:** These devices use an external temperature sensor. Accuracy of the total solution is a function of the accuracy of the external sensor.  
**NOTE 2:** TCN75 idle current is 250 μA. This device also has a Software Shutdown mode that reduces supply current to <1 μA.

### THERMAL MANAGEMENT PRODUCTS – Brushless DC Fan Controllers and Fan Fault Detectors

| Part # | Description | Typical Accuracy (°C) | Maximum Accuracy @ 25°C (°C) | Maximum Temperature Range (°C) | Vcc Range (V) | Maximum Supply Current (μA) | Features                                                           | Packages                           |
|--------|-------------|-----------------------|------------------------------|--------------------------------|---------------|-----------------------------|--------------------------------------------------------------------|------------------------------------|
| TC642  | Fan Manager | <b>Note 1</b>         | <b>Note 1</b>                | -40 to +85                     | +3.0 to +5.5  | 1,000                       | FanSense™ Fan Monitor, minimum fan speed control                   | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP |
| TC642B | Fan Manager | <b>Note 1</b>         | <b>Note 1</b>                | -40 to +85                     | +3.0 to +5.5  | 400                         | FanSense™ Fan Monitor, minimum fan speed control, fan auto-restart | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP |
| TC646  | Fan Manager | <b>Note 1</b>         | <b>Note 1</b>                | -40 to +85                     | +3.0 to +5.5  | 1,000                       | FanSense™ Fan Monitor, auto-shutdown                               | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP |
| TC646B | Fan Manager | <b>Note 1</b>         | <b>Note 1</b>                | -40 to +85                     | +3.0 to +5.5  | 400                         | FanSense™ Fan Monitor, auto-shutdown, fan auto-restart             | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP |
| TC647  | Fan Manager | <b>Note 1</b>         | <b>Note 1</b>                | -40 to +85                     | +3.0 to +5.5  | 1,000                       | FanSense™ Fan Monitor, minimum fan speed control                   | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP |
| TC647B | Fan Manager | <b>Note 1</b>         | <b>Note 1</b>                | -40 to +85                     | +3.0 to +5.5  | 400                         | FanSense™ Fan Monitor, minimum fan speed control, fan auto-restart | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP |
| TC648  | Fan Manager | <b>Note 1</b>         | <b>Note 1</b>                | -40 to +85                     | +3.0 to +5.5  | 1,000                       | Over-temperature alert, auto-shutdown                              | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP |
| TC648B | Fan Manager | <b>Note 1</b>         | <b>Note 1</b>                | -40 to +85                     | +3.0 to +5.5  | 400                         | Over-temperature alert, auto-shutdown, fan auto-restart            | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP |
| TC649  | Fan Manager | <b>Note 1</b>         | <b>Note 1</b>                | -40 to +85                     | +3.0 to +5.5  | 1,000                       | FanSense™ Fan Monitor, auto-shutdown                               | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP |

**NOTE 1:** These devices use an external temperature sensor. Accuracy of the total solution is a function of the accuracy of the external sensor.

## THERMAL MANAGEMENT PRODUCTS – Brushless DC Fan Controllers and Fan Fault Detectors

| Part # | Description                   | Typical Accuracy (°C) | Maximum Accuracy @ 25°C (°C) | Maximum Temperature Range (°C) | Vcc Range (V) | Maximum Supply Current (μA) | Features                                                     | Packages                           |
|--------|-------------------------------|-----------------------|------------------------------|--------------------------------|---------------|-----------------------------|--------------------------------------------------------------|------------------------------------|
| TC649B | Fan Manager                   | <b>Note 1</b>         | <b>Note 1</b>                | -40 to +85                     | +3.0 to +5.5  | 400                         | FanSense™ Fan Monitor, auto-shutdown, fan auto-restart       | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP |
| TC650  | Fan Manager                   | ±1                    | ±3                           | -40 to +125                    | +2.8 to +5.5  | 90                          | Over-temperature alert                                       | 8-Pin MSOP                         |
| TC651  | Fan Manager                   | ±1                    | ±3                           | -40 to +125                    | +2.8 to +5.5  | 90                          | Over-temperature alert, auto-shutdown                        | 8-Pin MSOP                         |
| TC652  | Fan Manager                   | ±1                    | ±3                           | -40 to +125                    | +2.8 to +5.5  | 90                          | FanSense™ Fan Monitor, over-temperature alert                | 8-Pin MSOP                         |
| TC653  | Fan Manager                   | ±1                    | ±3                           | -40 to +125                    | +2.8 to +5.5  | 90                          | FanSense™ Fan Monitor, over-temperature alert, auto-shutdown | 8-Pin MSOP                         |
| TC654  | Dual SMBus Fan Manager        | <b>Note 1</b>         | <b>Note 1</b>                | -40 to +85                     | +3.0 to +5.5  | 320                         | FanSense™ Fan Monitor, RPM data                              | 10-Pin MSOP                        |
| TC655  | Dual SMBus Fan Manager        | <b>Note 1</b>         | <b>Note 1</b>                | -40 to +85                     | +3.0 to +5.5  | 320                         | FanSense™ Fan Monitor, RPM data, over-temperature alert      | 10-Pin MSOP                        |
| TC664  | Single SMBus Fan Manager      | <b>Note 1</b>         | <b>Note 1</b>                | -40 to +85                     | +3.0 to +5.5  | 320                         | FanSense™ Fan Monitor, RPM data                              | 10-Pin MSOP                        |
| TC665  | Single SMBus Fan Manager      | <b>Note 1</b>         | <b>Note 1</b>                | -40 to +85                     | +3.0 to +5.5  | 320                         | FanSense™ Fan Monitor, RPM data, over-temperature alert      | 10-Pin MSOP                        |
| TC670  | Predictive Fan Fault Detector | N/A                   | N/A                          | -40 to +85                     | +3.0 to +5.5  | 150                         | FanSense™ Fan Monitor, programmable threshold                | 6-Pin SOT-23                       |

**NOTE 1:** These devices use an external temperature sensor. Accuracy of the total solution is a function of the accuracy of the external sensor.

## POWER MANAGEMENT – Voltage References

| Part #  | Vcc Range (V) | Output Voltage (V) | Max. Load Current (mA) | Initial Accuracy (max.%) | Temperature Coefficient (ppm/°C) | Max. Supply Current (μA @ 25°C) | Packages                   |
|---------|---------------|--------------------|------------------------|--------------------------|----------------------------------|---------------------------------|----------------------------|
| MCP1525 | 2.7 to 5.5    | 2.5                | ±2                     | ±1                       | 50                               | 100                             | 3-Pin TO-92, 3-Pin SOT-23B |
| MCP1541 | 4.3 to 5.5    | 4.096              | ±2                     | ±1                       | 50                               | 100                             | 3-Pin TO-92, 3-Pin SOT-23B |

## POWER MANAGEMENT – Linear Regulators

| Part #                                               | Max. Input Voltage (V) | Output Voltage (V)                                | Output Current (mA) | Junction Temperature Range (°C) | Typical Active Current (μA) | Typical Dropout Voltage @ Max. I <sub>OUT</sub> (mV) | Typical Output Voltage Accuracy (%) | Features                         | Packages      |
|------------------------------------------------------|------------------------|---------------------------------------------------|---------------------|---------------------------------|-----------------------------|------------------------------------------------------|-------------------------------------|----------------------------------|---------------|
| <b>50 mA to 250 mA Low Dropout Linear Regulators</b> |                        |                                                   |                     |                                 |                             |                                                      |                                     |                                  |               |
| TC2014                                               | 6.0                    | 1.8, 2.7, 2.8, 3.0, 3.3                           | 50                  | -40 to +125                     | 55                          | 45                                                   | ±0.4                                | Shutdown, Reference bypass input | 5-Pin SOT-23A |
| TC1014                                               | 6.0                    | 1.8, 2.5, 2.7, 2.8, 2.85, 3.0, 3.3, 3.6, 4.0, 5.0 | 50                  | -40 to +125                     | 50                          | 85                                                   | ±0.5                                | Shutdown, Reference bypass input | 5-Pin SOT-23A |
| TC2054                                               | 6.0                    | 1.8, 2.7, 2.8, 3.0, 3.3                           | 50                  | -40 to +125                     | 55                          | 45                                                   | ±0.4                                | Shutdown, Error output           | 5-Pin SOT-23A |

**NOTE 1:** Depending on external transistor configuration.  
**NOTE 2:** Each channel (for Dual and Quad LDOs).  
**NOTE 3:** LDOs with shutdown except TC56 and TC57 have typical shutdown currents of 0.05 μA.

POWER MANAGEMENT – Linear Regulators

| Part #                                                           | Max. Input Voltage (V) | Output Voltage (V)                                | Output Current (mA) | Junction Temperature Range (°C) | Typical Active Current (μA) | Typical Dropout Voltage @ Max. I <sub>OUT</sub> (mV) | Typical Output Voltage Accuracy (%) | Features                                            | Packages                                 |
|------------------------------------------------------------------|------------------------|---------------------------------------------------|---------------------|---------------------------------|-----------------------------|------------------------------------------------------|-------------------------------------|-----------------------------------------------------|------------------------------------------|
| <b>50 mA to 250 mA Low Dropout Linear Regulators (continued)</b> |                        |                                                   |                     |                                 |                             |                                                      |                                     |                                                     |                                          |
| TC1054                                                           | 6.0                    | 1.8, 2.5, 2.7, 2.8, 2.85, 3.0, 3.3, 3.6, 4.0, 5.0 | 50                  | -40 to +125                     | 50                          | 85                                                   | ±0.5                                | Shutdown, Error output                              | 5-Pin SOT-23A                            |
| TC1070                                                           | 6.0                    | 1.23 → V <sub>IN</sub>                            | 50                  | -40 to +125                     | 50                          | 85                                                   | —                                   | Shutdown, Adjustable                                | 5-Pin SOT-23A                            |
| TC1072                                                           | 6.0                    | 2.5, 2.7, 2.8, 2.85, 3.0, 3.3, 3.6, 4.0, 5.0      | 50                  | -40 to +125                     | 50                          | 85                                                   | ±0.5                                | Shutdown, Reference bypass input, Error output      | 6-Pin SOT-23A                            |
| TC1223                                                           | 6.0                    | 2.5, 2.7, 2.8, 3.0, 3.3, 3.6, 4.0, 5.0            | 50                  | -40 to +125                     | 50                          | 85                                                   | ±0.5                                | Shutdown                                            | 5-Pin SOT-23A                            |
| TC1016                                                           | 6.0                    | 1.8, 2.7, 2.8, 3.0                                | 80                  | -40 to +125                     | 50                          | 150                                                  | ±0.5                                | Shutdown                                            | 5-Pin SC-70                              |
| TC2015                                                           | 6.0                    | 1.8, 2.7, 2.8, 3.0, 3.3                           | 100                 | -40 to +125                     | 55                          | 90                                                   | ±0.4                                | Shutdown, Reference bypass input                    | 5-Pin SOT-23A                            |
| TC1015                                                           | 6.0                    | 1.8, 2.5, 2.7, 2.8, 2.85, 3.0, 3.3, 3.6, 4.0, 5.0 | 100                 | -40 to +125                     | 50                          | 180                                                  | ±0.5                                | Shutdown, Reference bypass input                    | 5-Pin SOT-23A                            |
| TC2055                                                           | 6.0                    | 1.8, 2.7, 2.8, 3.0, 3.3                           | 100                 | -40 to +125                     | 55                          | 90                                                   | ±0.4                                | Shutdown, Error output                              | 5-Pin SOT-23A                            |
| TC1055                                                           | 6.0                    | 1.8, 2.5, 2.7, 2.8, 2.85, 3.0, 3.3, 3.6, 4.0, 5.0 | 100                 | -40 to +125                     | 50                          | 180                                                  | ±0.5                                | Shutdown, Error output                              | 5-Pin SOT-23A                            |
| TC1071                                                           | 6.0                    | 1.23 → V <sub>IN</sub>                            | 100                 | -40 to +125                     | 50                          | 180                                                  | —                                   | Shutdown, Adjustable                                | 5-Pin SOT-23A                            |
| TC1073                                                           | 6.0                    | 2.5, 2.7, 2.8, 2.85, 3.0, 3.3, 3.6, 4.0, 5.0      | 100                 | -40 to +125                     | 50                          | 180                                                  | ±0.5                                | Shutdown, Reference bypass input, Error output      | 6-Pin SOT-23A                            |
| TC1224                                                           | 6.0                    | 2.5, 2.7, 2.8, 3.0, 3.3, 3.6, 4.0, 5.0            | 100                 | -40 to +125                     | 50                          | 180                                                  | ±0.5                                | Shutdown                                            | 5-Pin SOT-23A                            |
| TC1188                                                           | 6.0                    | 1.8, 2.8, 2.84, 3.15                              | 120                 | -40 to +125                     | 50                          | 130                                                  | ±0.5                                | Shutdown                                            | 5-Pin SOT-23A                            |
| TC1189                                                           | 6.0                    | 1.8, 2.8, 2.84, 3.15                              | 120                 | -40 to +125                     | 50                          | 130                                                  | ±0.5                                | Shutdown                                            | 5-Pin SOT-23A                            |
| TC2185                                                           | 6.0                    | 1.8, 2.7, 2.8, 3.0, 3.3                           | 150                 | -40 to +125                     | 55                          | 140                                                  | ±0.4                                | Shutdown, Reference bypass input                    | 5-Pin SOT-23A                            |
| TC1185                                                           | 6.0                    | 1.8, 2.5, 2.7, 2.8, 2.85, 3.0, 3.3, 3.6, 4.0, 5.0 | 150                 | -40 to +125                     | 50                          | 270                                                  | ±0.5                                | Shutdown, Reference bypass input                    | 5-Pin SOT-23A                            |
| TC2186                                                           | 6.0                    | 1.8, 2.7, 2.8, 3.0, 3.3                           | 150                 | -40 to +125                     | 55                          | 140                                                  | ±0.4                                | Shutdown, Error output                              | 5-Pin SOT-23A                            |
| TC1186                                                           | 6.0                    | 1.8, 2.5, 2.7, 2.8, 2.85, 3.0, 3.3, 3.6, 4.0, 5.0 | 150                 | -40 to +125                     | 50                          | 270                                                  | ±0.5                                | Shutdown, Error output                              | 5-Pin SOT-23A                            |
| TC1187                                                           | 6.0                    | 1.23 → V <sub>IN</sub>                            | 150                 | -40 to +125                     | 50                          | 270                                                  | —                                   | Shutdown, Adjustable                                | 5-Pin SOT-23A                            |
| TC1017                                                           | 6.0                    | 1.8, 2.6, 2.7, 2.8, 2.85, 2.9, 3.3, 3.4           | 150                 | -40 to +125                     | 53                          | 285                                                  | ±0.5                                | Shutdown                                            | 5-Pin SOT-23A, 5-Pin SC-70               |
| TC56 <sup>(3)</sup>                                              | 10                     | 2.5, 3.0, 3.3                                     | 180                 | -40 to +85                      | 11                          | 330                                                  | ±0.5                                | Shutdown                                            | 5-Pin SOT-23A                            |
| MCP1700                                                          | 6.0                    | 1.2, 1.8, 2.5, 3.0, 3.3, 5.0                      | 250                 | -40 to +125                     | 1.0                         | 300                                                  | ±0.4                                | 1.0 μF ceramic cap stable, Short-circuit protection | 3-Pin TO-92, 3-Pin SOT-23A, 3-Pin SOT-89 |
| MCP1701                                                          | 10                     | 1.8, 2.5, 3.0, 3.3, 5.0                           | 250                 | -40 to +85                      | 1.1                         | 380                                                  | ±0.5                                | 10V max. input voltage                              | 3-Pin SOT-23A, 3-Pin SOT-89, 3-Pin TO-92 |

**NOTE** 1: Depending on external transistor configuration.  
2: Each channel (for Dual and Quad LDOs).  
3: LDOs with shutdown except TC56 and TC57 have typical shutdown currents of 0.05 μA.

## POWER MANAGEMENT – Linear Regulators

| Part #                                                    | Max. Input Voltage (V) | Output Voltage (V)                                       | Output Current (mA)    | Junction Temperature Range (°C) | Typical Active Current (μA) | Typical Dropout Voltage @ Max. I <sub>OUT</sub> (mV) | Typical Output Voltage Accuracy (%) | Features                                                               | Packages                                 |
|-----------------------------------------------------------|------------------------|----------------------------------------------------------|------------------------|---------------------------------|-----------------------------|------------------------------------------------------|-------------------------------------|------------------------------------------------------------------------|------------------------------------------|
| <b>300 mA Low Dropout Linear Regulators</b>               |                        |                                                          |                        |                                 |                             |                                                      |                                     |                                                                        |                                          |
| TC1107                                                    | 6.0                    | 2.5, 2.7, 2.8, 3.0, 3.3, 5.0                             | 300                    | -40 to +125                     | 50                          | 240                                                  | ±0.5                                | Shutdown, Reference bypass input                                       | 8-Pin MSOP, 8-Pin SOIC                   |
| TC1108                                                    | 6.0                    | 2.5, 2.7, 2.8, 3.0, 3.3, 5.0                             | 300                    | -40 to +125                     | 50                          | 240                                                  | ±0.5                                |                                                                        | 3-Pin SOT-223                            |
| TC1173                                                    | 6.0                    | 2.5, 2.7, 2.8, 3.0, 3.3, 5.0                             | 300                    | -40 to +125                     | 50                          | 240                                                  | ±0.5                                | Shutdown, Reference bypass input, Error output                         | 8-Pin MSOP, 8-Pin SOIC                   |
| TC1174                                                    | 6.0                    | 1.23 → V <sub>IN</sub>                                   | 300                    | -40 to +125                     | 50                          | 240                                                  | —                                   | Shutdown, Reference bypass input, Adjustable                           | 8-Pin MSOP, 8-Pin SOIC                   |
| TC1269                                                    | 6.0                    | 2.5, 2.8, 3.0, 3.3, 5.0                                  | 300                    | -40 to +125                     | 50                          | 240                                                  | ±0.5                                | Shutdown, Reference bypass input                                       | 8-Pin MSOP                               |
| <b>500 mA to 800 mA Low Dropout Linear Regulators</b>     |                        |                                                          |                        |                                 |                             |                                                      |                                     |                                                                        |                                          |
| TC1262                                                    | 6.0                    | 2.5, 2.8, 3.0, 3.3, 5.0                                  | 500                    | -40 to +125                     | 80                          | 350                                                  | ±0.5                                |                                                                        | 3-Pin TO-220, 3-Pin DDPAK, 3-Pin SOT-223 |
| TC1263                                                    | 6.0                    | 2.5, 2.8, 3.0, 3.3, 5.0                                  | 500                    | -40 to +125                     | 80                          | 350                                                  | ±0.5                                | Shutdown, Reference bypass input, Error output                         | 8-Pin SOIC, 5-Pin TO-220, 5-Pin DDPAK    |
| TC1268                                                    | 6.0                    | 2.5                                                      | 500                    | -40 to +125                     | 80                          | 350                                                  | ±0.5                                | Shutdown, Reference bypass input, Error output                         | 8-Pin SOIC                               |
| TC1264                                                    | 6.0                    | 1.8, 2.5, 3.0, 3.3                                       | 800                    | -40 to +125                     | 80                          | 450                                                  | ±0.5                                |                                                                        | 3-Pin TO-220, 3-Pin DDPAK, 3-Pin SOT-223 |
| TC1265                                                    | 6.0                    | 1.8, 2.5, 3.0, 3.3                                       | 800                    | -40 to +125                     | 80                          | 450                                                  | ±0.5                                | Shutdown, Reference bypass input, Error output                         | 8-Pin SOIC, 5-Pin TO-220, 5-Pin DDPAK    |
| TC2117                                                    | 6.0                    | 1.8, 2.5, 3.0, 3.3                                       | 800                    | -40 to +125                     | 80                          | 600                                                  | ±0.5                                |                                                                        | 3-Pin SOT-223, 3-Pin DDPAK               |
| <b>1A and Above Low Dropout Linear Regulators</b>         |                        |                                                          |                        |                                 |                             |                                                      |                                     |                                                                        |                                          |
| MCP1726                                                   | 6.0                    | Fixed: 5, 3.3, 3, 2.5, 1.8, 1.2<br>Adjustable: .8 to 5.0 | 1000                   | -40 to +125                     | 140                         | 300                                                  | ±0.4                                | Shutdown, C <sub>delay</sub> , Power-Good                              | 8-Pin 3x3 DFN, 8-Pin SOIC                |
| <b>Application Specific Low Dropout Linear Regulators</b> |                        |                                                          |                        |                                 |                             |                                                      |                                     |                                                                        |                                          |
| TC1266                                                    | 6.0                    | 3.3                                                      | 200                    | -5 to +70                       | 230                         | 200                                                  | ±1.0                                | PCI compliant                                                          | 8-Pin SOIC, 8-Pin MSOP                   |
| TC1267                                                    | 6.0                    | 3.3                                                      | 400                    | -5 to +70                       | 230                         | 300                                                  | ±1.0                                | PCI compliant                                                          | 5-Pin DDPAK                              |
| TC57 <sup>(3)</sup>                                       | 8                      | 2.5, 3.0, 3.3                                            | 4,000 <sup>(1)</sup>   | -40 to +85                      | 50                          | 100 <sup>(1)</sup>                                   | ±2.0                                | Shutdown, External transistor                                          | 5-Pin SOT-23A                            |
| TC59                                                      | -10                    | -3.0, -5.0                                               | 100                    | -40 to +85                      | 3                           | 380                                                  | ±0.5                                | Negative LDO                                                           | 3-Pin SOT-23A                            |
| <b>Power Management Combination Products</b>              |                        |                                                          |                        |                                 |                             |                                                      |                                     |                                                                        |                                          |
| TC1300                                                    | 6.0                    | 2.5, 2.7, 2.8, 2.85, 3.0, 3.3                            | 300                    | -40 to +125                     | 80                          | 210                                                  | ±0.5                                | Shutdown, Reference bypass input, LDO plus Reset output                | 8-Pin MSOP                               |
| TC1301A                                                   | 6.0                    | LDO1: 1.5-3.3<br>LDO2: 1.5-3.3                           | LDO1: 300<br>LDO2: 150 | -40 to +125                     | 103                         | LDO1: 104<br>LDO2: 150                               | ±0.5                                | Dual LDO plus Reset output, Shutdown, Reference bypass, Voltage detect | 8-Pin MSOP, 8-Pin 3x3 DFN                |
| TC1301B                                                   | 6.0                    | LDO1: 1.5-3.3<br>LDO2: 1.5-3.3                           | LDO1: 300<br>LDO2: 150 | -40 to +125                     | 114                         | LDO1: 104<br>LDO2: 150                               | ±0.5                                | Dual LDO plus Reset, Per channel output shutdown, Reference bypass     | 8-Pin MSOP, 8-Pin 3x3 DFN                |

**NOTE** 1: Depending on external transistor configuration.  
2: Each channel (for Dual and Quad LDOs).  
3: LDOs with shutdown except TC56 and TC57 have typical shutdown currents of 0.05 μA.

**POWER MANAGEMENT – Linear Regulators**

| Part #                                                   | Max. Input Voltage (V) | Output Voltage (V)             | Output Current (mA)    | Junction Temperature Range (°C) | Typical Active Current (μA) | Typical Dropout Voltage @ Max. I <sub>OUT</sub> (mV) | Typical Output Voltage Accuracy (%) | Features                                                                                              | Packages                     |
|----------------------------------------------------------|------------------------|--------------------------------|------------------------|---------------------------------|-----------------------------|------------------------------------------------------|-------------------------------------|-------------------------------------------------------------------------------------------------------|------------------------------|
| <b>Power Management Combination Products (continued)</b> |                        |                                |                        |                                 |                             |                                                      |                                     |                                                                                                       |                              |
| TC1302A                                                  | 6.0                    | LDO1: 1.5-3.3<br>LDO2: 1.5-3.3 | LDO1: 300<br>LDO2: 150 | -40 to +125                     | 103                         | LDO1: 104<br>LDO2: 150                               | ±0.5                                | Dual LDO, Output shutdown reference bypass, Voltage detect                                            | 8-Pin MSOP,<br>8-Pin 3x3 DFN |
| TC1302B                                                  | 6.0                    | LDO1: 1.5-3.3<br>LDO2: 1.5-3.3 | LDO1: 300<br>LDO2: 150 | -40 to +125                     | 114                         | LDO1: 104<br>LDO2: 150                               | ±0.5                                | Dual LDO, Per channel output shutdown, Reference bypass                                               | 8-Pin MSOP,<br>8-Pin 3x3 DFN |
| TC1305                                                   | 6.0                    | 2.5, 2.8, 3.0                  | 150 <sup>(2)</sup>     | -40 to +125                     | 120                         | 240                                                  | ±0.5                                | Dual LDO plus Reset output, Reference bypass input, Shutdown, Select Mode™ selectable output voltages | 10-Pin MSOP                  |
| TC1306                                                   | 6.0                    | 1.8, 2.8, 3.0                  | 150 <sup>(2)</sup>     | -40 to +125                     | 120                         | 240                                                  | ±0.5                                | Dual LDO plus Reset output, Shutdown, Select Mode™ selectable output voltages                         | 8-Pin MSOP                   |
| TC1307                                                   | 6.0                    | 1.8, 2.5, 2.8, 3.0             | 150 <sup>(2)</sup>     | -40 to +125                     | 220                         | 200                                                  | ±0.5                                | Quad LDO plus Reset output, Shutdown, Select Mode™ selectable output voltage                          | 16-Pin QSOP                  |

**NOTE** 1: Depending on external transistor configuration.  
2: Each channel (for Dual and Quad LDOs).  
3: LDOs with shutdown except TC56 and TC57 have typical shutdown currents of 0.05 μA.

**POWER MANAGEMENT – Switching Regulators**

| Part #  | Description                                | Input Voltage Range (V) | Output Voltage (V)      | Operating Temperature Range (°C) | Control Scheme                    | Switching Frequency (kHz) | Typical Active Supply (μA) | Output Current (mA) | Features                                                                                                            | Packages      |
|---------|--------------------------------------------|-------------------------|-------------------------|----------------------------------|-----------------------------------|---------------------------|----------------------------|---------------------|---------------------------------------------------------------------------------------------------------------------|---------------|
| MCP1601 | Synchronous Buck Regulator                 | 2.7 to 5.5              | 0.9V to V <sub>IN</sub> | -40 to +85                       | PFM/PWM/<br>LDO                   | 750                       | 825 (PWM)<br>125 (PFM)     | 500                 | UVLO, Auto-switching, LDO                                                                                           | 8-Pin MSOP    |
| MCP1650 | Step-up DC/DC controller                   | 2.7 to 5.5              | 2.5 to ext. tx limited  | -40 to +125                      | Constant frequency,<br>2 fixed DC | 750                       | 0.12                       | 560/440             | 2 duty cycles for min. and max. loads, shutdown control, UVLO, soft start                                           | 8-Pin MSOP    |
| MCP1651 | Step-up DC/DC controller                   | 2.7 to 5.5              | 2.5 to ext. tx limited  | -40 to +125                      | Constant frequency,<br>2 fixed DC | 750                       | 0.12                       | 560/440             | 2 duty cycles for min. and max. loads, shutdown control, low battery detect, UVLO, soft start                       | 8-Pin MSOP    |
| MCP1652 | Step-up DC/DC controller                   | 2.7 to 5.5              | 2.5 to ext. tx limited  | -40 to +125                      | Constant frequency,<br>2 fixed DC | 750                       | 0.12                       | 560/440             | 2 duty cycles for min. and max. loads, shutdown control, power-good indicator, UVLO, soft start                     | 8-Pin MSOP    |
| MCP1653 | Step-up DC/DC controller                   | 2.7 to 5.5              | 2.5 to ext. tx limited  | -40 to +125                      | Constant frequency,<br>2 fixed DC | 750                       | 0.12                       | 560/440             | 2 duty cycles for min. and max. loads, shutdown control, low battery detect, power-good indicator, UVLO, soft start | 10-Pin MSOP   |
| TC105   | Step-down DC/DC Controller                 | 2.2 to 10               | 3.0, 3.3, 5.0           | -40 to +85                       | PFM/PWM                           | 300                       | 57                         | 1,000               | Low-Power Shutdown mode                                                                                             | 5-Pin SOT-23A |
| TC120   | Step-down Regulator/Controller Combination | 1.8 to 10               | 3.0, 3.3, 5.0           | -40 to +85                       | PFM/PWM                           | 300                       | 52                         | 2,000               | Soft-start, Low-Power Shutdown mode                                                                                 | 8-Pin SOP     |
| TC125   | Step-up DC/DC Regulator                    | 0.9 to 10               | 3.0, 3.3, 5.0           | -40 to +85                       | PFM                               | 100                       | 20                         | 80                  | Low-Power Shutdown mode                                                                                             | 5-Pin SOT-23A |
| TC126   | Step-up DC/DC Regulator                    | 0.9 to 10               | 3.0, 3.3, 5.0           | -40 to +85                       | PFM                               | 100                       | 20                         | 80                  | Feedback voltage sensing                                                                                            | 5-Pin SOT-23A |
| TC115   | Step-up DC/DC Regulator                    | 0.9 to 10               | 3.0, 3.3, 5.0           | -40 to +85                       | PFM/PWM                           | 100                       | 80                         | 140                 | Feedback voltage sensing, Low-Power Shutdown mode                                                                   | 5-Pin SOT-89  |



### POWER MANAGEMENT – Switching Regulators

| Part # | Description              | Input Voltage Range (V) | Output Voltage (V) | Operating Temperature Range (°C) | Control Scheme | Switching Frequency (kHz) | Typical Active Supply (μA) | Output Current (mA) | Features                            | Packages      |
|--------|--------------------------|-------------------------|--------------------|----------------------------------|----------------|---------------------------|----------------------------|---------------------|-------------------------------------|---------------|
| TC110  | Step-up DC/DC Controller | 2.0 to 10               | 3.0, 3.3, 5.0      | -40 to +85                       | PFM/PWM        | 100/300                   | 50/120                     | 300                 | Soft-start, Low-Power Shutdown mode | 5-Pin SOT-23A |

### POWER MANAGEMENT – PWM Controllers

| Part #  | Description                          | Input Voltage Range (V) | Output Voltage (V)                               | Operating Temperature Range (°C) | Control Scheme            | Switching Frequency (kHz) | Typical Active Supply (μA) | Output Current (mA) | Features                                                  | Packages   |
|---------|--------------------------------------|-------------------------|--------------------------------------------------|----------------------------------|---------------------------|---------------------------|----------------------------|---------------------|-----------------------------------------------------------|------------|
| MCP1630 | High speed PWM to use with PIC® MCUs | 2.7 to 5.5              | V <sub>SS</sub> + 0.2V to V <sub>DD</sub> - 0.2V | -40 to +125                      | Cycle-by-Cycle DC control | 1000                      | 3.5                        | ±10                 | UVLO, current sense to V <sub>EXT</sub> , response <25 ns | 8-Pin MSOP |

### POWER MANAGEMENT – Charge Pump DC-to-DC Converters

| Part #                                    | Input Voltage Range (V) | Output Voltage (V)                                                          | Operating Temperature Range (°C) | Maximum Input Current <sup>(1)</sup> (μA) | Typical Active Output Current (mA) | Features                                   | Packages                           |
|-------------------------------------------|-------------------------|-----------------------------------------------------------------------------|----------------------------------|-------------------------------------------|------------------------------------|--------------------------------------------|------------------------------------|
| <b>Inverting or Doubling Charge Pumps</b> |                         |                                                                             |                                  |                                           |                                    |                                            |                                    |
| TC1044S                                   | 1.5 to 12               | V <sub>OUT</sub> = -V <sub>IN</sub> or V <sub>OUT</sub> = 2 V <sub>IN</sub> | -40 to +85                       | 160                                       | 20                                 | 85 kHz oscillator, Boost mode              | 8-Pin PDIP, 8-Pin SOIC             |
| TC7660                                    | 1.5 to 10               | V <sub>OUT</sub> = -V <sub>IN</sub> or V <sub>OUT</sub> = 2 V <sub>IN</sub> | -40 to +85                       | 180                                       | 20                                 | 10 kHz oscillator                          | 8-Pin PDIP, 8-Pin SOIC             |
| TC7660H                                   | 1.5 to 10               | V <sub>OUT</sub> = -V <sub>IN</sub> or V <sub>OUT</sub> = 2 V <sub>IN</sub> | -40 to +85                       | 1,000                                     | 20                                 | 120 kHz oscillator                         | 8-Pin PDIP, 8-Pin SOIC             |
| TC7660S                                   | 1.5 to 12               | V <sub>OUT</sub> = -V <sub>IN</sub> or V <sub>OUT</sub> = 2 V <sub>IN</sub> | -40 to +85                       | 160                                       | 20                                 | 45 kHz oscillator, Boost mode              | 8-Pin PDIP, 8-Pin SOIC             |
| TC7662B                                   | 1.5 to 15               | V <sub>OUT</sub> = -V <sub>IN</sub> or V <sub>OUT</sub> = 2 V <sub>IN</sub> | -40 to +85                       | 180                                       | 20                                 | 35 kHz oscillator, Boost mode              | 8-Pin PDIP, 8-Pin SOIC             |
| TC1219                                    | 1.5 to 5.5              | V <sub>OUT</sub> = -V <sub>IN</sub> or V <sub>OUT</sub> = 2 V <sub>IN</sub> | -40 to +85                       | 115                                       | 25                                 | 12 kHz oscillator, Low-Power Shutdown mode | 6-Pin SOT-23A                      |
| TC1220                                    | 1.5 to 5.5              | V <sub>OUT</sub> = -V <sub>IN</sub> or V <sub>OUT</sub> = 2 V <sub>IN</sub> | -40 to +85                       | 325                                       | 25                                 | 35 kHz oscillator, Low-Power Shutdown mode | 6-Pin SOT-23A                      |
| TC1221                                    | 1.8 to 5.5              | V <sub>OUT</sub> = -V <sub>IN</sub> or V <sub>OUT</sub> = 2 V <sub>IN</sub> | -40 to +85                       | 600                                       | 25                                 | Shutdown, 125 kHz oscillator               | 6-Pin SOT-23A                      |
| TC1222                                    | 1.8 to 5.5              | V <sub>OUT</sub> = -V <sub>IN</sub> or V <sub>OUT</sub> = 2 V <sub>IN</sub> | -40 to +85                       | 2,800                                     | 25                                 | Shutdown, 750 kHz oscillator               | 6-Pin SOT-23A                      |
| TCM828                                    | 1.5 to 5.5              | V <sub>OUT</sub> = -V <sub>IN</sub> or V <sub>OUT</sub> = 2 V <sub>IN</sub> | -40 to +85                       | 90                                        | 25                                 | 12 kHz oscillator                          | 5-Pin SOT-23A                      |
| TCM829                                    | 1.5 to 5.5              | V <sub>OUT</sub> = -V <sub>IN</sub> or V <sub>OUT</sub> = 2 V <sub>IN</sub> | -40 to +85                       | 260                                       | 25                                 | 35 kHz oscillator                          | 5-Pin SOT-23A                      |
| TC1240                                    | 2.5 to 4.0              | V <sub>OUT</sub> = 2 V <sub>IN</sub>                                        | -40 to +85                       | 900                                       | 40                                 | Shutdown, 160 kHz oscillator               | 6-Pin SOT-23A                      |
| TC1240A                                   | 2.5 to 5.5              | V <sub>OUT</sub> = 2 V <sub>IN</sub>                                        | -40 to +85                       | 900                                       | 40                                 | Shutdown, 160 kHz oscillator               | 6-Pin SOT-23A                      |
| TC7662A                                   | 3 to 18                 | V <sub>OUT</sub> = -V <sub>IN</sub> or V <sub>OUT</sub> = 2V <sub>IN</sub>  | -40 to +85                       | 200                                       | 40                                 | 12 kHz oscillator                          | 8-Pin PDIP                         |
| TC962                                     | 3 to 18                 | V <sub>OUT</sub> = -V <sub>IN</sub> or V <sub>OUT</sub> = 2 V <sub>IN</sub> | -40 to +85                       | 200                                       | 80                                 |                                            | 8-Pin PDIP, 16-Pin SOIC            |
| TC1121                                    | 2.4 to 5.5              | V <sub>OUT</sub> = -V <sub>IN</sub> or V <sub>OUT</sub> = 2 V <sub>IN</sub> | -40 to +85                       | 100                                       | 100                                | Low-Power Shutdown mode                    | 8-Pin MSOP, 8-Pin PDIP, 8-Pin SOIC |
| <b>Multi-Function Charge Pumps</b>        |                         |                                                                             |                                  |                                           |                                    |                                            |                                    |
| TCM680                                    | 2.0 to 5.5              | V <sub>OUT</sub> = ±2 V <sub>IN</sub>                                       | -40 to +85                       | 1,000                                     | ±10                                | Generates ±6V from +3V or ±10V from +5V    | 8-Pin PDIP, 8-Pin SOIC             |

**NOTE 1:** Measured at V<sub>DD</sub> = 5.0V at 25°C and no load.

**POWER MANAGEMENT – Charge Pump DC-to-DC Converters**

| Part #                                     | Input Voltage Range (V)      | Output Voltage (V)                                 | Operating Temperature Range (°C) | Maximum Input Current <sup>(1)</sup> (μA) | Typical Active Output Current (mA) | Features                                                                                                         | Packages               |
|--------------------------------------------|------------------------------|----------------------------------------------------|----------------------------------|-------------------------------------------|------------------------------------|------------------------------------------------------------------------------------------------------------------|------------------------|
| <b>Inverting and Doubling Charge Pumps</b> |                              |                                                    |                                  |                                           |                                    |                                                                                                                  |                        |
| TC682                                      | 2.4 to 5.5                   | V <sub>OUT</sub> = -2 V <sub>IN</sub>              | -40 to +85                       | 400                                       | 10                                 | 12 kHz oscillator                                                                                                | 8-Pin PDIP, 8-Pin SOIC |
| <b>Regulated Charge Pumps</b>              |                              |                                                    |                                  |                                           |                                    |                                                                                                                  |                        |
| TC1142                                     | 2.5 to 5.5                   | -3V to -5V                                         | -40 to +85                       | 400                                       | 20                                 | Regulated GaAs FET supply, Internal 200 kHz oscillator, External clock 3 kHz to 500 kHz, Low-Power Shutdown mode | 8-Pin MSOP             |
| MCP1252                                    | 2.1/2.7 to 5.5<br>2.0 to 5.5 | Selectable 3.3V or 5.0V or Adjustable 1.5V to 5.5V | -40 to +85                       | 120                                       | 120 mA for V <sub>IN</sub> >3.0V   | Power-Good output, 650 kHz oscillator                                                                            | 8-Pin MSOP             |
| MCP1253                                    | 2.1/2.7 to 5.5<br>2.0 to 5.5 | Selectable 3.3V or 5.0V or Adjustable 1.5V to 5.5V | -40 to +85                       | 120                                       | 120 mA for V <sub>IN</sub> >3.0V   | Power-Good output, 1 MHz oscillator                                                                              | 8-Pin MSOP             |

**NOTE 1:** Measured at V<sub>DD</sub> = 5.0V at 25°C and no load.

**POWER MANAGEMENT – CPU/System Supervisors**

| Part # | V <sub>CC</sub> Range (V) | Operating Temperature Range (°C) | Nominal Reset Voltage (V)                 | Reset Type  | Output         | Typical Reset Pulse Width (ms) | Typical Supply Current (μA) | Additional Features | Packages                                | Bond Options |
|--------|---------------------------|----------------------------------|-------------------------------------------|-------------|----------------|--------------------------------|-----------------------------|---------------------|-----------------------------------------|--------------|
| MCP102 | 1V-5.5V                   | -40 to 125                       | 1.9, 2.32, 2, 63, 2.93, 3.08, 4.38, 4.63  | Active Low  | CMOS Push-Pull | 120                            | 1                           |                     | 3-Pin SOT-23B, 3-Pin SC-70, 3-Pin TO-92 | N/A          |
| MCP103 | 1V-5.5V                   | -40 to 125                       | 1.9, 2.32, 2, 63, 2.93, 3.08, 4.38, 4.63  | Active Low  | CMOS Push-Pull | 120                            | 1                           | Max. 809 Pinout     | 3-Pin SOT-23B, 3-Pin SC-70, 3-Pin TO-92 | N/A          |
| TC1272 | 1.2-5.5                   | -40 to +85                       | 4.62, 4.37, 4.12                          | Active Low  | CMOS Push-Pull | 200                            | 17                          |                     | 3-Pin SOT-23B                           | N/A          |
| TC1275 | 1.2-5.5                   | -40 to +85                       | 3.06, 2.88, 2.55                          | Active Low  | CMOS Push-Pull | 200                            | 20                          |                     | 3-Pin SOT-23B                           | N/A          |
| TCM809 | 1.2-5.5                   | -40 to +85                       | 4.63, 4.38, 4.00, 3.08, 2.93, 2.63, 2.32  | Active Low  | CMOS Push-Pull | 240                            | 12                          |                     | 3-Pin SOT-23B, 3-Pin SC-70              | N/A          |
| TC1270 | 1.2-5.5                   | -40 to +85                       | 4.63, 4.38, 3.08, 2.93, 2.63, 1.75        | Active Low  | CMOS Push-Pull | 280                            | 7                           | Manual Reset        | 4-Pin SOT-143                           | N/A          |
| TCM811 | 1.0-5.5                   | -40 to +85                       | 4.63, 4.38, 3.08, 2.93, 2.63, 1.75        | Active Low  | CMOS Push-Pull | 280                            | 6                           | Manual Reset        | 4-Pin SOT-143                           | N/A          |
| MCP100 | 1.0-5.5                   | -40 to +85                       | 4.72, 4.62, 4.47, 4.37, 3.075, 2.92, 2.62 | Active Low  | CMOS Push-Pull | 350                            | 45                          |                     | 3-Pin TO-92, 3-Pin SOT-23B              | D, H         |
| MCP809 | 1.0-5.5                   | -40 to +85                       | 4.72, 4.62, 4.47, 4.37, 3.075, 2.92, 2.62 | Active Low  | CMOS Push-Pull | 350                            | 45                          |                     | 3-Pin SOT-23B                           | N/A          |
| TC1274 | 1.8-5.5                   | -40 to +85                       | 4.62, 4.37, 4.13                          | Active High | CMOS Push-Pull | 200                            | 17                          |                     | 3-Pin SOT-23B                           | N/A          |
| TC1277 | 1.8-5.5                   | -40 to +85                       | 3.06, 2.88, 2.55                          | Active High | CMOS Push-Pull | 200                            | 20                          |                     | 3-Pin SOT-23B                           | N/A          |
| TCM810 | 1.2-5.5                   | -40 to +85                       | 4.63, 4.38, 3.08, 2.93, 2.63, 2.32        | Active High | CMOS Push-Pull | 240                            | 12                          |                     | 3-Pin SOT-23B, 3-Pin SC-70              | N/A          |
| TC1271 | 1.2-5.5                   | -40 to +85                       | 4.63, 4.38, 3.08, 2.93, 2.63, 1.75        | Active High | CMOS Push-Pull | 280                            | 7                           | Manual Reset        | 4-Pin SOT-143                           | N/A          |
| TCM812 | 1.1-5.5                   | -40 to +85                       | 4.63, 4.38, 3.08, 2.93, 2.63, 1.75        | Active High | CMOS Push-Pull | 280                            | 6                           | Manual Reset        | 4-Pin SOT-143                           | N/A          |
| MCP101 | 1.0-5.5                   | -40 to +85                       | 4.72, 4.62, 4.47, 4.37, 3.075, 2.92, 2.62 | Active High | CMOS Push-Pull | 350                            | 45                          |                     | 3-Pin TO-92, 3-Pin SOT-23B              | D, H         |
| MCP810 | 1.0-5.5                   | -40 to +85                       | 4.72, 4.62, 4.47, 4.37, 3.075, 2.92, 2.62 | Active High | CMOS Push-Pull | 350                            | 45                          |                     | 3-Pin SOT-23B                           | N/A          |
| MCP121 | 1V-5.5V                   | -40 to 125                       | 1.9, 2.32, 2, 63, 2.93, 3.08, 4.38, 4.63  | Active Low  | Open-drain     | 120                            | 1                           |                     | 3-Pin SOT-23B, 3-Pin SC-70, 3-Pin TO-92 | N/A          |
| TC1273 | 1.2-5.5                   | -40 to +85                       | 4.62, 4.37, 4.12                          | Active Low  | Open-drain     | 200                            | 17                          |                     | 3-Pin SOT-23B                           | N/A          |

### POWER MANAGEMENT – CPU/System Supervisors

| Part # | Vcc Range (V) | Operating Temperature Range (°C) | Nominal Reset Voltage (V)                 | Reset Type      | Output                     | Typical Reset Pulse Width (ms) | Typical Supply Current (μA) | Additional Features             | Packages                                | Bond Options |
|--------|---------------|----------------------------------|-------------------------------------------|-----------------|----------------------------|--------------------------------|-----------------------------|---------------------------------|-----------------------------------------|--------------|
| TC1276 | 1.2-5.5       | -40 to +85                       | 3.06, 2.88, 2.55                          | Active Low      | Open-drain                 | 200                            | 20                          |                                 | 3-Pin SOT-23B                           | N/A          |
| MCP120 | 1.0-5.5       | -40 to +85                       | 4.72, 4.62, 4.47, 4.37, 3.075, 2.92, 2.62 | Active Low      | Open-drain                 | 350                            | 45                          |                                 | 3-Pin TO-92, 3-Pin SOT-23, 8-Pin SOIC   | D, G, H      |
| TC1279 | 1.2-5.5       | -40 to +85                       | 4.62, 4.37, 4.125                         | Active Low      | Open-drain                 | 350                            | 900                         |                                 | 3-Pin SOT-23B                           | N/A          |
| MCP131 | 1V-5.5V       | -40 to 125                       | 1.9, 2.32, 2, 63, 2.93, 3.08, 4.38, 4.63  | Active Low      | Open-drain                 | 120                            | 1                           | 100kΩ Internal Pull-up Resistor | 3-Pin SOT-23B, 3-Pin SC-70, 3-Pin TO-92 | N/A          |
| MCP130 | 1.0-5.5       | -40 to +85                       | 4.72, 4.62, 4.47, 4.37, 3.075, 2.92, 2.62 | Active Low      | Open-drain w/ 5 kΩ Pull-up | 350                            | 45                          |                                 | 3-Pin TO-92, 3-Pin SOT-23, 8-Pin SOIC   | D, F, H      |
| TC1278 | 1.2-5.5       | -40 to +85                       | 4.62, 4.37, 4.125                         | Active High     | Open-drain                 | 350                            | 900                         |                                 | 3-Pin SOT-23B                           | N/A          |
| TC1232 | 4.5-5.5       | -40 to +85                       | 4.62, 4.37                                | Active Low/High | Open-drain                 | 610                            | 50                          | Watchdog Timer                  | 8-Pin PDIP, 8-Pin SOIC, 16-Pin SOIC     | N/A          |
| TC32M  | 4.5-5.5       | -40 to +85                       | 4.5                                       | Active Low      | Open-drain                 | 700                            | 50                          | Watchdog Timer                  | 3-Pin TO-92, 3-Pin SOT-223              | N/A          |

### POWER MANAGEMENT – Voltage Detectors

| Part # | Vcc Range (V) | Operating Temperature Range (°C) | Nominal Reset Voltage (V)                | Reset Type | Output                       | Minimum Reset Pulse Width (ms) | Typical Supply Current (μA) | Features     | Packages                                 |
|--------|---------------|----------------------------------|------------------------------------------|------------|------------------------------|--------------------------------|-----------------------------|--------------|------------------------------------------|
| MCP111 | 1.0 to 5.5    | -40 to +125                      | 4.63, 4.38, 3.08, 2.93, 2.63, 2.32, 1.90 | Active Low | Open-drain                   | —                              | 1                           |              | 3-Pin SOT-23B, 3-Pin TO-92, 3-Pin SC-70  |
| MCP112 | 1.0 to 5.5    | -40 to +125                      | 4.63, 4.38, 3.08, 2.93, 2.63, 2.32, 1.90 | Active Low | CMOS Push-Pull               | —                              | 1                           |              | 3-Pin SOT-23B, 3-Pin TO-92, 3-Pin SC-70  |
| TC51   | 0.7 to 10     | -40 to +85                       | 3.0, 2.7, 2.2                            | Active Low | Open-drain                   | 50                             | 1                           | Reset delay  | 3-Pin SOT-23A                            |
| TC52   | 1.5 to 10     | -40 to +85                       | 4.5/2.7, 3.0/2.7                         | Active Low | Open-drain                   | —                              | 2                           | Dual channel | 5-Pin SOT-23A                            |
| TC53   | 1.5 to 10     | -40 to +85                       | 2.9, 2.7, 2.2                            | Active Low | CMOS Push-Pull or Open-drain | —                              | 1                           |              | 5-Pin SOT-23A                            |
| TC54   | 0.7 to 10     | -40 to +85                       | 7.7, 4.3, 4.2, 3.0, 2.9, 2.7, 2.1, 1.4   | Active Low | CMOS Push-Pull or Open-drain | —                              | 1                           |              | 3-Pin SOT-23A, 3-Pin SOT-89, 3-Pin TO-92 |

### POWER MANAGEMENT – Power MOSFET Drivers

| Part #                                                    | Configuration         | Operating Temperature Range (°C) | Peak Output Current (A) | Output Resistance (R <sub>H/RL</sub> ) (Max. Ω @ 25°C) | Max. Supply Voltage (V) | Input/Output Delay (td1, td2) <sup>(1)</sup> (ns) | Packages                           |
|-----------------------------------------------------------|-----------------------|----------------------------------|-------------------------|--------------------------------------------------------|-------------------------|---------------------------------------------------|------------------------------------|
| <b>Low-Side Drivers, 0.5A to 1.2A Peak Output Current</b> |                       |                                  |                         |                                                        |                         |                                                   |                                    |
| TC1410                                                    | Single, Inverting     | -40 to +85                       | 0.5                     | 22/22                                                  | 16                      | 30/30                                             | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP |
| TC1410N                                                   | Single, Non-inverting | -40 to +85                       | 0.5                     | 22/22                                                  | 16                      | 30/30                                             | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP |
| TC1411                                                    | Single, Inverting     | -40 to +85                       | 1                       | 11/11                                                  | 16                      | 30/30                                             | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP |
| TC1411N                                                   | Single, Non-inverting | -40 to +85                       | 1                       | 11/11                                                  | 16                      | 30/30                                             | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP |
| TC1426                                                    | Dual, Inverting       | 0 to +70                         | 1.2                     | 18/18                                                  | 16                      | 75/75                                             | 8-Pin PDIP, 8-Pin SOIC             |
| TC1427                                                    | Dual, Non-inverting   | 0 to +70                         | 1.2                     | 18/18                                                  | 16                      | 75/75                                             | 8-Pin PDIP, 8-Pin SOIC             |

**NOTE 1:** \*td1 = delay time from input low-to-high transition to output transition. td2 = delay time from input high-to-low transition to output transition.

**POWER MANAGEMENT – Power MOSFET Drivers**

| Part #                                                                | Configuration                              | Operating Temperature Range (°C) | Peak Output Current (A) | Output Resistance (R <sub>H</sub> /R <sub>L</sub> ) (Max. $\Omega$ @ 25°C) | Max. Supply Voltage (V) | Input/Output Delay (td1, td2) <sup>(1)</sup> (ns) | Packages                                        |
|-----------------------------------------------------------------------|--------------------------------------------|----------------------------------|-------------------------|----------------------------------------------------------------------------|-------------------------|---------------------------------------------------|-------------------------------------------------|
| <b>Low-Side Drivers, 0.5A to 1.2A Peak Output Current (continued)</b> |                                            |                                  |                         |                                                                            |                         |                                                   |                                                 |
| TC1428                                                                | Dual, Inverting and Non-inverting          | 0 to +70                         | 1.2                     | 18/18                                                                      | 16                      | 75/75                                             | 8-Pin PDIP, 8-Pin SOIC                          |
| TC4467                                                                | Quad, Inverting                            | -40 to +85                       | 1.2                     | 15/15                                                                      | 18                      | 40/40                                             | 14-Pin PDIP, 16-Pin SOIC (W)                    |
| TC4468                                                                | Quad, Non-inverting                        | -40 to +85                       | 1.2                     | 15/15                                                                      | 18                      | 40/40                                             | 14-Pin PDIP, 16-Pin SOIC (W)                    |
| TC4469                                                                | Quad, Non-inverting                        | -40 to +85                       | 1.2                     | 15/15                                                                      | 18                      | 40/40                                             | 14-Pin PDIP, 16-Pin SOIC (W)                    |
| <b>Low-Side Drivers, 1.5A Peak Output Current</b>                     |                                            |                                  |                         |                                                                            |                         |                                                   |                                                 |
| TC4403                                                                | Single, Non-inverting Floating Load Driver | -40 to +85                       | 1.5                     | 5/5                                                                        | 18                      | 33/38                                             | 8-Pin PDIP                                      |
| TC4426A                                                               | Dual, Inverting                            | -40 to +125                      | 1.5                     | 9/9                                                                        | 18                      | 30/30                                             | 8-Pin PDIP, 8-Pin SOIC, 8-Pin DFN               |
| TC4427A                                                               | Dual, Non-inverting                        | -40 to +125                      | 1.5                     | 9/9                                                                        | 18                      | 30/30                                             | 8-Pin PDIP, 8-Pin SOIC, 8-Pin DFN               |
| TC4428A                                                               | Dual, Inverting and Non-inverting          | -40 to +125                      | 1.5                     | 9/9                                                                        | 18                      | 30/30                                             | 8-Pin PDIP, 8-Pin SOIC, 8-Pin DFN               |
| TC4426                                                                | Dual, Inverting                            | -40 to +125                      | 1.5                     | 10/10                                                                      | 18                      | 20/40                                             | 8-Pin PDIP, 8-Pin SOIC, 8-Pin DFN, 8-Pin MSOP   |
| TC4427                                                                | Dual, Non-inverting                        | -40 to +125                      | 1.5                     | 10/10                                                                      | 18                      | 20/40                                             | 8-Pin PDIP, 8-Pin SOIC, 8-Pin DFN, 8-Pin MSOP   |
| TC4428                                                                | Dual, Inverting and Non-inverting          | -40 to +125                      | 1.5                     | 10/10                                                                      | 18                      | 20/40                                             | 8-Pin PDIP, 8-Pin SOIC, 8-Pin DFN, 8-Pin MSOP   |
| TC426                                                                 | Dual, Inverting                            | -40 to +85                       | 1.5                     | 15/10                                                                      | 18                      | 50/75                                             | 8-Pin PDIP, 8-Pin SOIC                          |
| TC427                                                                 | Dual, Non-inverting                        | -40 to +85                       | 1.5                     | 15/10                                                                      | 18                      | 50/75                                             | 8-Pin PDIP, 8-Pin SOIC                          |
| TC428                                                                 | Dual, Inverting and Non-inverting          | -40 to +85                       | 1.5                     | 15/10                                                                      | 18                      | 50/75                                             | 8-Pin PDIP, 8-Pin SOIC                          |
| TC4404                                                                | Dual, Inverting                            | -40 to +85                       | 1.5                     | 10/10                                                                      | 18                      | 15/32                                             | 8-Pin PDIP, 8-Pin SOIC                          |
| TC4405                                                                | Dual, Non-inverting                        | -40 to +85                       | 1.5                     | 10/10                                                                      | 18                      | 15/32                                             | 8-Pin PDIP, 8-Pin SOIC                          |
| <b>Low-Side Drivers, 2.0A to 9.0A Peak Output Current</b>             |                                            |                                  |                         |                                                                            |                         |                                                   |                                                 |
| TC1412                                                                | Single, Inverting                          | -40 to +85                       | 2                       | 6/6                                                                        | 16                      | 35/35                                             | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP              |
| TC1412N                                                               | Single, Non-inverting                      | -40 to +85                       | 2                       | 6/6                                                                        | 16                      | 35/35                                             | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP              |
| TC1413                                                                | Single, Inverting                          | -40 to +85                       | 3                       | 4/4                                                                        | 16                      | 35/35                                             | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP              |
| TC1413N                                                               | Single, Non-inverting                      | -40 to +85                       | 3                       | 4/4                                                                        | 16                      | 35/35                                             | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP              |
| TC4423                                                                | Dual, Inverting                            | -40 to +125                      | 3                       | 5/5                                                                        | 18                      | 33/38                                             | 8-Pin PDIP, 16-Pin SOIC (W), 8-Pin DFN          |
| TC4424                                                                | Dual, Non-inverting                        | -40 to +125                      | 3                       | 5/5                                                                        | 18                      | 33/38                                             | 8-Pin PDIP, 16-Pin SOIC (W), 8-Pin DFN          |
| TC4425                                                                | Dual, Inverting and Non-inverting          | -40 to +125                      | 3                       | 5/5                                                                        | 18                      | 33/38                                             | 8-Pin PDIP, 16-Pin SOIC (W), 8-Pin DFN          |
| TC429                                                                 | Single, Inverting                          | -40 to +85                       | 6                       | 2.5/2.5                                                                    | 18                      | 53/60                                             | 8-Pin PDIP, 8-Pin DFN, 8-Pin SOIC               |
| TC4420                                                                | Single, Non-inverting                      | -40 to +125                      | 6                       | 2.8/2.5                                                                    | 18                      | 55/55                                             | 8-Pin PDIP, 8-Pin SOIC, 5-Pin TO-220, 8-Pin DFN |
| TC4429                                                                | Single, Inverting                          | -40 to +125                      | 6                       | 2.8/2.5                                                                    | 18                      | 55/55                                             | 8-Pin PDIP, 8-Pin SOIC, 5-Pin TO-220, 8-Pin DFN |
| TC4421                                                                | Single, Inverting                          | -40 to +125                      | 9                       | 1.4 (typ)/1.7                                                              | 18                      | 30/33                                             | 8-Pin PDIP, 5-Pin TO-220, 8-Pin DFN             |
| TC4422                                                                | Single, Non-inverting                      | -40 to +125                      | 9                       | 1.4 (typ)/1.7                                                              | 18                      | 30/33                                             | 8-Pin PDIP, 5-Pin TO-220, 8-Pin DFN             |

**NOTE 1:** \*td1 = delay time from input low-to-high transition to output transition. td2 = delay time from input high-to-low transition to output transition.

### POWER MANAGEMENT – Power MOSFET Drivers

| Part #                            | Configuration         | Operating Temperature Range (°C) | Peak Output Current (A) | Output Resistance (R <sub>H</sub> /R <sub>L</sub> ) (Max. Ω @ 25°C) | Max. Supply Voltage (V) | Input/Output Delay (td1, td2) <sup>(1)</sup> (ns) | Packages                    |
|-----------------------------------|-----------------------|----------------------------------|-------------------------|---------------------------------------------------------------------|-------------------------|---------------------------------------------------|-----------------------------|
| <b>High-Side/Low-Side Drivers</b> |                       |                                  |                         |                                                                     |                         |                                                   |                             |
| TC4626                            | Single, Inverting     | -40 to +85                       | 1.5                     | 15/10                                                               | 6                       | 35/45                                             | 8-Pin PDIP, 16-Pin SOIC (W) |
| TC4627                            | Single, Non-inverting | -40 to +85                       | 1.5                     | 15/10                                                               | 6                       | 35/45                                             | 8-Pin PDIP, 16-Pin SOIC (W) |
| TC4431                            | Single, Inverting     | -40 to +85                       | 1.5                     | 10/10                                                               | 30                      | 62/78                                             | 8-Pin PDIP, 8-Pin SOIC      |
| TC4432                            | Single, Non-inverting | -40 to +85                       | 1.5                     | 10/10                                                               | 30                      | 62/78                                             | 8-Pin PDIP, 8-Pin SOIC      |

**NOTE 1:** \*td1 = delay time from input low-to-high transition to output transition. td2 = delay time from input high-to-low transition to output transition.

### POWER MANAGEMENT – Battery Chargers

| Part #   | Mode   | Cell Type         | # of Cells | Vcc Range (V) | Max. Voltage Regulation (%) | Int/Ext FET | Features                                                      | Packages       |
|----------|--------|-------------------|------------|---------------|-----------------------------|-------------|---------------------------------------------------------------|----------------|
| MCP73826 | Linear | Li Ion/Li Polymer | 1          | 4.5 to 5.5    | ±1.0                        | Ext         | Small size                                                    | 6-Pin SOT-23   |
| MCP73827 | Linear | Li Ion/Li Polymer | 1          | 4.5 to 5.5    | ±1.0                        | Ext         | Mode indicator, Charge Current monitor                        | 8-Pin MSOP     |
| MCP73828 | Linear | Li Ion/Li Polymer | 1          | 4.5 to 5.5    | ±1.0                        | Ext         | Temperature monitor                                           | 8-Pin MSOP     |
| MCP73841 | Linear | Li Ion/Li Polymer | 1          | 4.5 to 12     | ±0.5                        | Ext         | Safety charge timers, Temperature monitor                     | 10-Pin MSOP    |
| MCP73842 | Linear | Li Ion/Li Polymer | 2          | 8.7 to 12     | ±0.5                        | Ext         | Safety charge timers, Temperature monitor                     | 10-Pin MSOP    |
| MCP73843 | Linear | Li Ion/Li Polymer | 1          | 4.5 to 12     | ±0.5                        | Ext         | Safety charge timers                                          | 8-Pin MSOP     |
| MCP73844 | Linear | Li Ion/Li Polymer | 2          | 8.7 to 12     | ±0.5                        | Ext         | Safety charge timers                                          | 8-Pin MSOP     |
| MCP73861 | Linear | Li Ion/Li Polymer | 1          | 4.5 to 12     | ±0.5                        | Int         | Safety charge timers, Temperature monitor, Thermal regulation | 16-pin 4x4 QFN |
| MCP73862 | Linear | Li Ion/Li Polymer | 2          | 8.7 to 12     | ±0.5                        | Int         | Safety charge timers, Temperature monitor, Thermal regulation | 16-pin 4x4 QFN |

### POWER MANAGEMENT – Hot Swap Controllers

| Part #   | Number of Outputs | V <sub>pos</sub> to V <sub>neg</sub> Differential Voltage (V) | Junction Temperature Range (°C) | OVLO       | UVLO       | Power Good | Int/Ext FET | Applications                        | Packages    |
|----------|-------------------|---------------------------------------------------------------|---------------------------------|------------|------------|------------|-------------|-------------------------------------|-------------|
| MCP18480 | 1                 | -0.3 to +15.0                                                 | -40 to +85                      | Adjustable | Adjustable | Adjustable | Ext         | -48V Telecom/Datacom, Bus/Backplane | 20-Pin SSOP |

### LINEAR – Op Amps

| Part # | # per Package | GBWP   | I <sub>Q</sub> Typical (μA) | V <sub>os</sub> Max (mV) | Operating Voltage (V) | Temp. Range (°C) | Features      | Packages                           |
|--------|---------------|--------|-----------------------------|--------------------------|-----------------------|------------------|---------------|------------------------------------|
| TC1034 | 1             | 90 kHz | 6                           | 1.5                      | 1.8 to 5.5            | -40 to +85       |               | 5-Pin SOT-23A                      |
| TC1035 | 1             | 90 kHz | 6                           | 1.5                      | 1.8 to 5.5            | -40 to +85       | Shutdown pin  | 6-Pin SOT-23A                      |
| TC1029 | 2             | 90 kHz | 6                           | 1.5                      | 1.8 to 5.5            | -40 to +85       |               | 8-Pin PDIP, 8-Pin MSOP, 8-Pin SOIC |
| TC1030 | 4             | 90 kHz | 5                           | 1.5                      | 1.8 to 5.5            | -40 to +85       | Shutdown pins | 16-Pin QSOP                        |

**NOTE:** All TC10XX Op Amps have rail-to-rail inputs and outputs.

**LINEAR – Op Amps**

| Part #  | # per Package | GBWP    | Iq Typical (μA) | Vos Max (mV) | Operating Voltage (V) | Temp. Range (°C) | Features                                               | Packages                                                      |
|---------|---------------|---------|-----------------|--------------|-----------------------|------------------|--------------------------------------------------------|---------------------------------------------------------------|
| MCP6041 | 1             | 14 kHz  | 0.6             | 3            | 1.4 to 5.5            | -40 to +85       | Rail-to-Rail Input/Output                              | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP, 5-Pin SOT-23              |
| MCP6042 | 2             | 14 kHz  | 0.6             | 3            | 1.4 to 5.5            | -40 to +85       | Rail-to-Rail Input/Output                              | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP                            |
| MCP6043 | 1             | 14 kHz  | 0.6             | 3            | 1.4 to 5.5            | -40 to +85       | Rail-to-Rail Input/Output, Chip Select                 | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP                            |
| MCP6044 | 4             | 14 kHz  | 0.6             | 3            | 1.4 to 5.5            | -40 to +85       | Rail-to-Rail Input/Output                              | 14-Pin PDIP, 14-Pin SOIC, 14-Pin TSSOP                        |
| MCP6141 | 1             | 100 kHz | 0.6             | 3            | 1.4 to 5.5            | -40 to +85       | Rail-to-Rail Input/Output, G>10 stable                 | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP                            |
| MCP6142 | 2             | 100 kHz | 0.6             | 3            | 1.4 to 5.5            | -40 to +85       | Rail-to-Rail Input/Output, G>10 stable                 | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP                            |
| MCP6143 | 1             | 100 kHz | 0.6             | 3            | 1.4 to 5.5            | -40 to +85       | Rail-to-Rail Input/Output, G>10 stable, Chip Select    | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP                            |
| MCP6144 | 4             | 100 kHz | 0.6             | 3            | 1.4 to 5.5            | -40 to +85       | Rail-to-Rail Input/Output, G>10 stable                 | 14-Pin PDIP, 14-Pin SOIC, 14-Pin TSSOP                        |
| MCP606  | 1             | 155 kHz | 19              | 0.25         | 2.5 to 5.5            | -40 to +85       | Rail-to-Rail Output                                    | 8-Pin PDIP, 8-Pin SOIC, 8-Pin TSSOP, 5-Pin SOT23              |
| MCP607  | 2             | 155 kHz | 19              | 0.25         | 2.5 to 5.5            | -40 to +85       | Rail-to-Rail Output                                    | 8-Pin PDIP, 8-Pin SOIC, 8-Pin TSSOP                           |
| MCP608  | 1             | 155 kHz | 19              | 0.25         | 2.5 to 5.5            | -40 to +85       | Rail-to-Rail Output, Chip Select                       | 8-Pin PDIP, 8-Pin SOIC, 8-Pin TSSOP                           |
| MCP609  | 4             | 155 kHz | 19              | 0.25         | 2.5 to 5.5            | -40 to +85       | Rail-to-Rail Output                                    | 14-Pin PDIP, 14-Pin SOIC, 14-Pin TSSOP                        |
| MCP616  | 1             | 190 kHz | 19              | 0.15         | 2.3 to 5.5            | -40 to +85       | Rail-to-Rail Output, PNP Input                         | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP                            |
| MCP617  | 2             | 190 kHz | 19              | 0.15         | 2.3 to 5.5            | -40 to +85       | Rail-to-Rail Output, PNP                               | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP                            |
| MCP618  | 1             | 190 kHz | 19              | 0.15         | 2.3 to 5.5            | -40 to +85       | Rail-to-Rail Output, Chip Select, PNP Input            | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP                            |
| MCP619  | 4             | 190 kHz | 19              | 0.15         | 2.3 to 5.5            | -40 to +85       | Rail-to-Rail Output, PNP Input                         | 14-Pin PDIP, 14-Pin SOIC, 14-Pin TSSOP                        |
| MCP6231 | 1             | 300 kHz | 20              | 7            | 1.8 to 5.5            | -40 to +125      | Rail-to-Rail Input/Output                              | 5-Pin SC-70, 5-Pin SOT-23, 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP |
| MCP6232 | 2             | 300 kHz | 20              | 7            | 1.8 to 5.5            | -40 to +125      | Rail-to-Rail Input/Output                              | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP                            |
| MCP6241 | 1             | 650 kHz | 50              | 7            | 1.8 to 5.5            | -40 to +125      | Rail-to-Rail Input/Output                              | 5-Pin SC-70, 5-Pin SOT-23, 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP |
| MCP6242 | 2             | 650 kHz | 50              | 7            | 1.8 to 5.5            | -40 to +125      | Rail-to-Rail Input/Output                              | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP                            |
| MCP6001 | 1             | 1 MHz   | 140             | 7            | 1.8 to 5.5            | -40 to +125      | Rail-to-Rail Input/Output                              | 5-Pin SOT-23, 5-Pin SC-70                                     |
| MCP6002 | 2             | 1 MHz   | 140             | 7            | 1.8 to 5.5            | -40 to +125      | Rail-to-Rail Input/Output                              | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP                            |
| MCP6004 | 4             | 1 MHz   | 140             | 7            | 1.8 to 5.5            | -40 to +125      | Rail-to-Rail Input/Output                              | 14-Pin PDIP, 14-Pin SOIC, 14-Pin TSSOP                        |
| MCP6271 | 1             | 2 MHz   | 170             | 3            | 2.0 to 5.5            | -40 to +125      | Rail-to-Rail Input/Output                              | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP                            |
| MCP6272 | 2             | 2 MHz   | 170             | 3            | 2.0 to 5.5            | -40 to +125      | Rail-to-Rail Input/Output                              | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP                            |
| MCP6273 | 1             | 2 MHz   | 170             | 3            | 2.0 to 5.5            | -40 to +125      | Rail-to-Rail Input/Output, Chip Select                 | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP                            |
| MCP6274 | 4             | 2 MHz   | 170             | 3            | 2.0 to 5.5            | -40 to +125      | Rail-to-Rail Input/Output                              | 14-Pin PDIP, 14-Pin SOIC, 14-Pin TSSOP                        |
| MCP6275 | 2             | 2 MHz   | 150             | 3            | 2.0 to 5.5            | -40 to +125      | Rail-to-Rail Input/Output, Dual connected, Chip Select | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP                            |
| MCP601  | 1             | 2.8 MHz | 230             | 2            | 2.7 to 5.5            | -40 to +125      | Rail-to-Rail Output                                    | 8-Pin PDIP, 8-Pin SOIC, 8-Pin TSSOP, 5-Pin SOT-23             |

**NOTE:** All TC10XX Op Amps have rail-to-rail inputs and outputs.

### LINEAR – Op Amps

| Part #  | # per Package | GBWP    | I <sub>Q</sub> Typical (μA) | V <sub>os</sub> Max (mV) | Operating Voltage (V) | Temp. Range (°C) | Features                                                        | Packages                               |
|---------|---------------|---------|-----------------------------|--------------------------|-----------------------|------------------|-----------------------------------------------------------------|----------------------------------------|
| MCP602  | 2             | 2.8 MHz | 230                         | 2                        | 2.7 to 5.5            | -40 to +125      | Rail-to-Rail Output                                             | 8-Pin PDIP, 8-Pin SOIC, 8-Pin TSSOP    |
| MCP603  | 1             | 2.8 MHz | 230                         | 2                        | 2.7 to 5.5            | -40 to +125      | Rail-to-Rail Output, Chip Select                                | 8-Pin PDIP, 8-Pin SOIC, 8-Pin TSSOP    |
| MCP604  | 4             | 2.8 MHz | 230                         | 2                        | 2.7 to 5.5            | -40 to +125      | Rail-to-Rail Output                                             | 14-Pin PDIP, 14-Pin SOIC, 14-Pin TSSOP |
| MCP6281 | 1             | 5 MHz   | 445                         | 3                        | 2.2 to 5.5            | -40 to +125      | Rail-to-Rail Input/Output                                       | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP     |
| MCP6282 | 2             | 5 MHz   | 445                         | 3                        | 2.2 to 5.5            | -40 to +125      | Rail-to-Rail Input/Output                                       | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP     |
| MCP6283 | 1             | 5 MHz   | 445                         | 3                        | 2.2 to 5.5            | -40 to +125      | Rail-to-Rail Input/Output, Chip Select                          | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP     |
| MCP6284 | 4             | 5 MHz   | 445                         | 3                        | 2.2 to 5.5            | -40 to +125      | Rail-to-Rail Input/Output                                       | 14-Pin PDIP, 14-Pin SOIC, 14-Pin TSSOP |
| MCP6285 | 2             | 5 MHz   | 400                         | 3                        | 2.2 to 5.5            | -40 to +125      | Rail-to-Rail Input/Output, Dual connected, Chip Select          | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP     |
| MCP6291 | 1             | 10 MHz  | 1000                        | 3                        | 2.4 to 5.5            | -40 to +125      | Rail-to-Rail Input/Output                                       | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP     |
| MCP6292 | 2             | 10 MHz  | 1000                        | 3                        | 2.4 to 5.5            | -40 to +125      | Rail-to-Rail Input/Output                                       | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP     |
| MCP6293 | 1             | 10 MHz  | 1000                        | 3                        | 2.4 to 5.5            | -40 to +125      | Rail-to-Rail Input/Output, Chip Select                          | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP     |
| MCP6294 | 4             | 10 MHz  | 1000                        | 3                        | 2.4 to 5.5            | -40 to +125      | Rail-to-Rail Input/Output                                       | 14-Pin PDIP, 14-Pin SOIC, 14-Pin TSSOP |
| MCP6295 | 2             | 10 MHz  | 1100                        | 3                        | 2.4 to 5.5            | -40 to +125      | Rail-to-Rail Input/Output, Dual connected, Chip Select          | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP     |
| MCP6021 | 1             | 10 MHz  | 1000                        | 0.5                      | 2.5 to 5.5            | -40 to +125      | Rail-to-Rail Input/Output, 1/2 V <sub>CC</sub> V <sub>REF</sub> | 8-Pin PDIP, 8-Pin SOIC, 8-Pin TSSOP    |
| MCP6022 | 2             | 10 MHz  | 1000                        | 0.5                      | 2.5 to 5.5            | -40 to +125      | Rail-to-Rail Input/Output                                       | 8-Pin PDIP, 8-Pin SOIC, 8-Pin TSSOP    |
| MCP6023 | 1             | 10 MHz  | 1000                        | 0.5                      | 2.5 to 5.5            | -40 to +125      | Rail-to-Rail Input/Output, Chip Select                          | 8-Pin PDIP, 8-Pin SOIC, 8-Pin TSSOP    |
| MCP6024 | 4             | 10 MHz  | 1000                        | 0.5                      | 2.5 to 5.5            | -40 to +125      | Rail-to-Rail Input/Output                                       | 14-Pin PDIP, 14-Pin SOIC, 14-Pin TSSOP |

**NOTE:** All TC10XX Op Amps have rail-to-rail inputs and outputs.

### LINEAR – High Precision Operational Amplifiers

| Part #                    | # per Package | GBWP    | I <sub>Q</sub> Max (mA) | Typical V <sub>os</sub> (μV) | V <sub>os</sub> Drift Max (μV/°C) | Operating Voltage (V) | Temp. Range (°C) | Features                           | Packages                |
|---------------------------|---------------|---------|-------------------------|------------------------------|-----------------------------------|-----------------------|------------------|------------------------------------|-------------------------|
| <b>Chopper Stabilized</b> |               |         |                         |                              |                                   |                       |                  |                                    |                         |
| TC7650                    | 1             | 2.0 MHz | 3.5                     | 5                            | 0.05                              | 4.5 to 16             | 0 to 70          | Single and Split Supply            | 8-Pin PDIP, 14-Pin PDIP |
| TC7652                    | 1             | 0.4 MHz | 3                       | 5                            | 0.05                              | 5 to 16               | 0 to 70          | Single and Split Supply, Low Noise | 8-Pin PDIP, 14-Pin PDIP |
| <b>Auto-Zero</b>          |               |         |                         |                              |                                   |                       |                  |                                    |                         |
| TC913                     | 2             | 1.5 MHz | 1.1                     | 15                           | 0.15                              | 6.5 to 16             | 0 to 70          | Single and Split Supply            | 8-Pin PDIP              |

**LINEAR – Programmable Gain Amplifiers (PGA)**

| Part #  | Channels | -3dB BW (MHz) | Iq Typ. | Vos (μV) | Operating Voltage (V) | Temp. Range (°C) | Features                             | Packages                               |
|---------|----------|---------------|---------|----------|-----------------------|------------------|--------------------------------------|----------------------------------------|
| MCP6S21 | 1        | 2 to 12       | 1.1 mA  | 275      | 2.5 to 5.5            | -40 to +85       | SPI, 8 Gain Steps, Software Shutdown | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP     |
| MCP6S22 | 2        | 2 to 12       | 1.1 mA  | 275      | 2.5 to 5.5            | -40 to +85       | SPI, 8 Gain Steps, Software Shutdown | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP     |
| MCP6S26 | 6        | 2 to 12       | 1.1 mA  | 275      | 2.5 to 5.5            | -40 to +85       | SPI, 8 Gain Steps, Software Shutdown | 14-Pin PDIP, 14-Pin SOIC, 14-Pin TSSOP |
| MCP6S28 | 8        | 2 to 12       | 1.1 mA  | 275      | 2.5 to 5.5            | -40 to +85       | SPI, 8 Gain Steps, Software Shutdown | 16-Pin PDIP, 16-Pin SOIC               |

**LINEAR – Integrated Devices**

| Part #  | # of Op Amps per Package | # of Comparators per Package | Iq Typical (μA) | VREF (V) | Operating Voltage (V) | Temp. Range (°C) | Features                    | Packages                           |
|---------|--------------------------|------------------------------|-----------------|----------|-----------------------|------------------|-----------------------------|------------------------------------|
| TC1026C | 1                        | 1                            | 12              | 1.2      | 1.8 to 5.5            | -40 to +85       | On-board VREF               | 8-Pin PDIP, 8-Pin MSOP, 8-Pin SOIC |
| TC1043C | 2                        | 2                            | 16              | 1.2      | 1.8 to 5.5            | -40 to +85       | On-board VREF, Shutdown pin | 16-Pin QSOP                        |

**LINEAR – Comparators**

| Part #  | # per Package | VREF (V) | Typical Propagation Delay (μs) | Iq Typical (μA) | Vos Max (mV) | Operating Voltage (V) | Temp. Range (°C) | Features                                               | Packages                                         |
|---------|---------------|----------|--------------------------------|-----------------|--------------|-----------------------|------------------|--------------------------------------------------------|--------------------------------------------------|
| TC1025  | 2             | —        | 4                              | 8               | 5            | 1.8 to 5.5            | -40 to +85       |                                                        | 8-Pin PDIP, 8-Pin MSOP, 8-Pin SOIC               |
| TC1027  | 4             | 1.2      | 4                              | 18              | 5            | 1.8 to 5.5            | -40 to +85       | On-board VREF                                          | 16-Pin PDIP, 16-Pin QSOP, 16-Pin SOIC            |
| TC1028  | 2             | 1.2      | 4                              | 10              | 5            | 1.8 to 5.5            | -40 to +85       | Shutdown pins, On-board VREF                           | 8-Pin MSOP                                       |
| TC1031  | 1             | 1.2      | 4                              | 6               | 5            | 1.8 to 5.5            | -40 to +85       | On-board VREF, Programmable hysteresis, Shutdown pin   | 8-Pin MSOP                                       |
| TC1037  | 1             | —        | 4                              | 4               | 5            | 1.8 to 5.5            | -40 to +85       |                                                        | 5-Pin SOT-23A                                    |
| TC1038  | 1             | —        | 4                              | 4               | 5            | 1.8 to 5.5            | -40 to +85       | Shutdown pin                                           | 6-Pin SOT-23A                                    |
| TC1039  | 1             | 1.2      | 4                              | 6               | 5            | 1.8 to 5.5            | -40 to +85       | On-board VREF                                          | 6-Pin SOT-23A                                    |
| TC1040  | 2             | 1.2      | 4                              | 10              | 5            | 1.8 to 5.5            | -40 to +85       | On-board VREF, Shutdown pin                            | 8-Pin MSOP                                       |
| TC1041  | 2             | 1.2      | 4                              | 10              | 5            | 1.8 to 5.5            | -40 to +85       | On-board VREF, Programmable hysteresis                 | 8-Pin MSOP, 8-Pin SOIC                           |
| MCP6541 | 1             | —        | 4                              | 1               | 5            | 1.6 to 5.5            | -40 to +85       | Push-Pull, Rail-to-Rail Input/Output                   | 5-Pin SOT-23, 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP |
| MCP6542 | 2             | —        | 4                              | 1               | 5            | 1.6 to 5.5            | -40 to +85       | Push-Pull, Rail-to-Rail Input/Output                   | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP               |
| MCP6543 | 1             | —        | 4                              | 1               | 5            | 1.6 to 5.5            | -40 to +85       | Push-Pull, Rail-to-Rail Input/Output, Chip Select      | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP               |
| MCP6544 | 4             | —        | 4                              | 1               | 5            | 1.6 to 5.5            | -40 to +85       | Push-Pull, Rail-to-Rail Input/Output                   | 14-Pin PDIP, 14-Pin SOIC, 14-Pin TSSOP           |
| MCP6546 | 1             | —        | 4                              | 1               | 5            | 1.6 to 5.5            | -40 to +85       | Open-drain, 9V, Rail-to-Rail Input/Output              | 5-Pin SOT-23, 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP |
| MCP6547 | 2             | —        | 4                              | 1               | 5            | 1.6 to 5.5            | -40 to +85       | Open-drain, 9V, Rail-to-Rail Input/Output              | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP               |
| MCP6548 | 1             | —        | 4                              | 1               | 5            | 1.6 to 5.5            | -40 to +85       | Open-drain, 9V, Rail-to-Rail Input/Output, Chip Select | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP               |
| MCP6549 | 4             | —        | 4                              | 1               | 5            | 1.6 to 5.5            | -40 to +85       | Open -drain, 9V, Rail-to-Rail Input/Output             | 14-Pin PDIP, 14-Pin SOIC, 14-Pin TSSOP           |

**NOTE:** All Comparators have rail-to-rail inputs and outputs.



### MIXED SIGNAL – Successive Approximation Register (SAR) A/D Converters

| Part #  | Resolution (bits) | Maximum Sampling Rate (ksamples/sec) | # of Input Channels | Input Type   | Interface        | Input Voltage Range (V) | Max. Supply Current (μA) | Max. INL | Temp. Range (°C) | Packages                               |
|---------|-------------------|--------------------------------------|---------------------|--------------|------------------|-------------------------|--------------------------|----------|------------------|----------------------------------------|
| MCP3021 | 10                | 22                                   | 1                   | Single-ended | I <sup>2</sup> C | 2.7 to 5.5              | 250                      | +1 LSB   | -40 to +125      | 5-Pin SOT-23A                          |
| MCP3001 | 10                | 200                                  | 1                   | Single-ended | SPI              | 2.7 to 5.5              | 500                      | ±1 LSB   | -40 to +85       | 8-Pin PDIP, 8-Pin SOIC, 8-Pin TSSOP    |
| MCP3002 | 10                | 200                                  | 2                   | Single-ended | SPI              | 2.7 to 5.5              | 650                      | ±1 LSB   | -40 to +85       | 8-Pin PDIP, 8-Pin SOIC, 8-Pin TSSOP    |
| MCP3004 | 10                | 200                                  | 4                   | Single-ended | SPI              | 2.7 to 5.5              | 550                      | ±1 LSB   | -40 to +85       | 14-Pin PDIP, 14-Pin SOIC, 14-Pin TSSOP |
| MCP3008 | 10                | 200                                  | 8                   | Single-ended | SPI              | 2.7 to 5.5              | 550                      | ±1 LSB   | -40 to +85       | 16-Pin PDIP, 16-Pin SOIC               |
| MCP3221 | 12                | 22                                   | 1                   | Single-ended | I <sup>2</sup> C | 2.7 to 5.5              | 250                      | ±2 LSB   | -40 to +125      | 5-Pin SOT-23A                          |
| MCP3201 | 12                | 100                                  | 1                   | Single-ended | SPI              | 2.7 to 5.5              | 400                      | ±1 LSB   | -40 to +85       | 8-Pin PDIP, 8-Pin SOIC, 8-Pin TSSOP    |
| MCP3202 | 12                | 100                                  | 2                   | Single-ended | SPI              | 2.7 to 5.5              | 550                      | ±1 LSB   | -40 to +85       | 8-Pin PDIP, 8-Pin SOIC, 8-Pin TSSOP    |
| MCP3204 | 12                | 100                                  | 4                   | Single-ended | SPI              | 2.7 to 5.5              | 400                      | ±1 LSB   | -40 to +85       | 14-Pin PDIP, 14-Pin SOIC, 14-Pin TSSOP |
| MCP3208 | 12                | 100                                  | 8                   | Single-ended | SPI              | 2.7 to 5.5              | 400                      | ±1 LSB   | -40 to +85       | 16-Pin PDIP, 16-Pin SOIC               |
| MCP3301 | 13                | 100                                  | 1                   | Differential | SPI              | 2.7 to 5.5              | 450                      | ±1 LSB   | -40 to +85       | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP     |
| MCP3302 | 13                | 100                                  | 2                   | Differential | SPI              | 2.7 to 5.5              | 450                      | ±1 LSB   | -40 to +85       | 14-Pin PDIP, 14-Pin SOIC, 14-Pin TSSOP |
| MCP3304 | 13                | 100                                  | 4                   | Differential | SPI              | 2.7 to 5.5              | 450                      | ±1 LSB   | -40 to +85       | 16-Pin PDIP, 16-Pin SOIC               |

### MIXED SIGNAL – Sigma-Delta A/D Converters

| Part #                | Resolution (bits) | Maximum Sampling Rate (samples/sec) | # of Input Channels    | Interface | Supply Voltage Range (V) | Typical Supply Current (μA) | Typical INL (%FSR) | Temp. Range (°C) | Features                                       | Packages                 |
|-----------------------|-------------------|-------------------------------------|------------------------|-----------|--------------------------|-----------------------------|--------------------|------------------|------------------------------------------------|--------------------------|
| TC3400 <sup>(1)</sup> | 10 to 16          | >400                                | 1 Diff                 | 2-Wire    | 1.8 to 5.5               | 260                         | 0.0038             | 0 to +85         |                                                | 8-Pin PDIP, 8-Pin SOIC   |
| TC3401 <sup>(1)</sup> | 10 to 16          | >400                                | 2 Diff                 | 2-Wire    | 1.8 to 5.5               | 300                         | 0.0038             | 0 to +85         | Enable mode, Reset monitor, Power-fail monitor | 16-Pin PDIP, 16-Pin QSOP |
| TC3402 <sup>(1)</sup> | 10 to 16          | >400                                | 4 Diff                 | 2-Wire    | 1.8 to 5.5               | 250                         | 0.0038             | 0 to +85         |                                                | 16-Pin PDIP, 16-Pin QSOP |
| TC3405 <sup>(1)</sup> | 10 to 16          | >400                                | 3 Single-ended, 1 Diff | 2-Wire    | 1.8 to 5.5               | 250                         | 0.0038             | 0 to +85         | Enable mode, Reset monitor                     | 16-Pin PDIP, 16-Pin QSOP |

**NOTE 1:** All TC340X are not recommended for new designs.

### MIXED SIGNAL – Dual Slope A/D Converters

| Part # | Supply Voltage (V) | Input Voltage Range (V)                          | Resolution    | Sampling Rate (Conv/s) | Input Channels | Data Interface | Temp. Range (°C) | Features                                                                                       | Packages                                |
|--------|--------------------|--------------------------------------------------|---------------|------------------------|----------------|----------------|------------------|------------------------------------------------------------------------------------------------|-----------------------------------------|
| TC500  | ±4.5 to ±7.5       | V <sub>SS</sub> + 1.5V to V <sub>DD</sub> – 1.5V | Up to 16 bits | 4 to 10                | 1              | 3-Wire         | 0 to +70         | Differential input range, Programmable resolution/conversion time                              | 16-Pin PDIP, 16-Pin SOIC, 16-Pin CerDIP |
| TC500A | ±4.5 to ±7.5       | V <sub>SS</sub> + 1.5V to V <sub>DD</sub> – 1.5V | Up to 17 bits | 4 to 10                | 1              | 3-Wire         | 0 to +70         | Differential input range, Programmable resolution/conversion time                              | 16-Pin PDIP, 16-Pin SOIC, 16-Pin CerDIP |
| TC510  | +4.5 to +5.5       | V <sub>SS</sub> + 1.5V to V <sub>DD</sub> – 1.5V | Up to 17 bits | 4 to 10                | 1              | 3-Wire         | 0 to +70         | Differential input range, Programmable resolution/conversion time, Charge pump (-V) output pin | 24-Pin PDIP, 24-Pin SOIC                |

**MIXED SIGNAL – Dual Slope A/D Converters**

| Part #  | Supply Voltage (V) | Input Voltage Range (V)                          | Resolution            | Sampling Rate (Conv/s) | Input Channels | Data Interface          | Temp. Range (°C) | Features                                                                                       | Packages                                             |
|---------|--------------------|--------------------------------------------------|-----------------------|------------------------|----------------|-------------------------|------------------|------------------------------------------------------------------------------------------------|------------------------------------------------------|
| TC514   | +4.5 to +5.5       | V <sub>SS</sub> + 1.5V to V <sub>DD</sub> – 1.5V | Up to 17 bits         | 4 to 10                | 4              | 3-Wire                  | 0 to +70         | Differential input range, Programmable resolution/conversion time, Charge pump (-V) output pin | 28-Pin PDIP, 28-Pin SOIC                             |
| TC520A  | +4.5 to +5.5       | —                                                | —                     | —                      | —              | Serial port             | 0 to +70         | Optional serial interface adapter for TC500/500A/510/514                                       | 14-Pin PDIP, 16-Pin SOIC                             |
| TC530   | +4.5 to +5.5       | V <sub>SS</sub> + 1.5V to V <sub>DD</sub> – 1.5V | Up to 17 bits         | 3 to 10                | 1              | Serial port             | 0 to +70         | Differential input range, Programmable resolution/conversion time, Charge pump (-V) output pin | 28-Pin PDIP, 28-Pin SOIC                             |
| TC534   | +4.5 to +5.5       | V <sub>SS</sub> + 1.5V to V <sub>DD</sub> – 1.5V | Up to 17 bits         | 3 to 10                | 4              | Serial port             | 0 to +70         | Differential input range, Programmable resolution/conversion time, Charge pump (-V) output pin | 40-Pin PDIP, 44-Pin MQFP                             |
| TC7109  | ±4.5 to ±5.5       | V <sub>SS</sub> + 1.5V to V <sub>DD</sub> – 1.0V | 12 bits plus sign bit | 2 to 10                | 1              | Parallel or Serial port | -25 to +85       | Differential input range                                                                       | 40-Pin PDIP, 40-Pin CerDip, 44-Pin PLCC, 44-Pin MQFP |
| TC7109A | ±4.5 to ±5.5       | V <sub>SS</sub> + 1.5V to V <sub>DD</sub> – 1.0V | 12 bits plus sign bit | 2 to 10                | 1              | Parallel or Serial port | -25 to +85       | Differential input range                                                                       | 40-Pin PDIP, 40-Pin CerDip, 44-Pin PLCC, 44-Pin MQFP |

**MIXED SIGNAL – Binary and BCD A/D Converters**

| Part #   | Description | Supply Voltage (V) | Input Voltage Range (V)                          | Resolution (Digits) | Resolution (Counts) | Max Power (mW) | Data Interface | Temp. Range (°C) | Features                               | Packages                                             |
|----------|-------------|--------------------|--------------------------------------------------|---------------------|---------------------|----------------|----------------|------------------|----------------------------------------|------------------------------------------------------|
| TC835    | BCD A/D     | ±5                 | V <sub>SS</sub> + 1.0V to V <sub>DD</sub> – 0.5V | 4½                  | ±20,000             | 30             | MUXed BCD      | 0 to +70         | Upgrade to TC7135                      | 64-Pin MQFP, 44-Pin MQFP, 28-Pin PDIP                |
| TC850    | Binary A/D  | ±5                 | V <sub>SS</sub> + 1.5V to V <sub>DD</sub> – 1.5V | 15-bit              | ±32,768             | 35             | 8-bit parallel | -25 to +70       | Highest conversion speed (40 conv/sec) | 44-Pin PLCC, 40-Pin PDIP, 40-Pin CerDIP              |
| TC7135   | BCD A/D     | ±5                 | V <sub>SS</sub> + 1.0V to V <sub>DD</sub> – 1.0V | 4½                  | ±20,000             | 30             | MUXed BCD      | 0 to +70         | For DMM, DPM, Data loggers             | 28-Pin PLCC, 28-Pin PDIP, 64-Pin MQFP                |
| TC14433  | BCD A/D     | ±4.5 to ±8         | ±199.9 mV to 1.999V                              | 3½                  | ±2,000              | 20             | MUXed BCD      | -40 to +85       | For DMM, DPM, Data loggers             | 24-Pin SOIC, 24-Pin PDIP, 28-Pin PLCC, 24-Pin CerDIP |
| TC14433A | BCD A/D     | ±4.5 to ±8         | ±199.9 mV to 1.999V                              | 3½                  | ±2,000              | 20             | MUXed BCD      | -40 to +85       | For DMM, DPM, Data loggers             | 24-Pin PDIP, 28-Pin PLCC, 24-Pin CerDIP              |

**MIXED SIGNAL – Display A/D Converters**

| Part #  | Display Type | Supply Voltage (V) | Resolution (Digits) | Resolution (Counts) | Power (mW) | Temp. Range (°C) | Features                                   | Packages                                             |
|---------|--------------|--------------------|---------------------|---------------------|------------|------------------|--------------------------------------------|------------------------------------------------------|
| TC820   | LCD          | 9                  | 3¾                  | ±4,000              | 10         | 0 to +70         | DMM plus frequency counter and logic probe | 40-Pin PDIP, 44-Pin PLCC, 44-Pin MQFP                |
| TC7106  | LCD          | 9                  | 3½                  | ±2,000              | 10         | -25 to +85       | For DMM, DPM, Data logger applications     | 40-Pin PDIP, 44-Pin PLCC, 44-Pin MQFP, 40-Pin CerDIP |
| TC7106A | LCD          | 9                  | 3½                  | ±2,000              | 10         | -25 to +85       | For DMM, DPM, Data logger applications     | 40-Pin PDIP, 44-Pin PLCC, 44-Pin MQFP, 40-Pin CerDIP |
| TC7107  | LED          | ±5                 | 3½                  | ±2,000              | 10         | -25 to +85       | For DMM, DPM, Data logger applications     | 40-Pin PDIP, 44-Pin PLCC, 44-Pin MQFP, 40-Pin CerDIP |
| TC7107A | LED          | ±5                 | 3½                  | ±2,000              | 10         | -25 to +85       | For DMM, DPM, Data logger applications     | 40-Pin PDIP, 44-Pin PLCC, 44-Pin MQFP, 40-Pin CerDIP |
| TC7116  | LCD          | 9                  | 3½                  | ±2,000              | 10         | -25 to +85       | Hold function                              | 40-Pin PDIP, 44-Pin PLCC, 44-Pin MQFP, 40-Pin CerDIP |
| TC7116A | LCD          | 9                  | 3½                  | ±2,000              | 10         | -25 to +85       | Hold function                              | 40-Pin PDIP, 44-Pin PLCC, 44-Pin MQFP, 40-Pin CerDIP |

**NOTE 1:** This product is on “End-of-Life” status.

### MIXED SIGNAL – Display A/D Converters

| Part #  | Display Type | Supply Voltage (V) | Resolution (Digits) | Resolution (Counts) | Power (mW) | Temp. Range (°C) | Features                       | Packages                                             |
|---------|--------------|--------------------|---------------------|---------------------|------------|------------------|--------------------------------|------------------------------------------------------|
| TC7117  | LED          | ±5                 | 3½                  | ±2,000              | 10         | -25 to +85       | Hold function                  | 40-Pin PDIP, 44-Pin PLCC, 44-Pin MQFP, 40-Pin CerDIP |
| TC7117A | LED          | ±5                 | 3½                  | ±2,000              | 10         | -25 to +85       | Hold function                  | 40-Pin PDIP, 44-Pin PLCC, 44-Pin MQFP, 40-Pin CerDIP |
| TC7126  | LCD          | 9                  | 3½                  | ±2,000              | 0.5        | -25 to +85       | Low-power TC7106               | 40-Pin PDIP, 44-Pin PLCC, 44-Pin MQFP, 40-Pin CerDIP |
| TC7126A | LCD          | 9                  | 3½                  | ±2,000              | 0.5        | -25 to +85       | Low-power TC7106               | 40-Pin PDIP, 44-Pin PLCC, 44-Pin MQFP, 40-Pin CerDIP |
| TC7129  | LCD          | 9                  | 4½                  | ±20,000             | 4.5        | 0 to +70         | Lowest noise ±3 mV sensitivity | 40-Pin PDIP, 44-Pin PLCC, 44-Pin MQFP                |
| TC7136  | LCD          | 9                  | 3½                  | ±2,000              | 0.5        | 0 to +70         | Low-power/noise TC7106         | 40-Pin PDIP, 44-Pin PLCC, 44-Pin MQFP                |
| TC7136A | LCD          | 9                  | 3½                  | ±2,000              | 0.5        | 0 to +70         | Low-power/noise TC7106         | 40-Pin PDIP, 44-Pin PLCC, 44-Pin MQFP                |

**NOTE 1:** This product is on “End-of-Life” status.

### MIXED SIGNAL – Digital Potentiometers

| Part #   | Number of Taps | Number per Package | Interface | Resistance (ohms) | INL (max) | DNL (max) | Temp. Range (°C) | Packages                               |
|----------|----------------|--------------------|-----------|-------------------|-----------|-----------|------------------|----------------------------------------|
| MCP41010 | 256            | 1                  | SPI       | 10K               | ±1 LSB    | ±1 LSB    | -40 to +85       | 8-Pin PDIP, 8-Pin SOIC                 |
| MCP41050 | 256            | 1                  | SPI       | 50K               | ±1 LSB    | ±1 LSB    | -40 to +85       | 8-Pin PDIP, 8-Pin SOIC                 |
| MCP41100 | 256            | 1                  | SPI       | 100K              | ±1 LSB    | ±1 LSB    | -40 to +85       | 8-Pin PDIP, 8-Pin SOIC                 |
| MCP42010 | 256            | 2                  | SPI       | 10K               | ±1 LSB    | ±1 LSB    | -40 to +85       | 14-Pin PDIP, 14-Pin SOIC, 14-Pin TSSOP |
| MCP42050 | 256            | 2                  | SPI       | 50K               | ±1 LSB    | ±1 LSB    | -40 to +85       | 14-Pin PDIP, 14-Pin SOIC, 14-Pin TSSOP |
| MCP42100 | 256            | 2                  | SPI       | 100K              | ±1 LSB    | ±1 LSB    | -40 to +85       | 14-Pin PDIP, 14-Pin SOIC, 14-Pin TSSOP |

### MIXED SIGNAL – Frequency-to-Voltage/Voltage-to-Frequency Converters

| Part # | Frequency Range (kHz) | Full Scale (ppm FS/°C) | Non-linearity (%FS) | Temp. Range (°C) | Packages                 |
|--------|-----------------------|------------------------|---------------------|------------------|--------------------------|
| TC9400 | 100                   | ±40                    | ±0.05               | -40 to +85       | 14-Pin PDIP, 14-Pin SOIC |
| TC9401 | 100                   | ±40                    | ±0.02               | -40 to +85       | 14-Pin PDIP, 14-Pin SOIC |
| TC9402 | 100                   | ±100                   | ±0.25               | -40 to +85       | 14-Pin PDIP, 14-Pin SOIC |

**MIXED SIGNAL – System D/A Converters**

| Part #  | Resolution (Bits) | DACs per Package | Interface | VREF | Output Settling Time (μs) | DNL (LSB) | Typical Standby Current (μA) | Typical Operating Current (μA) | Temp. Range (°C) | Packages                               |
|---------|-------------------|------------------|-----------|------|---------------------------|-----------|------------------------------|--------------------------------|------------------|----------------------------------------|
| TC1320  | 8                 | 1                | SMBus     | Ext  | 10                        | ±0.8      | 0.1                          | 350                            | -40 to +85       | 8-Pin MSOP, 8-Pin SOIC                 |
| TC1321  | 10                | 1                | SMBus     | Ext  | 10                        | ±2        | 0.1                          | 350                            | -40 to +85       | 8-Pin MSOP, 8-Pin SOIC                 |
| MCP4921 | 12                | 1                | SPI™      | Ext. | 8                         | 1         | 1                            | 450                            | -40 to +125      | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP     |
| MCP4922 | 12                | 2                | SPI       | Ext  | 8                         | 1         | 1                            | 450                            | -40 to +125      | 14-Pin PDIP, 14-Pin SOIC, 14-Pin TSSOP |

**NOTE:** The analog output is voltage.

**INTERFACE – Controller Area Network (CAN) Products**

| Part #                 | Operating Voltage (V) | Temperature Range (°C) | Tx Buffers | Rx Buffers | Filters | Masks | Interrupt Output | Unique Features                                                                                                         | Packages                               |
|------------------------|-----------------------|------------------------|------------|------------|---------|-------|------------------|-------------------------------------------------------------------------------------------------------------------------|----------------------------------------|
| MCP2510 <sup>(1)</sup> | 2.7 to 5.5            | -40 to +125            | 3          | 2          | 6       | 2     | Yes              | CAN 2.0B Active controller with SPI interface to MCU, 3 transmit buffers, 2 receive buffers, HW and SW message triggers | 18-Pin PDIP, 18-Pin SOIC, 20-Pin TSSOP |
| MCP2515                | 2.7 to 5.5            | -40 to +125            | 3          | 2          | 6       | 2     | Yes              | MCP2510 pin compatible upgrade with enhanced features including higher throughput and data byte filtering               | 18-Pin PDIP, 18-Pin SOIC, 20-Pin TSSOP |
| MCP25020               | 2.7 to 5.5            | -40 to +125            | 3          | 2          | 2       | 1     | N/A              | CAN 2.0B Active I/O Expander, Configurable I/O, 2 PWM outputs                                                           | 14-Pin PDIP, 14-Pin SOIC               |
| MCP25025               | 2.7 to 5.5            | -40 to +85             | 3          | 2          | 2       | 1     | N/A              | CAN 2.0B Active I/O Expander, Configurable I/O, 2 PWM outputs, One-wire CAN option                                      | 14-Pin PDIP, 14-Pin SOIC               |
| MCP25050               | 2.7 to 5.5            | -40 to +125            | 3          | 2          | 2       | 1     | N/A              | Mixed-Signal CAN 2.0B Active I/O Expander, Configurable I/O, 4 10-bit ADCs, 2 PWM outputs                               | 14-Pin PDIP, 14-Pin SOIC               |
| MCP25055               | 2.7 to 5.5            | -40 to +85             | 3          | 2          | 2       | 1     | N/A              | Mixed-Signal CAN 2.0B Active I/O Expander, Configurable I/O, 4 10-bit ADCs, 2 PWM outputs, One-wire CAN option          | 14-Pin PDIP, 14-Pin SOIC               |
| MCP2551                | 4.5 to 5.5            | -40 to +125            | n/a        | n/a        | n/a     | n/a   | N/A              | High-Speed CAN Transceiver (1 Mbps max. CAN bus speed), ISO11898 compatible, Industry standard pinout                   | 8-Pin PDIP, 8-Pin SOIC                 |

**NOTE 1:** Not recommended for new designs.

### INTERFACE – Infrared Products

| Part #  | Operating Voltage (V) | Operating Temperature Range (°C) | Max. Baud Rate (Kbaud)    | Unique Features                                                                                            | Packages                              |
|---------|-----------------------|----------------------------------|---------------------------|------------------------------------------------------------------------------------------------------------|---------------------------------------|
| MCP2120 | 2.5 to 5.5            | -40 to +85                       | 325                       | UART to IR encoder/decoder with both hardware and software baud rate selection                             | 14-Pin PDIP, 14-Pin SOIC              |
| MCP2122 | 1.8 to 5.5            | -40 to +85                       | 16x less than clock input | UART to IR encoder/decoder                                                                                 | 8-Pin PDIP, 8-Pin SOIC                |
| MCP2140 | 2.7 to 5.5            | -40 to +85                       | 9.6                       | IrDA® protocol handler plus bit encoder/decoder, Fixed baud rate, Low-Cost                                 | 18-Pin PDIP, 18-Pin SOIC, 20-Pin SSOP |
| MCP2150 | 3.0 to 5.5            | -40 to +85                       | 115.2                     | IrDA® Standard protocol handler plus bit encoder/decoder on one chip for DTE applications, Programmable ID | 18-Pin PDIP, 18-Pin SOIC, 20-Pin SSOP |
| MCP2155 | 3.0 to 5.5            | -40 to +85                       | 115.2                     | IrDA® Standard protocol handler plus bit encoder/decoder on one chip for DCE applications, Programmable ID | 18-Pin PDIP, 18-Pin SOIC, 20-Pin SSOP |

**NOTE:** IrDA® is a registered trademark of Infrared Data Association.

### INTERFACE – LIN Transceiver Products

| Part # | Description                          | Vreg Output Voltage (V) | Operating Temperature Range (°C) | Vreg Output Current (mA) | Vcc Range (V)            | Max Baud Rate | LIN Specification Supported | Packages               |
|--------|--------------------------------------|-------------------------|----------------------------------|--------------------------|--------------------------|---------------|-----------------------------|------------------------|
| MCP201 | LIN Transceiver with integrated VREG | 4.75 to 5.25            | -40 to +125                      | 50 <sup>(1)</sup>        | 6.0 to 18 <sup>(2)</sup> | 20 Kbaud      | Revision 1.2                | 8-pin PDIP, 8-pin SOIC |

**NOTE 1:** Output current can be increased with external pass transistor.

**NOTE 2:** Can withstand 40V load dump.

### INTERFACE – Serial Peripherals

| Part #   | Description              | Operating Voltage (V) | Operating Temperature Range (°C) | Bus Type          | Max. Bus Frequency (kHz) | Features                                                                 | Packages                                              |
|----------|--------------------------|-----------------------|----------------------------------|-------------------|--------------------------|--------------------------------------------------------------------------|-------------------------------------------------------|
| MCP23008 | 8-bit I/O Port Expander  | 1.8 to 5.5            | -40 to +85                       | I <sup>2</sup> C™ | 3400                     | 3 HW address pins, HW interrupt, 25 mA source/sink capability per I/O    | 18-Pin PDIP, 18-Pin SOIC, 20-Pin SSOP                 |
| MCP23S08 | 8-bit I/O Port Expander  | 1.8 to 5.5            | -40 to +85                       | SPI™              | 10000                    | 2 HW address pins, HW interrupt, 25 mA source/sink capability per I/O    | 18-Pin PDIP, 18-Pin SOIC, 20-Pin SSOP                 |
| MCP23016 | 16-bit I/O Port Expander | 2.0 to 5.5            | -40 to +85                       | I <sup>2</sup> C™ | 400                      | 3 H/W address inputs, HW interrupt, 25 mA source/sink capability per I/O | 28-Pin PDIP, 28-Pin SOIC, 28-Pin SSOP, 28-Pin 6x6 QFN |

## SERIAL ELECTRICALLY ERASABLE PROMS (EEPROM)

| Product                                                                                                                                                                                                                   | E/W Cycles | Density (Organization) | Write Speed | Max. Clock Freq. | Operating Voltage (V) | Temps   | Max. Standby Current | Unique Features                                                                                                                                                                                                                                                                                                                                                                                                                      | Packages <sup>(Note)</sup> |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|------------------------|-------------|------------------|-----------------------|---------|----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|
| <b>Microwire Compatible Serial EEPROM Family – Automatic ERAL before WRAL, self-timed erase and write cycle, power on/off data protection circuitry, sequential read function and industry standard 3-wire serial I/O</b> |            |                        |             |                  |                       |         |                      |                                                                                                                                                                                                                                                                                                                                                                                                                                      |                            |
| 93C46A                                                                                                                                                                                                                    | 1M         | 1 Kbits (x8)           | 2 ms        | 2 MHz            | 4.5 to 5.5            | C, I, E | 5 µA                 | 93Cx6A and 93Cx6B devices have no ORG pin. 93Cx6A parts have x8 organization; 93Cx6B parts are x16. Devices in this family include POR (V <sub>DD</sub> detect) feature.<br><br>Use 93C76C or 93C86C devices for P, SN, ST or MS packages.<br>Use 93C76C or 93C86C devices for P, SN, ST or MS packages.<br>Use 93C76C or 93C86C devices for P, SN, ST or MS packages.<br>Use 93C76C or 93C86C devices for P, SN, ST or MS packages. | P, SN, ST, MS, OT, X/SN    |
| 93C46B                                                                                                                                                                                                                    | 1M         | 1 Kbits (x16)          | 2 ms        | 2 MHz            | 4.5 to 5.5            | C, I, E | 5 µA                 |                                                                                                                                                                                                                                                                                                                                                                                                                                      | P, SN, ST, MS, OT, X/SN    |
| 93C56A                                                                                                                                                                                                                    | 1M         | 2 Kbits (x8)           | 2 ms        | 2 MHz            | 4.5 to 5.5            | I, E    | 5 µA                 |                                                                                                                                                                                                                                                                                                                                                                                                                                      | P, SN, ST, MS, OT          |
| 93C56B                                                                                                                                                                                                                    | 1M         | 2 Kbits (x16)          | 2 ms        | 2 MHz            | 4.5 to 5.5            | I, E    | 5 µA                 |                                                                                                                                                                                                                                                                                                                                                                                                                                      | P, SN, ST, MS, OT          |
| 93C66A                                                                                                                                                                                                                    | 1M         | 4 Kbits (x8)           | 2 ms        | 2 MHz            | 4.5 to 5.5            | I, E    | 5 µA                 |                                                                                                                                                                                                                                                                                                                                                                                                                                      | P, SN, ST, MS, OT          |
| 93C66B                                                                                                                                                                                                                    | 1M         | 4 Kbits (x16)          | 2 ms        | 2 MHz            | 4.5 to 5.5            | I, E    | 5 µA                 |                                                                                                                                                                                                                                                                                                                                                                                                                                      | P, SN, ST, MS, OT          |
| 93C76A                                                                                                                                                                                                                    | 1M         | 8 Kbits (x8)           | 2 ms        | 3 MHz            | 4.5 to 5.5            | I, E    | 5 µA                 |                                                                                                                                                                                                                                                                                                                                                                                                                                      | OT                         |
| 93C76B                                                                                                                                                                                                                    | 1M         | 8 Kbits (x16)          | 2 ms        | 3 MHz            | 4.5 to 5.5            | I, E    | 5 µA                 |                                                                                                                                                                                                                                                                                                                                                                                                                                      | OT                         |
| 93C86A                                                                                                                                                                                                                    | 1M         | 16 Kbits (x8)          | 2 ms        | 3 MHz            | 4.5 to 5.5            | I, E    | 5 µA                 | 93LCx6A and 93LCx6B devices have no ORG pin. 93LCx6A parts have x8 organization; 93Cx6B parts are x16.<br><br>Use 93LC76C or 93LC86C devices for P, SN, ST or MS packages.<br>Use 93LC76C or 93LC86C devices for P, SN, ST or MS packages.<br>Use 93LC76C or 93LC86C devices for P, SN, ST or MS packages.<br>Use 93LC76C or 93LC86C devices for P, SN, ST or MS packages.                                                           | OT                         |
| 93C86B                                                                                                                                                                                                                    | 1M         | 16 Kbits (x16)         | 2 ms        | 3 MHz            | 4.5 to 5.5            | I, E    | 5 µA                 |                                                                                                                                                                                                                                                                                                                                                                                                                                      | OT                         |
| 93LC46A                                                                                                                                                                                                                   | 1M         | 1 Kbits (x8)           | 6 ms        | 2 MHz            | 2.5 to 5.5            | C, I, E | 5 µA                 |                                                                                                                                                                                                                                                                                                                                                                                                                                      | P, SN, ST, MS, OT, X/SN    |
| 93LC46B                                                                                                                                                                                                                   | 1M         | 1 Kbits (x16)          | 6 ms        | 2 MHz            | 2.5 to 5.5            | C, I, E | 5 µA                 |                                                                                                                                                                                                                                                                                                                                                                                                                                      | P, SN, ST, MS, OT, X/SN    |
| 93LC56A                                                                                                                                                                                                                   | 1M         | 2 Kbits (x8)           | 6 ms        | 2 MHz            | 2.5 to 5.5            | C, I, E | 5 µA                 |                                                                                                                                                                                                                                                                                                                                                                                                                                      | P, SN, ST, MS, OT, X/SN    |
| 93LC56B                                                                                                                                                                                                                   | 1M         | 2 Kbits (x16)          | 6 ms        | 2 MHz            | 2.5 to 5.5            | C, I, E | 5 µA                 |                                                                                                                                                                                                                                                                                                                                                                                                                                      | P, SN, ST, MS, OT, X/SN    |
| 93LC66A                                                                                                                                                                                                                   | 1M         | 4 Kbits (x8)           | 6 ms        | 2 MHz            | 2.5 to 5.5            | C, I, E | 5 µA                 |                                                                                                                                                                                                                                                                                                                                                                                                                                      | P, SN, ST, MS, OT, X/SN    |
| 93LC66B                                                                                                                                                                                                                   | 1M         | 4 Kbits (x16)          | 6 ms        | 2 MHz            | 2.5 to 5.5            | C, I, E | 5 µA                 |                                                                                                                                                                                                                                                                                                                                                                                                                                      | P, SN, ST, MS, OT, X/SN    |
| 93LC76A                                                                                                                                                                                                                   | 1M         | 8 Kbits (x8)           | 6 ms        | 3 MHz            | 2.5 to 5.5            | I, E    | 5 µA                 | 93AAx6A and 93LCx6B devices have no ORG pin. 93AAx6A parts have x8 organization; 93Cx6B parts are x16.<br><br>Use 93AA76C or 93AA86C devices for P, SN, ST or MS packages.<br>Use 93AA76C or 93AA86C devices for P, SN, ST or MS packages.<br>Use 93AA76C or 93AA86C devices for P, SN, ST or MS packages.<br>Use 93AA76C or 93AA86C devices for P, SN, ST or MS packages.                                                           | OT                         |
| 93LC76B                                                                                                                                                                                                                   | 1M         | 8 Kbits (x16)          | 6 ms        | 3 MHz            | 2.5 to 5.5            | I, E    | 5 µA                 |                                                                                                                                                                                                                                                                                                                                                                                                                                      | OT                         |
| 93LC86A                                                                                                                                                                                                                   | 1M         | 16 Kbits (x8)          | 6 ms        | 3 MHz            | 2.5 to 5.5            | I, E    | 5 µA                 |                                                                                                                                                                                                                                                                                                                                                                                                                                      | OT                         |
| 93LC86B                                                                                                                                                                                                                   | 1M         | 16 Kbits (x16)         | 6 ms        | 3 MHz            | 2.5 to 5.5            | I, E    | 5 µA                 |                                                                                                                                                                                                                                                                                                                                                                                                                                      | OT                         |
| 93AA46A                                                                                                                                                                                                                   | 1M         | 1 Kbits (x8)           | 6 ms        | 2 MHz            | 1.8 to 5.5            | I       | 5 µA                 |                                                                                                                                                                                                                                                                                                                                                                                                                                      | P, SN, ST, MS, OT          |
| 93AA46B                                                                                                                                                                                                                   | 1M         | 1 Kbits (x16)          | 6 ms        | 2 MHz            | 1.8 to 5.5            | I       | 5 µA                 |                                                                                                                                                                                                                                                                                                                                                                                                                                      | P, SN, ST, MS, OT          |
| 93AA56A                                                                                                                                                                                                                   | 1M         | 2 Kbits (x8)           | 6 ms        | 2 MHz            | 1.8 to 5.5            | I       | 5 µA                 |                                                                                                                                                                                                                                                                                                                                                                                                                                      | P, SN, ST, MS, OT          |
| 93AA56B                                                                                                                                                                                                                   | 1M         | 2 Kbits (x16)          | 6 ms        | 2 MHz            | 1.8 to 5.5            | I       | 5 µA                 |                                                                                                                                                                                                                                                                                                                                                                                                                                      | P, SN, ST, MS, OT          |
| 93AA66A                                                                                                                                                                                                                   | 1M         | 4 Kbits (x8)           | 6 ms        | 2 MHz            | 1.8 to 5.5            | I       | 5 µA                 | 93Cx6C devices can be used in either x8 or x16 organization via the ORG pin. Devices in this family include POR (V <sub>DD</sub> detect) feature.                                                                                                                                                                                                                                                                                    | P, SN, ST, MS, OT          |
| 93AA66B                                                                                                                                                                                                                   | 1M         | 4 Kbits (x16)          | 6 ms        | 2 MHz            | 1.8 to 5.5            | I       | 5 µA                 |                                                                                                                                                                                                                                                                                                                                                                                                                                      | P, SN, ST, MS, OT          |
| 93AA76A                                                                                                                                                                                                                   | 1M         | 8 Kbits (x8)           | 6 ms        | 3 MHz            | 1.8 to 5.5            | I       | 5 µA                 |                                                                                                                                                                                                                                                                                                                                                                                                                                      | OT                         |
| 93AA76B                                                                                                                                                                                                                   | 1M         | 8 Kbits (x16)          | 6 ms        | 3 MHz            | 1.8 to 5.5            | I       | 5 µA                 |                                                                                                                                                                                                                                                                                                                                                                                                                                      | OT                         |
| 93AA86A                                                                                                                                                                                                                   | 1M         | 16 Kbits (x8)          | 6 ms        | 3 MHz            | 1.8 to 5.5            | I       | 5 µA                 |                                                                                                                                                                                                                                                                                                                                                                                                                                      | OT                         |
| 93AA86B                                                                                                                                                                                                                   | 1M         | 16 Kbits (x16)         | 6 ms        | 3 MHz            | 1.8 to 5.5            | I       | 5 µA                 |                                                                                                                                                                                                                                                                                                                                                                                                                                      | OT                         |
| 93C46C                                                                                                                                                                                                                    | 1M         | 1 Kbits (x8 or x16)    | 2 ms        | 3 MHz            | 4.5 to 5.5            | I, E    | 5 µA                 |                                                                                                                                                                                                                                                                                                                                                                                                                                      | P, SN, ST, MS              |
| 93C56C                                                                                                                                                                                                                    | 1M         | 2 Kbits (x8 or x16)    | 2 ms        | 3 MHz            | 4.5 to 5.5            | I, E    | 5 µA                 |                                                                                                                                                                                                                                                                                                                                                                                                                                      | P, SN, ST, MS              |
| 93C66C                                                                                                                                                                                                                    | 1M         | 4 Kbits (x8 or x16)    | 2 ms        | 3 MHz            | 4.5 to 5.5            | I, E    | 5 µA                 | 93LCx6C devices can be used in either x8 or x16 organization via the ORG pin.                                                                                                                                                                                                                                                                                                                                                        | P, SN, ST, MS              |
| 93C76C                                                                                                                                                                                                                    | 1M         | 8 Kbits (x8 or x16)    | 2 ms        | 3 MHz            | 4.5 to 5.5            | I, E    | 5 µA                 |                                                                                                                                                                                                                                                                                                                                                                                                                                      | P, SN, ST, MS              |
| 93C86C                                                                                                                                                                                                                    | 1M         | 16 Kbits (x8 or x16)   | 2 ms        | 3 MHz            | 4.5 to 5.5            | I, E    | 5 µA                 |                                                                                                                                                                                                                                                                                                                                                                                                                                      | P, SN, ST, MS              |
| 93LC46C                                                                                                                                                                                                                   | 1M         | 1 Kbits (x8 or x16)    | 6 ms        | 3 MHz            | 2.5 to 5.5            | I, E    | 5 µA                 |                                                                                                                                                                                                                                                                                                                                                                                                                                      | P, SN, ST, MS, X/SN        |
| 93LC56C                                                                                                                                                                                                                   | 1M         | 2 Kbits (x8 or x16)    | 6 ms        | 3 MHz            | 2.5 to 5.5            | I, E    | 5 µA                 |                                                                                                                                                                                                                                                                                                                                                                                                                                      | P, SN, ST, MS, X/SN        |
| 93LC66C                                                                                                                                                                                                                   | 1M         | 4 Kbits (x8 or x16)    | 6 ms        | 3 MHz            | 2.5 to 5.5            | I, E    | 5 µA                 |                                                                                                                                                                                                                                                                                                                                                                                                                                      | P, SN, ST, MS, X/SN        |
| 93LC76C                                                                                                                                                                                                                   | 1M         | 8 Kbits (x8 or x16)    | 6 ms        | 3 MHz            | 2.5 to 5.5            | I, E    | 5 µA                 |                                                                                                                                                                                                                                                                                                                                                                                                                                      | P, SN, ST, MS              |
| 93LC86C                                                                                                                                                                                                                   | 1M         | 16 Kbits (x8 or x16)   | 6 ms        | 3 MHz            | 2.5 to 5.5            | I, E    | 5 µA                 |                                                                                                                                                                                                                                                                                                                                                                                                                                      | P, SN, ST, MS              |
| 93AA46C                                                                                                                                                                                                                   | 1M         | 1 Kbits (x8 or x16)    | 6 ms        | 3 MHz            | 1.8 to 5.5            | I       | 5 µA                 | 93AAx6C devices can be used in either x8 or x16 organization via the ORG pin.                                                                                                                                                                                                                                                                                                                                                        | P, SN, ST, MS, X/SN        |
| 93AA56C                                                                                                                                                                                                                   | 1M         | 2 Kbits (x8 or x16)    | 6 ms        | 3 MHz            | 1.8 to 5.5            | I       | 5 µA                 |                                                                                                                                                                                                                                                                                                                                                                                                                                      | P, SN, ST, MS, X/SN        |
| 93AA66C                                                                                                                                                                                                                   | 1M         | 4 Kbits (x8 or x16)    | 6 ms        | 3 MHz            | 1.8 to 5.5            | I       | 5 µA                 |                                                                                                                                                                                                                                                                                                                                                                                                                                      | P, SN, ST, MS, X/SN        |
| 93AA76C                                                                                                                                                                                                                   | 1M         | 8 Kbits (x8 or x16)    | 6 ms        | 3 MHz            | 1.8 to 5.5            | I       | 5 µA                 |                                                                                                                                                                                                                                                                                                                                                                                                                                      | P, SN, ST, MS              |
| 93AA86C                                                                                                                                                                                                                   | 1M         | 16 Kbits (x8 or x16)   | 6 ms        | 3 MHz            | 1.8 to 5.5            | I       | 5 µA                 |                                                                                                                                                                                                                                                                                                                                                                                                                                      | P, SN, ST, MS              |

**NOTE:** All 93-series parts are available with Pb-free packages. Order with "G" suffix. Example: 93LC46BT-I/OTG.  
X/SN package code denotes rotated pinouts.

| Product                                                                                                    | E/W Cycles | Density<br>(Organization) | Write Speed | Max. Clock<br>Frequency | Operating<br>Voltage (V) | Temps   | Unique Features                                                                                                                                                                                                                     | Packages <sup>(Note)</sup> |
|------------------------------------------------------------------------------------------------------------|------------|---------------------------|-------------|-------------------------|--------------------------|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|
| <b>2-Wire I<sup>2</sup>C™ Compatible Serial EEPROM Family – Self-timed write cycle and Page Write mode</b> |            |                           |             |                         |                          |         |                                                                                                                                                                                                                                     |                            |
| 24C00                                                                                                      | 1M         | 128 bits (x8)             | 4 ms        | 400 kHz                 | 4.5 to 5.5               | C, I, E | 100 kHz operation for voltages from 1.8V to 4.5V.                                                                                                                                                                                   | P, SN, ST, OT              |
| 24LC00                                                                                                     | 1M         | 128 bits (x8)             | 4 ms        | 400 kHz                 | 2.5 to 6.0               | C, I    |                                                                                                                                                                                                                                     | P, SN, ST, OT              |
| 24AA00                                                                                                     | 1M         | 128 bits (x8)             | 4 ms        | 400 kHz                 | 1.8 to 6.0               | C, I    |                                                                                                                                                                                                                                     | P, SN, ST, OT              |
| 24C01C                                                                                                     | 1M         | 1 Kbits (x8)              | 1 ms        | 400 kHz                 | 4.5 to 5.5               | C, I, E | The 24C01C and 24C02C are for applications which require fast byte write and/or extended temperature. Three address pins.                                                                                                           | P, SN, ST, MS              |
| 24C02C                                                                                                     | 1M         | 2 Kbits (x8)              | 1 ms        | 400 kHz                 | 4.5 to 5.5               | C, I, E |                                                                                                                                                                                                                                     | P, SN, ST, MS              |
| 24LC014                                                                                                    | 1M         | 1 Kbit (x8)               | 10 ms       | 400 MHz                 | 2.5 to 5.5               | I       | Three address pins.                                                                                                                                                                                                                 | P, SN, ST, MS              |
| 24AA014                                                                                                    | 1M         | 1 Kbit (x8)               | 10 ms       | 400 MHz                 | 1.8 to 5.5               | I       |                                                                                                                                                                                                                                     | P, SN, ST, MS              |
| 24LC01B                                                                                                    | 1M         | 1 Kbits (x8)              | 5 ms        | 400 kHz                 | 2.5 to 5.5               | I, E    | Hardware write protect. Schmitt trigger inputs.<br>2.5V operation @ extended temperatures.<br>100 kHz operation @ extended temperatures.<br><br>B version on 2-wire devices designates that address pins A0, A1, A2 are no-connect. | P, SN, ST, MS, OT          |
| 24LC02B                                                                                                    | 1M         | 2 Kbits (x8)              | 5 ms        | 400 kHz                 | 2.5 to 5.5               | I, E    |                                                                                                                                                                                                                                     | P, SN, ST, MS, OT          |
| 24LC04B                                                                                                    | 1M         | 4 Kbits (x8)              | 5 ms        | 400 kHz                 | 2.5 to 5.5               | I, E    |                                                                                                                                                                                                                                     | P, SN, ST, MS, OT          |
| 24LC08B                                                                                                    | 1M         | 8 Kbits (x8)              | 5 ms        | 400 kHz                 | 2.5 to 5.5               | I, E    |                                                                                                                                                                                                                                     | P, SN, ST, MS, OT          |
| 24LC16B                                                                                                    | 1M         | 16 Kbits (x8)             | 5 ms        | 400 kHz                 | 2.5 to 5.5               | I, E    |                                                                                                                                                                                                                                     | P, SN, ST, MS, OT          |
| 24AA01                                                                                                     | 1M         | 1 Kbits (x8)              | 5 ms        | 400 kHz                 | 1.8 to 5.5               | I       | Hardware write protect. Schmitt trigger inputs.<br>100 kHz operation for voltages from 1.8V to 2.5V.                                                                                                                                | P, SN, ST, MS, OT          |
| 24AA02                                                                                                     | 1M         | 2 Kbits (x8)              | 5 ms        | 400 kHz                 | 1.8 to 5.5               | I       |                                                                                                                                                                                                                                     | P, SN, ST, MS, OT          |
| 24AA04                                                                                                     | 1M         | 4 Kbits (x8)              | 5 ms        | 400 kHz                 | 1.8 to 5.5               | I       |                                                                                                                                                                                                                                     | P, SN, ST, MS, OT          |
| 24AA08                                                                                                     | 1M         | 8 Kbits (x8)              | 5 ms        | 400 kHz                 | 1.8 to 5.5               | I       |                                                                                                                                                                                                                                     | P, SN, ST, MS, OT          |
| 24AA16                                                                                                     | 1M         | 16 Kbits (x8)             | 5 ms        | 400 kHz                 | 1.8 to 5.5               | I       |                                                                                                                                                                                                                                     | P, SN, ST, MS, OT          |
| 24LC32A                                                                                                    | 1M         | 32 Kbits (x8)             | 5 ms        | 400 kHz                 | 2.5 to 5.5               | I, E    | 100 kHz operation for voltages from 1.8V to 2.5V.                                                                                                                                                                                   | P, SN, SM, ST, MS          |
| 24AA32A                                                                                                    | 1M         | 32 Kbits (x8)             | 5 ms        | 400 kHz                 | 1.8 to 5.5               | I       |                                                                                                                                                                                                                                     | P, SN, SM, ST, MS          |
| 24LC64                                                                                                     | 1M         | 64 Kbits (x8)             | 5 ms        | 400 kHz                 | 2.5 to 5.5               | I, E    | 32-byte page. 100 kHz operation for voltages from 1.8V to 2.5V.                                                                                                                                                                     | P, SN, SM, ST, MS          |
| 24AA64                                                                                                     | 1M         | 64 Kbits (x8)             | 5 ms        | 400 kHz                 | 1.8 to 5.5               | I       |                                                                                                                                                                                                                                     | P, SN, SM, ST, MS          |
| 24LC65                                                                                                     | 1 M/10 M   | 64 Kbits (x8)             | 5 ms        | 400 kHz                 | 2.5 to 5.5               | C, I    | 8-byte page, 64-byte input buffer, high-endurance block, write protectable in 4K blocks.<br>Smart Serial™ EEPROM.                                                                                                                   | P, SM                      |
| 24AA65                                                                                                     | 1 M/10 M   | 64 Kbits (x8)             | 5 ms        | 400 kHz                 | 1.8 to 5.5               | C       |                                                                                                                                                                                                                                     | P, SM                      |
| 24C65                                                                                                      | 1 M/10 M   | 64 Kbits (x8)             | 5 ms        | 400 kHz                 | 4.5 to 5.5               | C, I, E |                                                                                                                                                                                                                                     | P, SM                      |
| 24LC128                                                                                                    | 1M         | 128 Kbits (x8)            | 5 ms        | 400 kHz                 | 2.5 to 5.5               | I, E    | 64-byte page. 100 kHz operation for voltages from 1.8V to 2.5V.                                                                                                                                                                     | P, SN, SM, ST, MS, MF      |
| 24AA128                                                                                                    | 1M         | 128 Kbits (x8)            | 5 ms        | 400 kHz                 | 1.8 to 5.5               | I       |                                                                                                                                                                                                                                     | P, SN, SM, ST, MS, MF      |
| 24FC128                                                                                                    | 1M         | 128 Kbits (x8)            | 5 ms        | 1 MHz                   | 2.5 to 5.5               | I       | 400 kHz operation for voltages below 4.5V (24FC128).                                                                                                                                                                                | P, SN, SM, ST, MS, MF      |
| 24LC256                                                                                                    | 1M         | 256 Kbits (x8)            | 5 ms        | 400 kHz                 | 2.5 to 5.5               | I, E    | 64-byte page. 100 kHz operation for voltages from 1.8V to 2.5V.                                                                                                                                                                     | P, SM, SN, ST, MS, MF      |
| 24AA256                                                                                                    | 1M         | 256 Kbits (x8)            | 5 ms        | 400 kHz                 | 1.8 to 5.5               | I       |                                                                                                                                                                                                                                     | P, SM, SN, ST, MS, MF      |
| 24FC256                                                                                                    | 1M         | 256 Kbits (x8)            | 5 ms        | 1 MHz                   | 2.5 to 5.5               | I       |                                                                                                                                                                                                                                     | P, SN, SM, ST, MS, MF      |
| 24LC512                                                                                                    | 1M         | 512 Kbits (x8)            | 5 ms        | 400 kHz                 | 2.5 to 5.5               | I, E    | 128-byte page, cascadeable up to 8 devices (4 Mbits).<br>100 kHz operation for voltages from 1.8 to 2.5V.<br>400 kHz operation for voltages below 4.5V. (24FC512).                                                                  | P, MF, ST14, SM            |
| 24AA512                                                                                                    | 1M         | 512 Kbits (x8)            | 5 ms        | 400 kHz                 | 1.8 to 5.5               | I       |                                                                                                                                                                                                                                     | P, MF, ST14, SM            |
| 24FC512                                                                                                    | 1M         | 512 Kbits (x8)            | 5 ms        | 1 MHz                   | 2.5 to 5.5               | I       |                                                                                                                                                                                                                                     | P, MF, ST14, SM            |
| 24LC515                                                                                                    | 1M         | 512 Kbits (x8)            | 5 ms        | 400 kHz                 | 2.5 to 5.5               | I       | Cascadeable up to 4 devices (2 Mbits).<br>100 kHz operation for voltages from 1.8V to 2.5V.                                                                                                                                         | P, SM                      |
| 24AA515                                                                                                    | 1M         | 512 Kbits (x8)            | 5 ms        | 400 kHz                 | 1.8 to 5.5               | I       |                                                                                                                                                                                                                                     | P, SM                      |
| 24FC515                                                                                                    | 1M         | 512 Kbits (x8)            | 5 ms        | 1 MHz                   | 2.5 to 5.5               | I       |                                                                                                                                                                                                                                     | P, SM                      |

**NOTE:** All 24-series parts in this section are available with Pb-free packages. Order with "G" suffix. Example: 24LC01BT-I/OTG.

# Memory Family Products

| Product                                                                                                                  | E/W Cycles | Density<br>(Organization) | Write Speed | Max. Clock<br>Frequency | Operating<br>Voltage (V) | Temps | Unique Features | Packages <sup>(Note)</sup> |
|--------------------------------------------------------------------------------------------------------------------------|------------|---------------------------|-------------|-------------------------|--------------------------|-------|-----------------|----------------------------|
| <b>ISO Smart Card Family – Self-timed write cycle and Page Write mode. All devices meet ISO7816 pinout requirements.</b> |            |                           |             |                         |                          |       |                 |                            |
| 24LC01SC                                                                                                                 | 1M         | 1 Kbits (x8)              | 5 ms        | 400 kHz                 | 2.5 to 5.5               | C, I  |                 | S, W, WF                   |
| 24LC02SC                                                                                                                 | 1M         | 2 Kbits (x8)              | 5 ms        | 400 kHz                 | 2.5 to 5.5               | C, I  |                 | S, W, WF                   |
| 24LC04SC                                                                                                                 | 1M         | 4 Kbits (x8)              | 5 ms        | 400 kHz                 | 2.5 to 5.5               | C, I  |                 | S, W, WF                   |
| 24LC08SC                                                                                                                 | 1M         | 8 Kbits (x8)              | 5 ms        | 400 kHz                 | 2.5 to 5.5               | C, I  |                 | S, W, WF                   |
| 24LC16SC                                                                                                                 | 1M         | 16 Kbits (x8)             | 5 ms        | 400 kHz                 | 2.5 to 5.5               | C, I  |                 | S, W, WF                   |
| 24LC32ASC                                                                                                                | 1M         | 32 Kbits (x8)             | 5 ms        | 400 kHz                 | 2.5 to 5.5               | C, I  |                 | S, W, WF                   |
| 24LC64SC                                                                                                                 | 1M         | 64 Kbits (x8)             | 5 ms        | 400 kHz                 | 2.5 to 5.5               | C, I  |                 | S, W, WF                   |
| 24LC128SC                                                                                                                | 1M         | 128 Kbits (x8)            | 5 ms        | 400 kHz                 | 2.5 to 5.5               | C, I  |                 | S, W, WF                   |
| 24LC256SC                                                                                                                | 1M         | 256 Kbits (x8)            | 5 ms        | 400 kHz                 | 2.5 to 5.5               | C, I  |                 | S, W, WF                   |
| 24LC512SC                                                                                                                | 1M         | 512 Kbits (x8)            | 5 ms        | 400 kHz                 | 2.5 to 5.5               | C, I  |                 | S, W, WF                   |
| 24AA01SC                                                                                                                 | 1M         | 1 Kbits (x8)              | 5 ms        | 400 kHz                 | 1.8 to 5.5               | C     |                 | S, W, WF                   |
| 24AA02SC                                                                                                                 | 1M         | 2 Kbits (x8)              | 5 ms        | 400 kHz                 | 1.8 to 5.5               | C     |                 | S, W, WF                   |
| 24AA04SC                                                                                                                 | 1M         | 4 Kbits (x8)              | 5 ms        | 400 kHz                 | 1.8 to 5.5               | C     |                 | S, W, WF                   |
| 24AA08SC                                                                                                                 | 1M         | 8 Kbits (x8)              | 5 ms        | 400 kHz                 | 1.8 to 5.5               | C     |                 | S, W, WF                   |
| 24AA16SC                                                                                                                 | 1M         | 16 Kbits (x8)             | 5 ms        | 400 kHz                 | 1.8 to 5.5               | C     |                 | S, W, WF                   |
| 24AA32ASC                                                                                                                | 1M         | 32 Kbits (x8)             | 5 ms        | 400 kHz                 | 1.8 to 5.5               | C     |                 | S, W, WF                   |
| 24AA64SC                                                                                                                 | 1M         | 64 Kbits (x8)             | 5 ms        | 400 kHz                 | 1.8 to 5.5               | C     |                 | S, W, WF                   |
| 24AA128SC                                                                                                                | 1M         | 128 Kbits (x8)            | 5 ms        | 400 kHz                 | 1.8 to 5.5               | C     |                 | S, W, WF                   |
| 24AA256SC                                                                                                                | 1M         | 256 Kbits (x8)            | 5 ms        | 400 kHz                 | 1.8 to 5.5               | C     |                 | S, W, WF                   |
| 24AA512SC                                                                                                                | 1M         | 512 Kbits (x8)            | 5 ms        | 400 kHz                 | 1.8 to 5.5               | C     |                 | S, W, WF                   |

| Product                                                                                                                                                                    | E/W Cycles | Density<br>(Organization) | Page Size | Write Speed | Max. Clock<br>Frequency | Operating Voltage<br>(V) | Temps | Unique Features | Packages <sup>(Note)</sup> |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|---------------------------|-----------|-------------|-------------------------|--------------------------|-------|-----------------|----------------------------|
| <b>SPI™ Compatible Serial EEPROM Family – Page Write mode, HOLD pin, software enabled block write protection and hardware write-protect pin. Supports SPI™ modes 0, 3.</b> |            |                           |           |             |                         |                          |       |                 |                            |
| 25C040                                                                                                                                                                     | 1M         | 4 Kbits (x8)              | 16B       | 5 ms        | 3 MHz                   | 4.5 to 5.5               | I, E  |                 | P, SN, X/ST                |
| 25LC040                                                                                                                                                                    | 1M         | 4 Kbits (x8)              | 16B       | 5 ms        | 2 MHz                   | 2.5 to 5.5               | I     |                 | P, SN, X/ST                |
| 25AA040                                                                                                                                                                    | 1M         | 4 Kbits (x8)              | 16B       | 5 ms        | 1 MHz                   | 1.8 to 5.5               | I     |                 | P, SN, X/ST                |
| 25LC080A                                                                                                                                                                   | 1M         | 8 Kbits (x8)              | 16B       | 5 ms        | 10 MHz                  | 2.5 to 5.5               | I, E  |                 | P, SN, ST, MS              |
| 25AA080A                                                                                                                                                                   | 1M         | 8 Kbits (x8)              | 16B       | 5 ms        | 10 MHz                  | 1.8 to 5.5               | I     |                 | P, SN, ST, MS              |
| 25LC080B                                                                                                                                                                   | 1M         | 8 Kbits (x8)              | 32B       | 5 ms        | 10 MHz                  | 2.5 to 5.5               | I, E  |                 | P, SN, ST, MS              |
| 25AA080B                                                                                                                                                                   | 1M         | 8 Kbits (x8)              | 32B       | 5 ms        | 10 MHz                  | 1.8 to 5.5               | I     |                 | P, SN, ST, MS              |

**NOTE:** All 25-series products are available in Pb-free packages. Order with "G" suffix. Example: 25LC080AT-I/MSG. X/ST package code denotes rotated pinout.



| Product                                                                                                                                                                                | E/W Cycles | Density (Organization) | Page Size | Write Speed | Max. Clock Frequency | Operating Voltage (V) | Temps | Unique Features | Packages <sup>(Note)</sup> |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|------------------------|-----------|-------------|----------------------|-----------------------|-------|-----------------|----------------------------|
| <b>SPI™ Compatible Serial EEPROM Family – Page Write mode, HOLD pin, software enabled block write protection and hardware write-protect pin. Supports SPI™ modes 0, 3. (continued)</b> |            |                        |           |             |                      |                       |       |                 |                            |
| 25LC160A                                                                                                                                                                               | 1M         | 16 Kbits (x8)          | 16B       | 5 ms        | 10 MHz               | 2.5 to 5.5            | I, E  |                 | P, SN, ST, MS              |
| 25AA160A                                                                                                                                                                               | 1M         | 16 Kbits (x8)          | 16B       | 5 ms        | 10 MHz               | 1.8 to 5.5            | I     |                 | P, SN, ST, MS              |
| 25LC160B                                                                                                                                                                               | 1M         | 16 Kbits (x8)          | 32B       | 5 ms        | 10 MHz               | 2.5 to 5.5            | I, E  |                 | P, SN, ST, MS              |
| 25AA160B                                                                                                                                                                               | 1M         | 16 Kbits (x8)          | 32B       | 5 ms        | 10 MHz               | 1.8 to 5.5            | I     |                 | P, SN, ST, MS              |
| 25C320                                                                                                                                                                                 | 100K       | 32 Kbits (x8)          | 32B       | 5 ms        | 3 MHz                | 4.5 to 5.5            | I, E  |                 | P, SN                      |
| 25LC320                                                                                                                                                                                | 1M         | 32 Kbits (x8)          | 32B       | 5 ms        | 2 MHz                | 2.5 to 5.5            | I, E  |                 | P, SN, X/ST                |
| 25AA320                                                                                                                                                                                | 1M         | 32 Kbits (x8)          | 32B       | 5 ms        | 1 MHz                | 1.8 to 5.5            | I     |                 | P, SN, X/ST                |
| 25LC640                                                                                                                                                                                | 1M         | 64 Kbits (x8)          | 32B       | 5 ms        | 3 MHz                | 2.5 to 5.5            | I, E  |                 | P, SN, X/ST                |
| 25AA640                                                                                                                                                                                | 1M         | 64 Kbits (x8)          | 32B       | 5 ms        | 1 MHz                | 1.8 to 5.5            | I     |                 | P, SN, X/ST                |

**NOTE:** All 25-series products are available in Pb-free packages. Order with "G" suffix. Example: 25LC080AT-I/MSG. X/ST package code denotes rotated pinout.

| Product                                                                                                                                    | E/W Cycles | Density (Organization) | Write Speed | Max. Clock Frequency | Operating Voltage (V) | Temps | Unique Features                                                                                                                                                                     | Packages <sup>(Note)</sup> |
|--------------------------------------------------------------------------------------------------------------------------------------------|------------|------------------------|-------------|----------------------|-----------------------|-------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|
| <b>Identification Products (Application-Specific Products for Monitors, DRAM Modules, ACR Risers and Other Plug-And-Play Applications)</b> |            |                        |             |                      |                       |       |                                                                                                                                                                                     |                            |
| 24LC21                                                                                                                                     | 1M         | 1 Kbits (x8)           | 10 ms       | 400 kHz              | 2.5 to 5.5            | C, I  | Completely implements DDC1™/DDC2™ interface for VESA monitor identification. Improved noise filter. Write protection pin. Not recommended for new designs. Use 24LC21A or 24LCS21A. | P, SN                      |
| 24LCS21                                                                                                                                    | 1M         | 1 Kbits (x8)           | 10 ms       | 400 kHz              | 2.5 to 5.5            | C, I  | Same as 24LC21 plus software enabled write-protect pin. Not recommended for new designs. Use 24LC21A or 24LCS21A.                                                                   | P, SN                      |
| 24LC21A                                                                                                                                    | 1M         | 1 Kbits (x8)           | 10 ms       | 400 kHz              | 2.5 to 5.5            | C, I  | Same as 24LC21 plus "return to DDC1" feature.                                                                                                                                       | P, SN                      |
| 24LCS21A                                                                                                                                   | 1M         | 1 Kbits (x8)           | 10 ms       | 400 kHz              | 2.5 to 5.5            | C, I  | Same as 24LC21A plus software enabled write-protect pin.                                                                                                                            | P, SN                      |
| 24LCS22A                                                                                                                                   | 1M         | 2 Kbits (x8)           | 10 ms       | 400 kHz              | 2.5 to 5.5            | I     | Implements VESA E-EDID 1.3 for flat panels and projectors. Includes "return to DDC1" feature and software - enabled write protect pin.                                              | P, SN                      |
| 24LC024                                                                                                                                    | 1M         | 2 Kbits (x8)           | 10 ms       | 400 kHz              | 2.5 to 5.5            | C, I  | Addressable, hardware write protection for DRAM DIMM modules and other applications.                                                                                                | P, SN, ST, MS              |
| 24LC025                                                                                                                                    | 1M         | 2 Kbits (x8)           | 10 ms       | 400 kHz              | 2.5 to 5.5            | C, I  | Addressable. No write-protect.                                                                                                                                                      | P, SN, ST, MS              |
| 24AA52                                                                                                                                     | 1M         | 2 Kbits (x8)           | 10 ms       | 400 kHz              | 1.8 to 5.5            | I     | Addressable, hardware write protection and software write protection for lower half of the array. Designed for DRAM DIMM modules.                                                   | P, SN, ST, MS              |
| 24LCS52                                                                                                                                    | 1M         | 2 Kbits (x8)           | 10 ms       | 400 kHz              | 2.5 to 5.5            | I     |                                                                                                                                                                                     | P, SN, ST, MS              |

**NOTE:** Pb-free packages also available. Order with "G" suffix. Example: 24LCS52T-I/STG.

## DEVELOPMENT SYSTEMS

### MPLAB® ICE 2000 and MPLAB® ICE 4000 Emulator Systems

#### HOW DO I ORDER MPLAB® ICE?

Ordering MPLAB® ICE is as easy as 1, 2, and 3!

**NOTE 1:** Choose your PICmicro® MCU.

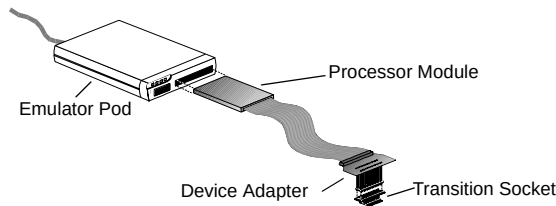
**2:** Choose your PICmicro® MCU package.

**3:** Find the right line on the next few pages for MPLAB® ICE part numbers. You're ready to order.

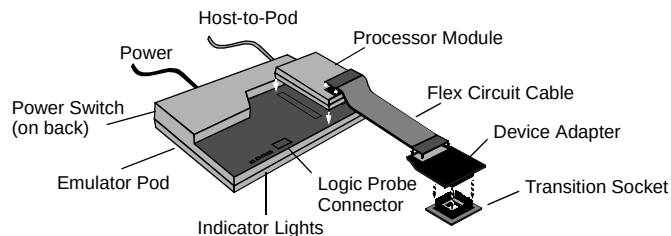
#### A COMPLETE MPLAB® ICE SYSTEM

MPLAB® ICE is a modular emulator system with interchangeable components allowing the system to be easily configured to emulate different PICmicro® MCUs. Since this emulator supports package-specific emulation, customers need to know which device and package they intend to emulate. Then, the customer can use the *Cross Reference Parts List* on the following pages to identify the part numbers required to complete an MPLAB® ICE system. A complete system consists of:

- NOTE 1:** An emulator pod (including among other things the host-to-pod parallel cable and power supply)  
**2:** A processor module  
**3:** A device adapter  
**4:** A transition socket



#### MPLAB® ICE 2000 Emulator



#### MPLAB® ICE 4000 Emulator

An MPLAB® ICE emulator system is ordered as separate components. Knowing the terms will make it easy to order and use the MPLAB® ICE emulator system. Read more about each component:

#### 1. Emulator Pod

The MPLAB® ICE 2000 and MPLAB® ICE 4000 are full-featured emulator pods containing a main board with an additional board for expanded trace memory and complex control logic. The pods come with a standard parallel interface cable that connects the pods to the parallel port of the PC and a power supply. MPLAB® ICE 4000 also includes a USB interface cable that connects the pod to the USB port.

#### 2. Processor Module

The processor module is a PICmicro®, device-specific module that is inserted into the emulator pod. The processor module contains the emulator chip, logic, and low-voltage circuitry. A flex cable extends from the processor module and is connected to the device adapter at the target application.

#### 3. Device Adapter

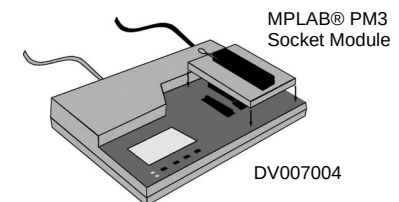
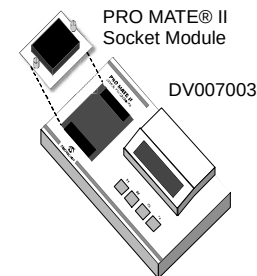
The device adapter provides a common interface for the PICmicro® MCU being emulated. This adapter contains a special device that provides an oscillator clock allowing the user to accurately emulate the RC characteristics of the PICmicro® MCU. The device adapter provides emulation support for standard DIP and PLCC styles. For emulation support of other packages, a transition socket is needed along with the device adapter.

#### 4. Transition Socket

The transition sockets are available in various styles to allow the common device adapter to be translated to support surface-mount packages, such as SOIC, SSOP, PQFP, TQFP and MLF.

### PRO MATE® II and MPLAB® PM3 Programmers

The PRO MATE® II Programmer (DV007003) and the MPLAB® PM3 Programmer (DV007004) are Microchip's production rated programmers, which can be operated stand-alone or with a PC using MPLAB® IDE (included free). They come complete with accessories needed to connect to a host system, including a power supply and cables, giving the developer complete control over the programming session. Each programmer requires a socket module (to be purchased separately), which can be selected from the following chart by identifying the devices for programming and then picking the appropriate part number from their respective columns. In-Circuit Serial Programming™ (ICSP™) can be added to the PRO MATE® II Programmer by ordering Socket Module AC004004. MPLAB® PM3 has built-in ICSP™ programming capability.



### In-Circuit Debuggers: MPLAB® ICD 2

MPLAB® ICD 2 is a low cost, flash-based development tool that connects between the PC and the designer's target board allowing direct in-circuit debugging of the PICmicro® target microcontroller. Programs can be executed in real time or single step, watch variables established, break points set, memory read/writes accomplished and more. The MPLAB® ICD 2 can also be used as a development programmer for the microcontrollers.

**MPLAB® ICE 2000 and MPLAB® ICE 4000 Emulator Systems, PRO MATE® II Programmer Socket Modules, MPLAB® In-Circuit Debugger, Software Tools, Programmers and Demonstration Boards**

|                                                    |                         | MPLAB® ICE 2000 System (1) |                    |                      | MPLAB® ICE 4000 System (2) |                    |                      |                                        |                                    |                       |                     |                        |                                               |
|----------------------------------------------------|-------------------------|----------------------------|--------------------|----------------------|----------------------------|--------------------|----------------------|----------------------------------------|------------------------------------|-----------------------|---------------------|------------------------|-----------------------------------------------|
| Part Number                                        | Lead Count/<br>Pkg Type | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket | PRO MATE® II<br>Socket<br>Module (3,4) | MPLAB® PM3<br>Socket<br>Module (8) | PICSTART®<br>Plus (5) | MPLAB® ICD 2<br>(6) | MPLAB® CXX<br>Compiler | Demonstration<br>Boards or<br>Evaluation Kits |
| <b>Analog Interface Development Tools</b>          |                         |                            |                    |                      |                            |                    |                      |                                        |                                    |                       |                     |                        |                                               |
| MCP2120                                            | 14P                     |                            |                    |                      |                            |                    |                      |                                        |                                    |                       |                     |                        | DM163008                                      |
| MCP2150                                            | 18P                     |                            |                    |                      |                            |                    |                      |                                        |                                    |                       |                     |                        | DM163008                                      |
| MCP250XX                                           | 14P                     |                            |                    |                      |                            |                    |                      | AC254001                               |                                    |                       |                     |                        | DV250501                                      |
| MCP250XX                                           | 14SO                    |                            |                    |                      |                            |                    |                      | AC254001                               |                                    |                       |                     |                        |                                               |
| MCP2510                                            | 18P                     |                            |                    |                      |                            |                    |                      |                                        |                                    |                       |                     |                        | DV251001                                      |
| MCP2515                                            | 18P                     |                            |                    |                      |                            |                    |                      |                                        |                                    |                       |                     |                        | DV251001                                      |
| <b>PICmicro® Microcontroller Development Tools</b> |                         |                            |                    |                      |                            |                    |                      |                                        |                                    |                       |                     |                        |                                               |
| PIC10F200                                          | 60T                     |                            |                    |                      |                            |                    |                      | AC164037                               | AC164321                           | ✓                     | AC162059            |                        | DV164101*<br>+AC163020                        |
| PIC10F200                                          | 8P                      |                            |                    |                      |                            |                    |                      | AC164037                               | AC164301                           | ✓                     | AC162059            |                        | DV164101*                                     |
| PIC10F202                                          | 60T                     |                            |                    |                      |                            |                    |                      | AC164037                               | AC164321                           | ✓                     | AC162059            |                        | DV164101*<br>+AC163020                        |
| PIC10F202                                          | 8P                      |                            |                    |                      |                            |                    |                      | AC164037                               | AC164301                           | ✓                     | AC162059            |                        | DV164101*                                     |
| PIC10F204                                          | 60T                     |                            |                    |                      |                            |                    |                      | AC164037                               | AC164321                           | ✓                     | AC162059            |                        | DV164101*<br>+AC163020                        |
| PIC10F204                                          | 8P                      |                            |                    |                      |                            |                    |                      | AC164037                               | AC164301                           | ✓                     | AC162059            |                        | DV164101*                                     |
| PIC10F206                                          | 60T                     |                            |                    |                      |                            |                    |                      | AC164037                               | AC164321                           | ✓                     | AC162059            |                        | DV164101*<br>+AC163020                        |
| PIC10F206                                          | 8P                      |                            |                    |                      |                            |                    |                      | AC164037                               | AC164301                           | ✓                     | AC162059            |                        | DV164101*                                     |
| PIC12C508                                          | 8P, 8JW                 | PCM16XA0                   | DVA12XP080         |                      |                            |                    |                      | AC124001                               | AC164301                           | ✓                     |                     |                        | DM163001, DVMCPA                              |
| PIC12C508                                          | 8SM                     | PCM16XA0                   | DVA12XP080         | XLT08SO              |                            |                    |                      | AC124001                               | AC164312                           |                       |                     |                        |                                               |
| PIC12C508A                                         | 8P, 8JW                 | PCM16XA0                   | DVA12XP080         |                      |                            |                    |                      | AC124001                               | AC164301                           | ✓                     |                     |                        | DM163001, DVMCPA                              |
| PIC12C508A                                         | 8SM                     | PCM16XA0                   | DVA12XP080         | XLT08SO              |                            |                    |                      | AC124001                               | AC164312                           |                       |                     |                        |                                               |
| PIC12C508A                                         | 8SN                     | PCM16XA0                   | DVA12XP080         | XLT08SO              |                            |                    |                      | AC164026                               | AC164302                           |                       |                     |                        |                                               |
| PIC12C508A                                         | 8MF                     | PCM16XA0                   | DVA12XP080         | XLT08DFN             |                            |                    |                      | AC124001<br>+AC164032                  | AC164301<br>+AC164032              | AC164032              |                     |                        |                                               |
| PIC12C509                                          | 8P, 8JW                 | PCM16XA0                   | DVA12XP080         |                      |                            |                    |                      | AC124001                               | AC164301                           | ✓                     |                     |                        | DM163001, DVMCPA                              |
| PIC12C509                                          | 8SM                     | PCM16XA0                   | DVA12XP080         | XLT08SO              |                            |                    |                      | AC124001                               | AC164312                           |                       |                     |                        |                                               |
| PIC12C509A                                         | 8P, 8JW                 | PCM16XA0                   | DVA12XP080         |                      |                            |                    |                      | AC124001                               | AC164301                           | ✓                     |                     |                        | DM163001, DVMCPA                              |
| PIC12C509A                                         | 8SM                     | PCM16XA0                   | DVA12XP080         | XLT08SO              |                            |                    |                      | AC124001                               | AC164312                           |                       |                     |                        |                                               |
| PIC12C509A                                         | 8SN                     | PCM16XA0                   | DVA12XP080         | XLT08SO              |                            |                    |                      | AC164026                               | AC164302                           |                       |                     |                        |                                               |
| PIC12C509A                                         | 8MF                     | PCM16XA0                   | DVA12XP080         | XLT08DFN             |                            |                    |                      | AC124001<br>+AC164032                  | AC164301<br>+AC164032              | AC164032              |                     |                        |                                               |

**MPLAB® ICE 2000 and MPLAB® ICE 4000 Emulator Systems, PRO MATE® II Programmer Socket Modules, MPLAB® In-Circuit Debugger, Software Tools, Programmers and Demonstration Boards**

|                                                                |                         | MPLAB® ICE 2000 System (1) |                    |                       | MPLAB® ICE 4000 System (2) |                    |                      |                                        |                                    |                       |                     |                        |                                               |
|----------------------------------------------------------------|-------------------------|----------------------------|--------------------|-----------------------|----------------------------|--------------------|----------------------|----------------------------------------|------------------------------------|-----------------------|---------------------|------------------------|-----------------------------------------------|
| Part Number                                                    | Lead Count/<br>Pkg Type | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket  | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket | PRO MATE® II<br>Socket<br>Module (3,4) | MPLAB® PM3<br>Socket<br>Module (8) | PICSTART®<br>Plus (5) | MPLAB® ICD 2<br>(6) | MPLAB® CXX<br>Compiler | Demonstration<br>Boards or<br>Evaluation Kits |
| <b>PICmicro® Microcontroller Development Tools (continued)</b> |                         |                            |                    |                       |                            |                    |                      |                                        |                                    |                       |                     |                        |                                               |
| PIC12C671                                                      | 8P, 8JW                 | PCM12XA0                   | DVA12XP081         | XLT08SO               |                            |                    |                      | AC124001                               | AC164301                           | ✓                     |                     |                        |                                               |
| PIC12C671                                                      | 8SM                     | PCM12XA0                   | DVA12XP081         |                       |                            |                    |                      | AC124001                               | AC164312                           |                       |                     |                        |                                               |
| PIC12C671                                                      | 8MF                     | PCM12XA0                   | DVA12XP081         |                       |                            |                    |                      | AC124001<br>+AC164032                  | AC164301<br>+AC164032              | AC164032              |                     |                        |                                               |
| PIC12C672                                                      | 8P, 8JW                 | PCM12XA0                   | DVA12XP081         | XLT08SO               |                            |                    |                      | AC124001                               | AC164301                           | ✓                     |                     |                        |                                               |
| PIC12C672                                                      | 8SM                     | PCM12XA0                   | DVA12XP081         |                       |                            |                    |                      | AC124001                               | AC164312                           |                       |                     |                        |                                               |
| PIC12C672                                                      | 8MF                     | PCM12XA0                   | DVA12XP081         |                       |                            |                    |                      | AC124001<br>+AC164032                  | AC164301<br>+AC164032              | AC164032              |                     |                        |                                               |
| PIC12CE518                                                     | 8P, 8JW                 | PCM16XA0                   | DVA12XP080         | XLT08SO               |                            |                    |                      | AC124001                               | AC164301                           | ✓                     |                     |                        |                                               |
| PIC12CE518                                                     | 8SM                     | PCM16XA0                   | DVA12XP080         |                       |                            |                    |                      | AC124001                               | AC164312                           |                       |                     |                        |                                               |
| PIC12CE518                                                     | 8SN                     | PCM16XA0                   | DVA12XP080         |                       |                            |                    |                      | AC164026                               | AC164302                           |                       |                     |                        |                                               |
| PIC12CE519                                                     | 8P, 8JW                 | PCM16XA0                   | DVA12XP080         | XLT08SO               |                            |                    |                      | AC124001                               | AC164301                           | ✓                     |                     |                        |                                               |
| PIC12CE519                                                     | 8SM                     | PCM16XA0                   | DVA12XP080         |                       |                            |                    |                      | AC124001                               | AC164312                           |                       |                     |                        |                                               |
| PIC12CE519                                                     | 8SN                     | PCM16XA0                   | DVA12XP080         |                       |                            |                    |                      | AC164026                               | AC164302                           |                       |                     |                        |                                               |
| PIC12CE673                                                     | 8P, 8JW                 | PCM12XA0                   | DVA12XP081         |                       |                            |                    |                      | AC124001                               | AC164301                           | ✓                     |                     |                        |                                               |
| PIC12CE674                                                     | 8P, 8JW                 | PCM12XA0                   | DVA12XP081         |                       |                            |                    |                      | AC124001                               | AC164301                           | ✓                     |                     |                        |                                               |
| PIC12F508                                                      | 8P                      | PCM16XA0                   | DVA12XP080         | XLT08SO               |                            |                    |                      | AC124001                               | AC164301*                          | ✓                     | AC162059            |                        | DM163014,<br>DV164101*                        |
| PIC12F508                                                      | 8SO                     | PCM16XA0                   | DVA12XP080         |                       |                            |                    |                      | AC164026                               | AC164302*                          |                       | AC162059            |                        |                                               |
| PIC12F508                                                      | 8ST                     | PCM16XA0                   | DVA12XP080         |                       |                            |                    |                      |                                        | AC164306*                          |                       | AC162059            |                        |                                               |
| PIC12F508                                                      | 8MS                     | PCM16XA0                   | DVA12XP080         |                       |                            |                    |                      |                                        |                                    |                       | AC162059            |                        |                                               |
| PIC12F509                                                      | 8P                      | PCM16XA0                   | DVA12XP080         | XLT08SO               |                            |                    |                      | AC124001                               | AC164301*                          | ✓                     | AC162059            |                        | DM163014,<br>DV164101*                        |
| PIC12F509                                                      | 8SO                     | PCM16XA0                   | DVA12XP080         |                       |                            |                    |                      | AC164026                               | AC164302*                          |                       | AC162059            |                        |                                               |
| PIC12F509                                                      | 8ST                     | PCM16XA0                   | DVA12XP080         |                       |                            |                    |                      |                                        | AC164306*                          |                       | AC162059            |                        |                                               |
| PIC12F509                                                      | 8MS                     | PCM16XA0                   | DVA12XP080         |                       |                            |                    |                      |                                        |                                    |                       | AC162059            |                        |                                               |
| PIC12F629                                                      | 8P                      | PCM12XB0                   | DVA12XP081         | XLT08SO               |                            |                    |                      | AC124001                               | AC164301                           | ✓                     | AC162050            |                        | DM163014, DV164101                            |
| PIC12F629                                                      | 8SN                     | PCM12XB0                   | DVA12XP081         |                       |                            |                    |                      | AC164026                               | AC164302                           |                       | AC162050            |                        |                                               |
| PIC12F629                                                      | 8MF                     | PCM12XB0                   | DVA12XP081         |                       |                            |                    |                      | AC124001<br>+AC164032                  | AC164301<br>+AC164032              | AC164032              | AC162050            |                        |                                               |
| PIC12F635                                                      | 8P                      | PCM16YM0*                  | DVA1002            | ACICE0201             |                            |                    |                      | AC164321                               | AC164301                           | ✓                     | AC162057            |                        | DM163014,<br>DV164101*                        |
| PIC12F635                                                      | 8SO                     | PCM16YM0*                  | DVA1002            | XLT08SO<br>+ACICE0201 |                            |                    |                      | AC164321                               | AC164302                           |                       | AC162057            |                        |                                               |

**MPLAB® ICE 2000 and MPLAB® ICE 4000 Emulator Systems, PRO MATE® II Programmer Socket Modules, MPLAB® In-Circuit Debugger, Software Tools, Programmers and Demonstration Boards**

|                                                                |                         | MPLAB® ICE 2000 System (1) |                    |                        | MPLAB® ICE 4000 System (2) |                    |                      |                                        |                                    |                       |                     |                        |                                               |
|----------------------------------------------------------------|-------------------------|----------------------------|--------------------|------------------------|----------------------------|--------------------|----------------------|----------------------------------------|------------------------------------|-----------------------|---------------------|------------------------|-----------------------------------------------|
| Part Number                                                    | Lead Count/<br>Pkg Type | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket   | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket | PRO MATE® II<br>Socket<br>Module (3,4) | MPLAB® PM3<br>Socket<br>Module (8) | PICSTART®<br>Plus (5) | MPLAB® ICD 2<br>(6) | MPLAB® CXX<br>Compiler | Demonstration<br>Boards or<br>Evaluation Kits |
| <b>PICmicro® Microcontroller Development Tools (continued)</b> |                         |                            |                    |                        |                            |                    |                      |                                        |                                    |                       |                     |                        |                                               |
| PIC12F675                                                      | 8P                      | PCM12XB0                   | DVA12XP081         |                        |                            |                    |                      | AC124001                               | AC164301                           | ✓                     | AC162050            |                        | DM163014, DV164101                            |
| PIC12F675                                                      | 8SN                     | PCM12XB0                   | DVA12XP081         | XLT08SO                |                            |                    |                      | AC164026                               | AC164302                           |                       | AC162050            |                        |                                               |
| PIC12F675                                                      | 8MF                     | PCM12XB0                   | DVA12XP081         | XLT08DFN               |                            |                    |                      | AC124001<br>+AC164032                  | AC164301<br>+AC164032              | AC164032              | AC162050            |                        |                                               |
| PIC12F683                                                      | 8P                      | PCM12XC0*                  | DVA1002            | ACICE0201              |                            |                    |                      | AC124001                               | AC164301                           | ✓                     | AC162058            |                        | DM163014,<br>DV164101*                        |
| PIC12F683                                                      | 8SO                     | PCM12XC0*                  | DVA1002            | XLT08SO<br>+ACICE0201  |                            |                    |                      | AC164026                               | AC164302                           |                       | AC162058            |                        |                                               |
| PIC12F683                                                      | 8MF                     | PCM12XC0*                  | DVA1002            | XLT08DFN<br>+ACICE0201 |                            |                    |                      |                                        | AC164301<br>+AC164032              |                       | AC162058            |                        |                                               |
| PIC14000                                                       | 28SP, 28JW              | PCM14XA0                   | DVA14XP280         |                        |                            |                    |                      | AC144001                               | AC164301                           | ✓                     |                     |                        | DM143001                                      |
| PIC14000                                                       | 28SO                    | PCM14XA0                   | DVA14XP280         | XLT28SO                |                            |                    |                      | AC144002                               | AC164302                           |                       |                     |                        |                                               |
| PIC14000                                                       | 28SS                    | PCM14XA0                   | DVA14XP280         | XLT28SS                |                            |                    |                      | AC144002                               | AC164307                           |                       |                     |                        |                                               |
| PIC16C52                                                       | 18P                     | PCM16XA0                   | DVA16XP180         |                        |                            |                    |                      | AC164001                               | AC164301                           | ✓                     |                     |                        | DM163001                                      |
| PIC16C52                                                       | 18SO                    | PCM16XA0                   | DVA16XP180         | XLT18SO                |                            |                    |                      | AC164002                               | AC164302                           |                       |                     |                        |                                               |
| PIC16C54/54A/<br>54C                                           | 18P, 18JW               | PCM16XA0                   | DVA16XP180         |                        |                            |                    |                      | AC164001                               | AC164301                           | ✓                     |                     |                        | DM163001                                      |
| PIC16C54/54A/<br>54C                                           | 18SO                    | PCM16XA0                   | DVA16XP180         | XLT18SO                |                            |                    |                      | AC164002                               | AC164302                           |                       |                     |                        |                                               |
| PIC16C54/54A/<br>54C                                           | 20SS                    | PCM16XA0                   | DVA16XP180         | XLT20SS                |                            |                    |                      | AC164015                               | AC164307                           |                       |                     |                        |                                               |
| PIC16C55/55A                                                   | 28P, 28JW               | PCM16XA0                   | DVA16XP280         | XLT28XP                |                            |                    |                      | AC164001                               | AC164301                           | ✓                     |                     |                        | DM163001<br>DM163001                          |
| PIC16C55/55A                                                   | 28SP                    | PCM16XA0                   | DVA16XP280         |                        |                            |                    |                      | AC164001                               | AC164301                           | ✓                     |                     |                        |                                               |
| PIC16C55/55A                                                   | 28SO                    | PCM16XA0                   | DVA16XP280         | XLT28SO                |                            |                    |                      | AC164002                               | AC164302                           |                       |                     |                        |                                               |
| PIC16C55/55A                                                   | 28SS                    | PCM16XA0                   | DVA16XP280         | XLT28SS2               |                            |                    |                      | AC164015                               | AC164307                           |                       |                     |                        |                                               |
| PIC16C56/56A                                                   | 18P, 18JW               | PCM16XA0                   | DVA16XP180         |                        |                            |                    |                      | AC164001                               | AC164301                           | ✓                     |                     |                        | DM163001                                      |
| PIC16C56/56A                                                   | 18SO                    | PCM16XA0                   | DVA16XP180         | XLT18SO                |                            |                    |                      | AC164002                               | AC164302                           |                       |                     |                        |                                               |
| PIC16C56/56A                                                   | 20SS                    | PCM16XA0                   | DVA16XP180         | XLT20SS                |                            |                    |                      | AC164015                               | AC164307                           |                       |                     |                        |                                               |
| PIC16C57/57C                                                   | 28P, 28JW               | PCM16XA0                   | DVA16XP280         | XLT28XP                |                            |                    |                      | AC164001                               | AC164301                           | ✓                     |                     |                        | DM163001<br>DM163001                          |
| PIC16C57/57C                                                   | 28SP                    | PCM16XA0                   | DVA16XP280         |                        |                            |                    |                      | AC164001                               | AC164301                           | ✓                     |                     |                        |                                               |
| PIC16C57/57C                                                   | 28SO                    | PCM16XA0                   | DVA16XP280         | XLT28SO                |                            |                    |                      | AC164002                               | AC164302                           |                       |                     |                        |                                               |
| PIC16C57/57C                                                   | 28SS                    | PCM16XA0                   | DVA16XP280         | XLT28SS2               |                            |                    |                      | AC164015                               | AC164307                           |                       |                     |                        |                                               |

**MPLAB® ICE 2000 and MPLAB® ICE 4000 Emulator Systems, PRO MATE® II Programmer Socket Modules, MPLAB® In-Circuit Debugger, Software Tools, Programmers and Demonstration Boards**

|                                                                |                         | MPLAB® ICE 2000 System (1) |                    |                      | MPLAB® ICE 4000 System (2) |                    |                      |                                        |                                    |                       |                     |                        |                                               |
|----------------------------------------------------------------|-------------------------|----------------------------|--------------------|----------------------|----------------------------|--------------------|----------------------|----------------------------------------|------------------------------------|-----------------------|---------------------|------------------------|-----------------------------------------------|
| Part Number                                                    | Lead Count/<br>Pkg Type | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket | PRO MATE® II<br>Socket<br>Module (3,4) | MPLAB® PM3<br>Socket<br>Module (8) | PICSTART®<br>Plus (5) | MPLAB® ICD 2<br>(6) | MPLAB® CXX<br>Compiler | Demonstration<br>Boards or<br>Evaluation Kits |
| <b>PICmicro® Microcontroller Development Tools (continued)</b> |                         |                            |                    |                      |                            |                    |                      |                                        |                                    |                       |                     |                        |                                               |
| PIC16C58A/<br>58B                                              | 18P, 18JW               | PCM16XA0                   | DVA16XP180         |                      |                            |                    |                      | AC164001                               | AC164301                           | ✓                     |                     |                        | DM163001                                      |
| PIC16C58A/<br>58B                                              | 18SO                    | PCM16XA0                   | DVA16XP180         | XLT18SO              |                            |                    |                      | AC164002                               | AC164302                           |                       |                     |                        |                                               |
| PIC16C58A/<br>58B                                              | 20SS                    | PCM16XA0                   | DVA16XP180         | XLT20SS              |                            |                    |                      | AC164015                               | AC164307                           |                       |                     |                        |                                               |
| PIC16C62A                                                      | 28P, 28JW               | PCM16XB1                   | DVA16XP282         |                      |                            |                    |                      | AC164012                               | AC164301                           | ✓                     |                     |                        | DM163022                                      |
| PIC16C62A                                                      | 28SO                    | PCM16XB1                   | DVA16XP282         | XLT28SO              |                            |                    |                      | AC164017                               | AC164302                           |                       |                     |                        |                                               |
| PIC16C62A                                                      | 28SS                    | PCM16XB1                   | DVA16XP282         | XLT28SS              |                            |                    |                      | AC164021                               | AC164307                           |                       |                     |                        |                                               |
| PIC16C62B                                                      | 28SP, 28JW              | PCM16XE1                   | DVA16XP282         |                      |                            |                    |                      | AC164012                               | AC164301                           | ✓                     |                     |                        | DM163022                                      |
| PIC16C62B                                                      | 28ML                    | PCM16XE1                   | DVA16XP282         | XLT28QFN             |                            |                    |                      | AC164012<br>+AC164031                  | AC164301<br>+AC164031              | AC164031              |                     |                        |                                               |
| PIC16C62B                                                      | 28SO                    | PCM16XE1                   | DVA16XP282         | XLT28SO              |                            |                    |                      | AC164017                               | AC164302                           |                       |                     |                        |                                               |
| PIC16C62B                                                      | 28SS                    | PCM16XE1                   | DVA16XP282         | XLT28SS              |                            |                    |                      | AC164021                               | AC164307                           |                       |                     |                        |                                               |
| PIC16C63                                                       | 28SP, 28JW              | PCM16XB1                   | DVA16XP282         |                      |                            |                    |                      | AC164012                               | AC164301                           | ✓                     |                     |                        | DM163022,<br>DVMCPA                           |
| PIC16C63                                                       | 28SO                    | PCM16XB1                   | DVA16XP282         | XLT28SO              |                            |                    |                      | AC164017                               | AC164302                           |                       |                     |                        |                                               |
| PIC16C63A                                                      | 28SP, 28JW              | PCM16XE1                   | DVA16XP282         |                      |                            |                    |                      | AC164012                               | AC164301                           | ✓                     |                     |                        | DM163022                                      |
| PIC16C63A                                                      | 28ML                    | PCM16XE1                   | DVA16XP282         | XLT28QFN             |                            |                    |                      | AC164012<br>+AC164031                  | AC164301<br>+AC164031              | AC164031              |                     |                        |                                               |
| PIC16C63A                                                      | 28SO                    | PCM16XE1                   | DVA16XP282         | XLT28SO              |                            |                    |                      | AC164017                               | AC164302                           |                       |                     |                        |                                               |
| PIC16C63A                                                      | 28SS                    | PCM16XE1                   | DVA16XP282         | XLT28SS              |                            |                    |                      | AC164021                               | AC164307                           |                       |                     |                        |                                               |
| PIC16C64A                                                      | 40P, 40JW               | PCM16XB1                   | DVA16XP401         |                      |                            |                    |                      | AC164012                               | AC164301                           | ✓                     |                     |                        | DM163022                                      |
| PIC16C64A                                                      | 44L                     | PCM16XB1                   | DVA16XL441         |                      |                            |                    |                      | AC164013                               | AC164309                           |                       |                     |                        |                                               |
| PIC16C64A                                                      | 44PQ                    | PCM16XB1                   | DVA16PQ441         | XLT44PT              |                            |                    |                      | AC164014                               | AC164311                           |                       |                     |                        |                                               |
| PIC16C64A                                                      | 44PT                    | PCM16XB1                   | DVA16PQ441         | XLT44PT              |                            |                    |                      | AC164020                               | AC164305                           |                       |                     |                        |                                               |
| PIC16C65A                                                      | 40P, 40JW               | PCM16XB1                   | DVA16XP401         |                      |                            |                    |                      | AC164012                               | AC164301                           | ✓                     |                     |                        | DM163022                                      |
| PIC16C65A                                                      | 44L                     | PCM16XB1                   | DVA16XL441         |                      |                            |                    |                      | AC164013                               | AC164309                           |                       |                     |                        |                                               |
| PIC16C65A                                                      | 44PQ                    | PCM16XB1                   | DVA16PQ441         | XLT44PT              |                            |                    |                      | AC164014                               | AC164311                           |                       |                     |                        |                                               |
| PIC16C65A                                                      | 44PT                    | PCM16XB1                   | DVA16PQ441         | XLT44PT              |                            |                    |                      | AC164020                               | AC164305                           |                       |                     |                        |                                               |
| PIC16C65B                                                      | 40P, 40JW               | PCM16XE1                   | DVA16XP401         |                      |                            |                    |                      | AC164012                               | AC164301                           | ✓                     |                     |                        | DM163022                                      |
| PIC16C65B                                                      | 44L                     | PCM16XE1                   | DVA16XL441         |                      |                            |                    |                      | AC164013                               | AC164309                           |                       |                     |                        |                                               |
| PIC16C65B                                                      | 44PQ                    | PCM16XE1                   | DVA16PQ441         | XLT44PT              |                            |                    |                      | AC164014                               | AC164311                           |                       |                     |                        |                                               |
| PIC16C65B                                                      | 44PT                    | PCM16XE1                   | DVA16PQ441         | XLT44PT              |                            |                    |                      | AC164020                               | AC164305                           |                       |                     |                        |                                               |

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|                                                                |                         | MPLAB® ICE 2000 System (1) |                    |                      | MPLAB® ICE 4000 System (2) |                    |                      |                                        |                                    |                       |                     |                        |                                               |
|----------------------------------------------------------------|-------------------------|----------------------------|--------------------|----------------------|----------------------------|--------------------|----------------------|----------------------------------------|------------------------------------|-----------------------|---------------------|------------------------|-----------------------------------------------|
| Part Number                                                    | Lead Count/<br>Pkg Type | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket | PRO MATE® II<br>Socket<br>Module (3,4) | MPLAB® PM3<br>Socket<br>Module (8) | PICSTART®<br>Plus (5) | MPLAB® ICD 2<br>(6) | MPLAB® CXX<br>Compiler | Demonstration<br>Boards or<br>Evaluation Kits |
| <b>PICmicro® Microcontroller Development Tools (continued)</b> |                         |                            |                    |                      |                            |                    |                      |                                        |                                    |                       |                     |                        |                                               |
| PIC16C66                                                       | 28SP, 28JW              | PCM16XE1                   | DVA16XP282         |                      |                            |                    |                      | AC164012                               | AC164301                           | ✓                     |                     |                        | DM163022                                      |
| PIC16C66                                                       | 28SO                    | PCM16XE1                   | DVA16XP282         | XLT28SO              |                            |                    |                      | AC164017                               | AC164302                           |                       |                     |                        |                                               |
| PIC16C67                                                       | 40P, 40JW               | PCM16XE1                   | DVA16XP401         |                      |                            |                    |                      | AC164012                               | AC164301                           | ✓                     |                     |                        | DM163022                                      |
| PIC16C67                                                       | 44L                     | PCM16XE1                   | DVA16XL441         |                      |                            |                    |                      | AC164013                               | AC164309                           |                       |                     |                        |                                               |
| PIC16C67                                                       | 44PQ                    | PCM16XE1                   | DVA16PQ441         | XLT44PT              |                            |                    |                      | AC164014                               | AC164311                           |                       |                     |                        |                                               |
| PIC16C67                                                       | 44PT                    | PCM16XE1                   | DVA16PQ441         | XLT44PT              |                            |                    |                      | AC164020                               | AC164305                           |                       |                     |                        |                                               |
| PIC16C71                                                       | 18P, 18JW               | PCM16XF0                   | DVA16XP180         |                      |                            |                    |                      | AC164010                               | AC164301                           | ✓                     |                     |                        | DM163001                                      |
| PIC16C71                                                       | 18SO                    | PCM16XF0                   | DVA16XP180         | XLT18SO              |                            |                    |                      | AC164010                               | AC164302                           |                       |                     |                        |                                               |
| PIC16C72                                                       | 28SP, 28JW              | PCM16XB1                   | DVA16XP282         |                      |                            |                    |                      | AC164012                               | AC164301                           | ✓                     |                     |                        | DM163022                                      |
| PIC16C72                                                       | 28SO                    | PCM16XB1                   | DVA16XP282         | XLT28SO              |                            |                    |                      | AC164017                               | AC164302                           |                       |                     |                        |                                               |
| PIC16C72                                                       | 28SS                    | PCM16XB1                   | DVA16XP282         | XLT28SS              |                            |                    |                      | AC164021                               | AC164307                           |                       |                     |                        |                                               |
| PIC16C72A                                                      | 28SP, 28JW              | PCM16XE1                   | DVA16XP282         |                      |                            |                    |                      | AC164012                               | AC164301                           | ✓                     |                     |                        | DM163022                                      |
| PIC16C72A                                                      | 28ML                    | PCM16XE1                   | DVA16XP282         | XLT28QFN             |                            |                    |                      | AC164012<br>+AC164031                  | AC164301<br>+AC164031              | AC164031              |                     |                        |                                               |
| PIC16C72A                                                      | 28SO                    | PCM16XE1                   | DVA16XP282         | XLT28SO              |                            |                    |                      | AC164017                               | AC164302                           |                       |                     |                        |                                               |
| PIC16C72A                                                      | 28SS                    | PCM16XE1                   | DVA16XP282         | XLT28SS              |                            |                    |                      | AC164021                               | AC164307                           |                       |                     |                        |                                               |
| PIC16C73A                                                      | 28SP, 28JW              | PCM16XB1                   | DVA16XP282         |                      |                            |                    |                      | AC164012                               | AC164301                           | ✓                     |                     |                        | DM163022                                      |
| PIC16C73A                                                      | 28SO                    | PCM16XB1                   | DVA16XP282         | XLT28SO              |                            |                    |                      | AC164017                               | AC164302                           |                       |                     |                        |                                               |
| PIC16C73B                                                      | 28SP, 28JW              | PCM16XE1                   | DVA16XP282         |                      |                            |                    |                      | AC164012                               | AC164301                           | ✓                     |                     |                        | DM163022                                      |
| PIC16C73B                                                      | 28ML                    | PCM16XE1                   | DVA16XP282         | XLT28QFN             |                            |                    |                      | AC164012<br>+AC164031                  | AC164301<br>+AC164031              | AC164031              |                     |                        |                                               |
| PIC16C73B                                                      | 28SO                    | PCM16XE1                   | DVA16XP282         | XLT28SO              |                            |                    |                      | AC164017                               | AC164302                           |                       |                     |                        |                                               |
| PIC16C73B                                                      | 28SS                    | PCM16XE1                   | DVA16XP282         | XLT28SS              |                            |                    |                      | AC164021                               | AC164307                           |                       |                     |                        |                                               |
| PIC16C74A                                                      | 40P, 40JW               | PCM16XB1                   | DVA16XP401         |                      |                            |                    |                      | AC164012                               | AC164301                           | ✓                     |                     |                        | DM163022                                      |
| PIC16C74A                                                      | 44L                     | PCM16XB1                   | DVA16XL441         |                      |                            |                    |                      | AC164013                               | AC164309                           |                       |                     |                        |                                               |
| PIC16C74A                                                      | 44PQ                    | PCM16XB1                   | DVA16PQ441         | XLT44PT              |                            |                    |                      | AC164014                               | AC164311                           |                       |                     |                        |                                               |
| PIC16C74A                                                      | 44PT                    | PCM16XB1                   | DVA16PQ441         | XLT44PT              |                            |                    |                      | AC164020                               | AC164305                           |                       |                     |                        |                                               |
| PIC16C74B                                                      | 40P, 40JW               | PCM16XE1                   | DVA16XP401         |                      |                            |                    |                      | AC164012                               | AC164301                           | ✓                     |                     |                        | DM163022                                      |
| PIC16C74B                                                      | 44L                     | PCM16XE1                   | DVA16XL441         |                      |                            |                    |                      | AC164013                               | AC164309                           |                       |                     |                        |                                               |
| PIC16C74B                                                      | 44PQ                    | PCM16XE1                   | DVA16PQ441         | XLT44PT              |                            |                    |                      | AC164014                               | AC164311                           |                       |                     |                        |                                               |
| PIC16C74B                                                      | 44PT                    | PCM16XE1                   | DVA16PQ441         | XLT44PT              |                            |                    |                      | AC164020                               | AC164305                           |                       |                     |                        |                                               |

**MPLAB® ICE 2000 and MPLAB® ICE 4000 Emulator Systems, PRO MATE® II Programmer Socket Modules, MPLAB® In-Circuit Debugger, Software Tools, Programmers and Demonstration Boards**

|                                                                |                         | MPLAB® ICE 2000 System (1) |                    |                      | MPLAB® ICE 4000 System (2) |                    |                      |                                        |                                    |                       |                     |                        |                                               |
|----------------------------------------------------------------|-------------------------|----------------------------|--------------------|----------------------|----------------------------|--------------------|----------------------|----------------------------------------|------------------------------------|-----------------------|---------------------|------------------------|-----------------------------------------------|
| Part Number                                                    | Lead Count/<br>Pkg Type | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket | PRO MATE® II<br>Socket<br>Module (3,4) | MPLAB® PM3<br>Socket<br>Module (8) | PICSTART®<br>Plus (5) | MPLAB® ICD 2<br>(6) | MPLAB® CXX<br>Compiler | Demonstration<br>Boards or<br>Evaluation Kits |
| <b>PICmicro® Microcontroller Development Tools (continued)</b> |                         |                            |                    |                      |                            |                    |                      |                                        |                                    |                       |                     |                        |                                               |
| PIC16C76                                                       | 28SP, 28JW              | PCM16XE1                   | DVA16XP282         |                      |                            |                    |                      | AC164012                               | AC164301                           | ✓                     |                     |                        | DM163022                                      |
| PIC16C76                                                       | 28SO                    | PCM16XE1                   | DVA16XP282         | XLT28SO              |                            |                    |                      | AC164017                               | AC164302                           |                       |                     |                        |                                               |
| PIC16C77                                                       | 40P, 40JW               | PCM16XE1                   | DVA16XP401         |                      |                            |                    |                      | AC164012                               | AC164301                           | ✓                     |                     |                        | DM163022                                      |
| PIC16C77                                                       | 44L                     | PCM16XE1                   | DVA16XL441         |                      |                            |                    |                      | AC164013                               | AC164309                           |                       |                     |                        |                                               |
| PIC16C77                                                       | 44PQ                    | PCM16XE1                   | DVA16PQ441         | XLT44PT              |                            |                    |                      | AC164014                               | AC164311                           |                       |                     |                        |                                               |
| PIC16C77                                                       | 44PT                    | PCM16XE1                   | DVA16PQ441         | XLT44PT              |                            |                    |                      | AC164020                               | AC164305                           |                       |                     |                        |                                               |
| PIC16C432                                                      | 20P, 20JW               | PCM16YB0                   | DVA16XP201         |                      |                            |                    |                      | AC164029                               | AC164301                           |                       |                     |                        | DM163005                                      |
| PIC16C432                                                      | 20SS                    | PCM16YB0                   | DVA16XP201         | XLT20SS1             |                            |                    |                      | AC164029                               | AC164307                           |                       |                     |                        | DM163007, DM163011                            |
| PIC16C433                                                      | 18P, 18JW               | PCM16YC0                   | DVA16XP185         |                      |                            |                    |                      | AC164030                               | AC164301                           |                       |                     |                        | DM163005                                      |
| PIC16C433                                                      | 18SS                    | PCM16YC0                   | DVA16XP185         | XLT18SO              |                            |                    |                      | AC164030                               | AC164307                           |                       |                     |                        |                                               |
| PIC16C505                                                      | 14P, 14JW               | PCM16XA0                   | DVA16XP140         |                      |                            |                    |                      | AC124001                               | AC164301                           | ✓                     |                     |                        |                                               |
| PIC16C505                                                      | 14SL                    | PCM16XA0                   | DVA16XP140         | XLT14SO              |                            |                    |                      | AC164026                               | AC164302                           |                       |                     |                        |                                               |
| PIC16C554                                                      | 18P, 18JW               | PCM16XC0                   | DVA16XP180         |                      |                            |                    |                      | AC164010                               | AC164301                           | ✓                     |                     |                        | DM163001                                      |
| PIC16C554                                                      | 18SO                    | PCM16XC0                   | DVA16XP180         | XLT18SO              |                            |                    |                      | AC164010                               | AC164302                           |                       |                     |                        |                                               |
| PIC16C554                                                      | 18SS                    | PCM16XC0                   | DVA16XP180         | XLT20SS              |                            |                    |                      | AC164018                               | AV164307                           |                       |                     |                        |                                               |
| PIC16C557                                                      | 28P                     |                            |                    |                      |                            |                    |                      | AC164001                               | AC164301                           |                       |                     |                        |                                               |
| PIC16C557                                                      | 28SO                    |                            |                    |                      |                            |                    |                      | AC164002                               | AC164302                           |                       |                     |                        |                                               |
| PIC16C558                                                      | 18P, 18JW               | PCM16XC0                   | DVA16XP180         |                      |                            |                    |                      | AC164010                               | AC164301                           | ✓                     |                     |                        | DM163001                                      |
| PIC16C558                                                      | 18SO                    | PCM16XC0                   | DVA16XP180         | XLT18SO              |                            |                    |                      | AC164010                               | AC164302                           |                       |                     |                        |                                               |
| PIC16C558                                                      | 18SS                    | PCM16XC0                   | DVA16XP180         | XLT20SS              |                            |                    |                      | AC164018                               | AC164307                           |                       |                     |                        |                                               |
| PIC16C620/<br>620A                                             | 18P, 18JW               | PCM16XC0                   | DVA16XP180         |                      |                            |                    |                      | AC164010                               | AC164301                           | ✓                     |                     |                        | DM163001                                      |
| PIC16C620/<br>620A                                             | 18SO                    | PCM16XC0                   | DVA16XP180         | XLT18SO              |                            |                    |                      | AC164010                               | AC164302                           |                       |                     |                        |                                               |
| PIC16C620/<br>620A                                             | 20SS                    | PCM16XC0                   | DVA16XP180         | XLT20SS              |                            |                    |                      | AC164018                               | AC164307                           |                       |                     |                        |                                               |
| PIC16C621/<br>621A                                             | 18P, 18JW               | PCM16XC0                   | DVA16XP180         |                      |                            |                    |                      | AC164010                               | AC164301                           | ✓                     |                     |                        | DM163001                                      |
| PIC16C621/<br>621A                                             | 18SO                    | PCM16XC0                   | DVA16XP180         | XLT18SO              |                            |                    |                      | AC164010                               | AC164302                           |                       |                     |                        |                                               |
| PIC16C621/<br>621A                                             | 20SS                    | PCM16XC0                   | DVA16XP180         | XLT20SS              |                            |                    |                      | AC164018                               | AC164307                           |                       |                     |                        |                                               |



**MPLAB® ICE 2000 and MPLAB® ICE 4000 Emulator Systems, PRO MATE® II Programmer Socket Modules, MPLAB® In-Circuit Debugger, Software Tools, Programmers and Demonstration Boards**

|                                                                |                         | MPLAB® ICE 2000 System (1) |                    |                      | MPLAB® ICE 4000 System (2) |                    |                      |                                        |                                    |                       |                     |                        |                                               |
|----------------------------------------------------------------|-------------------------|----------------------------|--------------------|----------------------|----------------------------|--------------------|----------------------|----------------------------------------|------------------------------------|-----------------------|---------------------|------------------------|-----------------------------------------------|
| Part Number                                                    | Lead Count/<br>Pkg Type | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket | PRO MATE® II<br>Socket<br>Module (3,4) | MPLAB® PM3<br>Socket<br>Module (8) | PICSTART®<br>Plus (5) | MPLAB® ICD 2<br>(6) | MPLAB® CXX<br>Compiler | Demonstration<br>Boards or<br>Evaluation Kits |
| <b>PICmicro® Microcontroller Development Tools (continued)</b> |                         |                            |                    |                      |                            |                    |                      |                                        |                                    |                       |                     |                        |                                               |
| PIC16C622/<br>622A                                             | 18P, 18JW               | PCM16XC0                   | DVA16XP180         |                      |                            |                    |                      | AC164010                               | AC164301                           | ✓                     |                     |                        | DM163001                                      |
| PIC16C622/<br>622A                                             | 18SO                    | PCM16XC0                   | DVA16XP180         | XLT18SO              |                            |                    |                      | AC164010                               | AC164302                           |                       |                     |                        |                                               |
| PIC16C622/<br>622A                                             | 20SS                    | PCM16XC0                   | DVA16XP180         | XLT20SS              |                            |                    |                      | AC164018                               | AC164307                           |                       |                     |                        |                                               |
| PIC16C642                                                      | 28SP, 28JW              | PCM16XD0                   | DVA16XP282         |                      |                            |                    |                      | AC164012                               | AC164301*                          | ✓                     |                     |                        | DM163022                                      |
| PIC16C642                                                      | 28SO                    | PCM16XD0                   | DVA16XP282         | XLT28SO              |                            |                    |                      | AC164017                               | AC164302*                          |                       |                     |                        |                                               |
| PIC16C662                                                      | 40P, 40JW               | PCM16XD0                   | DVA16XP401         |                      |                            |                    |                      | AC164012                               | AC164301*                          | ✓                     |                     |                        | DM163022                                      |
| PIC16C662                                                      | 44L                     | PCM16XD0                   | DVA16XL441         |                      |                            |                    |                      | AC164013                               | AC164309*                          |                       |                     |                        |                                               |
| PIC16C662                                                      | 44PQ                    | PCM16XD0                   | DVA16PQ441         | XLT44PT              |                            |                    |                      | AC164014                               | AC164311*                          |                       |                     |                        |                                               |
| PIC16C662                                                      | 44PT                    | PCM16XD0                   | DVA16PQ441         | XLT44PT              |                            |                    |                      | AC164020                               | AC164305*                          |                       |                     |                        |                                               |
| PIC16C710                                                      | 18P, 18JW               | PCM16XF0                   | DVA16XP180         |                      |                            |                    |                      | AC164010                               | AC164301                           | ✓                     |                     |                        | DM163001                                      |
| PIC16C710                                                      | 18SO                    | PCM16XF0                   | DVA16XP180         | XLT18SO              |                            |                    |                      | AC164010                               | AC164302                           |                       |                     |                        |                                               |
| PIC16C710                                                      | 20SS                    | PCM16XF0                   | DVA16XP180         | XLT20SS              |                            |                    |                      | AC164018                               | AC164307                           |                       |                     |                        |                                               |
| PIC16C711                                                      | 18P, 18JW               | PCM16XF0                   | DVA16XP180         |                      |                            |                    |                      | AC164010                               | AC164301                           | ✓                     |                     |                        | DM163001                                      |
| PIC16C711                                                      | 18SO                    | PCM16XF0                   | DVA16XP180         | XLT18SO              |                            |                    |                      | AC164010                               | AC164302                           |                       |                     |                        |                                               |
| PIC16C711                                                      | 20SS                    | PCM16XF0                   | DVA16XP180         | XLT20SS              |                            |                    |                      | AC164018                               | AC164307                           |                       |                     |                        |                                               |
| PIC16C712                                                      | 18P, 18JW               | PCM16XE1                   | DVA16XP182         |                      |                            |                    |                      | AC164010                               | AC164301                           | ✓                     |                     |                        | DM163001                                      |
| PIC16C712                                                      | 18SO                    | PCM16XE1                   | DVA16XP182         | XLT18SO              |                            |                    |                      | AC164010                               | AC164302                           |                       |                     |                        |                                               |
| PIC16C712                                                      | 20SS                    | PCM16XE1                   | DVA16XP182         | XLT20SS              |                            |                    |                      | AC164018                               | AC164307                           |                       |                     |                        |                                               |
| PIC16C715                                                      | 18P, 18JW               | PCM16XG0                   | DVA16XP180         |                      |                            |                    |                      | AC164010                               | AC164301*                          | ✓                     |                     |                        | DM163001                                      |
| PIC16C715                                                      | 18SO                    | PCM16XG0                   | DVA16XP180         | XLT18SO              |                            |                    |                      | AC164010                               | AC164302*                          |                       |                     |                        |                                               |
| PIC16C715                                                      | 20SS                    | PCM16XG0                   | DVA16XP180         | XLT20SS              |                            |                    |                      | AC164018                               | AC164307*                          |                       |                     |                        |                                               |
| PIC16C716                                                      | 18P, 18JW               | PCM16XE1                   | DVA16XP182         |                      |                            |                    |                      | AC164010                               | AC164301                           | ✓                     |                     |                        | DM163001                                      |
| PIC16C716                                                      | 18SO                    | PCM16XE1                   | DVA16XP182         | XLT18SO              |                            |                    |                      | AC164010                               | AC164302                           |                       |                     |                        |                                               |
| PIC16C716                                                      | 20SS                    | PCM16XE1                   | DVA16XP182         | XLT20SS              |                            |                    |                      | AC164018                               | AC164307                           |                       |                     |                        |                                               |
| PIC16C717                                                      | 18P, 18JW               | PCM16XN1                   | DVA18XP180         |                      |                            |                    |                      | AC164010                               | AC164301                           | ✓                     |                     |                        | DM163001                                      |
| PIC16C717                                                      | 18SO                    | PCM16XN1                   | DVA18XP180         | XLT18SO              |                            |                    |                      | AC164010                               | AC164302                           |                       |                     |                        |                                               |
| PIC16C717                                                      | 20SS                    | PCM16XN1                   | DVA18XP180         | XLT20SS              |                            |                    |                      | AC164018                               | AC164307                           |                       |                     |                        |                                               |
| PIC16C745                                                      | 28SP, 28JW              | PCM16XQ1                   | DVA16XP282         |                      |                            |                    |                      | AC164012                               | AC164301                           | ✓                     |                     |                        | DM163010                                      |
| PIC16C745                                                      | 28SO                    | PCM16XQ1                   | DVA16XP282         | XLT28SO              |                            |                    |                      | AC164017                               | AC164302                           |                       |                     |                        |                                               |

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|                                                                |                         | MPLAB® ICE 2000 System (1) |                    |                      | MPLAB® ICE 4000 System (2) |                    |                      |                                        |                                    |                       |                     |                        |                                               |
|----------------------------------------------------------------|-------------------------|----------------------------|--------------------|----------------------|----------------------------|--------------------|----------------------|----------------------------------------|------------------------------------|-----------------------|---------------------|------------------------|-----------------------------------------------|
| Part Number                                                    | Lead Count/<br>Pkg Type | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket | PRO MATE® II<br>Socket<br>Module (3,4) | MPLAB® PM3<br>Socket<br>Module (8) | PICSTART®<br>Plus (5) | MPLAB® ICD 2<br>(6) | MPLAB® CXX<br>Compiler | Demonstration<br>Boards or<br>Evaluation Kits |
| <b>PICmicro® Microcontroller Development Tools (continued)</b> |                         |                            |                    |                      |                            |                    |                      |                                        |                                    |                       |                     |                        |                                               |
| PIC16C765                                                      | 40P                     | PCM16XQ1                   | DVA16XP401         |                      |                            |                    |                      | AC164012                               | AC164301                           | ✓                     |                     |                        | DM163010                                      |
| PIC16C765                                                      | 44L                     | PCM16XQ1                   | DVA16XL441         |                      |                            |                    |                      | AC164013                               | AC164309                           |                       |                     |                        |                                               |
| PIC16C765                                                      | 44PT                    | PCM16XQ1                   | DVA16PQ441         | XLT44PT              |                            |                    |                      | AC164020                               | AC164305                           |                       |                     |                        |                                               |
| PIC16C770                                                      | 20P                     | PCM16XN1                   | DVA16XP200         |                      |                            |                    |                      | AC164028                               | AC164301                           | ✓                     |                     |                        | DM163001                                      |
| PIC16C770                                                      | 20SO                    | PCM16XN1                   | DVA16XP200         | XLT20SO1             |                            |                    |                      | AC164028                               | AC164302                           |                       |                     |                        |                                               |
| PIC16C770                                                      | 20SS                    | PCM16XN1                   | DVA16XP200         | XLT20SS1             |                            |                    |                      | AC164018                               | AC164307                           |                       |                     |                        |                                               |
| PIC16C771                                                      | 20P                     | PCM16XN1                   | DVA16XP200         |                      |                            |                    |                      | AC164028                               | AC164301                           | ✓                     |                     |                        | DM163001                                      |
| PIC16C771                                                      | 20SO                    | PCM16XN1                   | DVA16XP200         | XLT20SO1             |                            |                    |                      | AC164028                               | AC164302                           |                       |                     |                        |                                               |
| PIC16C771                                                      | 20SS                    | PCM16XN1                   | DVA16XP200         | XLT20SS1             |                            |                    |                      | AC164018                               | AC164307                           |                       |                     |                        |                                               |
| PIC16C773                                                      | 28SP, 28JW              | PCM16XL0                   | DVA16XP282         |                      |                            |                    |                      | AC164012                               | AC164301                           | ✓                     |                     |                        | DM163022                                      |
| PIC16C773                                                      | 28SO                    | PCM16XL0                   | DVA16XP282         | XLT28SO              |                            |                    |                      | AC164017                               | AC164302                           |                       |                     |                        |                                               |
| PIC16C773                                                      | 28SS                    | PCM16XL0                   | DVA16XP282         | XLT28SS              |                            |                    |                      | AC164021                               | AC164307                           |                       |                     |                        |                                               |
| PIC16C774                                                      | 40P, 40JW               | PCM16XL0                   | DVA16XP401         |                      |                            |                    |                      | AC164012                               | AC164301                           | ✓                     |                     |                        | DM163022                                      |
| PIC16C774                                                      | 44L                     | PCM16XL0                   | DVA16XL441         |                      |                            |                    |                      | AC164013                               | AC164309                           |                       |                     |                        |                                               |
| PIC16C774                                                      | 44PQ                    | PCM16XL0                   | DVA16PQ441         | XLT44PT              |                            |                    |                      | AC164014                               | AC164311                           |                       |                     |                        |                                               |
| PIC16C774                                                      | 44PT                    | PCM16XL0                   | DVA16PQ441         | XLT44PT              |                            |                    |                      | AC164020                               | AC164305                           |                       |                     |                        |                                               |
| PIC16C781                                                      | 20P, 20JW               | PCM16XW0                   | DVA16XP202         |                      |                            |                    |                      | AC164028                               | AC164301                           | ✓                     |                     |                        | DM163012                                      |
| PIC16C781                                                      | 20SO                    | PCM16XW0                   | DVA16XP202         | XLT20SO1             |                            |                    |                      | AC164028                               | AC164302                           |                       |                     |                        |                                               |
| PIC16C781                                                      | 20SS                    | PCM16XW0                   | DVA16XP202         | XLT20SS1             |                            |                    |                      | AC164018                               | AC164307                           |                       |                     |                        |                                               |
| PIC16C782                                                      | 20P, 20JW               | PCM16XW0                   | DVA16XP202         |                      |                            |                    |                      | AC164028                               | AC164301                           | ✓                     |                     |                        | DM163012                                      |
| PIC16C782                                                      | 20SO                    | PCM16XW0                   | DVA16XP202         | XLT20SO1             |                            |                    |                      | AC164028                               | AC164302                           |                       |                     |                        |                                               |
| PIC16C782                                                      | 20SS                    | PCM16XW0                   | DVA16XP202         | XLT20SS1             |                            |                    |                      | AC164018                               | AC164307                           |                       |                     |                        |                                               |
| PIC16C923                                                      | 64SP                    | PCM16XJ0                   | DVA16XP640         |                      |                            |                    |                      | AC164025                               |                                    | ✓                     |                     |                        |                                               |
| PIC16C923                                                      | 64PT                    | PCM16XJ0                   | DVA16PQ640         | XLT64PT1             |                            |                    |                      | AC164023                               | AC164319                           |                       |                     |                        |                                               |
| PIC16C923                                                      | 68L, 68CL               | PCM16XJ0                   | DVA16XL680         |                      |                            |                    |                      | AC164022                               | AC164308                           | AC164024              |                     |                        | DM163003                                      |
| PIC16C924                                                      | 64SP                    | PCM16XJ0                   | DVA16XP640         |                      |                            |                    |                      | AC164025                               |                                    | ✓                     |                     |                        |                                               |
| PIC16C924                                                      | 64PT                    | PCM16XJ0                   | DVA16PQ640         | XLT64PT1             |                            |                    |                      | AC164023                               | AC164319                           |                       |                     |                        |                                               |
| PIC16C924                                                      | 68L, 68CL               | PCM16XJ0                   | DVA16XL680         |                      |                            |                    |                      | AC164022                               | AC164308                           | AC164024              |                     |                        | DM163003                                      |
| PIC16C925                                                      | 64PT                    | PCM16XT0                   | DVA16PQ640         | XLT64PT1             |                            |                    |                      | AC164023                               | AC164319                           |                       |                     |                        |                                               |
| PIC16C925                                                      | 68L                     | PCM16XT0                   | DVA16XL680         |                      |                            |                    |                      | AC164022                               | AC164308                           | AC164024              |                     |                        | DM163003                                      |
| PIC16C926                                                      | 64PT                    | PCM16XT0                   | DVA16PQ640         | XLT64PT1             |                            |                    |                      | AC164023                               | AC164319                           |                       |                     |                        |                                               |
| PIC16C926                                                      | 68L                     | PCM16XT0                   | DVA16XL680         |                      |                            |                    |                      | AC164022                               | AC164308                           | AC164024              |                     |                        | DM163003                                      |

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|                                                                |                         | MPLAB® ICE 2000 System (1) |                    |                      | MPLAB® ICE 4000 System (2) |                    |                      |                                        |                                    |                       |                     |                        |                                               |
|----------------------------------------------------------------|-------------------------|----------------------------|--------------------|----------------------|----------------------------|--------------------|----------------------|----------------------------------------|------------------------------------|-----------------------|---------------------|------------------------|-----------------------------------------------|
| Part Number                                                    | Lead Count/<br>Pkg Type | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket | PRO MATE® II<br>Socket<br>Module (3,4) | MPLAB® PM3<br>Socket<br>Module (8) | PICSTART®<br>Plus (5) | MPLAB® ICD 2<br>(6) | MPLAB® CXX<br>Compiler | Demonstration<br>Boards or<br>Evaluation Kits |
| <b>PICmicro® Microcontroller Development Tools (continued)</b> |                         |                            |                    |                      |                            |                    |                      |                                        |                                    |                       |                     |                        |                                               |
| PIC16CE623                                                     | 18P, 18JW               | PCM16XC0                   | DVA16XP180         |                      |                            |                    |                      | AC164010                               | AC164301                           | ✓                     |                     |                        | DM163001                                      |
| PIC16CE623                                                     | 18SO                    | PCM16XC0                   | DVA16XP180         | XLT18SO              |                            |                    |                      | AC164010                               | AC164302                           |                       |                     |                        |                                               |
| PIC16CE623                                                     | 20SS                    | PCM16XC0                   | DVA16XP180         | XLT20SS              |                            |                    |                      | AC164018                               | AC164307                           |                       |                     |                        |                                               |
| PIC16CE624                                                     | 18P, 18JW               | PCM16XC0                   | DVA16XP180         |                      |                            |                    |                      | AC164010                               | AC164301                           | ✓                     |                     |                        | DM163001                                      |
| PIC16CE624                                                     | 18SO                    | PCM16XC0                   | DVA16XP180         | XLT18SO              |                            |                    |                      | AC164010                               | AC164302                           |                       |                     |                        |                                               |
| PIC16CE624                                                     | 20SS                    | PCM16XC0                   | DVA16XP180         | XLT20SS              |                            |                    |                      | AC164018                               | AC164307                           |                       |                     |                        |                                               |
| PIC16CE625                                                     | 18P, 18JW               | PCM16XC0                   | DVA16XP180         |                      |                            |                    |                      | AC164010                               | AC164301                           | ✓                     |                     |                        | DM163001                                      |
| PIC16CE625                                                     | 18SO                    | PCM16XC0                   | DVA16XP180         | XLT18SO              |                            |                    |                      | AC164010                               | AC164302                           |                       |                     |                        |                                               |
| PIC16CE625                                                     | 20SS                    | PCM16XC0                   | DVA16XP180         | XLT20SS              |                            |                    |                      | AC164018                               | AC164307                           |                       |                     |                        |                                               |
| PIC16F54                                                       | 18P                     | PCM16XA0                   | DVA16XP180         |                      |                            |                    |                      | AC164001                               | AC164301                           | ✓                     | ✓                   |                        | DM163001                                      |
| PIC16F54                                                       | 18SO                    | PCM16XA0                   | DVA16XP180         | XLT18SO              |                            |                    |                      | AC164002                               | AC164302                           |                       | ✓                   |                        |                                               |
| PIC16F54                                                       | 20SS                    | PCM16XA0                   | DVA16XP180         | XLT20SS              |                            |                    |                      | AC164015                               | AC164307                           |                       | ✓                   |                        |                                               |
| PIC16F57                                                       | 28SP                    | PCM16XA0                   | DVA16XP280         |                      |                            |                    |                      | AC164001                               | AC164301                           | ✓                     | ✓                   |                        | DM163001                                      |
| PIC16F57                                                       | 28SO                    | PCM16XA0                   | DVA16XP280         | XLT28SO              |                            |                    |                      | AC164002                               | AC164302                           |                       | ✓                   |                        |                                               |
| PIC16F57                                                       | 28SS                    | PCM16XA0                   | DVA16XP280         | XLT28SS2             |                            |                    |                      | AC164015                               | AC164307                           |                       | ✓                   |                        |                                               |
| PIC16F72                                                       | 28SP, 28JW              | PCM16XS2                   | DVA16XP282         |                      |                            |                    |                      | AC164012                               | AC164301                           | ✓                     |                     |                        | DM163022                                      |
| PIC16F72                                                       | 28SO                    | PCM16XS2                   | DVA16XP282         | XLT28SO              |                            |                    |                      | AC164017                               | AC164302                           |                       |                     |                        |                                               |
| PIC16F72                                                       | 28SS                    | PCM16XS2                   | DVA16XP282         | XLT28SS              |                            |                    |                      | AC164021                               | AC164307                           |                       |                     |                        |                                               |
| PIC16F73                                                       | 28SP, 28JW              | PCM16XS2                   | DVA16XP282         |                      |                            |                    |                      | AC164012                               | AC164301                           | ✓                     | ✓*                  |                        | DM163022                                      |
| PIC16F73                                                       | 28ML                    | PCM16XS2                   | DVA16XP282         | XLT28QFN             |                            |                    |                      | AC164012<br>+AC164031                  | AC164301<br>+AC164031              | AC164031              | ✓*                  |                        |                                               |
| PIC16F73                                                       | 28SO                    | PCM16XS2                   | DVA16XP282         | XLT28SO              |                            |                    |                      | AC164017                               | AC164302                           |                       | ✓*                  |                        |                                               |
| PIC16F73                                                       | 28SS                    | PCM16XS2                   | DVA16XP282         | XLT28SS              |                            |                    |                      | AC164021                               | AC164307                           |                       | ✓*                  |                        |                                               |
| PIC16F74                                                       | 40P                     | PCM16XS2                   | DVA16XP401         |                      |                            |                    |                      | AC164012                               | AC164301                           | ✓                     | ✓*                  |                        | DM163022                                      |
| PIC16F74                                                       | 44L                     | PCM16XS2                   | DVA16XL441         |                      |                            |                    |                      | AC164013                               | AC164309                           |                       | ✓*                  |                        |                                               |
| PIC16F74                                                       | 44PT                    | PCM16XS2                   | DVA16PQ441         | XLT44PT              |                            |                    |                      | AC164020                               | AC164305                           |                       | ✓*                  |                        |                                               |
| PIC16F76                                                       | 28SP, 28JW              | PCM16XS2                   | DVA16XP282         |                      |                            |                    |                      | AC164012                               | AC164301                           | ✓                     | ✓*                  |                        | DM163022                                      |
| PIC16F76                                                       | 28ML                    | PCM16XS2                   | DVA16XP282         | XLT28QFN             |                            |                    |                      | AC164012<br>+AC164031                  | AC164301<br>+AC164031              | AC164031              | ✓*                  |                        |                                               |
| PIC16F76                                                       | 28SO                    | PCM16XS2                   | DVA16XP282         | XLT28SO              |                            |                    |                      | AC164017                               | AC164302                           |                       | ✓*                  |                        |                                               |

**MPLAB® ICE 2000 and MPLAB® ICE 4000 Emulator Systems, PRO MATE® II Programmer Socket Modules, MPLAB® In-Circuit Debugger, Software Tools, Programmers and Demonstration Boards**

|                                                                |                         | MPLAB® ICE 2000 System (1) |                    |                      | MPLAB® ICE 4000 System (2) |                    |                      |                                        |                                    |                       |                     |                        |                                               |
|----------------------------------------------------------------|-------------------------|----------------------------|--------------------|----------------------|----------------------------|--------------------|----------------------|----------------------------------------|------------------------------------|-----------------------|---------------------|------------------------|-----------------------------------------------|
| Part Number                                                    | Lead Count/<br>Pkg Type | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket | PRO MATE® II<br>Socket<br>Module (3,4) | MPLAB® PM3<br>Socket<br>Module (8) | PICSTART®<br>Plus (5) | MPLAB® ICD 2<br>(6) | MPLAB® CXX<br>Compiler | Demonstration<br>Boards or<br>Evaluation Kits |
| <b>PICmicro® Microcontroller Development Tools (continued)</b> |                         |                            |                    |                      |                            |                    |                      |                                        |                                    |                       |                     |                        |                                               |
| PIC16F77                                                       | 40P, 40JW               | PCM16XS2                   | DVA16XP401         |                      |                            |                    |                      | AC164012                               | AC164301                           | ✓                     | ✓*                  |                        | DM163022                                      |
| PIC16F77                                                       | 44L                     | PCM16XS2                   | DVA16XL441         |                      |                            |                    |                      | AC164013                               | AC164309                           |                       | ✓*                  |                        |                                               |
| PIC16F77                                                       | 44PQ                    | PCM16XS2                   | DVA16PQ441         | XLT44PT              |                            |                    |                      | AC164014                               | AC164311                           |                       | ✓*                  |                        |                                               |
| PIC16F77                                                       | 44PT                    | PCM16XS2                   | DVA16PQ441         | XLT44PT              |                            |                    |                      | AC164020                               | AC164305                           |                       | ✓*                  |                        |                                               |
| PIC16F83                                                       | 18P                     | PCM16XH1                   | DVA16XP180         |                      |                            |                    |                      | AC164010                               | AC164301                           | ✓                     |                     |                        | DM163001                                      |
| PIC16F83                                                       | 18SO                    | PCM16XH1                   | DVA16XP180         | XLT18SO              |                            |                    |                      | AC164010                               | AC164302                           |                       |                     |                        |                                               |
| PIC16F84                                                       | 18P                     | PCM16XH1                   | DVA16XP180         |                      |                            |                    |                      | AC164010                               | AC164301                           | ✓                     |                     |                        | DM163001                                      |
| PIC16F84                                                       | 18SO                    | PCM16XH1                   | DVA16XP180         | XLT18SO              |                            |                    |                      | AC164010                               | AC164302                           |                       |                     |                        |                                               |
| PIC16F84A                                                      | 18P                     | PCM16XH1                   | DVA16XP180         |                      |                            |                    |                      | AC164010                               | AC164301                           | ✓                     |                     |                        | DM163001                                      |
| PIC16F84A                                                      | 18SO                    | PCM16XH1                   | DVA16XP180         | XLT18SO              |                            |                    |                      | AC164010                               | AC164302                           |                       |                     |                        |                                               |
| PIC16F84A                                                      | 20SS                    | PCM16XH1                   | DVA16XP180         | XLT20SS              |                            |                    |                      | AC164018                               | AC164307                           |                       |                     |                        |                                               |
| PIC16F87                                                       | 18P                     | PCM16YG0                   | DVA16XP186         |                      |                            |                    |                      | AC164010                               | AC164301                           | ✓                     | ✓                   |                        | DM163014                                      |
| PIC16F87                                                       | 18SO                    | PCM16YG0                   | DVA16XP186         | XLT18SO              |                            |                    |                      | AC164010                               | AC164302                           |                       | ✓                   |                        |                                               |
| PIC16F87                                                       | 20SS                    | PCM16YG0                   | DVA16XP186         | XLT20SS              |                            |                    |                      | AC164018                               | AC164307                           |                       | ✓                   |                        |                                               |
| PIC16F87                                                       | 28ML                    | PCM16YG0                   | DVA16XP186         | XLT28QFN2            |                            |                    |                      | AC164010<br>+AC164033                  | AC164301<br>+AC164031              | AC164033              | ✓                   |                        |                                               |
| PIC16F88                                                       | 18P                     | PCM16YG0                   | DVA16XP186         |                      |                            |                    |                      | AC164010                               | AC164301                           | ✓                     | ✓                   |                        | DM163014                                      |
| PIC16F88                                                       | 18SO                    | PCM16YG0                   | DVA16XP186         | XLT18SO              |                            |                    |                      | AC164010                               | AC164302                           |                       | ✓                   |                        |                                               |
| PIC16F88                                                       | 20SS                    | PCM16YG0                   | DVA16XP186         | XLT20SS              |                            |                    |                      | AC164018                               | AC164307                           |                       | ✓                   |                        |                                               |
| PIC16F88                                                       | 28ML                    | PCM16YG0                   | DVA16XP186         | XLT28QFN2            |                            |                    |                      | AC164010<br>+AC164033                  | AC164301<br>+AC164031              | AC164033              | ✓                   |                        |                                               |
| PIC16F505                                                      | 14P                     | PCM16XA0                   | DVA16XP140         |                      |                            |                    |                      | AC124001                               | AC164301                           | ✓                     | AC162059            |                        | DM163014,<br>DV164101                         |
| PIC16F505                                                      | 14SO                    | PCM16XA0                   | DVA16XP140         | XLT14SO              |                            |                    |                      | AC164026                               | AC164302                           |                       | AC162059            |                        |                                               |
| PIC16F505                                                      | 14ST                    | PCM16XA0                   | DVA16XP140         |                      |                            |                    |                      |                                        | AC164306                           |                       | AC162059            |                        |                                               |
| PIC16F627                                                      | 18P, 18JW               | PCM16XP0                   | DVA16XP183         |                      |                            |                    |                      | AC164010                               | AC164301                           | ✓                     |                     |                        | DM163001                                      |
| PIC16F627                                                      | 18SO                    | PCM16XP0                   | DVA16XP183         | XLT18SO              |                            |                    |                      | AC164010                               | AC164302                           |                       |                     |                        |                                               |
| PIC16F627                                                      | 20SS                    | PCM16XP0                   | DVA16XP183         | XLT20SS              |                            |                    |                      | AC164018                               | AC164307                           |                       |                     |                        |                                               |

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|                                                                |                         | MPLAB® ICE 2000 System (1) |                    |                       | MPLAB® ICE 4000 System (2) |                    |                      |                                        |                                    |                       |                     |                        |                                               |
|----------------------------------------------------------------|-------------------------|----------------------------|--------------------|-----------------------|----------------------------|--------------------|----------------------|----------------------------------------|------------------------------------|-----------------------|---------------------|------------------------|-----------------------------------------------|
| Part Number                                                    | Lead Count/<br>Pkg Type | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket  | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket | PRO MATE® II<br>Socket<br>Module (3,4) | MPLAB® PM3<br>Socket<br>Module (8) | PICSTART®<br>Plus (5) | MPLAB® ICD 2<br>(6) | MPLAB® CXX<br>Compiler | Demonstration<br>Boards or<br>Evaluation Kits |
| <b>PICmicro® Microcontroller Development Tools (continued)</b> |                         |                            |                    |                       |                            |                    |                      |                                        |                                    |                       |                     |                        |                                               |
| PIC16F627A                                                     | 18P                     | PCM16YF0                   | DVA16XP186         |                       |                            |                    |                      | AC164010                               | AC164301                           | ✓                     | AC162053            |                        | DM163014                                      |
| PIC16F627A                                                     | 18SO                    | PCM16YF0                   | DVA16XP186         | XLT18SO               |                            |                    |                      | AC164010                               | AC164302                           |                       | AC162053            |                        |                                               |
| PIC16F627A                                                     | 20SS                    | PCM16YF0                   | DVA16XP186         | XLT20SS               |                            |                    |                      | AC164018                               | AC164307                           |                       | AC162053            |                        |                                               |
| PIC16F627A                                                     | 28ML                    | PCM16YF0                   | DVA16XP186         | XLT28QFN2             |                            |                    |                      | AC164010<br>+AC164033                  | AC164301<br>+AC164031              | AC164033              | AC162053            |                        |                                               |
| PIC16F628                                                      | 18P, 18JW               | PCM16XP0                   | DVA16XP183         |                       |                            |                    |                      | AC164010                               | AC164301                           | ✓                     |                     |                        | DM163001                                      |
| PIC16F628                                                      | 18SO                    | PCM16XP0                   | DVA16XP183         | XLT18SO               |                            |                    |                      | AC164010                               | AC164302                           |                       |                     |                        |                                               |
| PIC16F628                                                      | 20SS                    | PCM16XP0                   | DVA16XP183         | XLT20SS               |                            |                    |                      | AC164018                               | AC164307                           |                       |                     |                        |                                               |
| PIC16F628A                                                     | 18P                     | PCM16YF0                   | DVA16XP186         |                       |                            |                    |                      | AC164010                               | AC164301                           | ✓                     | AC162053            |                        | DM163014                                      |
| PIC16F628A                                                     | 18SO                    | PCM16YF0                   | DVA16XP186         | XLT18SO               |                            |                    |                      | AC164010                               | AC164302                           |                       | AC162053            |                        |                                               |
| PIC16F628A                                                     | 20SS                    | PCM16YF0                   | DVA16XP186         | XLT20SS               |                            |                    |                      | AC164018                               | AC164307                           |                       | AC162053            |                        |                                               |
| PIC16F628A                                                     | 28ML                    | PCM16YF0                   | DVA16XP186         | XLT28QFN2             |                            |                    |                      | AC164010<br>+AC164033                  | AC164301<br>+AC164031              | AC164033              | AC162053            |                        |                                               |
| PIC16F630                                                      | 14P                     | PCM16YD0                   | DVA16XP141         |                       |                            |                    |                      | AC124001                               | AC164301                           | ✓                     | AC162052            |                        | DM163014, DV164101                            |
| PIC16F630                                                      | 14SO                    | PCM16YD0                   | DVA16XP141         | XLT14SO               |                            |                    |                      | AC164026                               | AC164302                           |                       | AC162052            |                        |                                               |
| PIC16F630                                                      | 14ST                    | PCM16YD0                   | DVA16XP141         | XLT14SS               |                            |                    |                      | AC164026                               | AC164306                           |                       | AC162052            |                        |                                               |
| PIC16F636                                                      | 14P                     | PCM16YM0                   | DVA1002            | ACICE0207             |                            |                    |                      | AC124001                               | AC164301                           | ✓                     | AC162057            |                        |                                               |
| PIC16F636                                                      | 14SO                    | PCM16YM0                   | DVA1002            | XLT14SO<br>+ACICE0207 |                            |                    |                      | AC164026                               | AC164302                           |                       | AC162057            |                        |                                               |
| PIC16F636                                                      | 14ST                    | PCM16YM0                   | DVA1002            | XLT14SS<br>+ACICE0207 |                            |                    |                      | AC164026                               | AC164306                           |                       | AC162057            |                        |                                               |
| PIC16F648A                                                     | 18P                     | PCM16YF0                   | DVA16XP186         |                       |                            |                    |                      | AC164010                               | AC164301                           | ✓                     | AC162053            |                        | DM163014                                      |
| PIC16F648A                                                     | 18SO                    | PCM16YF0                   | DVA16XP186         | XLT18SO               |                            |                    |                      | AC164010                               | AC164302                           |                       | AC162053            |                        |                                               |
| PIC16F648A                                                     | 20SS                    | PCM16YF0                   | DVA16XP186         | XLT20SS               |                            |                    |                      | AC164018                               | AC164307                           |                       | AC162053            |                        |                                               |
| PIC16F648A                                                     | 28ML                    | PCM16YF0                   | DVA16XP186         | XLT28QFN2             |                            |                    |                      | AC164010<br>+AC164033                  | AC164301<br>+AC164031              | AC164033              | AC162053            |                        |                                               |
| PIC16F676                                                      | 14P                     | PCM16YD0                   | DVA16XP141         |                       |                            |                    |                      | AC124001                               | AC164301                           | ✓                     | AC162052            |                        | DM163014, DV164101                            |
| PIC16F676                                                      | 14SO                    | PCM16YD0                   | DVA16XP141         | XLT14SO               |                            |                    |                      | AC164026                               | AC164302                           |                       | AC162052            |                        |                                               |
| PIC16F676                                                      | 14ST                    | PCM16YD0                   | DVA16XP141         | XLT14SS               |                            |                    |                      | AC164026                               | AC164306                           |                       | AC162052            |                        |                                               |
| PIC16F684                                                      | 14P                     | PCM16YK0                   | DVA1002            | ACICE0207             |                            |                    |                      | AC124001                               | AC164301                           | ✓                     | AC162055            |                        | DV164101                                      |
| PIC16F684                                                      | 14SO                    | PCM16YK0                   | DVA1002            | XLT14SO<br>+ACICE0207 |                            |                    |                      | AC164026                               | AC164302                           |                       | AC162055            |                        |                                               |
| PIC16F684                                                      | 14ST                    | PCM16YK0                   | DVA1002            | XLT14SS<br>+ACICE0207 |                            |                    |                      | AC164026                               | AC164306                           |                       | AC162055            |                        |                                               |

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|                                                                |                         | MPLAB® ICE 2000 System (1) |                    |                       | MPLAB® ICE 4000 System (2) |                    |                      |                                        |                                    |                       |                     |                        |                                               |
|----------------------------------------------------------------|-------------------------|----------------------------|--------------------|-----------------------|----------------------------|--------------------|----------------------|----------------------------------------|------------------------------------|-----------------------|---------------------|------------------------|-----------------------------------------------|
| Part Number                                                    | Lead Count/<br>Pkg Type | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket  | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket | PRO MATE® II<br>Socket<br>Module (3,4) | MPLAB® PM3<br>Socket<br>Module (8) | PICSTART®<br>Plus (5) | MPLAB® ICD 2<br>(6) | MPLAB® CXX<br>Compiler | Demonstration<br>Boards or<br>Evaluation Kits |
| <b>PICmicro® Microcontroller Development Tools (continued)</b> |                         |                            |                    |                       |                            |                    |                      |                                        |                                    |                       |                     |                        |                                               |
| PIC16F688                                                      | 14P                     | PCM16YL0                   | DVA1002            | ACICE0207             |                            |                    |                      | AC124001                               | AC164301                           | ✓                     | AC162056            |                        | DV164101                                      |
| PIC16F688                                                      | 14SO                    | PCM16YL0                   | DVA1002            | XLT14SO<br>+ACICE0207 |                            |                    |                      | AC164026                               | AC164302                           |                       | AC162056            |                        |                                               |
| PIC16F688                                                      | 14ST                    | PCM16YL0                   | DVA1002            | XLT14SS<br>+ACICE0207 |                            |                    |                      | AC164026                               | AC164306                           |                       | AC162056            |                        |                                               |
| PIC16F716                                                      | 18P                     | PCM16YJ0                   | DVA16XP187         |                       |                            |                    |                      | AC164010                               | AC164301                           | ✓                     | AC162054            |                        | DM163001                                      |
| PIC16F716                                                      | 18SO                    | PCM16YJ0                   | DVA16XP187         | XLT18SO               |                            |                    |                      | AC164010                               | AC164302                           |                       | AC162054            |                        |                                               |
| PIC16F716                                                      | 20SS                    | PCM16YJ0                   | DVA16XP187         | XLT20SS               |                            |                    |                      | AC164018                               | AC164307                           |                       | AC162054            |                        |                                               |
| PIC16F737                                                      | 28P                     | PCM16YH0                   | DVA18XP280         |                       |                            |                    |                      | AC164012                               | AC164301                           | ✓                     | ✓                   |                        |                                               |
| PIC16F737                                                      | 28SO                    | PCM16YH0                   | DVA18XP280         | XLT28SO               |                            |                    |                      | AC164017                               | AC164302                           |                       | ✓                   |                        |                                               |
| PIC16F737                                                      | 28SS                    | PCM16YH0                   | DVA18XP280         | XLT28SS               |                            |                    |                      | AC164021                               | AC164307                           |                       | ✓                   |                        |                                               |
| PIC16F737                                                      | 28ML                    | PCM16YH0                   | DVA18XP280         | XLT28QFN              |                            |                    |                      | AC164012<br>+AC164031                  | AC164301<br>+AC164031              |                       | ✓                   |                        |                                               |
| PIC16F747                                                      | 40P                     | PCM16YH0                   | DVA18XP400         |                       |                            |                    |                      | AC164012                               | AC164301                           | ✓                     | ✓                   |                        |                                               |
| PIC16F747                                                      | 44PT                    | PCM16YH0                   | DVA18PQ440         | XLT44PT               |                            |                    |                      | AC164020                               | AC164305                           |                       | ✓                   |                        |                                               |
| PIC16F747                                                      | 44ML                    | PCM16YH0                   | DVA18XP400         | XLT44QFN              |                            |                    |                      | AC164012<br>+AC164034                  | AC164301<br>+AC164034              |                       | ✓                   |                        |                                               |
| PIC16F767                                                      | 28P                     | PCM16YH0                   | DVA18XP280         |                       |                            |                    |                      | AC164012                               | AC164301                           | ✓                     | ✓                   |                        |                                               |
| PIC16F767                                                      | 28SO                    | PCM16YH0                   | DVA18XP280         | XLT28SO               |                            |                    |                      | AC164017                               | AC164302                           |                       | ✓                   |                        |                                               |
| PIC16F767                                                      | 28SS                    | PCM16YH0                   | DVA18XP280         | XLT28SS               |                            |                    |                      | AC164021                               | AC164307                           |                       | ✓                   |                        |                                               |
| PIC16F767                                                      | 28ML                    | PCM16YH0                   | DVA18XP280         | XLT28QFN              |                            |                    |                      | AC164012<br>+AC164031                  | AC164301<br>+AC164031              |                       | ✓                   |                        |                                               |
| PIC16F777                                                      | 40P                     | PCM16YH0                   | DVA18XP400         |                       |                            |                    |                      | AC164012                               | AC164301                           | ✓                     | ✓                   |                        |                                               |
| PIC16F777                                                      | 44PT                    | PCM16YH0                   | DVA18PQ440         | XLT44PT               |                            |                    |                      | AC164020                               | AC164305                           |                       | ✓                   |                        |                                               |
| PIC16F777                                                      | 44ML                    | PCM16YH0                   | DVA18XP400         | XLT44QFN              |                            |                    |                      | AC164012<br>+AC164034                  | AC164301<br>+AC164034              |                       | ✓                   |                        |                                               |
| PIC16F818                                                      | 18P                     | PCM16YE0                   | DVA16XP186         |                       |                            |                    |                      | AC164010                               | AC164301                           | ✓                     | ✓                   |                        | DM163014                                      |
| PIC16F818                                                      | 18SO                    | PCM16YE0                   | DVA16XP186         | XLT18SO               |                            |                    |                      | AC164010                               | AC164302                           |                       | ✓                   |                        |                                               |
| PIC16F818                                                      | 20SS                    | PCM16YE0                   | DVA16XP186         | XLT20SS               |                            |                    |                      | AC164018                               | AC164307                           |                       | ✓                   |                        |                                               |
| PIC16F818                                                      | 28ML                    | PCM16YE0                   | DVA16XP186         | XLT28QFN2             |                            |                    |                      | AC164010<br>+AC164033                  | AC164301<br>+AC164031              | AC164033              | ✓                   |                        |                                               |
| PIC16F819                                                      | 18P                     | PCM16YE0                   | DVA16XP186         |                       |                            |                    |                      | AC164010                               | AC164301                           | ✓                     | ✓                   |                        | DM163014                                      |
| PIC16F819                                                      | 18SO                    | PCM16YE0                   | DVA16XP186         | XLT18SO               |                            |                    |                      | AC164010                               | AC164302                           |                       | ✓                   |                        |                                               |
| PIC16F819                                                      | 20SS                    | PCM16YE0                   | DVA16XP186         | XLT20SS               |                            |                    |                      | AC164018                               | AC164307                           |                       | ✓                   |                        |                                               |

**MPLAB® ICE 2000 and MPLAB® ICE 4000 Emulator Systems, PRO MATE® II Programmer Socket Modules, MPLAB® In-Circuit Debugger, Software Tools, Programmers and Demonstration Boards**

|                                                                |                         | MPLAB® ICE 2000 System (1) |                    |                      | MPLAB® ICE 4000 System (2) |                    |                      |                                        |                                    |                       |                     |                        |                                               |
|----------------------------------------------------------------|-------------------------|----------------------------|--------------------|----------------------|----------------------------|--------------------|----------------------|----------------------------------------|------------------------------------|-----------------------|---------------------|------------------------|-----------------------------------------------|
| Part Number                                                    | Lead Count/<br>Pkg Type | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket | PRO MATE® II<br>Socket<br>Module (3,4) | MPLAB® PM3<br>Socket<br>Module (8) | PICSTART®<br>Plus (5) | MPLAB® ICD 2<br>(6) | MPLAB® CXX<br>Compiler | Demonstration<br>Boards or<br>Evaluation Kits |
| <b>PICmicro® Microcontroller Development Tools (continued)</b> |                         |                            |                    |                      |                            |                    |                      |                                        |                                    |                       |                     |                        |                                               |
| PIC16F819                                                      | 28ML                    | PCM16YE0                   | DVA16XP186         | XLT28QFN2            |                            |                    |                      | AC164010<br>+AC164033                  | AC164301<br>+AC164031              | AC164033              | ✓                   |                        |                                               |
| PIC16F870                                                      | 28SP, 28JW              | PCM16XR1                   | DVA16XP282         |                      |                            |                    |                      | AC164012                               | AC164301                           | ✓                     | ✓                   |                        | DM163022                                      |
| PIC16F870                                                      | 28SO                    | PCM16XR1                   | DVA16XP282         | XLT28SO              |                            |                    |                      | AC164017                               | AC164302                           |                       | ✓                   |                        |                                               |
| PIC16F870                                                      | 28SS                    | PCM16XR1                   | DVA16XP282         | XLT28SS              |                            |                    |                      | AC164021                               | AC164307                           |                       | ✓                   |                        |                                               |
| PIC16F871                                                      | 40P                     | PCM16XR1                   | DVA16XP401         |                      |                            |                    |                      | AC164012                               | AC164301                           | ✓                     | ✓                   |                        | DM163022                                      |
| PIC16F871                                                      | 44L                     | PCM16XR1                   | DVA16XL441         |                      |                            |                    |                      | AC164013                               | AC164309                           |                       | ✓                   |                        |                                               |
| PIC16F871                                                      | 44PT                    | PCM16XR1                   | DVA16PQ441         | XLT44PT              |                            |                    |                      | AC164020                               | AC164305                           |                       | ✓                   |                        |                                               |
| PIC16F872                                                      | 28SP                    | PCM16XK1                   | DVA16XP282         |                      |                            |                    |                      | AC164012                               | AC164301                           | ✓                     | ✓                   |                        | DM163022                                      |
| PIC16F872                                                      | 28SO                    | PCM16XK1                   | DVA16XP282         | XLT28SO              |                            |                    |                      | AC164017                               | AC164302                           |                       | ✓                   |                        |                                               |
| PIC16F872                                                      | 28SS                    | PCM16XK1                   | DVA16XP282         | XLT28SS              |                            |                    |                      | AC164021                               | AC164307                           |                       | ✓                   |                        |                                               |
| PIC16F873                                                      | 28SP                    | PCM16XK1                   | DVA16XP282         |                      |                            |                    |                      | AC164012                               | AC164301                           | ✓                     | ✓                   |                        | DM163022                                      |
| PIC16F873                                                      | 28SO                    | PCM16XK1                   | DVA16XP282         | XLT28SO              |                            |                    |                      | AC164017                               | AC164302                           |                       | ✓                   |                        |                                               |
| PIC16F873A                                                     | 28SP                    | PCM16XV0                   | DVA16XP282         |                      |                            |                    |                      | AC164012                               | AC164301                           | ✓                     | ✓                   |                        | DM163022                                      |
| PIC16F873A                                                     | 28SO                    | PCM16XV0                   | DVA16XP282         | XLT28SO              |                            |                    |                      | AC164017                               | AC164302                           |                       | ✓                   |                        |                                               |
| PIC16F873A                                                     | 28SS                    | PCM16XV0                   | DVA16XP282         | XLT28SS              |                            |                    |                      | AC164021                               | AC164307                           |                       | ✓                   |                        |                                               |
| PIC16F873A                                                     | 28ML                    | PCM16XV0                   | DVA16XP282         | XLT28QFN             |                            |                    |                      | AC164012<br>+AC164031                  | AC164301<br>+AC164031              | AC164031              | ✓                   |                        |                                               |
| PIC16F874                                                      | 40P                     | PCM16XK1                   | DVA16XP401         |                      |                            |                    |                      | AC164012                               | AC164301                           | ✓                     | ✓                   |                        | DM163022                                      |
| PIC16F874                                                      | 44L                     | PCM16XK1                   | DVA16XL441         |                      |                            |                    |                      | AC164013                               | AC164309                           |                       | ✓                   |                        |                                               |
| PIC16F874                                                      | 44PQ                    | PCM16XK1                   | DVA16PQ441         | XLT44PT              |                            |                    |                      | AC164014                               | AC164311                           |                       | ✓                   |                        |                                               |
| PIC16F874                                                      | 44PT                    | PCM16XK1                   | DVA16PQ441         | XLT44PT              |                            |                    |                      | AC164020                               | AC164305                           |                       | ✓                   |                        |                                               |
| PIC16F874A                                                     | 40P                     | PCM16XV0                   | DVA16XP401         |                      |                            |                    |                      | AC164012                               | AC164301                           | ✓                     | ✓                   |                        | DM163022                                      |
| PIC16F874A                                                     | 44L                     | PCM16XV0                   | DVA16XL441         |                      |                            |                    |                      | AC164013                               | AC164309                           |                       | ✓                   |                        |                                               |
| PIC16F874A                                                     | 44PT                    | PCM16XV0                   | DVA16PQ441         | XLT44PT              |                            |                    |                      | AC164020                               | AC164305                           |                       | ✓                   |                        |                                               |
| PIC16F876                                                      | 28SP                    | PCM16XK1                   | DVA16XP282         |                      |                            |                    |                      | AC164012                               | AC164301                           | ✓                     | ✓                   |                        | DM163022                                      |
| PIC16F876                                                      | 28SO                    | PCM16XK1                   | DVA16XP282         | XLT28SO              |                            |                    |                      | AC164017                               | AC164302                           |                       | ✓                   |                        |                                               |
| PIC16F876A                                                     | 28SP                    | PCM16XV0                   | DVA16XP282         |                      |                            |                    |                      | AC164012                               | AC164301                           | ✓                     | ✓                   |                        | DM163022                                      |
| PIC16F876A                                                     | 28SO                    | PCM16XV0                   | DVA16XP282         | XLT28SO              |                            |                    |                      | AC164017                               | AC164302                           |                       | ✓                   |                        |                                               |
| PIC16F876A                                                     | 28SS                    | PCM16XV0                   | DVA16XP282         | XLT28SS              |                            |                    |                      | AC164021                               | AC164307                           |                       | ✓                   |                        |                                               |
| PIC16F876A                                                     | 28ML                    | PCM16XV0                   | DVA16XP282         | XLT28QFN             |                            |                    |                      | AC164012<br>+AC164031                  | AC164301<br>+AC164031              | AC164031              | ✓                   |                        |                                               |

**MPLAB® ICE 2000 and MPLAB® ICE 4000 Emulator Systems, PRO MATE® II Programmer Socket Modules, MPLAB® In-Circuit Debugger, Software Tools, Programmers and Demonstration Boards**

|                                                                |                         | MPLAB® ICE 2000 System (1) |                    |                      | MPLAB® ICE 4000 System (2) |                    |                      |                                        |                                    |                       |                     |                        |                                               |
|----------------------------------------------------------------|-------------------------|----------------------------|--------------------|----------------------|----------------------------|--------------------|----------------------|----------------------------------------|------------------------------------|-----------------------|---------------------|------------------------|-----------------------------------------------|
| Part Number                                                    | Lead Count/<br>Pkg Type | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket | PRO MATE® II<br>Socket<br>Module (3,4) | MPLAB® PM3<br>Socket<br>Module (8) | PICSTART®<br>Plus (5) | MPLAB® ICD 2<br>(6) | MPLAB® CXX<br>Compiler | Demonstration<br>Boards or<br>Evaluation Kits |
| <b>PICmicro® Microcontroller Development Tools (continued)</b> |                         |                            |                    |                      |                            |                    |                      |                                        |                                    |                       |                     |                        |                                               |
| PIC16F877                                                      | 40P                     | PCM16XK1                   | DVA16XP401         |                      |                            |                    |                      | AC164012                               | AC164301                           | ✓                     | ✓                   |                        | DM163022                                      |
| PIC16F877                                                      | 44L                     | PCM16XK1                   | DVA16XL441         |                      |                            |                    |                      | AC164013                               | AC164309                           |                       | ✓                   |                        |                                               |
| PIC16F877                                                      | 44PQ                    | PCM16XK1                   | DVA16PQ441         | XLT44PT              |                            |                    |                      | AC164014                               | AC164311                           |                       | ✓                   |                        |                                               |
| PIC16F877                                                      | 44PT                    | PCM16XK1                   | DVA16PQ441         | XLT44PT              |                            |                    |                      | AC164020                               | AC164305                           |                       | ✓                   |                        |                                               |
| PIC16F877A                                                     | 40P                     | PCM16XV0                   | DVA16XP401         |                      |                            |                    |                      | AC164012                               | AC164301                           | ✓                     | ✓                   |                        | DM163022                                      |
| PIC16F877A                                                     | 44L                     | PCM16XV0                   | DVA16XL441         |                      |                            |                    |                      | AC164013                               | AC164309                           |                       | ✓                   |                        |                                               |
| PIC16F877A                                                     | 44PT                    | PCM16XV0                   | DVA16PQ441         | XLT44PT              |                            |                    |                      | AC164020                               | AC164305                           |                       | ✓                   |                        |                                               |
| PIC16F877A                                                     | 44ML                    | PCM16XV0                   | DVA16XP401         | XLT44QFN             |                            |                    |                      | AC164012<br>+AC164034                  | AC164301<br>+AC164034              | AC164034              | ✓                   |                        |                                               |
| PIC16HV540                                                     | 18P                     |                            |                    |                      |                            |                    |                      | AC164001                               | AC164301                           | ✓                     |                     |                        |                                               |
| PIC16HV540                                                     | 18SO                    |                            |                    |                      |                            |                    |                      | AC164002                               | AC164302                           |                       |                     |                        |                                               |
| PIC16HV540                                                     | 18SS                    |                            |                    |                      |                            |                    |                      | AC164015                               | AC164307                           |                       |                     |                        |                                               |
| PIC17C42A                                                      | 40P, 40JW               | PCM17XA0                   | DVA17XP401         |                      |                            |                    |                      | AC174001                               | AC164301                           | ✓                     |                     |                        | DM163001                                      |
| PIC17C42A                                                      | 44L                     | PCM17XA0                   | DVA17XL441         |                      |                            |                    |                      | AC174002                               | AC164317                           |                       |                     |                        |                                               |
| PIC17C42A                                                      | 44PQ                    | PCM17XA0                   | DVA17PQ441         | XLT44PT              |                            |                    |                      | AC174004                               | AC164316                           |                       |                     |                        |                                               |
| PIC17C42A                                                      | 44PT                    | PCM17XA0                   | DVA17PQ441         | XLT44PT              |                            |                    |                      | AC174005                               | AC164315                           |                       |                     |                        |                                               |
| PIC17C43                                                       | 40P, 40JW               | PCM17XA0                   | DVA17XP401         |                      |                            |                    |                      | AC174001                               | AC164301                           | ✓                     |                     |                        | DM163001                                      |
| PIC17C43                                                       | 44L                     | PCM17XA0                   | DVA17XL441         |                      |                            |                    |                      | AC174002                               | AC164317                           |                       |                     |                        |                                               |
| PIC17C43                                                       | 44PQ                    | PCM17XA0                   | DVA17PQ441         | XLT44PT              |                            |                    |                      | AC174004                               | AC164316                           |                       |                     |                        |                                               |
| PIC17C43                                                       | 44PT                    | PCM17XA0                   | DVA17PQ441         | XLT44PT              |                            |                    |                      | AC174005                               | AC164315                           |                       |                     |                        |                                               |
| PIC17C44                                                       | 40P, 40JW               | PCM17XA0                   | DVA17XP401         |                      |                            |                    |                      | AC174001                               | AC164301                           | ✓                     |                     |                        | DM163001                                      |
| PIC17C44                                                       | 44L                     | PCM17XA0                   | DVA17XL441         |                      |                            |                    |                      | AC174002                               | AC164317                           |                       |                     |                        |                                               |
| PIC17C44                                                       | 44PQ                    | PCM17XA0                   | DVA17PQ441         | XLT44PT              |                            |                    |                      | AC174004                               | AC164316                           |                       |                     |                        |                                               |
| PIC17C44                                                       | 44PT                    | PCM17XA0                   | DVA17PQ441         | XLT44PT              |                            |                    |                      | AC174005                               | AC164315                           |                       |                     |                        |                                               |
| PIC17C752                                                      | 68L                     | PCM17XA0                   | DVA17XL681         |                      |                            |                    |                      | AC174007                               | AC164308*                          | AC164024              |                     |                        | DM173001                                      |
| PIC17C752                                                      | 64PT                    | PCM17XA0                   | DVA17PQ641         | XLT64PT2             |                            |                    |                      | AC174008                               | AC164319*                          |                       |                     |                        |                                               |
| PIC17C756/<br>756A                                             | 68L, 68CL               | PCM17XA0                   | DVA17XL681         |                      |                            |                    |                      | AC174007                               | AC164308*                          | AC164024              |                     |                        | DM173001                                      |
| PIC17C756/<br>756A                                             | 64PT                    | PCM17XA0                   | DVA17PQ641         | XLT64PT2             |                            |                    |                      | AC174008                               | AC164319*                          |                       |                     |                        |                                               |
| PIC17C762                                                      | 84L                     | PCM17XA0                   | DVA17XL841         |                      |                            |                    |                      | AC174012                               | AC164318                           | AC164027              |                     |                        | DM173001                                      |
| PIC17C762                                                      | 80PT                    | PCM17XA0                   | DVA17PQ801         | XLT80PT              |                            |                    |                      | AC174011                               | AC164320                           |                       |                     |                        |                                               |



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|                                                                |                         | MPLAB® ICE 2000 System (1) |                             |                      | MPLAB® ICE 4000 System (2) |                    |                      |                                        |                                    |                       |                     |                        |                                               |
|----------------------------------------------------------------|-------------------------|----------------------------|-----------------------------|----------------------|----------------------------|--------------------|----------------------|----------------------------------------|------------------------------------|-----------------------|---------------------|------------------------|-----------------------------------------------|
| Part Number                                                    | Lead Count/<br>Pkg Type | Processor<br>Module        | Device<br>Adapters          | Transition<br>Socket | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket | PRO MATE® II<br>Socket<br>Module (3,4) | MPLAB® PM3<br>Socket<br>Module (8) | PICSTART®<br>Plus (5) | MPLAB® ICD 2<br>(6) | MPLAB® CXX<br>Compiler | Demonstration<br>Boards or<br>Evaluation Kits |
| <b>PICmicro® Microcontroller Development Tools (continued)</b> |                         |                            |                             |                      |                            |                    |                      |                                        |                                    |                       |                     |                        |                                               |
| PIC17C766                                                      | 84L, 84CL               | PCM17XA0                   | DVA17XL841                  |                      |                            |                    |                      | AC174012                               | AC164318                           | AC164027              |                     |                        | DM173001                                      |
| PIC17C766                                                      | 80PT                    | PCM17XA0                   | DVA17PQ801                  | XLT80PT              |                            |                    |                      | AC174011                               | AC164320                           |                       |                     |                        |                                               |
| PIC18C242                                                      | 28SP, 28JW              | PCM18XA0                   | DVA16XP282                  |                      |                            |                    |                      | AC164012                               | AC164301                           | ✓                     |                     | SW006011               | DM163022                                      |
| PIC18C242                                                      | 28SO                    | PCM18XA0                   | DVA16XP282                  | XLT28SO              |                            |                    |                      | AC164017                               | AC164302                           |                       |                     | SW006011               |                                               |
| PIC18C252                                                      | 28SP                    | PCM18XA0                   | DVA16XP282                  |                      |                            |                    |                      | AC164012                               | AC164301                           | ✓                     |                     | SW006011               | DM163022                                      |
| PIC18C252                                                      | 28JW                    | PCM18XA0                   | DVA16XP282                  | XLT28XP              |                            |                    |                      | AC164012                               | AC164301                           |                       |                     | SW006011               | DM163022                                      |
| PIC18C252                                                      | 28SO                    | PCM18XA0                   | DVA16XP282                  | XLT28SO              |                            |                    |                      | AC164017                               | AC164302                           |                       |                     | SW006011               |                                               |
| PIC18C442                                                      | 40P, 40JW               | PCM18XA0                   | DVA16XP401                  |                      |                            |                    |                      | AC164012                               | AC164301                           | ✓                     |                     | SW006011               | DM163022                                      |
| PIC18C442                                                      | 44L                     | PCM18XA0                   | DVA16XL441                  |                      |                            |                    |                      | AC164013                               | AC164309                           |                       |                     | SW006011               |                                               |
| PIC18C442                                                      | 44PT                    | PCM18XA0                   | DVA16PQ441                  | XLT44PT              |                            |                    |                      | AC164020                               | AC164305                           |                       |                     | SW006011               |                                               |
| PIC18C452                                                      | 40P, 40JW               | PCM18XA0                   | DVA16XP401                  |                      |                            |                    |                      | AC164012                               | AC164301                           | ✓                     |                     | SW006011               | DM163022                                      |
| PIC18C452                                                      | 44L                     | PCM18XA0                   | DVA16XL441                  |                      |                            |                    |                      | AC164013                               | AC164309                           |                       |                     | SW006011               |                                               |
| PIC18C452                                                      | 44PT                    | PCM18XA0                   | DVA16PQ441                  | XLT44PT              |                            |                    |                      | AC164020                               | AC164305                           |                       |                     | SW006011               |                                               |
| PIC18C601                                                      | 68L                     |                            |                             |                      | PMF18WB1                   | DAF18-1            | XLT68L1              | AC174007                               | AC164308                           |                       | ✓                   | SW006011               | DM163006                                      |
| PIC18C601                                                      | 64PT                    |                            |                             |                      | PMF18WB1                   | DAF18-1            | XLT64PT2             | AC174008                               | AC164303                           |                       | ✓                   | SW006011               |                                               |
| PIC18C658                                                      | 68L                     | PCM18XB0                   | DVA18XL680                  |                      |                            |                    |                      | AC174007                               | AC164308                           | ✓ (8)                 |                     | SW006011               | DM163007                                      |
| PIC18C658                                                      | 64PT                    | PCM18XB0                   | DVA18PQ640                  | XLT64PT2             |                            |                    |                      | AC174008                               | AC164303                           |                       |                     | SW006011               |                                               |
| PIC18C801                                                      | 80PT                    |                            |                             |                      | PMF18WB1                   | DAF18-1            | XLT80PT              | AC174011                               | AC164304                           |                       | ✓                   | SW006011               |                                               |
| PIC18C801                                                      | 84L                     |                            |                             |                      | PMF18WB1                   | DAF18-1            | XLT84L1              | AC174012                               | AC164310                           |                       | ✓                   | SW006011               | DM163006                                      |
| PIC18C858                                                      | 84L                     | PCM18XB0                   | DVA18XL840                  |                      |                            |                    |                      | AC174012                               | AC164310                           | ✓ (8)                 |                     | SW006011               | DM163007                                      |
| PIC18C858                                                      | 80PT                    | PCM18XB0                   | DVA18PQ800                  | XLT80PT              |                            |                    |                      | AC174011                               | AC164304                           |                       |                     | SW006011               |                                               |
| PIC18F242                                                      | 28SP                    | PCM18XH0                   | DVA16XP282 or<br>DVA18XP280 |                      | PMF18WC0                   | DAF18-2            | ACICE0204            | AC164012                               | AC164301                           | ✓                     | ✓                   | SW006011               | DM163022                                      |
| PIC18F242                                                      | 28SO                    | PCM18XH0                   | DVA16XP282 or<br>DVA18XP280 | XLT28SO              | PMF18WC0                   | DAF18-2            | XLT28SO              | AC164017                               | AC164302                           |                       | ✓                   | SW006011               |                                               |
| PIC18F248                                                      | 28SP                    | PCM18XD1                   | DVA16XP282                  |                      |                            |                    |                      | AC164012                               | AC164301                           | ✓                     | ✓                   | SW006011               | DM163022                                      |
| PIC18F248                                                      | 28SO                    | PCM18XD1                   | DVA16XP282                  | XLT28SO              |                            |                    |                      | AC164017                               | AC164302                           |                       | ✓                   | SW006011               |                                               |
| PIC18F252                                                      | 28SP                    | PCM18XH0                   | DVA16XP282 or<br>DVA18XP280 |                      | PMF18WC0                   | DAF18-2            | ACICE0204            | AC164012                               | AC164301                           | ✓                     | ✓                   | SW006011               | DM163022                                      |
| PIC18F252                                                      | 28SO                    | PCM18XH0                   | DVA16XP282 or<br>DVA18XP280 | XLT28SO              | PMF18WC0                   | DAF18-2            | XLT28SO              | AC164017                               | AC164302                           |                       | ✓                   | SW006011               |                                               |
| PIC18F258                                                      | 28SP                    | PCM18XD1                   | DVA16XP282                  |                      |                            |                    |                      | AC164012                               | AC164301                           | ✓                     | ✓                   | SW006011               | DM163022, DM163011                            |
| PIC18F258                                                      | 28SO                    | PCM18XD1                   | DVA16XP282                  | XLT28SO              |                            |                    |                      | AC164017                               | AC164302                           |                       | ✓                   | SW006011               |                                               |

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|                                                                |                         | MPLAB® ICE 2000 System (1) |                             |                      | MPLAB® ICE 4000 System (2) |                    |                      |                                        |                                    |                       |                     |                        |                                               |
|----------------------------------------------------------------|-------------------------|----------------------------|-----------------------------|----------------------|----------------------------|--------------------|----------------------|----------------------------------------|------------------------------------|-----------------------|---------------------|------------------------|-----------------------------------------------|
| Part Number                                                    | Lead Count/<br>Pkg Type | Processor<br>Module        | Device<br>Adapters          | Transition<br>Socket | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket | PRO MATE® II<br>Socket<br>Module (3,4) | MPLAB® PM3<br>Socket<br>Module (8) | PICSTART®<br>Plus (5) | MPLAB® ICD 2<br>(6) | MPLAB® CXX<br>Compiler | Demonstration<br>Boards or<br>Evaluation Kits |
| <b>PICmicro® Microcontroller Development Tools (continued)</b> |                         |                            |                             |                      |                            |                    |                      |                                        |                                    |                       |                     |                        |                                               |
| PIC18F442                                                      | 40P                     | PCM18XH0                   | DVA16XP401 or<br>DVA18XP400 |                      | PMF18WC0                   | DAF18-2            | ACICE0206            | AC164012                               | AC164301                           | ✓                     | ✓                   | SW006011               | DM163022                                      |
| PIC18F442                                                      | 44L                     | PCM18XH0                   | DVA16XL441                  |                      | PMF18WC0                   | DAF18-3*           | XLT44L2              | AC164013                               | AC164309                           |                       | ✓                   | SW006011               |                                               |
| PIC18F442                                                      | 44PT                    | PCM18XH0                   | DVA16PQ441 or<br>DVA18PQ440 | XLT44PT              | PMF18WC0                   | DAF18-3*           | XLT44PT              | AC164020                               | AC164305                           |                       | ✓                   | SW006011               |                                               |
| PIC18F448                                                      | 40P                     | PCM18XD1                   | DVA16XP401                  |                      |                            |                    |                      | AC164012                               | AC164301                           | ✓                     | ✓                   | SW006011               | DM163022                                      |
| PIC18F448                                                      | 44L                     | PCM18XD1                   | DVA16XL441                  |                      |                            |                    |                      | AC164013                               | AC164309                           |                       | ✓                   | SW006011               |                                               |
| PIC18F448                                                      | 44PT                    | PCM18XD1                   | DVA16PQ441                  | XLT44PT              |                            |                    |                      | AC164020                               | AC164305                           |                       | ✓                   | SW006011               |                                               |
| PIC18F452                                                      | 40P                     | PCM18XH0                   | DVA16XP401                  |                      | PMF18WC0                   | DAF18-2            | ACICE0206            | AC164012                               | AC164301                           | ✓                     | ✓                   | SW006011               | DM163022                                      |
| PIC18F452                                                      | 44L                     | PCM18XH0                   | DVA16XL441                  |                      | PMF18WC0                   | DAF18-3*           | XLT44L2              | AC164013                               | AC164309                           |                       | ✓                   | SW006011               |                                               |
| PIC18F452                                                      | 44PT                    | PCM18XH0                   | DVA16PQ441                  | XLT44PT              | PMF18WC0                   | DAF18-3*           | XLT44PT              | AC164020                               | AC164305                           |                       | ✓                   | SW006011               |                                               |
| PIC18F458                                                      | 40P                     | PCM18XD1                   | DVA16XP401                  |                      |                            |                    |                      | AC164012                               | AC164301                           | ✓                     | ✓                   | SW006011               | DM163022, DM163011                            |
| PIC18F458                                                      | 44L                     | PCM18XD1                   | DVA16XL441                  |                      |                            |                    |                      | AC164013                               | AC164309                           |                       | ✓                   | SW006011               |                                               |
| PIC18F458                                                      | 44PT                    | PCM18XD1                   | DVA16PQ441                  | XLT44PT              |                            |                    |                      | AC164020                               | AC164305                           |                       | ✓                   | SW006011               |                                               |
| PIC18F1220                                                     | 18P                     | PCM18XJ0                   | DVA18XP180                  |                      | PMF18WD0                   | DAF18-2            | ACICE0202            | AC164010                               | AC164301                           | ✓ *                   | ✓                   | SW006011               | DM163014                                      |
| PIC18F1220                                                     | 18SO                    | PCM18XJ0                   | DVA18XP180                  | XLT18SO              | PMF18WD0                   | DAF18-2            | XLT18SO              | AC164010                               | AC164302                           |                       | ✓                   | SW006011               |                                               |
| PIC18F1220                                                     | 20SS                    | PCM18XJ0                   | DVA18XP180                  | XLT20SS              | PMF18WD0                   | DAF18-2            | XLT20SS              | AC164018                               | AC164307                           |                       | ✓                   | SW006011               |                                               |
| PIC18F1220                                                     | 28ML                    | PCM18XJ0                   | DVA18XP180                  | XLT28QFN2            | PMF18WD0                   | DAF18-2            | XLT28QFN2            | AC164010<br>+AC164033                  | AC164301<br>+AC164031              | AC164033*             | ✓                   | SW006011               |                                               |
| PIC18F1320                                                     | 18P                     | PCM18XJ0                   | DVA18XP180                  |                      | PMF18WD0                   | DAF18-2            | ACICE0202            | AC164010                               | AC164301                           | ✓ *                   | ✓                   | SW006011               | DM163014                                      |
| PIC18F1320                                                     | 18SO                    | PCM18XJ0                   | DVA18XP180                  | XLT18SO              | PMF18WD0                   | DAF18-2            | XLT18SO              | AC164010                               | AC164302                           |                       | ✓                   | SW006011               |                                               |
| PIC18F1320                                                     | 20SS                    | PCM18XJ0                   | DVA18XP180                  | XLT20SS              | PMF18WD0                   | DAF18-2            | XLT20SS              | AC164018                               | AC164307                           |                       | ✓                   | SW006011               |                                               |
| PIC18F1320                                                     | 28ML                    | PCM18XJ0                   | DVA18XP180                  | XLT28QFN2            | PMF18WD0                   | DAF18-2            | XLT28QFN2            | AC164010<br>+AC164033                  | AC164301<br>+AC164031              | AC164033*             | ✓                   | SW006011               |                                               |
| PIC18F2220                                                     | 28SP                    | PCM18XH0                   | DVA18XP280                  |                      | PMF18WC0                   | DAF18-2            | ACICE0204            | AC164012                               | AC164301                           | ✓ *                   | ✓                   | SW006011               |                                               |
| PIC18F2220                                                     | 28SO                    | PCM18XH0                   | DVA18XP280                  | XLT28SO              | PMF18WC0                   | DAF18-2            | XLT28SO              | AC164017                               | AC164302                           |                       | ✓                   | SW006011               |                                               |
| PIC18F2320                                                     | 28SP                    | PCM18XH0                   | DVA18XP280                  |                      | PMF18WC0                   | DAF18-2            | ACICE0204            | AC164012                               | AC164301                           | ✓ *                   | ✓                   | SW006011               |                                               |
| PIC18F2320                                                     | 28SO                    | PCM18XH0                   | DVA18XP280                  | XLT28SO              | PMF18WC0                   | DAF18-2            | XLT28SO              | AC164017                               | AC164302                           |                       | ✓                   | SW006011               |                                               |
| PIC18F2331                                                     | 28SP                    | PCM18XL0                   | DVA18XP280                  |                      | PMF18WF0*                  | DAF18-4*           | ACICE0204            | AC164035                               | AC164301                           | ✓ *                   | ✓                   | SW006011               | DM183011                                      |
| PIC18F2331                                                     | 28SO                    | PCM18XL0                   | DVA18XP280                  | XLT28SO              | PMF18WF0*                  | DAF18-4*           | XLT28SO              | AC164036                               | AC164302                           |                       | ✓                   | SW006011               |                                               |
| PIC18F2431                                                     | 28SP                    | PCM18XL0                   | DVA18XP280                  |                      | PMF18WF0*                  | DAF18-4*           | ACICE0204            | AC164035                               | AC164301                           | ✓ *                   | ✓                   | SW006011               | DM183011                                      |
| PIC18F2431                                                     | 28SO                    | PCM18XL0                   | DVA18XP280                  | XLT28SO              | PMF18WF0*                  | DAF18-4*           | XLT28SO              | AC164036                               | AC164302                           |                       | ✓                   | SW006011               |                                               |

**MPLAB® ICE 2000 and MPLAB® ICE 4000 Emulator Systems, PRO MATE® II Programmer Socket Modules, MPLAB® In-Circuit Debugger, Software Tools, Programmers and Demonstration Boards**

|                                                                |                         | MPLAB® ICE 2000 System (1) |                    |                      | MPLAB® ICE 4000 System (2) |                    |                      |                                        |                                    |                       |                     |                        |                                               |
|----------------------------------------------------------------|-------------------------|----------------------------|--------------------|----------------------|----------------------------|--------------------|----------------------|----------------------------------------|------------------------------------|-----------------------|---------------------|------------------------|-----------------------------------------------|
| Part Number                                                    | Lead Count/<br>Pkg Type | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket | PRO MATE® II<br>Socket<br>Module (3,4) | MPLAB® PM3<br>Socket<br>Module (8) | PICSTART®<br>Plus (5) | MPLAB® ICD 2<br>(6) | MPLAB® CXX<br>Compiler | Demonstration<br>Boards or<br>Evaluation Kits |
| <b>PICmicro® Microcontroller Development Tools (continued)</b> |                         |                            |                    |                      |                            |                    |                      |                                        |                                    |                       |                     |                        |                                               |
| PIC18F2439                                                     | 28P                     |                            |                    |                      |                            |                    |                      | AC164012                               | AC164301*                          | ✓*                    | ✓                   | SW006011               |                                               |
| PIC18F2439                                                     | 28SO                    |                            |                    |                      |                            |                    |                      | AC164017                               | AC164302*                          |                       | ✓                   | SW006011               |                                               |
| PIC18F2510                                                     | 28SP                    | PCM18XN0*                  | DVA18XP280         |                      | PMF18WH0*                  | DAF18-4*           | ACICE0204            | AC164012*                              | AC164301*                          | ✓*                    | ✓*                  | SW006011               | DM163022                                      |
| PIC18F2510                                                     | 28SO                    | PCM18XN0*                  | DVA18XP280         | XLT28SO              | PMF18WH0*                  | DAF18-4*           | XLT28SO              | AC164017*                              | AC164302*                          |                       | ✓*                  | SW006011               |                                               |
| PIC18F2510                                                     | 28ML                    | PCM18XN0*                  | DVA18XP280         | XLT28QFN             | PMF18WH0*                  | DAF18-4*           | TBD                  |                                        | AC164301*<br>+AC164031             |                       | ✓*                  | SW006011               |                                               |
| PIC18F2515                                                     | 28SP                    | PCM18XN0*                  | DVA18XP280         |                      | PMF18WH0*                  | DAF18-4*           | ACICE0204            | AC164012*                              | AC164301*                          | ✓*                    | ✓*                  | SW006011               |                                               |
| PIC18F2515                                                     | 28SO                    | PCM18XN0*                  | DVA18CP280         | XLT28SO              | PMF18WH0*                  | DAF18-4*           | XLT28SO              | AC164017*                              | AC164302*                          |                       | ✓*                  | SW006011               |                                               |
| PIC18F2520                                                     | 28SP                    | PCM18XN0*                  | DVA18XP280         |                      | PMF18WH0*                  | DAF18-4*           | ACICE0204            | AC164012*                              | AC164301*                          | ✓*                    | ✓*                  | SW006011               | DM163022                                      |
| PIC18F2520                                                     | 28SO                    | PCM18XN0*                  | DVA18XP280         | XLT28SO              | PMF18WH0*                  | DAF18-4*           | XLT28SO              | AC164017*                              | AC164302*                          |                       | ✓*                  | SW006011               |                                               |
| PIC18F2520                                                     | 28ML                    | PCM18XN0*                  | DVA18XP280         | XLT28QFN             | PMF18WH0*                  | DAF18-4*           | TBD                  |                                        | AC164301*<br>+AC164031             |                       | ✓*                  | SW006011               |                                               |
| PIC18F2525                                                     | 28SP                    | PCM18XN0*                  | DVA18XP280         |                      | PMF18WH0*                  | DAF18-4*           | ACICE0204            | AC164012*                              | AC164301*                          | ✓*                    | ✓*                  | SW006011               |                                               |
| PIC18F2525                                                     | 28SO                    | PCM18XN0*                  | DVA18XP280         | XLT28SO              | PMF18WH0*                  | DAF18-4*           | XLT28SO              | AC164017*                              | AC164302*                          |                       | ✓*                  | SW006011               |                                               |
| PIC18F2539                                                     | 28P                     |                            |                    |                      |                            |                    |                      | AC164012                               | AC164301*                          | ✓*                    | ✓                   | SW006011               |                                               |
| PIC18F2539                                                     | 28SO                    |                            |                    |                      |                            |                    |                      | AC164017                               | AC164302*                          |                       | ✓                   | SW006011               |                                               |
| PIC18F2585                                                     | 28SP                    | PCM18XP0*                  | DVA18XP280         |                      | PMF18WJ0*                  | DAF18-4*           | ACICE0204            | AC164012*                              | AC164301*                          | ✓*                    | ✓*                  | SW006011               |                                               |
| PIC18F2585                                                     | 28SO                    | PCM18XP0*                  | DVA18XP280         | XLT28SO              | PMF18WJ0*                  | DAF18-4*           | XLT28SO              | AC164017*                              | AC164302*                          |                       | ✓*                  | SW006011               |                                               |
| PIC18F2586                                                     | 28SP                    | PCM18XP0*                  | DVA18XP280         |                      | PMF18WJ0*                  | DAF18-4*           | ACICE0204            | AC164012*                              | AC164301*                          | ✓*                    | ✓*                  | SW006011               |                                               |
| PIC18F2586                                                     | 28SO                    | PCM18XP0*                  | DVA18XP280         | XLT28SO              | PMF18WJ0*                  | DAF18-4*           | XLT28SO              | AC164017*                              | AC164302*                          |                       | ✓*                  | SW006011               |                                               |
| PIC18F2610                                                     | 28SP                    | PCM18XN0*                  | DVA18XP280         |                      | PMF18WH0*                  | DAF18-4*           | ACICE0204            | AC164012*                              | AC164301*                          | ✓*                    | ✓*                  | SW006011               |                                               |
| PIC18F2610                                                     | 28SO                    | PCM18XN0*                  | DVA18XP280         | XLT28SO              | PMF18WH0*                  | DAF18-4*           | XLT28SO              | AC164017*                              | AC164302*                          |                       | ✓*                  | SW006011               |                                               |
| PIC18F2620                                                     | 28SP                    | PCM18XN0*                  | DVA18XP280         |                      | PMF18WH0*                  | DAF18-4*           | ACICE0204            | AC164012*                              | AC164301*                          | ✓*                    | ✓*                  | SW006011               |                                               |
| PIC18F2620                                                     | 28SO                    | PCM18XN0*                  | DVA18XP280         | XLT28SO              | PMF18WH0*                  | DAF18-4*           | XLT28SO              | AC164017*                              | AC164302*                          |                       | ✓*                  | SW006011               |                                               |
| PIC18F2680                                                     | 28SP                    | PCM18XP0*                  | DVA18XP280         |                      | PMF18WJ0*                  | DAF18-4*           | ACICE0204            | AC164012*                              | AC164301*                          | ✓*                    | ✓*                  | SW006011               |                                               |
| PIC18F2680                                                     | 28SO                    | PCM18XP0*                  | DVA18XP280         | XLT28SO              | PMF18WJ0*                  | DAF18-4*           | XLT28SO              | AC164017*                              | AC164302*                          |                       | ✓*                  | SW006011               |                                               |
| PIC18F2681                                                     | 28SP                    | PCM18XP0*                  | DVA18XP280         |                      | PMF18WJ0*                  | DAF18-4*           | ACICE0204            | AC164012*                              | AC164301*                          | ✓*                    | ✓*                  | SW006011               |                                               |
| PIC18F2681                                                     | 28SO                    | PCM18XP0*                  | DVA18XP280         | XLT28SO              | PMF18WJ0*                  | DAF18-4*           | XLT28SO              | AC164017*                              | AC164302*                          |                       | ✓*                  | SW006011               |                                               |
| PIC18F4220                                                     | 40P                     | PCM18XH0                   | DVA18XP400         |                      | PMF18WC0                   | DAF18-2            | ACICE0206            | AC164012                               | AC164301                           | ✓*                    | ✓                   | SW006011               |                                               |
| PIC18F4220                                                     | 44ML                    | PCM18XH0                   | DVA18XP400         | XLT44QFN             | PMF18WC0                   | DAF18-3*           | XLT44QFN             | AC164012<br>+AC164034                  | AC164301<br>+AC164034              | AC164034*             | ✓                   | SW006011               |                                               |
| PIC18F4220                                                     | 44PT                    | PCM18XH0                   | DVA18PQ440         | XLT44PT              | PMF18WC0                   | DAF18-3*           | XLT44PT              | AC164020                               | AC164305                           |                       | ✓                   | SW006011               |                                               |

**MPLAB® ICE 2000 and MPLAB® ICE 4000 Emulator Systems, PRO MATE® II Programmer Socket Modules, MPLAB® In-Circuit Debugger, Software Tools, Programmers and Demonstration Boards**

|                                                                |                         | MPLAB® ICE 2000 System (1) |                    |                      | MPLAB® ICE 4000 System (2) |                    |                      |                                        |                                    |                       |                     |                        |                                               |
|----------------------------------------------------------------|-------------------------|----------------------------|--------------------|----------------------|----------------------------|--------------------|----------------------|----------------------------------------|------------------------------------|-----------------------|---------------------|------------------------|-----------------------------------------------|
| Part Number                                                    | Lead Count/<br>Pkg Type | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket | PRO MATE® II<br>Socket<br>Module (3,4) | MPLAB® PM3<br>Socket<br>Module (8) | PICSTART®<br>Plus (5) | MPLAB® ICD 2<br>(6) | MPLAB® CXX<br>Compiler | Demonstration<br>Boards or<br>Evaluation Kits |
| <b>PICmicro® Microcontroller Development Tools (continued)</b> |                         |                            |                    |                      |                            |                    |                      |                                        |                                    |                       |                     |                        |                                               |
| PIC18F4320                                                     | 40P                     | PCM18XH0                   | DVA18XP400         |                      | PMF18WC0                   | DAF18-2            | ACICE0206            | AC164012                               | AC164301                           | ✓ *                   | ✓                   | SW006011               |                                               |
| PIC18F4320                                                     | 44ML                    | PCM18XH0                   | DVA18XP400         | XLT44QFN             | PMF18WC0                   | DAF18-3*           | XLT44QFN             | AC164012<br>+AC164034                  | AC164301<br>+AC164034              | AC164034*             | ✓                   | SW006011               |                                               |
| PIC18F4320                                                     | 44PT                    | PCM18XH0                   | DVA18PQ440         | XLT44PT              | PMF18WC0                   | DAF18-3*           | XLT44PT              | AC164020                               | AC164305                           |                       | ✓                   | SW006011               |                                               |
| PIC18F4331                                                     | 40P                     | PCM18XL0                   | DVA18XP400         |                      | PMF18WF0*                  | DAF18-4*           | ACICE0206            | AC164012                               | AC164301                           | ✓                     | ✓                   | SW006011               | DM183011                                      |
| PIC18F4331                                                     | 44PT                    | PCM18XL0                   | DVA18PQ440         | XLT44PT              | PMF18WF0*                  | DAF18-5*           | XLT44PT              | AC164020                               | AC164305                           |                       | ✓                   | SW006011               |                                               |
| PIC18F4331                                                     | 44ML                    | PCM18XL0                   | DVA18XP400         | XLT44QFN             | PMF18WF0*                  | DAF18-5*           | XLT44QFN             | AC164012<br>+AC164034                  | AC164301<br>+AC164034              |                       | ✓                   | SW006011               |                                               |
| PIC18F4431                                                     | 40P                     | PCM18XL0                   | DVA18XP400         |                      | PMF18WF0*                  | DAF18-4*           | ACICE0206            | AC164012                               | AC164301                           | ✓                     | ✓                   | SW006011               | DM183011                                      |
| PIC18F4431                                                     | 44PT                    | PCM18XL0                   | DVA18PQ440         | XLT44PT              | PMF18WF0*                  | DAF18-5*           | XLT44PT              | AC164020                               | AC164305                           |                       | ✓                   | SW006011               |                                               |
| PIC18F4431                                                     | 44ML                    | PCM18XL0                   | DVA18XP400         | XLT44QFN             | PMF18WF0*                  | DAF18-5*           | XLT44QFN             | AC164012<br>+AC164034                  | AC164301<br>+AC164034              |                       | ✓                   | SW006011               |                                               |
| PIC18F4439                                                     | 40P                     |                            |                    |                      |                            |                    |                      | AC164012                               | AC164301*                          | ✓ *                   | ✓                   | SW006011               |                                               |
| PIC18F4439                                                     | 44ML                    |                            |                    |                      |                            |                    |                      | AC164012<br>+AC164034                  | AC164301*<br>+AC164034             | AC164034*             | ✓                   | SW006011               |                                               |
| PIC18F4439                                                     | 44PT                    |                            |                    |                      |                            |                    |                      | AC164020                               | AC164305*                          |                       | ✓                   | SW006011               |                                               |
| PIC18F4510                                                     | 40P                     | PCM18XN0*                  | DVA18XP400         |                      | PMF18WH0*                  | DAF18-4*           | ACICE0206            | AC164012*                              | AC164301*                          | ✓ *                   | ✓ *                 | SW006011               | DM163022                                      |
| PIC18F4510                                                     | 44PT                    | PCM18XN0*                  | DVA18PQ440         | XLT44PT              | PMF18WH0*                  | DAF18-5*           | XLT44PT              | AC164020*                              | AC164305*                          |                       | ✓ *                 | SW006011               |                                               |
| PIC18F4510                                                     | 44ML                    | PCM18XN0*                  | DVA18XP400         | XLT44QFN             | PMF18WH0*                  | DAF18-5*           | XLT44QFN             | AC164012*<br>+AC164034                 | AC164301*<br>+AC164034             |                       | ✓ *                 | SW006011               |                                               |
| PIC18F4515                                                     | 40P                     | PCM18XN0*                  | DVA18XP400         |                      | PMF18WH0*                  | DAF18-4*           | ACICE0206            | AC164012*                              | AC164301*                          | ✓ *                   | ✓ *                 | SW006011               |                                               |
| PIC18F4515                                                     | 44PT                    | PCM18XN0*                  | DVA18PQ440         | XLT44PT              | PMF18WH0*                  | DAF18-5*           | XLT44PT              | AC164020*                              | AC164305*                          |                       | ✓ *                 | SW006011               |                                               |
| PIC18F4515                                                     | 44ML                    | PCM18XN0*                  | DVA18XP400         | XLT44QFN             | PMF18WH0*                  | DAF18-5*           | XLT44QFN             | AC164012*<br>+AC164034                 | AC164301*<br>+AC164034             |                       | ✓ *                 | SW006011               |                                               |
| PIC18F4520                                                     | 40P                     | PCM18XN0*                  | DVA18XP400         |                      | PMF18WH0*                  | DAF18-4*           | ACICE0206            | AC164012*                              | AC164301*                          | ✓ *                   | ✓ *                 | SW006011               | DM163022                                      |
| PIC18F4520                                                     | 44PT                    | PCM18XN0*                  | DVA18PQ440         | XLT44PT              | PMF18WH0*                  | DAF18-5*           | XLT44PT              | AC164020*                              | AC164305*                          |                       | ✓ *                 | SW006011               |                                               |
| PIC18F4520                                                     | 44ML                    | PCM18XN0*                  | DVA18XP400         | XLT44QFN             | PMF18WH0*                  | DAF18-5*           | XLT44QFN             | AC164012*<br>+AC164034                 | AC164301*<br>+AC164034             |                       | ✓ *                 | SW006011               |                                               |
| PIC18F4525                                                     | 40P                     | PCM18XN0*                  | DVA18XP400         |                      | PMF18WH0*                  | DAF18-4*           | ACICE0206            | AC164012*                              | AC164301*                          | ✓ *                   | ✓ *                 | SW006011               |                                               |
| PIC18F4525                                                     | 44PT                    | PCM18XN0*                  | DVA18PQ440         | XLT44PT              | PMF18WH0*                  | DAF18-5*           | XLT44PT              | AC164020*                              | AC164305*                          |                       | ✓ *                 | SW006011               |                                               |
| PIC18F4525                                                     | 44ML                    | PCM18XN0*                  | DVA18XP400         | XLT44QFN             | PMF18WH0*                  | DAF18-5*           | XLT44QFN             | AC164012*<br>+AC164034                 | AC164301*<br>+AC164034             |                       | ✓ *                 | SW006011               |                                               |
| PIC18F4539                                                     | 40P                     |                            |                    |                      |                            |                    |                      | AC164012                               | AC164301*                          | ✓ *                   | ✓                   | SW006011               |                                               |
| PIC18F4539                                                     | 44ML                    |                            |                    |                      |                            |                    |                      | AC164012<br>+AC164034                  | AC164301*<br>+AC164034             | AC164034*             | ✓                   | SW006011               |                                               |
| PIC18F4539                                                     | 44PT                    |                            |                    |                      |                            |                    |                      | AC164020                               | AC164305*                          |                       | ✓                   | SW006011               |                                               |

**MPLAB® ICE 2000 and MPLAB® ICE 4000 Emulator Systems, PRO MATE® II Programmer Socket Modules, MPLAB® In-Circuit Debugger, Software Tools, Programmers and Demonstration Boards**

|                                                                |                         | MPLAB® ICE 2000 System (1) |                    |                      | MPLAB® ICE 4000 System (2) |                    |                      |                                        |                                    |                       |                     |                        |                                               |
|----------------------------------------------------------------|-------------------------|----------------------------|--------------------|----------------------|----------------------------|--------------------|----------------------|----------------------------------------|------------------------------------|-----------------------|---------------------|------------------------|-----------------------------------------------|
| Part Number                                                    | Lead Count/<br>Pkg Type | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket | PRO MATE® II<br>Socket<br>Module (3,4) | MPLAB® PM3<br>Socket<br>Module (8) | PICSTART®<br>Plus (5) | MPLAB® ICD 2<br>(6) | MPLAB® CXX<br>Compiler | Demonstration<br>Boards or<br>Evaluation Kits |
| <b>PICmicro® Microcontroller Development Tools (continued)</b> |                         |                            |                    |                      |                            |                    |                      |                                        |                                    |                       |                     |                        |                                               |
| PIC18F4585                                                     | 40P                     | PCM18XP0*                  | DVA18XP400         |                      | PMF18WJ0*                  | DAF18-4*           | ACICE0206            | AC164012*                              | AC164301*                          | ✓*                    | ✓*                  | SW006011               |                                               |
| PIC18F4585                                                     | 44PT                    | PCM18XP0*                  | DVA18PQ440         | XLT44PT              | PMF18WJ0*                  | DAF18-5*           | XLT44PT              | AC164020*                              | AC164305*                          |                       | ✓*                  | SW006011               |                                               |
| PIC18F4585                                                     | 44ML                    | PCM18XP0*                  | DVA18XP400         | XLT44QFN             | PMF18WJ0*                  | DAF18-5*           | XLT44QFN             | AC164012*<br>+AC164034                 | AC164301*<br>+AC164034             |                       | ✓*                  | SW006011               |                                               |
| PIC18F4586                                                     | 40P                     | PCM18XP0*                  | DVA18XP400         |                      | PMF18WJ0*                  | DAF18-4*           | ACICE0206            | AC164012*                              | AC164301*                          | ✓*                    | ✓*                  | SW006011               |                                               |
| PIC18F4586                                                     | 44PT                    | PCM18XP0*                  | DVA18PQ440         | XLT44PT              | PMF18WJ0*                  | DAF18-5*           | XLT44PT              | AC164020*                              | AC164305*                          |                       | ✓*                  | SW006011               |                                               |
| PIC18F4586                                                     | 44ML                    | PCM18XP0*                  | DVA18XP400         | XLT44QFN             | PMF18WJ0*                  | DAF18-5*           | XLT44QFN             | AC164012*<br>+AC164034                 | AC164301*<br>+AC164034             |                       | ✓*                  | SW006011               |                                               |
| PIC18F4610                                                     | 40P                     | PCM18XN0*                  | DVA18XP400         |                      | PMF18WHO*                  | DAF18-4*           | ACICE0206            | AC164012*                              | AC164301*                          | ✓*                    | ✓*                  | SW006011               |                                               |
| PIC18F4610                                                     | 44PT                    | PCM18XN0*                  | DVA18PQ440         | XLT44PT              | PMF18WHO*                  | DAF18-5*           | XLT44PT              | AC164020*                              | AC164305*                          |                       | ✓*                  | SW006011               |                                               |
| PIC18F4610                                                     | 44ML                    | PCM18XN0*                  | DVA18XP400         | XLT44QFN             | PMF18WHO*                  | DAF18-5*           | XLT44QFN             | AC164012*<br>+AC164034                 | AC164301*<br>+AC164034             |                       | ✓*                  | SW006011               |                                               |
| PIC18F4620                                                     | 40P                     | PCM18XN0*                  | DVA18XP400         |                      | PMF18WHO*                  | DAF18-4*           | ACICE0206            | AC164012*                              | AC164301*                          | ✓*                    | ✓*                  | SW006011               |                                               |
| PIC18F4620                                                     | 44PT                    | PCM18XN0*                  | DVA18PQ440         | XLT44PT              | PMF18WHO*                  | DAF18-5*           | XLT44PT              | AC164020*                              | AC164305*                          |                       | ✓*                  | SW006011               |                                               |
| PIC18F4620                                                     | 44ML                    | PCM18XN0*                  | DVA18XP400         | XLT44QFN             | PMF18WHO*                  | DAF18-5*           | XLT44QFN             | AC164012*<br>+AC164034                 | AC164301*<br>+AC164034             |                       | ✓*                  | SW006011               |                                               |
| PIC18F4680                                                     | 40P                     | PCM18XP0                   | DVA18XP400         |                      | PMF18WJ0*                  | DAF18-4*           | ACICE0206            | AC164012*                              | AC164301*                          | ✓*                    | ✓*                  | SW006011               |                                               |
| PIC18F4680                                                     | 44PT                    | PCM18XP0                   | DVA18PQ440         | XLT44PT              | PMF18WJ0*                  | DAF18-5*           | XLT44PT              | AC164020*                              | AC164305*                          |                       | ✓*                  | SW006011               |                                               |
| PIC18F4680                                                     | 44ML                    | PCM18XP0                   | DVA18XP400         | XLT44QFN             | PMF18WJ0*                  | DAF18-5*           | XLT44QFN             | AC164012*<br>+AC164034                 | AC164301*<br>+AC164034             |                       | ✓*                  | SW006011               |                                               |
| PIC18F4681                                                     | 40P                     | PCM18XP0                   | DVA18XP400         |                      | PMF18WJ0*                  | DAF18-4*           | ACICE0206            | AC164012*                              | AC1643018*                         | ✓*                    | ✓*                  | SW006011               |                                               |
| PIC18F4681                                                     | 44PT                    | PCM18XP0                   | DVA18PQ440         | XLT44PT              | PMF18WJ0*                  | DAF18-5*           | XLT44PT              | AC164020*                              | AC1643058*                         |                       | ✓*                  | SW006011               |                                               |
| PIC18F4681                                                     | 44ML                    | PCM18XP0                   | DVA18XP400         | XLT44QFN             | PMF18WJ0*                  | DAF18-5*           | XLT44QFN             | AC164012*<br>+AC164034                 | AC164301*<br>+AC164034             |                       | ✓*                  | SW006011               |                                               |
| PIC18F6310                                                     | 64PT                    | PCM18XQ0*                  | DVA1003*           | XLT64PT2             | PMF18WK0*                  | DAF18-6*           | XLT64PT2             | TBD                                    | AC164303*                          |                       | ✓*                  | SW006011               |                                               |
| PIC18F6390                                                     | 64PT                    | PCM18XQ0*                  | DVA1003*           | XLT64PT2             | PMF18WK0*                  | DAF18-6*           | XLT64PT2             | TBD                                    | AC164303*                          |                       | ✓*                  | SW006011               |                                               |
| PIC18F6410                                                     | 64PT                    | PCM18XQ0*                  | DVA1003*           | XLT64PT2             | PMF18WK0*                  | DAF18-6*           | XLT64PT2             | AC174008*                              | AC164303*                          |                       | ✓*                  | SW006011               |                                               |
| PIC18F6490                                                     | 64PT                    | PCM18XQ0*                  | DVA1003*           | XLT64PT2             | PMF18WK0*                  | DAF18-6*           | XLT64PT2             | AC174008*                              | AC164303*                          |                       | ✓*                  | SW006011               |                                               |
| PIC18F6520                                                     | 64PT                    | PCM18XE1                   | DVA18PQ640         | XLT64PT2             | PMF18WA1                   | DAF18-1            | XLT64PT2             | AC174008                               | AC164303                           |                       | ✓                   | SW006011               | DM183020                                      |
| PIC18F6525                                                     | 64PT                    | PCM18XK0                   | DVA18PQ802         | XLT64PT2             | PMF18WE0                   | DAF18-1            | XLT64PT2             | AC174008                               | AC164303                           |                       | ✓                   | SW006011               |                                               |
| PIC18F6585                                                     | 68L                     | PCM18XK0                   | DVA18PQ802         | XLT68L1              | PMF18WE0                   | DAF18-1            | XLT68L1              | AC174007                               | AC164308                           |                       | ✓                   | SW006011               |                                               |
| PIC18F6585                                                     | 64PT                    | PCM18XK0                   | DVA18PQ802         | XLT64PT2             | PMF18WE0                   | DAF18-1            | XLT64PT2             | AC174008                               | AC164303                           |                       | ✓                   | SW006011               |                                               |
| PIC18F6620                                                     | 64PT                    | PCM18XE1                   | DVA18PQ640         | XLT64PT2             | PMF18WA1                   | DAF18-1            | XLT64PT2             | AC174008                               | AC164303                           | ✓ (7)                 | ✓                   | SW006011               | DM183020                                      |

**MPLAB® ICE 2000 and MPLAB® ICE 4000 Emulator Systems, PRO MATE® II Programmer Socket Modules, MPLAB® In-Circuit Debugger, Software Tools, Programmers and Demonstration Boards**

|                                                                |                         | MPLAB® ICE 2000 System (1) |                    |                      | MPLAB® ICE 4000 System (2) |                    |                      |                                        |                                    |                       |                     |                        |                                               |
|----------------------------------------------------------------|-------------------------|----------------------------|--------------------|----------------------|----------------------------|--------------------|----------------------|----------------------------------------|------------------------------------|-----------------------|---------------------|------------------------|-----------------------------------------------|
| Part Number                                                    | Lead Count/<br>Pkg Type | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket | PRO MATE® II<br>Socket<br>Module (3,4) | MPLAB® PM3<br>Socket<br>Module (8) | PICSTART®<br>Plus (5) | MPLAB® ICD 2<br>(6) | MPLAB® CXX<br>Compiler | Demonstration<br>Boards or<br>Evaluation Kits |
| <b>PICmicro® Microcontroller Development Tools (continued)</b> |                         |                            |                    |                      |                            |                    |                      |                                        |                                    |                       |                     |                        |                                               |
| PIC18F6621                                                     | 64PT                    | PCM18XK0                   | DVA18PQ802         | XLT64PT2             | PMF18WE0                   | DAF18-1            | XLT64PT2             | AC174008                               | AC164303                           |                       | ✓                   | SW006011               |                                               |
| PIC18F6680                                                     | 68L                     | PCM18XK0                   | DVA18PQ802         | XLT68L1              | PMF18WE0                   | DAF18-1            | XLT68L1              | AC174007                               | AC164308                           |                       | ✓                   | SW006011               |                                               |
| PIC18F6680                                                     | 64PT                    | PCM18XK0                   | DVA18PQ802         | XLT64PT2             | PMF18WE0                   | DAF18-1            | XLT64PT2             | AC174008                               | AC164303                           |                       | ✓                   | SW006011               |                                               |
| PIC18F6720                                                     | 64PT                    | PCM18XE1                   | DVA18PQ640         | XLT64PT2             | PMF18WA1                   | DAF18-1            | XLT64PT2             | AC174008                               | AC164303                           | ✓ (7)                 | ✓                   | SW006011               | DM183020                                      |
| PIC18F8310                                                     | 80PT                    | PCM18XQ0*                  | DVA1003*           | XLT80PT              | PMF18WK0*                  | DAF18-6*           | XLT80PT              | TBD                                    | AC164304*                          |                       | ✓*                  | SW006011               |                                               |
| PIC18F8390                                                     | 80PT                    | PCM18XQ0*                  | DVA1003*           | XLT80PT              | PMF18WK0*                  | DAF18-6*           | XLT80PT              | TBD                                    | AC164304*                          |                       | ✓*                  | SW006011               |                                               |
| PIC18F8410                                                     | 80PT                    | PCM18XQ0*                  | DVA1003*           | XLT80PT              | PMF18WK0*                  | DAF18-6*           | XLT80PT              | AC174011*                              | AC164304*                          |                       | ✓*                  | SW006011               |                                               |
| PIC18F8490                                                     | 80PT                    | PCM18XQ0*                  | DVA1003*           | XLT80PT              | PMF18WK0*                  | DAF18-6*           | XLT80PT              | AC174011*                              | AC164304*                          |                       | ✓*                  | SW006011               |                                               |
| PIC18F8520                                                     | 80PT                    | PCM18XE1                   | DVA18PQ800         | XLT80PT              | PMF18WA1                   | DAF18-1            | XLT80PT              | AC174011                               | AC164304                           |                       | ✓                   | SW006011               | DM183020                                      |
| PIC18F8525                                                     | 80PT                    | PCM18XK0                   | DVA18PQ802         | XLT80PT              | PMF18WE0                   | DAF18-1            | XLT80PT              | AC174011                               | AC164304                           |                       | ✓                   | SW006011               |                                               |
| PIC18F8585                                                     | 80PT                    | PCM18XK0                   | DVA18PQ802         | XLT80PT              | PMF18WE0                   | DAF18-1            | XLT80PT              | AC174011                               | AC164304                           |                       | ✓                   | SW006011               |                                               |
| PIC18F8620                                                     | 80PT                    | PCM18XE1                   | DVA18PQ800         | XLT80PT              | PMF18WA1                   | DAF18-1            | XLT80PT              | AC174011                               | AC164304                           | ✓ (7)                 | ✓                   | SW006011               | DM183020                                      |
| PIC18F8621                                                     | 80PT                    | PCM18XK0                   | DVA18PQ802         | XLT80PT              | PMF18WE0                   | DAF18-1            | XLT80PT              | AC174011                               | AC164304                           |                       | ✓                   | SW006011               |                                               |
| PIC18F8680                                                     | 80PT                    | PCM18XK0                   | DVA18PQ802         | XLT80PT              | PMF18WE0                   | DAF18-1            | XLT80PT              | AC174011                               | AC164304                           |                       | ✓                   | SW006011               |                                               |
| PIC18F8720                                                     | 80PT                    | PCM18XE1                   | DVA18PQ800         | XLT80PT              | PMF18WA1                   | DAF18-1            | XLT80PT              | AC174011                               | AC164304                           | ✓ (7)                 | ✓                   | SW006011               | DM183020                                      |
| <b>rfPIC® Microcontroller Development Tools</b>                |                         |                            |                    |                      |                            |                    |                      |                                        |                                    |                       |                     |                        |                                               |
| rfPIC12C509AF/<br>509AG                                        | 18SO                    | PCM16XA0                   | DVA12XP080         | XLT18SO              |                            |                    |                      | AC124002                               | AC164302                           | ✓ (7)                 |                     |                        |                                               |
| rfPIC12C509AF/<br>509AG                                        | 20SS                    | PCM16XA0                   | DVA12XP080         | XLT20SS              |                            |                    |                      | AC124002                               | AC164307                           |                       |                     |                        |                                               |
| rfPIC12F675F                                                   | 20SS                    | PCM12XB0                   | DVA12XP081         | XLT20SS              |                            |                    |                      | AC124002                               | AC164307                           | ✓ (7)*                |                     |                        | DV164102<br>AC164101<br>AC164103              |
| rfPIC12F675H                                                   | 20SS                    | PCM12XB0                   | DVA12XP081         | XLT20SS              |                            |                    |                      | AC124002                               | AC164307                           | ✓ (7)*                |                     |                        |                                               |
| rfPIC12F675K                                                   | 20SS                    | PCM12XB0                   | DVA12XP081         | XLT20SS              |                            |                    |                      | AC124002                               | AC164307                           | ✓ (7)*                |                     |                        | DV164102<br>AC164102<br>AC164104              |
| rfRXD0420                                                      | 32LQ                    |                            |                    |                      |                            |                    |                      |                                        |                                    |                       |                     |                        | DV164102                                      |
| rfRXD0920                                                      | 32LQ                    |                            |                    |                      |                            |                    |                      |                                        |                                    |                       |                     |                        |                                               |

**MPLAB® ICE 2000 and MPLAB® ICE 4000 Emulator Systems, PRO MATE® II Programmer Socket Modules, MPLAB® In-Circuit Debugger, Software Tools, Programmers and Demonstration Boards**

|                                                 |                         | MPLAB® ICE 2000 System (1) |                    |                      | MPLAB® ICE 4000 System (2) |                    |                         |                                        |                                    |                       |                     |                        |                                               |
|-------------------------------------------------|-------------------------|----------------------------|--------------------|----------------------|----------------------------|--------------------|-------------------------|----------------------------------------|------------------------------------|-----------------------|---------------------|------------------------|-----------------------------------------------|
| Part Number                                     | Lead Count/<br>Pkg Type | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket    | PRO MATE® II<br>Socket<br>Module (3,4) | MPLAB® PM3<br>Socket<br>Module (8) | PICSTART®<br>Plus (5) | MPLAB® ICD 2<br>(6) | MPLAB® CXX<br>Compiler | Demonstration<br>Boards or<br>Evaluation Kits |
| <b>dsPIC™ Microcontroller Development Tools</b> |                         |                            |                    |                      |                            |                    |                         |                                        |                                    |                       |                     |                        |                                               |
| dsPIC30F2010                                    | 28SO                    |                            |                    |                      | PMF30XA1*                  | DAF30-4*           | XLT28SO                 | AC30F004*                              | AC164302*                          |                       | ✓                   | SW006012               | DM300017                                      |
| dsPIC30F2010                                    | 28SP                    |                            |                    |                      | PMF30XA1*                  | DAF30-4*           | ACICE0204               | AC30F004*                              | AC164301*                          |                       | ✓                   | SW006012               | DM300017                                      |
| dsPIC30F2011                                    | 18SO                    |                            |                    |                      | PMF30XA1*                  | DAF30-4*           | XLT18SO                 | AC30F005*                              | AC164302*                          |                       | ✓*                  | SW006012               |                                               |
| dsPIC30F2011                                    | 18P                     |                            |                    |                      | PMF30XA1*                  | DAF30-4*           | ACICE0202               | AC30F005*                              | AC164301*                          |                       | ✓*                  | SW006012               |                                               |
| dsPIC30F2012                                    | 28SO                    |                            |                    |                      | PMF30XA1*                  | DAF30-4*           | XLT28SO                 | AC30F004*                              | AC164302*                          |                       | ✓*                  | SW006012               |                                               |
| dsPIC30F2012                                    | 28SP                    |                            |                    |                      | PMF30XA1*                  | DAF30-4*           | ACICE0204               | AC30F004*                              | AC164301*                          |                       | ✓*                  | SW006012               |                                               |
| dsPIC30F3010                                    | 28SO                    |                            |                    |                      | PMF30XA1*                  | DAF30-4*           | XLT28SO                 | AC30F004*                              | AC164302*                          |                       | ✓*                  | SW006012               |                                               |
| dsPIC30F3010                                    | 28SP                    |                            |                    |                      | PMF30XA1*                  | DAF30-4*           | ACICE0204               | AC30F004*                              | AC164301*                          |                       | ✓*                  | SW006012               |                                               |
| dsPIC30F3011                                    | 40P                     |                            |                    |                      | PMF30XA1*                  | DAF30-4*           | ACICE0206               | AC30F003*                              | AC164301*                          |                       | ✓*                  | SW006012               |                                               |
| dsPIC30F3011                                    | 44PT                    |                            |                    |                      | PMF30XA1*                  | DAF30-3*           | XLT44PT or<br>XLT44PT3  | AC30F006*                              | AC164305*                          |                       | ✓*                  | SW006012               |                                               |
| dsPIC30F3012                                    | 18SO                    |                            |                    |                      | PMF30XA1*                  | DAF30-4*           | XLT18SO                 | AC30F005*                              | AC164302*                          |                       | ✓*                  | SW006012               |                                               |
| dsPIC30F3012                                    | 18P                     |                            |                    |                      | PMF30XA1*                  | DAF30-4*           | ACICE0202               | AC30F005*                              | AC164301*                          |                       | ✓*                  | SW006012               |                                               |
| dsPIC30F3013                                    | 28SO                    |                            |                    |                      | PMF30XA1*                  | DAF30-4*           | XLT28SO                 | AC30F004*                              | AC164302*                          |                       | ✓*                  | SW006012               |                                               |
| dsPIC30F3013                                    | 28SP                    |                            |                    |                      | PMF30XA1*                  | DAF30-4*           | ACICE0204               | AC30F004*                              | AC164301*                          |                       | ✓*                  | SW006012               |                                               |
| dsPIC30F3014                                    | 40P                     |                            |                    |                      | PMF30XA1*                  | DAF30-4*           | ACICE0206               | AC30F003*                              | AC164301*                          |                       | ✓*                  | SW006012               |                                               |
| dsPIC30F3014                                    | 44PT                    |                            |                    |                      | PMF30XA1*                  | DAF30-3*           | XLT44PT or<br>XLT44PT3  | AC30F006*                              | AC164305*                          |                       | ✓*                  | SW006012               |                                               |
| dsPIC30F4011                                    | 40P                     |                            |                    |                      | PMF30XA1*                  | DAF30-4*           | ACICE0206               | AC30F003*                              | AC164301*                          |                       | ✓*                  | SW006012               |                                               |
| dsPIC30F4011                                    | 44PT                    |                            |                    |                      | PMF30XA1*                  | DAF30-3*           | XLT44PT or<br>XLT44PT3  | AC30F006*                              | AC164305*                          |                       | ✓*                  | SW006012               |                                               |
| dsPIC30F4012                                    | 28SO                    |                            |                    |                      | PMF30XA1*                  | DAF30-4*           | XLT28SO                 | AC30F004*                              | AC164302*                          |                       | ✓*                  | SW006012               |                                               |
| dsPIC30F4012                                    | 28SP                    |                            |                    |                      | PMF30XA1*                  | DAF30-4*           | ACICE0204               | AC30F004*                              | AC164301*                          |                       | ✓*                  | SW006012               |                                               |
| dsPIC30F4013                                    | 40P                     |                            |                    |                      | PMF30XA1*                  | DAF30-4*           | ACICE0206               | AC30F003*                              | AC164301*                          |                       | ✓*                  | SW006012               |                                               |
| dsPIC30F4013                                    | 44PT                    |                            |                    |                      | PMF30XA1*                  | DAF30-3*           | XLT44PT or<br>XLT44PT3  | AC30F006*                              | AC164305*                          |                       | ✓*                  | SW006012               |                                               |
| dsPIC30F5011                                    | 64PT                    |                            |                    |                      | PMF30XA1*                  | DAF30-2            | XLT64PT2 or<br>XLT64PT5 | AC30F008*                              | AC164303*                          |                       | ✓                   | SW006012               |                                               |
| dsPIC30F5013                                    | 80PT                    |                            |                    |                      | PMF30XA1*                  | DAF30-2            | XLT80PT or<br>XLT80PT3  | AC30F007*                              | AC164304*                          |                       | ✓                   | SW006012               | DM300014<br>DM300004-1<br>DM300004-2          |
| dsPIC30F5015                                    | 64PT                    |                            |                    |                      | PMF30XA1*                  | DAF30-2            | XLT64PT2 or<br>XLT64PT5 | AC30F008*                              | AC164303*                          |                       | ✓*                  | SW006012               |                                               |

**MPLAB® ICE 2000 and MPLAB® ICE 4000 Emulator Systems, PRO MATE® II Programmer Socket Modules, MPLAB® In-Circuit Debugger, Software Tools, Programmers and Demonstration Boards**

|                                                             |                         | MPLAB® ICE 2000 System (1) |                    |                      | MPLAB® ICE 4000 System (2) |                    |                         |                                        |                                    |                       |                     |                        |                                               |
|-------------------------------------------------------------|-------------------------|----------------------------|--------------------|----------------------|----------------------------|--------------------|-------------------------|----------------------------------------|------------------------------------|-----------------------|---------------------|------------------------|-----------------------------------------------|
| Part Number                                                 | Lead Count/<br>Pkg Type | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket    | PRO MATE® II<br>Socket<br>Module (3,4) | MPLAB® PM3<br>Socket<br>Module (8) | PICSTART®<br>Plus (5) | MPLAB® ICD 2<br>(6) | MPLAB® CXX<br>Compiler | Demonstration<br>Boards or<br>Evaluation Kits |
| <b>dsPIC™ Microcontroller Development Tools (continued)</b> |                         |                            |                    |                      |                            |                    |                         |                                        |                                    |                       |                     |                        |                                               |
| dsPIC30F6010                                                | 80PF                    |                            |                    |                      | PMF30XA1*                  | DAF30-2            | XLT80PT2                | AC30F001                               | AC164314*                          |                       | ✓                   | SW006012               | DM300020                                      |
| dsPIC30F6011                                                | 64PF                    |                            |                    |                      | PMF30XA1*                  | DAF30-2            | XLT64PT3 or<br>XLT64PT4 | AC30F002*                              | AC164313*                          |                       | ✓                   | SW006012               | DM300016                                      |
| dsPIC30F6012                                                | 64PF                    |                            |                    |                      | PMF30XA1*                  | DAF30-2            | XLT64PT3 or<br>XLT64PT4 | AC30F002*                              | AC164313*                          |                       | ✓                   | SW006012               | DM300016                                      |
| dsPIC30F6013                                                | 80PF                    |                            |                    |                      | PMF30XA1*                  | DAF30-2            | XLT80PT2                | AC30F001*                              | AC164314*                          |                       | ✓                   | SW006012               | DM300014                                      |
| dsPIC30F6014                                                | 80PF                    |                            |                    |                      | PMF30XA1*                  | DAF30-2            | XLT80PT2                | AC30F001*                              | AC164314*                          |                       | ✓                   | SW006012               | DM300014<br>DM300004-1<br>DM300004-2          |

- NOTES** 1: MPLAB® ICE 2000 pod available separately. (ICE2000)  
2: MPLAB® ICE 4000 pod available separately. (ICE4000)  
3: PRO MATE® II Programmer unit (no longer available). (DV007003)  
4: Optional In-Circuit Serial Programming™ (ICSP™) Socket for PRO MATE® II available separately. (AC004004)  
5: PICSTART® Plus (DV003001)  
6: MPLAB® ICD 2 In-Circuit Debugger. Configurations are:  
(DV164005) ICD 2 module, USB cable and ICD cable.  
(DV164006) ICD 2 module, USB cable, ICD cable, serial cable, PICDEM™ 2 Plus and power supply.  
(DV164007) ICD 2 module, USB cable, ICD cable, serial cable and power supply;  
(DV164030) ICD 2 module, USB cable, ICD cable, serial cable and dsPICDEM™ Starter Demo Board;  
(AC162049) ICD 2 Universal Programming Module;  
(AC162051) ICD or ICD 2 28/40 PDIP Header Interface Board.  
7: Custom adapter required; not available from Microchip. See "Readme" for PICSTART® Plus.  
8: MPLAB® PM3 Programmer Unit available separately. (DV007004). ICSP™ function is built-in with MPLAB® PM3 Programmer.  
(AC164350) MPLAB® PM3 Adapter for PRO MATE® II Socket modules.

\* New product or future support. Contact Microchip web site at [www.microchip.com](http://www.microchip.com) for availability.

✓ Supported with basic configuration. If a part number is listed in the column, that part is required and available separately.



| Demonstration Boards and Evaluation Kits (9) |                                                                                                                                      |
|----------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|
| Part Number                                  | Description                                                                                                                          |
| <b>PICmicro® Demonstration Kits</b>          |                                                                                                                                      |
| DM143001                                     | PICDEM™ 14A Demo Board for PIC14C000                                                                                                 |
| DM163001                                     | PICDEM™ 1 Demo Board for PIC16C5X, 55X, 62X, CE62X, 71, 710, 711, 715, 770, 771, 83, 84, and PIC17C42, 43, 44                        |
| DM163003                                     | PICDEM™ 3 Demo Board for PIC16C923, 924, 925, 926                                                                                    |
| DM163006                                     | PICDEM™ 18R Demo Board for PIC18C601/801                                                                                             |
| DM163014                                     | PICDEM™ 4 Demo Board for PIC12F629, 675, PIC16F630, 676, 684, 627A, 628A, 648A, 818, 819, 87, 88, PIC18F1220, 1320                   |
| DM163022                                     | PICDEM™ 2 Plus Demo Board for PIC16C62, 63, 64, 65, 66, 67, 72, 73, 74, 76, 77, 87X, 773, 774 and PIC18CXX2, 642, 662, and PIC18FXXX |
| DV164101                                     | PICKit™ 1 8/14P Flash Development Kit for PIC12F629, 675 and PIC16F630, 676                                                          |
| DV164102                                     | rfPIC® Development Kit 1                                                                                                             |
| AC164101                                     | rfPIC® Transmitter Module (433.92 MHz)                                                                                               |
| AC164102                                     | rfPIC® Transmitter Module (315 MHz)                                                                                                  |
| AC164103                                     | rfRXD Receiver Module (433.92 MHz)                                                                                                   |
| AC164104                                     | rfRXD Receiver Module (315 MHz)                                                                                                      |
| AC164120                                     | Signal Analysis PICtail™ Daughter Board                                                                                              |
| AC163020                                     | PIC10F2XX Programmer Adapter                                                                                                         |
| AC163021                                     | 6L SOT-23 to 8P DIP Adapter Kit                                                                                                      |
| DM173001                                     | PICDEM™ 17 Demo Board for PIC17CXX                                                                                                   |
| DM183011                                     | PICDEM™ MC Demo Board for PIC18F2331, 2431, 4331, 4431                                                                               |
| DM183020                                     | PIC18FXX20 64/80L TQFP Demo Board for PIC18F6620, 6720, 8620, 8720, 6520, 8520                                                       |
| <b>Connectivity Demonstration Kits</b>       |                                                                                                                                      |
| DM163004-LT                                  | PICDEM.net™ TCP/IP Demo Board (with no text book)                                                                                    |
| DM163005                                     | PICDEM™ LIN Demo Board for PIC16C432/433 LIN bus                                                                                     |
| DM163007                                     | PICDEM™ CAN-LIN 1 Demo Board                                                                                                         |
| DM163008                                     | MCP2120/2150 Developer's Kit for IR Communication                                                                                    |
| DM163010                                     | PICDEM™ USB Demo Board for PIC16C7X5                                                                                                 |
| DM163011                                     | PICDEM™ CAN-LIN 2 Demo Board                                                                                                         |
| DM163015                                     | PICDEM™ CAN-LIN 3 Demo Board                                                                                                         |
| DV250501                                     | MCP250XX CAN Developer's Kit                                                                                                         |
| DV251001                                     | MCP2510/2515 CAN Developer's Kit                                                                                                     |

\* Contact Microchip web site at [www.microchip.com](http://www.microchip.com) for availability.

**Demonstration Boards and Evaluation Kits (9)**

| Part Number                                    | Description                                                                                                       |
|------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|
| <b>Mixed Signal Control Demonstration Kits</b> |                                                                                                                   |
| AC163001                                       | PICDEM™ MSC 1 Voltage Boost Demo Board; requires DM163012                                                         |
| AC163002                                       | PICDEM™ MSC 1 High Power IR Demo Board; requires DM163012                                                         |
| AC163003                                       | PICDEM™ MSC 1 Delta Sigma Demo Board; requires DM163012                                                           |
| AC163004                                       | PICDEM™ MSC 1 Flow Rate Sensor Demo Board; requires DM163012                                                      |
| DM163012                                       | PICDEM™ MSC 1 Mixed Signal Controller Demo Board for PIC16C781/782                                                |
| <b>dsPIC™ 16-bit DSC Demonstration Kits</b>    |                                                                                                                   |
| DM300004-1                                     | dsPICDEM.net™ 1 FCC/JATE PSTN Support, Ethernet NIC Demo Board                                                    |
| DM300004-2                                     | dsPICDEM.net™ 2 CTR-21 PSTN Support, Ethernet NIC Demo Board                                                      |
| DM300014                                       | dsPICDEM™ 1.1 General Purpose Demo Board                                                                          |
| DM300016                                       | dsPICDEM™ Starter Demo Board                                                                                      |
| DM300017                                       | dsPICDEM™ 28-Pin Starter Demo Board                                                                               |
| DM300020                                       | dsPICDEM™ MC1 Motor Control Development Board                                                                     |
| DM300021                                       | dsPICDEM™ MC1H 3-Phase High Voltage Power Module                                                                  |
| DM300022                                       | dsPICDEM™ MC1L 3-Phase Low Voltage Power Module                                                                   |
| <b>dsPIC™ 16-bit DSC Software Tools</b>        |                                                                                                                   |
| SW300001                                       | Digital Filter Design                                                                                             |
| SW300002                                       | dsPIC™ V.22/V.22bis Soft Modem Library (free download: <a href="http://www.microchip.com">www.microchip.com</a> ) |
| SW300003-EVAL                                  | dsPIC™ V.32 Soft Modem Library (Eval Copy)                                                                        |
| SW300003, 04, 05                               | dsPIC™ V.32 Soft Modem Library (5K, 25K, 100K licenses, respectively)                                             |
| SW300006*                                      | dsPIC™ V.22/V.22bis Soft Modem Library by Vocal Technology                                                        |
| SW300010-EVAL*                                 | dsPIC™ Speech Recognition (Eval Copy)                                                                             |
| SW300010, 11, 12*                              | dsPIC™ Speech Recognition (5K, 25K, 100K licenses, respectively)                                                  |
| SW300020                                       | dsPIC30 Math Library: Double-Precision Floating Point Routines                                                    |
| SW300021                                       | dsPIC30 Peripheral Library: Peripheral Initialization and Control Routines                                        |
| SW300022                                       | dsPIC30 DSP Library: Data Signal Processing Library Suite (FFT, Filters)                                          |
| SW300023                                       | dsPICworks™ Visual Algorithm Analyzer: Data Analyzer and Converter Tool                                           |
| SW300030                                       | CMX Scheduler: Multi-tasking, Preemptive Scheduler for dsPIC30F                                                   |
| SW300060-5K, 25K, 100K                         | Acoustic Echo Cancellation Library                                                                                |
| SW300031                                       | CMX-RTX for dsPIC™ DSC: Fully Preemptive RTOS                                                                     |
| SW300032                                       | CMX-Tiny+ for dsPIC™ DSC: Preemptive RTOS                                                                         |
| SW300040-EVAL, 5K, 25K, 100K                   | Noise Suppression Library (Eval, 5K, 25K, 100K licenses, respectively)                                            |
| SW300050-EVAL, 5K, 25K, 100K                   | dsPIC™ Symmetric Embedded Encryption Library (Eval, 5K, 25K, 100K licenses, respectively)                         |
| SW300055-EVAL, 5K, 25K, 100K                   | dsPIC™ Asymmetric Embedded Encryption Library (Eval, 5K, 25K, 100K licenses, respectively)                        |
| SW300060-EVAL, 5K, 25K, 100K                   | Acoustic Echo Cancellation Library (Eval, 5K, 25K, 100K licenses, respectively)                                   |

\* Contact Microchip web site at [www.microchip.com](http://www.microchip.com) for availability.

| PowerSmart® Systems        |                                                                          |
|----------------------------|--------------------------------------------------------------------------|
| Model Name/<br>Part Number | Description                                                              |
| PS040*                     | PowerTool™ Development Software for PS401 and PS402 Applications         |
| PS042                      | PS401 PowerCal™ Board                                                    |
| PS051                      | PowerInfo™ 2 Configuration Interface Board for use with PS70X and PS50X. |
| PS052                      | PowerCal™ 2 Configuration Interface Board for use with PS70X and PS50X.  |
| PS070*                     | PowerMate™ Development Software for PS700 Applications                   |
| PS4160-3                   | 3-cell Li-Ion Fuel Gauge                                                 |
| PS4160-4                   | 4-cell Li-Ion Fuel Gauge                                                 |
| PS4160EV-3                 | 3-cell Li-Ion Fuel Gauge with PS041 PowerInfo™ Board                     |
| PS4160EV-4                 | 4-cell Li-Ion Fuel Gauge with PS041 PowerInfo™ Board                     |
| PS4200                     | 6-12 cell NiMH Fuel Gauge                                                |
| PS4200EV                   | 6-12 Cell NiMH Fuel Gauge with PS041 PowerInfo™ Board                    |
| PS5100*                    | PS501 6-12 cell NiMH Module                                              |
| PS5100EV*                  | PS501 6-12 cell NiMH Module with PS051                                   |
| PS5162                     | 2-cell Li-Ion/Poly Fuel Gauge with safety                                |
| PS5162EV                   | 2-cell Li-Ion/Poly Fuel Gauge with safety and PS051 PowerInfo™ 2         |
| PS5163                     | 3-cell Li-Ion/Poly Fuel Gauge with safety                                |
| PS5163EV                   | 3-cell Li-Ion/Poly Fuel Gauge with safety and PS051 PowerInfo™ 2         |
| PS5164                     | 4-cell Li-Ion/Poly Fuel Gauge with safety                                |
| PS5164EV                   | 4-cell Li-Ion/Poly Fuel Gauge with safety and PS051 PowerInfo™ 2         |
| PS7051                     | Single Cell Li-Ion Fuel Gauge with safety                                |
| PS7052                     | Two Cell Li-Ion Fuel Gauge with safety                                   |
| PS7070                     | PS700 Battery Monitor Evaluation Board                                   |
| PS7070EV                   | PS700 Battery Monitor Evaluation Board with PS051 PowerInfo™ 2           |

\* Contact Microchip web site at [www.microchip.com](http://www.microchip.com) for availability.

| Memory Evaluation/Developer's Kits       |          |                                             |
|------------------------------------------|----------|---------------------------------------------|
| SEEVAL® 32 Serial EEPROM Developer's Kit | DV243002 | All serial EEPROMS, 24XX, 93XX, 25XX series |

| KEELOQ® Evaluation Kits                      |          |            |                |            |          |            |            |          |            |          |
|----------------------------------------------|----------|------------|----------------|------------|----------|------------|------------|----------|------------|----------|
|                                              | HCS101   | HCS200/201 | HCS300/301/320 | HCS360/361 | HCS362   | HCS365/370 | HCS410/412 | HCS473   | HCS500/515 | HCS512   |
| KEELOQ® Transponder Evaluation Kit*          | –        | –          | –              | –          | –        | –          | DM303005   | –        | –          |          |
| KEELOQ® Evaluation Kit II*                   | DM303006 | DM303006   | DM303006       | DM303006   | DM303006 | DM303006   | DM303006   | DM303006 | DM303006   |          |
| PRO MATE® II Universal Programmer for SOIC*  | AC004002 | AC004002   | AC004002       | AC004002   | AC004002 | AC004003   | AC004002   | AC004003 | –          | AC164002 |
| PRO MATE® II Universal Programmer for DIP*   | AC004001 | AC004001   | AC004001       | AC004001   | AC004001 | AC004007   | AC004001   | AC004007 | –          | AC164001 |
| PRO MATE® II Universal Programmer for ICSP™* | AC004004 | AC004004   | AC004004       | AC004004   | AC004004 | AC004004   | AC004004   | AC004004 | AC004004   |          |

\*Support is limited to PRO MATE® II using MPLAB® IDE release 5.70.

| Analog Evaluation/Developer's Kits       |            |            |            |            |            |                    |            |           |           |          |                           |
|------------------------------------------|------------|------------|------------|------------|------------|--------------------|------------|-----------|-----------|----------|---------------------------|
|                                          | MCP3001/02 | MCP3004/08 | MCP3201/02 | MCP3204/08 | MCP60X     | MCP41XXX/<br>42XXX | TC64X/64XB | TC650/51  | TC652/53  | TC74     | TC3400/01/02/<br>03/04/05 |
| <b>Analog Evaluation Kits</b>            |            |            |            |            |            |                    |            |           |           |          |                           |
| Analog Evaluation Driver Board           | DVMCPA     | DVMCPA     | DVMCPA     | DVMCPA     | –          | DVMCPA             |            |           |           |          |                           |
| Evaluation Board                         | DV3201A**  | DV3204A**  | DV3201A**  | DV3204A**  | –          | DV42XXX**          |            |           |           |          |                           |
| FilterLab® Active Filter Design Tool     |            |            |            |            | FilterLab* |                    |            |           |           |          |                           |
| <b>Thermal Management Tools</b>          |            |            |            |            |            |                    |            |           |           |          |                           |
| Fan Controller Demo Board                |            |            |            |            |            |                    | TC642Demo  | TC650Demo | TC652Demo |          |                           |
| Fan Controller Evaluation Kit            |            |            |            |            |            |                    | TC642EV    |           |           |          |                           |
| Serial Digital Thermal Sensor Demo Board |            |            |            |            |            |                    |            |           |           | TC74Demo |                           |
| <b>Data Converter Tools</b>              |            |            |            |            |            |                    |            |           |           |          |                           |
| Sigma-Delta A/D Family Demo Board        |            |            |            |            |            |                    |            |           |           |          |                           |
| Sigma-Delta A/D Family Evaluation Kit    |            |            |            |            |            |                    |            |           |           |          |                           |

\* Available for download from Microchip Technology Inc.'s web site at [www.microchip.com](http://www.microchip.com).

\*\* Must be ordered with DVMCPA.

| RFID Evaluation/Developer's Kits                                             |         |         |                    |             |
|------------------------------------------------------------------------------|---------|---------|--------------------|-------------|
|                                                                              | MCRF200 | MCRF250 | MCRF355            | MCRF450/452 |
| 13.56 MHz Anti-Collision microID® Developer's Kit for MCRF355, 360, 450, 452 | –       | –       | DV103003, DV103006 | DV103006    |
| microID® Programmer Kit only for MCRF355                                     | –       | –       | PG103003           | –           |

## FUTURE MICROCHIP MICROCONTROLLER PRODUCTS

### Baseline 8-Bit PICmicro® Microcontroller Family

| Product                                                                                                                                                           | Program Memory (Bytes) | EEPROM Data Memory Bytes | RAM Bytes | I/O Pins | Packages        | Analog       |       | Digital        |            | Max. Speed MHz | IntOSC | ICSP™ | BOR/ PBOR/ PLVD | ICD # of Breakpoints | CCP/ ECCP | nW | Other Features    |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|--------------------------|-----------|----------|-----------------|--------------|-------|----------------|------------|----------------|--------|-------|-----------------|----------------------|-----------|----|-------------------|
|                                                                                                                                                                   |                        |                          |           |          |                 | ADC Channels | Comp. | Timers/WDT     | Serial I/O |                |        |       |                 |                      |           |    |                   |
| PIC12FXXX (x12): 200 ns Instruction Execution, 33 Instructions                                                                                                    |                        |                          |           |          |                 |              |       |                |            |                |        |       |                 |                      |           |    |                   |
| PIC12F510                                                                                                                                                         | 1536 StdFI             | —                        | 72        | 6        | 8P, 8SN, 8MS    | —            | 1     | 1-8 bit, 1-WDT | —          | 20             | 8 MHz  | ✓     | —               | 1**                  | —         | —  | Bandgap reference |
| PIC16FXXX (x12): Upwardly Compatible with PIC16C5X/PIC12CXXX, 4-12 Interrupts, 200 ns Instruction Execution, 35 Instructions, 20 mA source and 25 mA sink per I/O |                        |                          |           |          |                 |              |       |                |            |                |        |       |                 |                      |           |    |                   |
| PIC16F506                                                                                                                                                         | 1536 StdFI             | —                        | 72        | 12       | 14P, 14SO, 14ST | —            | 2     | 1-8 bit, 1-WDT | —          | 20             | 8 MHz  | ✓     | —               | 1**                  | —         | —  | Bandgap reference |

\*\* Requires ICD specific device with header module – refer to Development Tools.

### Mid-Range 8-Bit PICmicro® Microcontroller Family

| Product                                                                                                                             | Program Memory (Bytes) | EEPROM Data Memory Bytes | RAM Bytes | I/O Pins | Packages               | Analog       |       | Digital                  |                 | Max. Speed MHz | IntOSC | BOR/PBOR/PLVD | ICD # of Breakpoints | CCP/ECCP | nW | Other Features                                  |
|-------------------------------------------------------------------------------------------------------------------------------------|------------------------|--------------------------|-----------|----------|------------------------|--------------|-------|--------------------------|-----------------|----------------|--------|---------------|----------------------|----------|----|-------------------------------------------------|
|                                                                                                                                     |                        |                          |           |          |                        | ADC Channels | Comp. | Timers/WDT               | Serial I/O      |                |        |               |                      |          |    |                                                 |
| PIC16FXXX (x14): Upwardly Compatible with PIC16C5X/PIC12CXXX, 4-12 Interrupts, 200 ns Instruction Execution, 35 Instructions, ICSP™ |                        |                          |           |          |                        |              |       |                          |                 |                |        |               |                      |          |    |                                                 |
| PIC16F631                                                                                                                           | 1792 StdFI             | 128                      | 64        | 18       | 20P, 20SO, 20SS        | —            | 2     | 1-16 bit, 1-8 bit, 1-WDT | —               | 20             | 8 MHz  | BOR           | 1**                  | —        | ✓  | Transponder Analog Front End, KEELOQ®           |
| PIC16F639                                                                                                                           | 3584 StdFI             | 256                      | 128       | 12       | 20P, 20SO, 20SS        | —            | 2     | 1-16 bit, 1-8 bit, 1-WDT | —               | 20             | 8 MHz  | BOR           | 1**                  | —        | ✓  |                                                 |
| PIC16F677                                                                                                                           | 3584 StdFI             | 256                      | 128       | 18       | 20P, 20SO, 20SS        | 12           | 2     | 1-16 bit, 1-8 bit, 1-WDT | —               | 20             | 8 MHz  | BOR           | 1**                  | —        | ✓  |                                                 |
| PIC16F685                                                                                                                           | 7168 StdFI             | 256                      | 256       | 18       | 20P, 20SO, 20SS        | 12           | 2     | 1-16 bit, 2-8 bit, 1-WDT | —               | 20             | 8 MHz  | BOR           | 1**                  | 0/1      | ✓  |                                                 |
| PIC16F687                                                                                                                           | 3584 StdFI             | 256                      | 128       | 18       | 20P, 20SO, 20SS        | 12           | 2     | 1-16 bit, 1-8 bit, 1-WDT | EUSART, I²C/SPI | 20             | 8 MHz  | BOR           | 1**                  | —        | ✓  |                                                 |
| PIC16F689                                                                                                                           | 7168 StdFI             | 256                      | 256       | 18       | 20P, 20SO, 20SS        | 12           | 2     | 1-16 bit, 1-8 bit, 1-WDT | EUSART, I²C/SPI | 20             | 8 MHz  | BOR           | 1**                  | —        | ✓  |                                                 |
| PIC16F690                                                                                                                           | 7168 StdFI             | 256                      | 256       | 18       | 20P, 20SO, 20SS        | 12           | 2     | 1-16 bit, 1-8 bit, 1-WDT | EUSART, I²C/SPI | 20             | 8 MHz  | BOR           | 1**                  | 0/1      | ✓  |                                                 |
| PIC16F785                                                                                                                           | 3584 StdFI             | 256                      | 128       | 18       | 20P, 20SO, 20SS        | 12           | 2     | 1-16 bit, 2-8 bit, 1-WDT | —               | 20             | 8 MHz  | BOR           | 1**                  | 1/0      | ✓  | 2 phase PWM, 2x Op Amp, VREF                    |
| PIC16F913                                                                                                                           | 7168 EnhFI             | 256                      | 256       | 25       | 28P, 28SO, 28SS, 28QFN | 4            | 1     | 2-8 bit, 1-16 bit        | AUSART, I²C/SPI | 20             | 8 MHz  | BOR/PLVD      | 1                    | 1/0      | ✓  | Integrated LCD control modules with 60 segments |
| PIC16F914                                                                                                                           | 7168 EnhFI             | 256                      | 256       | 36       | 40P, 44TQFP, 44QFN     | 8            | 2     | 2-8 bit, 1-16 bit        | AUSART, I²C/SPI | 20             | 8 MHz  | BOR/PLVD      | 1                    | 2/0      | ✓  | Integrated LCD control modules with 96 segments |
| PIC16F916                                                                                                                           | 14336 EnhFI            | 256                      | 352       | 25       | 28P, 28SO, 28SS, 28QFN | 4            | 1     | 2-8 bit, 1-16 bit        | AUSART, I²C/SPI | 20             | 8 MHz  | BOR/PLVD      | 1                    | 1/0      | ✓  | Integrated LCD control modules with 60 segments |
| PIC16F917                                                                                                                           | 14336 EnhFI            | 256                      | 352       | 36       | 40P, 44TQFP, 44QFN     | 8            | 2     | 2-8 bit, 1-16 bit        | AUSART, I²C/SPI | 20             | 8 MHz  | BOR/PLVD      | 1                    | 2/0      | ✓  | Integrated LCD control modules with 96 segments |

\*\* Requires ICD specific device with header module – refer to Development Tools.

# High Performance 8-Bit PICmicro® Microcontroller Family

| Product                                                                                                                                                                                                                              | Program Memory (Bytes) | EEPROM Data Memory Bytes | RAM Bytes | I/O Pins | Packages              | Analog    |       | Digital                  |                                     | Max. Speed MHz | IntOSC | BOR/PBOR/PLVD |      | ICD # of Breakpoints | CCP/ ECCP | nW | Other Features    |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|--------------------------|-----------|----------|-----------------------|-----------|-------|--------------------------|-------------------------------------|----------------|--------|---------------|------|----------------------|-----------|----|-------------------|
|                                                                                                                                                                                                                                      |                        |                          |           |          |                       | ADC Ch    | Comp. | Timers/WDT               | Serial I/O                          |                |        |               |      |                      |           |    |                   |
| PIC18FXXX (x16): Upwardly Compatible with PIC17C7XX/PIC16C5X/PIC12CXXX, 77 Instructions, C Compiler Efficient Instruction Set, Software Stack Capability, Table Read/Write, Switchable Oscillator Sources, 4x PLL, 10-12 MIPS, ICSP™ |                        |                          |           |          |                       |           |       |                          |                                     |                |        |               |      |                      |           |    |                   |
| PIC18F1230                                                                                                                                                                                                                           | 4096 EnhFI             | 128                      | 256       | 16       | 18P, 18SO, 20SS, 28ML | 3x10-bit  | 3     | 2-16 bit, 1-WDT          | EUSART                              | 40             | 8 MHz  | PBOR/PLVD     |      | 3                    | —         | ✓  | Motor Control PWM |
| PIC18F1330                                                                                                                                                                                                                           | 8192 EnhFI             | 128                      | 256       | 16       | 18P, 18SO, 20SS, 28ML | 3x10-bit  | 3     | 2-16 bit, 1-WDT          | EUSART                              | 40             | 8 MHz  | PBOR/PLVD     |      | 3                    | —         | ✓  | Motor Control PWM |
| PIC18F65J10                                                                                                                                                                                                                          | 32,768 StdFI           | —                        | 2048      | 51       | 64PT                  | 11x10-bit | 2     | 3-16 bit, 2-8 bit, 1-WDT | 2x EUSART, 2x MI <sup>2</sup> C/SPI | 40             | —      | ✓             | BOR  | 3                    | 2/3       | ✓  | PSP               |
| PIC18F65J15                                                                                                                                                                                                                          | 49,152 StdFI           | —                        | 2048      | 51       | 64PT                  | 11x10-bit | 2     | 3-16 bit, 2-8 bit, 1-WDT | 2x EUSART, 2x MI <sup>2</sup> C/SPI | 40             | —      | ✓             | BOR  | 3                    | 2/3       | ✓  | PSP               |
| PIC18F66J10                                                                                                                                                                                                                          | 65,536 StdFI           | —                        | 2048      | 51       | 64PT                  | 11x10-bit | 2     | 3-16 bit, 2-8 bit, 1-WDT | 2x EUSART, 2x MI <sup>2</sup> C/SPI | 40             | —      | ✓             | BOR  | 3                    | 2/3       | ✓  | PSP               |
| PIC18F66J15                                                                                                                                                                                                                          | 98,304 StdFI           | —                        | 3936      | 51       | 64PT                  | 11x10-bit | 2     | 3-16 bit, 2-8 bit, 1-WDT | 2x EUSART, 2x MI <sup>2</sup> C/SPI | 40             | —      | ✓             | BOR  | 3                    | 2/3       | ✓  | PSP               |
| PIC18F67J10                                                                                                                                                                                                                          | 131,072 StdFI          | —                        | 3936      | 51       | 64PT                  | 11x10-bit | 2     | 3-16 bit, 2-8 bit, 1-WDT | 2x EUSART, 2x MI <sup>2</sup> C/SPI | 40             | —      | ✓             | BOR  | 3                    | 2/3       | ✓  | PSP               |
| PIC18F85J10                                                                                                                                                                                                                          | 32,768 StdFI           | —                        | 2048      | 67       | 80PT                  | 15x10-bit | 2     | 3-16 bit, 2-8 bit, 1-WDT | 2x EUSART, 2x MI <sup>2</sup> C/SPI | 40             | —      | ✓             | BOR  | 3                    | 2/3       | ✓  | PSP, EMA          |
| PIC18F85J15                                                                                                                                                                                                                          | 49,152 StdFI           | —                        | 2048      | 67       | 80PT                  | 15x10-bit | 2     | 3-16 bit, 2-8 bit, 1-WDT | 2x EUSART, 2x MI <sup>2</sup> C/SPI | 40             | —      | ✓             | BOR  | 3                    | 2/3       | ✓  | PSP, EMA          |
| PIC18F86J10                                                                                                                                                                                                                          | 65,536 StdFI           | —                        | 3936      | 67       | 80PT                  | 15x10-bit | 2     | 3-16 bit, 2-8 bit, 1-WDT | 2x EUSART, 2x MI <sup>2</sup> C/SPI | 40             | —      | ✓             | BOR  | 3                    | 2/3       | ✓  | PSP, EMA          |
| PIC18F86J15                                                                                                                                                                                                                          | 98,304 StdFI           | —                        | 3936      | 67       | 80PT                  | 15x10-bit | 2     | 3-16 bit, 2-8 bit, 1-WDT | 2x EUSART, 2x MI <sup>2</sup> C/SPI | 40             | —      | ✓             | BOR  | 3                    | 2/3       | ✓  | PSP, EMA          |
| PIC18F87J10                                                                                                                                                                                                                          | 131,072 StdFI          | —                        | 3936      | 67       | 80PT                  | 15x10-bit | 2     | 3-16 bit, 2-8 bit, 1-WDT | 2x EUSART, 2x MI <sup>2</sup> C/SPI | 40             | —      | ✓             | BOR  | 3                    | 2/3       | ✓  | PSP, EMA          |
| PIC18F6522                                                                                                                                                                                                                           | 32,768 EnhFI           | 1024                     | 2048      | 54       | 64PT                  | 12x10-bit | 2     | 3-16 bit, 2-8 bit, 1-WDT | 2x EUSART, 2x MI <sup>2</sup> C/SPI | 40             | 8 MHz  | ✓             | PBOR | 3                    | 2/3       | ✓  | PSP               |
| PIC18F6527                                                                                                                                                                                                                           | 49,152 EnhFI           | 1024                     | 3936      | 54       | 64PT                  | 12x10-bit | 2     | 3-16 bit, 2-8 bit, 1-WDT | 2x EUSART, 2x MI <sup>2</sup> C/SPI | 40             | 8 MHz  | ✓             | PBOR | 3                    | 2/3       | ✓  | PSP               |
| PIC18F6622                                                                                                                                                                                                                           | 65,536 EnhFI           | 1024                     | 3936      | 54       | 64PT                  | 12x10-bit | 2     | 3-16 bit, 2-8 bit, 1-WDT | 2x EUSART, 2x MI <sup>2</sup> C/SPI | 40             | 8 MHz  | ✓             | PBOR | 3                    | 2/3       | ✓  | PSP               |
| PIC18F8522                                                                                                                                                                                                                           | 32,768 EnhFI           | 1024                     | 2048      | 70       | 80PT                  | 16x10-bit | 2     | 3-16 bit, 2-8 bit, 1-WDT | 2x EUSART, 2x MI <sup>2</sup> C/SPI | 40             | 8 MHz  | ✓             | PBOR | 3                    | 2/3       | ✓  | PSP, EMA          |
| PIC18F8527                                                                                                                                                                                                                           | 49,152 EnhFI           | 1024                     | 3936      | 70       | 80PT                  | 16x10-bit | 2     | 3-16 bit, 2-8 bit, 1-WDT | 2x EUSART, 2x MI <sup>2</sup> C/SPI | 40             | 8 MHz  | ✓             | PBOR | 3                    | 2/3       | ✓  | PSP, EMA          |
| PIC18F8622                                                                                                                                                                                                                           | 65,536 EnhFI           | 1024                     | 3936      | 70       | 80PT                  | 16x10-bit | 2     | 3-16 bit, 2-8 bit, 1-WDT | 2x EUSART, 2x MI <sup>2</sup> C/SPI | 40             | 8 MHz  | ✓             | PBOR | 3                    | 2/3       | ✓  | PSP, EMA          |

## Abbreviations:

CAN = Controller Area Network  
CCP = Capture/Compare/PWM  
DAC = Digital-to-Analog Converter  
E<sup>2</sup> = EEPROM

ECAN = Enhanced Controller Area Network  
ECCP = Enhanced Capture/Compare/4-ch PWM with programmable dead time

\*Contact Microchip Technology for availability date.

ICSP = In-Circuit Serial Programming  
ICD = # of in-circuit debug breakpoints  
IntOSC = Internal Oscillator  
LVD = Low Voltage Detection  
LIN XCVR = Local Interconnection Network Transceiver  
MI<sup>2</sup>C/SPI = Master I<sup>2</sup>C/SPI

PSP = Parallel Slave Port  
PWM = Pulse Width Modulator  
PSMC = Programmable Switch Mode Controller  
ROM-less = External ROM necessary  
SLAC = Slope A/D Converter, up to 16 bits  
SMB = System Management Bus

VREF = Voltage Reference  
WDT = Watchdog Timer  
x12 = 12-bit Instruction Width  
x14 = 14-bit Instruction Width  
x16 = 16-bit Instruction Width

## BATTERY MANAGEMENT FAMILY PRODUCTS

### Switching Battery Chargers

| Product | Mode   | Cell Type         | # of Cells | Vcc Range (V) | Max. Voltage Regulation (%) | Int/Ext FET | Features                                                                                                                    | Package                 |
|---------|--------|-------------------|------------|---------------|-----------------------------|-------------|-----------------------------------------------------------------------------------------------------------------------------|-------------------------|
| PS200   | Switch | Li-Ion/Li-Polymer | 1 - 4      | 5 - 18        | ±1%                         | Ext         | Voltage and current regulation, safety charge timers and temperature limits, internal voltage regulator, 500 kHz (max.) PWM | 20-pin PDIP, SOIC, SSOP |

For Linear Battery Chargers, refer to Analog/Interface Family Products.

### Battery Fuel Gauge ICs

| Product | Battery Chemistry | # of Cells | Interface | Data Set | A/D Converter      | Programmable Memory | Programmable I/O Functions | Accuracy | Time Base | Safety   | Temp. Sensor | Packaging                | Description                                                                                                                                                                  |
|---------|-------------------|------------|-----------|----------|--------------------|---------------------|----------------------------|----------|-----------|----------|--------------|--------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| PS810   | Li-Ion            | 1-Jan      | SMBus/SI  |          | 16-bit Sigma-Delta | 4k x 16 Flash       | 6 GPIO                     | 1%       | On-chip   | —        | On-chip      | 14-pin TSSOP, 16-pin QFN | Single cell Li-Ion fuel gauge provides battery status such as run time-to-empty, run time-to-full, relative state-of-charge and battery state-of-health.                     |
| PS830   | Li-Ion            | 1-Jan      | SMBus/SI  |          | 16-bit Sigma-Delta | 4k x 16 Flash       | 3 GPIO                     | 1%       | On-chip   | Internal | On-chip      | 14-pin TSSOP, 16-pin QFN | Single cell Li-Ion fuel gauge w/ integrated safety provides battery status such as run time-to-empty, run time-to-full, relative state-of-charge and battery state-of-health |

## dsPIC® DIGITAL SIGNAL CONTROLLER (DSC) PRODUCTS

| Product                                                   | Program (FLASH) KBytes | Memory (FLASH) KWords | EE Bytes | SRAM Bytes | Packages     | A/D 12-bit 100 KSPS | A/D 10-bit 500 KSPS | Timer 16-bit | Input Cap | Output Comp/ Std PWM | Motor Control PWM | Quad Enc. | UART | SPI™ | I²C™ | CAN | Codec Interface |
|-----------------------------------------------------------|------------------------|-----------------------|----------|------------|--------------|---------------------|---------------------|--------------|-----------|----------------------|-------------------|-----------|------|------|------|-----|-----------------|
| <b>dsPIC30F Motor Control and Power Conversion Family</b> |                        |                       |          |            |              |                     |                     |              |           |                      |                   |           |      |      |      |     |                 |
| dsPIC30F3010                                              | 24                     | 8                     | 1024     | 1024       | 28SOG, 28SPG | —                   | 6 ch                | 5            | 4         | 2                    | 6                 | ✓         | 1    | 1    | 1    | —   | —               |
| dsPIC30F3011                                              | 24                     | 8                     | 1024     | 1024       | 40PG, 44PTG  | —                   | 9 ch                | 5            | 4         | 4                    | 6                 | ✓         | 2    | 1    | 1    | —   | —               |
| dsPIC30F5015                                              | 66                     | 22                    | 1024     | 2048       | 64PTG        | —                   | 16 ch               | 5            | 4         | 4                    | 8                 | ✓         | 1    | 2    | 1    | 1   | —               |

\*Contact Microchip Technology for availability date.

### SERIAL ELECTRICALLY ERASABLE PROMS (EEPROM)

| Part #                                                                                                                                          | E/W Cycles | Density<br>(Organization) | Page Size | Write Speed | Max. Clock Freq. | Operating Voltage<br>(V) | Temps | Unique Features | Packages <sup>(Note)</sup> |
|-------------------------------------------------------------------------------------------------------------------------------------------------|------------|---------------------------|-----------|-------------|------------------|--------------------------|-------|-----------------|----------------------------|
| <b>SPI™ Compatible Serial EEPROM Family – Page Write mode, HOLD pin, software enabled block write protection and hardware write-protect pin</b> |            |                           |           |             |                  |                          |       |                 |                            |
| 25LC010A                                                                                                                                        | 1M         | 1 Kbit (x8)               | 16B       | 5 ms        | 10 MHz           | 2.5 to 5.5               | I, E  |                 | P, SN, ST, MS              |
| 25AA010A                                                                                                                                        | 1M         | 1 Kbit (x8)               | 16B       | 5 ms        | 10 MHz           | 1.8 to 5.5               | I     |                 | P, SN, ST, MS              |
| 25LC020A                                                                                                                                        | 1M         | 2 Kbit (x8)               | 16B       | 5 ms        | 10 MHz           | 2.5 to 5.5               | I, E  |                 | P, SN, ST, MS              |
| 25AA020A                                                                                                                                        | 1M         | 2 Kbit (x8)               | 16B       | 5 ms        | 10 MHz           | 1.8 to 5.5               | I     |                 | P, SN, ST, MS              |
| 25LC040A                                                                                                                                        | 1M         | 4 Kbit (x8)               | 16B       | 5 ms        | 10 MHz           | 2.5 to 5.5               | I, E  |                 | P, SN, ST, MS              |
| 25AA040A                                                                                                                                        | 1M         | 4 Kbit (x8)               | 16B       | 5 ms        | 10 MHz           | 1.8 to 5.5               | I     |                 | P, SN, ST, MS              |
| 25LC320A                                                                                                                                        | 1M         | 32 Kbits (x8)             | 32B       | 5 ms        | 10 MHz           | 2.5 to 5.5               | I, E  |                 | P, SN, ST, MS              |
| 25AA320A                                                                                                                                        | 1M         | 32 Kbits (x8)             | 32B       | 5 ms        | 10 MHz           | 1.8 to 5.5               | I, E  |                 | P, SN, ST, MS              |
| 25LC640A                                                                                                                                        | 1M         | 64 Kbits (x8)             | 32B       | 5 ms        | 10 MHz           | 2.5 to 5.5               | I, E  |                 | P, SN, ST, MS              |
| 25AA640A                                                                                                                                        | 1M         | 64 Kbits (x8)             | 32B       | 5 ms        | 10 MHz           | 1.8 to 5.5               | I     |                 | P, SN, ST, MS              |
| 25LC128                                                                                                                                         | 1M         | 128 Kbits (x8)            | 64B       | 5 ms        | 10 MHz           | 2.5 to 5.5               | I, E  |                 | P, SN, ST, MS              |
| 25AA128                                                                                                                                         | 1M         | 128 Kbits (x8)            | 64B       | 5 ms        | 10 MHz           | 1.8 to 5.5               | I     |                 | P, SN, ST, MS              |
| 25LC256                                                                                                                                         | 1M         | 256 Kbits (x8)            | 64B       | 5 ms        | 10 MHz           | 2.5 to 5.5               | I, E  |                 | P, SN, ST, MF              |
| 25AA256                                                                                                                                         | 1M         | 256 Kbits (x8)            | 64B       | 5 ms        | 10 MHz           | 1.8 to 5.5               | I     |                 | P, SN, ST, MF              |
| 25LC1024                                                                                                                                        | 1M         | 1 Mbit (x8)               | 256B      | 5 ms        | 20 MHz           | 2.5 to 5.5               | I, E  |                 | P, SM, MF                  |
| 25AA1024                                                                                                                                        | 1M         | 1 Mbit (x8)               | 256B      | 5 ms        | 20 MHz           | 1.8 to 5.5               | I     |                 | P, SM, MF                  |

**NOTE:** Pb-free packages will be available. Order with "G" suffix. Example: 25LC040A-I/SNG.

### ANALOG/INTERFACE PRODUCTS

| Part #                                                         | Typical<br>Accuracy<br>(°C) | Maximum<br>Accuracy @<br>25°C (°C) | Maximum<br>Temperature<br>Range (°C) | Vcc Range (V) | Max. Supply<br>Current (μA) | Features                                         | Packages    |
|----------------------------------------------------------------|-----------------------------|------------------------------------|--------------------------------------|---------------|-----------------------------|--------------------------------------------------|-------------|
| <b>Thermal Management - Voltage Output Temperature Sensors</b> |                             |                                    |                                      |               |                             |                                                  |             |
| MCP9700                                                        | ±2                          | ±4                                 | -40 to +125                          | +2.3 to +5.5  | 12                          | Temperature slope: 10 mV/°C                      | 5-pin SC-70 |
| MCP9700A                                                       | ±1                          | ±2                                 | -40 to +125                          | +2.3 to +5.5  | 12                          | Temperature slope: 10 mV/°C                      | 5-pin SC-70 |
| MCP9701                                                        | ±2                          | ±4                                 | -10 to +125                          | +3.1 to +5.5  | 12                          | Temperature slope: 19.53 mV/°C, cross to MAX6612 | 5-pin SC-70 |
| MCP9701A                                                       | ±1                          | ±2                                 | -10 to +125                          | +3.1 to +5.5  | 12                          | Temperature slope: 19.53 mV/°C, cross to MAX6612 | 5-pin SC-70 |



| Power Management – Switching Regulators |                                       |                         |                          |                                  |                        |                           |                             |                     |                                                                                    |                           |
|-----------------------------------------|---------------------------------------|-------------------------|--------------------------|----------------------------------|------------------------|---------------------------|-----------------------------|---------------------|------------------------------------------------------------------------------------|---------------------------|
| Part #                                  | Description                           | Input Voltage Range (V) | Output Voltage Range (V) | Operating Temperature Range (°C) | Control Scheme         | Switching Frequency (kHz) | Typical Active Current (mA) | Output Current (mA) | Features                                                                           | Packages                  |
| MCP1612                                 | Synchronous Buck DC/DC Regulator      | 2.7 to 5.5              | 0.8 to 5.5               | -40 to +85                       | Constant frequency PWM | 1400                      | 10                          | 1000                | Overall efficiency >94% soft start, over-temperature and over-current protection   | 8-Pin MSOP, 8-Pin 3x3 DFN |
| MCP1614                                 | Dual Synchronous Buck DC-DC converter | 2.7 to 5.5              | 0.8 to 5.5               | -40 to +85                       | Constant frequency PWM | 1400                      | 18                          | 1000/1000           | Overall efficiency > 94%, soft start, over-temperature and over current protection | 16-Pin QSOP               |

| Power Management - Battery Chargers |        |                   |            |               |                             |             |                                                                            |                  |
|-------------------------------------|--------|-------------------|------------|---------------|-----------------------------|-------------|----------------------------------------------------------------------------|------------------|
| Part #                              | Mode   | Cell Type         | # of Cells | Vcc Range (V) | Max. Voltage Regulation (%) | Int/Ext FET | Features                                                                   | Packages         |
| MCP73853                            | Linear | Li-Ion/Li-Polymer | 1          | 4.5 to 5.5    | ±0.5                        | Int         | USB control, safety charge timers, temperature monitor, thermal regulation | 16-Pin QFN (4x4) |
| MCP73855                            | Linear | Li-Ion/Li-Polymer | 1          | 4.5 to 5.5    | ±0.5                        | Int         | USB control, safety charge timers, thermal regulation                      | 10-Pin DFN (3x3) |

| Linear – Operational Amplifiers |          |         |                     |                 |                       |                        |                           |                                        |
|---------------------------------|----------|---------|---------------------|-----------------|-----------------------|------------------------|---------------------------|----------------------------------------|
| Part #                          | Channels | GBWP    | I <sub>Q</sub> Typ. | V <sub>OS</sub> | Operating Voltage (V) | Temperature Range (°C) | Features                  | Packages                               |
| MCP6234                         | 4        | 300 kHz | 20 µA               | 7 mV            | 1.8 to 5.5            | -40° to +125           | Rail-to-Rail Input/Output | 14-Pin PDIP, 14-Pin SOIC, 14-Pin TSSOP |
| MCP6244                         | 4        | 650 kHz | 50 µA               | 7 mV            | 1.8 to 5.5            | -40° to +125           | Rail-to-Rail Input/Output | 14-Pin PDIP, 14-Pin SOIC, 14-Pin TSSOP |

| Linear – Linear Gain Blocks |          |               |                     |                      |                       |                        |                  |                                        |
|-----------------------------|----------|---------------|---------------------|----------------------|-----------------------|------------------------|------------------|----------------------------------------|
| Part #                      | Channels | -3dB BW (kHz) | I <sub>Q</sub> (µA) | V <sub>OS</sub> (mV) | Operating Voltage (V) | Temperature Range (°C) | Gain Steps (V/V) | Packages                               |
| MCP6G01                     | 1        | 1             | 120                 | 3                    | 1.8 to 5.5            | -40 to +125            | 1, 10, 50        | 8-Pin PDIP, 8-Pin SOIC, 8-Pin TSSOP    |
| MCP6G02                     | 2        | 1             | 120                 | 3                    | 1.8 to 5.5            | -40 to +125            | 1, 10, 50        | 8-Pin PDIP, 8-Pin SOIC, 8-Pin TSSOP    |
| MCP6G04                     | 4        | 1             | 120                 | 3                    | 1.8 to 5.5            | -40 to +125            | 1, 10, 50        | 14-Pin PDIP, 14-Pin SOIC, 14-Pin TSSOP |
| MCP6G41                     | 1        | 14 to 100     | 2                   | 3                    | 1.8 to 5.5            | -40 to +125            | 1, 10, 50        | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP     |
| MCP6G42                     | 2        | 14 to 100     | 2                   | 3                    | 1.8 to 5.5            | -40 to +125            | 1, 10, 50        | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP     |
| MCP6G44                     | 4        | 14 to 100     | 2                   | 3                    | 1.8 to 5.5            | -40 to +125            | 1, 10, 50        | 14-Pin PDIP, 14-Pin SOIC, 14-Pin TSSOP |

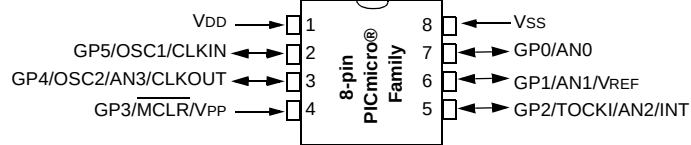
| Mixed Signal - Delta-Sigma A/D Converters |                   |                                     |                  |           |                             |                          |                                    |
|-------------------------------------------|-------------------|-------------------------------------|------------------|-----------|-----------------------------|--------------------------|------------------------------------|
| Part #                                    | Resolution (bits) | Maximum Sampling Rate (samples/sec) | # Input Channels | Interface | Typical Supply Current (μA) | Supply Voltage Range (V) | Packages                           |
| MCP3551                                   | 22                | 15                                  | 1                | SPI™      | 150                         | 2.7 to 5.5               | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP |

| Interface – Infrared Products |                       |                        |                           |                                                                                          |                                       |  |
|-------------------------------|-----------------------|------------------------|---------------------------|------------------------------------------------------------------------------------------|---------------------------------------|--|
| Part #                        | Operating Voltage (V) | Temperature Range (°C) | Max Baud Rate             | Unique Features                                                                          | Packages                              |  |
| MCP2130                       | 2.7 to 5.5            | -40 to +85             | 16x less than clock input | IrDA encoder/decoder plus transceiver processing. No external IrDA transceiver required. | 14-Pin PDIP, 14-Pin SOIC, 10-Pin MSOP |  |

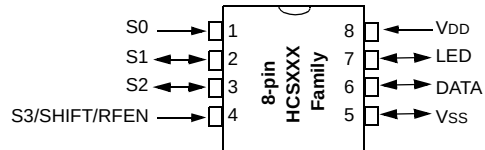
## PIN AND CODE COMPATIBILITY CHART

### 8-pin PICmicro® MCU Family



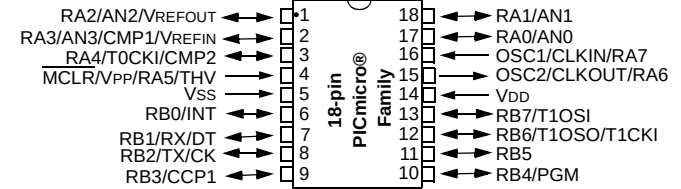
|             |            |           |
|-------------|------------|-----------|
| PIC12C508A  | PIC12C671  | PIC12F509 |
| PIC12C509A  | PIC12C672  | PIC12F629 |
| PIC12CR509A | PIC12CE673 | PIC12F635 |
| PIC12CE518  | PIC12CE674 | PIC12F675 |
| PIC12CE519  | PIC12F508  | PIC12F683 |

### 8-pin KEELoQ® Family



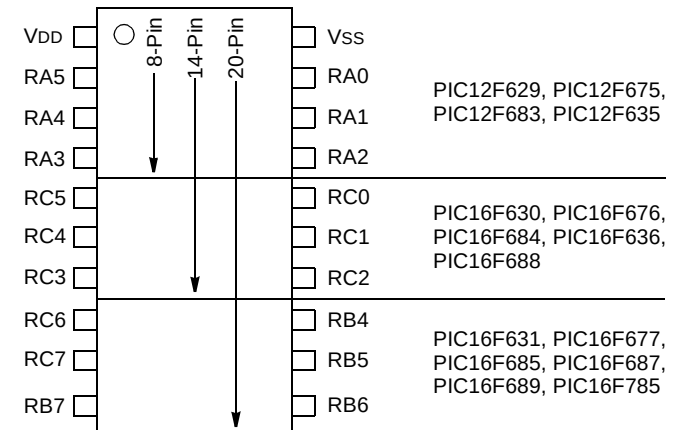
|        |        |        |
|--------|--------|--------|
| HCS101 | HCS300 | HCS360 |
| HCS200 | HCS301 | HCS361 |
| HCS201 | HCS320 | HCS362 |
|        |        | HCS365 |

### 18-pin PICmicro® MCU Family

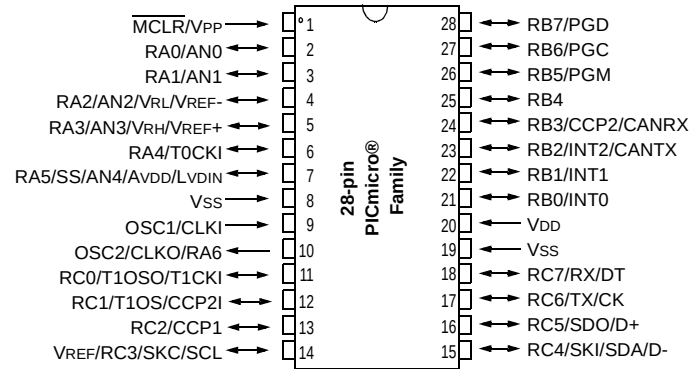


|             |            |           |            |
|-------------|------------|-----------|------------|
| PIC16C620A  | PIC16CE625 | PIC16C710 | PIC16F84A  |
| PIC16CR620A | PIC16F627  | PIC16C711 | PIC16F818  |
| PIC16C621A  | PIC16F628  | PIC16C712 | PIC16F819  |
| PIC16C622A  | PIC16F627A | PIC16C715 | PIC16F87   |
| PIC16CE623  | PIC16F628A | PIC16C716 | PIC16F88   |
| PIC16CE624  | PIC16F648A | PIC16F716 | PIC16F54   |
| PIC16C54C   | PIC16C56A  | PIC16C58B | PIC16HV540 |

### 8/14/20-pin PICmicro® MCU Family

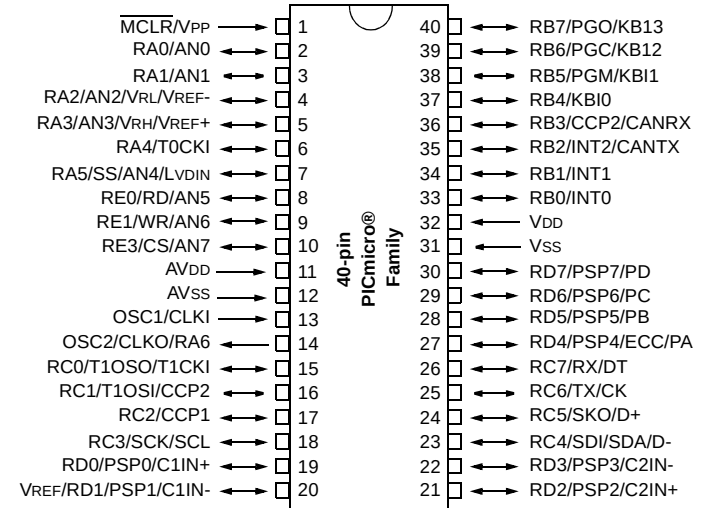


## 28-pin PICmicro® MCU Family



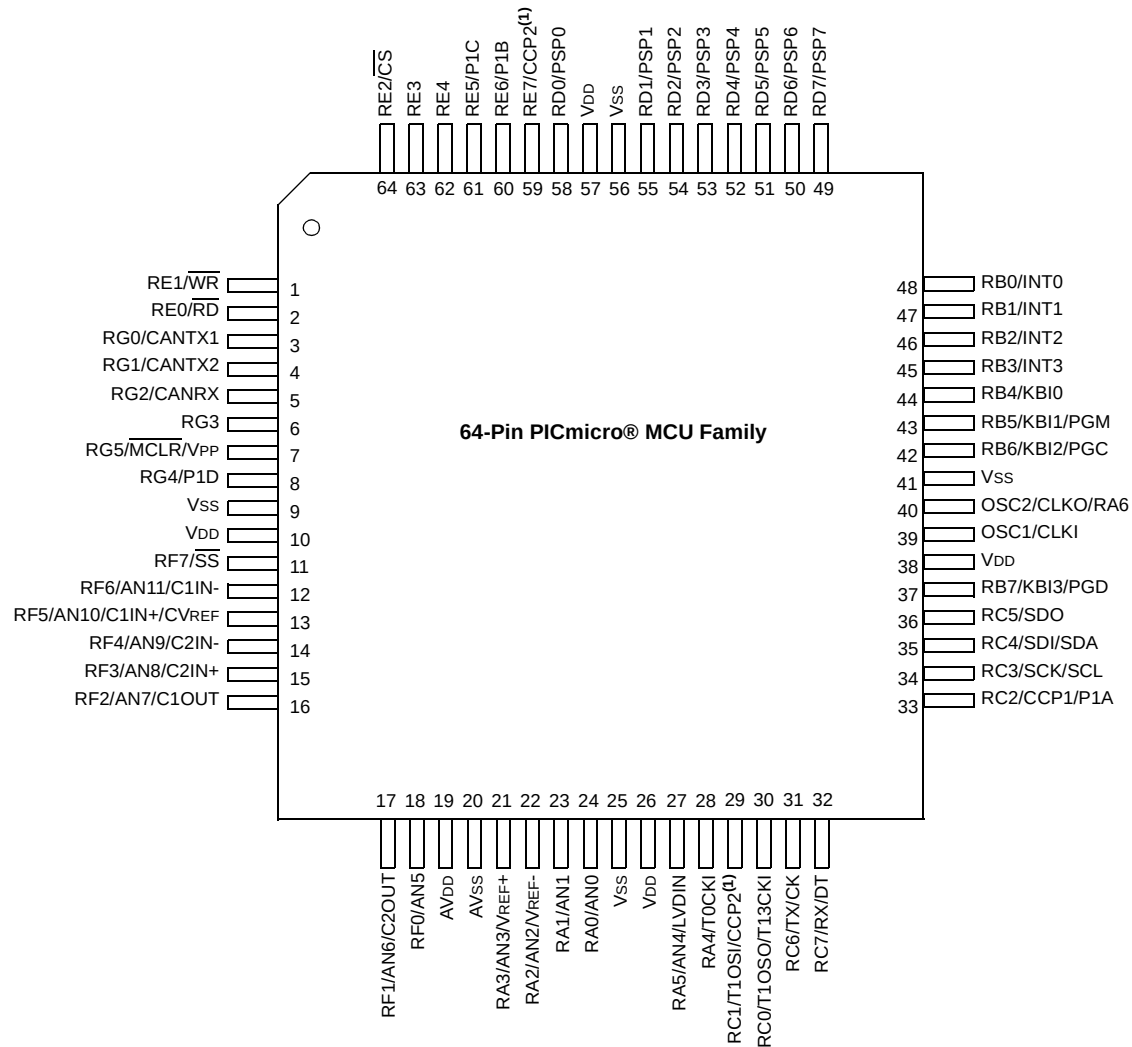
|           |            |            |
|-----------|------------|------------|
| PIC16C62B | PIC16F72   | PIC18C242  |
| PIC16CR63 | PIC16F73   | PIC18C252  |
| PIC16C63A | PIC16F737  | PIC18F242  |
| PIC16C642 | PIC16F76   | PIC18F248  |
| PIC16C66  | PIC16F767  | PIC18F252  |
| PIC16CR72 | PIC16F870  | PIC18F258  |
| PIC16C72A | PIC16F872  | PIC18F2220 |
| PIC16C73B | PIC16F873  | PIC18F2320 |
| PIC16C745 | PIC16F873A | PIC18F2455 |
| PIC16C76  | PIC16F876  | PIC18F2525 |
| PIC16C773 | PIC16F876A | PIC18F2550 |
|           |            | PIC18F2620 |

## 40-pin PICmicro® MCU Family



|           |            |            |
|-----------|------------|------------|
| PIC16CR65 | PIC16F77   | PIC18F448  |
| PIC16C65B | PIC16F777  | PIC18F452  |
| PIC16C662 | PIC16F871  | PIC18F458  |
| PIC16C67  | PIC16F874  | PIC18F4220 |
| PIC16C74B | PIC16F874A | PIC18F4320 |
| PIC16C765 | PIC16F877  | PIC18F4455 |
| PIC16C77  | PIC16F877A | PIC18F4525 |
| PIC16C774 | PIC18C442  | PIC18F4550 |
| PIC16F74  | PIC18C452  | PIC18F4620 |
| PIC16F747 | PIC18F442  |            |

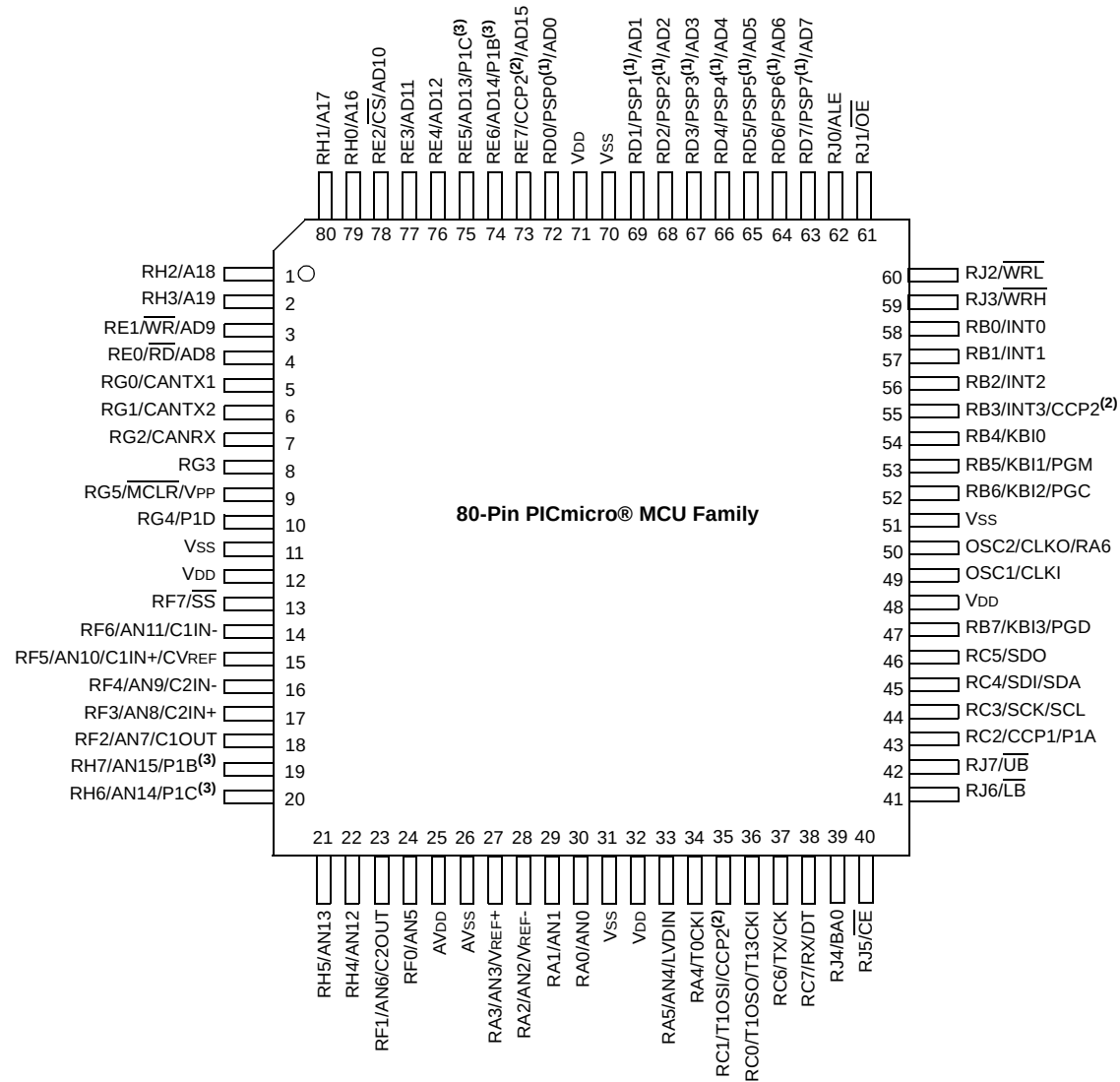
## 64-pin PICmicro® MCU Family



**Note 1:** CCP2 pin placement depends on CCP2MX setting.

|            |            |            |
|------------|------------|------------|
| PIC18F6310 | PIC18F6525 | PIC18F6621 |
| PIC18F6410 | PIC18F6585 | PIC18F6680 |
| PIC18F6520 | PIC18F6620 | PIC18F6720 |

## 80-pin PICmicro® MCU Family



PIC18F8310  
PIC18F8410  
PIC18F8520  
PIC18F8525  
PIC18F8585  
PIC18F8620  
PIC18F8621  
PIC18F8680  
PIC18F8720

## CERAMIC DUAL IN-LINE CERDIP



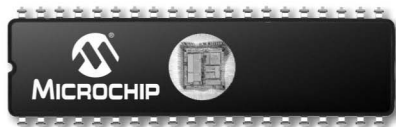
18-LEAD CERDIP  
"JW"



20-LEAD CERDIP  
"JW"



28-LEAD CERDIP  
"JW"

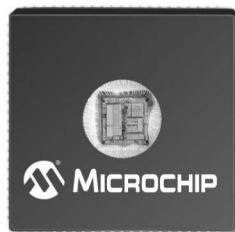


40-LEAD CERDIP  
"JW"

## CERAMIC CHIP CARRIER CERQUAD



68-LEAD CERQUAD  
"CL"



84-LEAD CERQUAD  
"CL"

## PLASTIC DUAL IN-LINE PDIP



8-LEAD PDIP  
"P" OR "PA"



14-LEAD PDIP  
"P" OR "PD"



18-LEAD PDIP  
"P"



20-LEAD PDIP  
"P"



24-LEAD PDIP  
"P" OR "PG"



28-LEAD PDIP  
"P" OR "PI"



28-LEAD SKINNY PDIP  
"SP" OR "PJ"



40-LEAD PDIP  
"P" OR "PL"

## PLASTIC QUAD FLATPACK "QFP"



32-LEAD LQFP  
"LQ"



44-LEAD MQFP  
"PQ"

## PLASTIC LEADED CHIP CARRIER PLCC



32-LEAD PLCC  
"L"



44-LEAD PLCC  
"L" OR "W"



68-LEAD PLCC  
"L" OR "LS"



84-LEAD PLCC  
"L"

**PACKAGES ARE APPROXIMATE SIZE**

## PLASTIC SMALL OUTLINE "SOIC"

  
8-LEAD SOIC  
(.150") "SN" OR "OA"

  
8-LEAD SOIC  
(.208") "SM"

  
14-LEAD SOIC  
(.150") "SL" OR "OD"

  
28-LEAD SOIC  
"SO" OR "OI"

  
16-LEAD SOIC  
(.150") "SL"

  
18-LEAD SOIC  
"SO"

  
20-LEAD SOIC  
"SO"

## PLASTIC SHRINK SMALL OUTLINE "SSOP"

  
20-LEAD SSOP  
"SS"   
28-LEAD SSOP  
"SS"

  
16-LEAD SSOP  
"SS"

  
8-LEAD MSOP  
"MS" OR "UA"

  
10-LEAD MSOP  
"UN"

## PLASTIC THIN QUAD FLATPACK "TQFP"

  
44-LEAD TQFP  
"PT"

  
64-LEAD TQFP  
"PT"

  
80-LEAD "TQFP"  
"PT"

  
80-LEAD "TQFP"  
"PF"

## SIDE BRAZED DUAL-IN-LINE "JW"

  
8-LEAD SIDE BRAZED  
"JW"

  
14-LEAD SIDE BRAZED  
"JW"

  
20-LEAD SIDE BRAZED  
"JW"

  
28-LEAD SIDE BRAZED  
(.300") "JW"

## PLASTIC THIN SHRINK SMALL OUTLINE "TSOP"

  
8-LEAD TSOP  
(4.4MM) "ST"

  
14-LEAD TSOP  
(4.4MM) "ST" (PICmicro MCU)  
(4.4MM) "ST14" (Memory)

  
20-LEAD TSOP  
(4.4MM) "ST"

  
8-LEAD DFN  
3X3  
"MF"

  
8-LEAD DFN  
6X5  
"MF"

  
44-LEAD QFN  
8X8  
"ML"

  
16-LEAD QFN  
4X4  
"ML"

  
28-LEAD QFN  
6X6  
"ML" or "MM"

  
3-LEAD DPAK

  
5-LEAD DPAK

## SMALL OUTLINE TRANSISTOR

  
3-LEAD TRANSISTOR  
"TO" OR "ZB"

  
3-LEAD SC-89

  
SOT-223

  
6-LEAD SOT-23

  
3-LEAD SOT-23

  
SOT-143

  
5-LEAD TO-220

  
5-LEAD SOT-23

  
5-LEAD SC-70

  
3-LEAD SC-70

PACKAGES ARE APPROXIMATE SIZE



## Part Number Suffix Designations

Ordering Information for all Microchip PICmicro®, KEELoq®, RFID, rFHCS and Memory Products

XXXXXXXXXX - XX X/XX XXX

QTP, SQTP or ROM Code; Special Requirements

### Package:

|    |   |                                         |       |   |                                              |
|----|---|-----------------------------------------|-------|---|----------------------------------------------|
| 1M | = | 1000pF COB Module, .75mm                | S     | = | Die in Waffle Pack                           |
| 3M | = | 330pF COB Module, .45mm                 | SB    | = | Bumped Die in Waffle Pack                    |
| 6C | = | 2x68pF COB Module (WORLD II)            | SL    | = | 14-lead Small Outline (150 mil)              |
| 7M | = | 2x68pF COB Module (IOA2)                | SM    | = | 8-lead Small Outline (207 mil)               |
| CB | = | Chip on Board (COB)                     | SN    | = | 8-lead Small Outline (150 mil)               |
| CL | = | Windowed CERQUAD                        | SO    | = | Plastic Small Outline (SOIC) (300 mil)       |
| G  | = | Lead Free                               | SP    | = | Plastic Skinny DIP                           |
| JW | = | Windowed Cerdip                         | SS    | = | Plastic Shrink Small Outline (SSOP)          |
| L  | = | Plastic Leaded Chip Carrier (PLCC)      | ST    | = | Thin Shrink Small Outline (TSSOP 4.4 mm)     |
| LQ | = | Plastic Low Quad Flatpack (LQFP)        | ST14  | = | 14-lead Thin Shrink Small Outline (TSSOP-14) |
| MF | = | Dual Flat - No Leads (DFN)              | TO-92 | = | Transistor Outline                           |
| ML | = | Quad Flat - No Leads (QFN)              | TS    | = | Thin Small Outline (8mm x 20mm)              |
| MM | = | Quad Flat - No Leads (DFN)              | TT    | = | SOT-23-3 Small Outline Transistor            |
| MS | = | Micro Small Outline (MSOP)              | VS    | = | Very Small Outline (8mm x 12mm)              |
| OT | = | 5-Lead or 6-Lead SOT-23                 | W     | = | Uncut Wafer                                  |
| P  | = | Plastic DIP                             | WB    | = | Bumped Wafer                                 |
| PF | = | Plastic Thin Quad Flatpack (TQFP 14x14) | WF    | = | Sawed Wafer on Frame                         |
| PQ | = | Plastic Quad Flatpack (PQFP)            | WFB   | = | Bumped, Sawed Wafer on Frame                 |
| PT | = | Plastic Thin Quad Flatpack (TQFP)       | WM    | = | SOT385 Leadless Module                       |

### Process Temperature:

Blank = 0°C to +70°C  
I (Industrial) = -40°C to +85°C  
E (Extended) = -40°C to +125°C

### Speed:

OR

|     |   |                   |
|-----|---|-------------------|
| -90 | = | 90 ns             |
| -10 | = | 100 ns            |
| -12 | = | 120 ns            |
| -15 | = | 150 ns            |
| -17 | = | 170 ns            |
| -20 | = | 200 ns or 20 MIPS |
| -25 | = | 250 ns or 30 MIPS |
| -30 | = | 300 ns            |

### Crystal Frequency Designator for PICmicro® MCUs

|    |   |                                                    |
|----|---|----------------------------------------------------|
| LP | = | DC to 40 kHz, Low Power Crystal Oscillator         |
| RC | = | DC to 4 MHz, Resistor/Capacitor Oscillator         |
| XT | = | DC to 4 MHz, Standard Crystal Resonator Oscillator |
| HS | = | DC to 20 MHz, High Speed Crystal Oscillator        |
| 02 | = | DC to 2 MHz, XT and RC Oscillator Support          |
| 04 | = | DC to 4 MHz Internal, XT and RC Oscillator Support |
| 04 | = | DC to 200 kHz, LP Oscillator Support               |
| 08 | = | DC to 8 MHz, HS Oscillator Support                 |
| 10 | = | DC to 10 MHz, HS Oscillator Support                |
| 16 | = | DC to 16 MHz, XT Oscillator Support                |
| 20 | = | DC to 20 MHz, HS Oscillator Support                |
| 25 | = | DC to 25 MHz, XT Oscillator Support                |
| 30 | = | DC to 30 MHz, HS Oscillator Support                |
| 33 | = | DC to 33 MHz, XT Oscillator Support                |
| 40 | = | DC to 40 MHz, HS Oscillator Support                |

### Option:

T = Tape and Reel Shipments  
X = Rotated pinout

### Device Type: (Up to 10 digits)

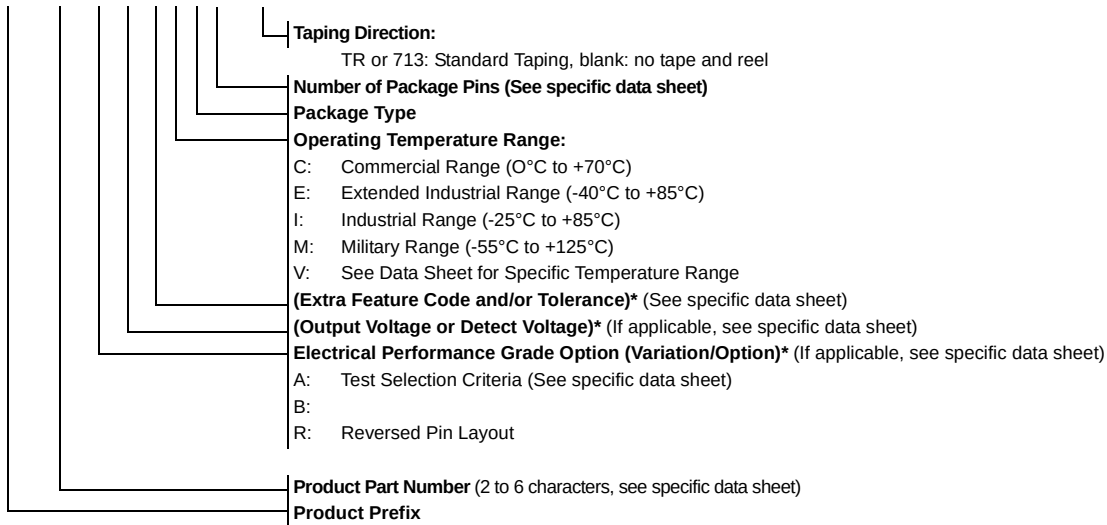
|    |   |                                  |     |   |                                   |
|----|---|----------------------------------|-----|---|-----------------------------------|
| AA | = | 1.8V Serial EEPROM               | LCE | = | Low Voltage CMOS EPROM/EEPROM MCU |
| C  | = | CMOS EPROM/ROMless MCU           | LCR | = | Low Voltage CMOS ROM MCU          |
| C  | = | 5V Serial EEPROM                 | LCS | = | Low Voltage Security              |
| CE | = | CMOS EPROM/EEPROM MCU            | LF  | = | Low Voltage FLASH MCU             |
| CR | = | CMOS ROM MCU                     | LV  | = | Low Voltage                       |
| F  | = | Flash MCU                        | 24  | = | 2-Wire (I <sup>2</sup> C)         |
| FC | = | High Speed serial EEPROM         | 25  | = | SPI                               |
| HC | = | High Speed                       | 93  | = | 3-Wire (Microwire)                |
| HV | = | High Voltage                     |     |   |                                   |
| LC | = | Low Voltage CMOS EPROM MCU       |     |   |                                   |
| LC | = | Low Voltage (2.5V) Serial EEPROM |     |   |                                   |

**Note:** Microchip offers a wide variety of lead-free package options. Contact your local sales office for availability or refer to the list on Microchip's web site.  
Lead-free plating is denoted by a "G" at the end of the package designation.

## Part Number Suffix Designations

Ordering Information for all Microchip Analog Products beginning with "TC" (formerly TelCom Semiconductor Products)

TC 7106 A-60 1 C P L 713



**NOTE:** (\*) Used for voltage regulators and detectors.

Pin Count/  
Packaging

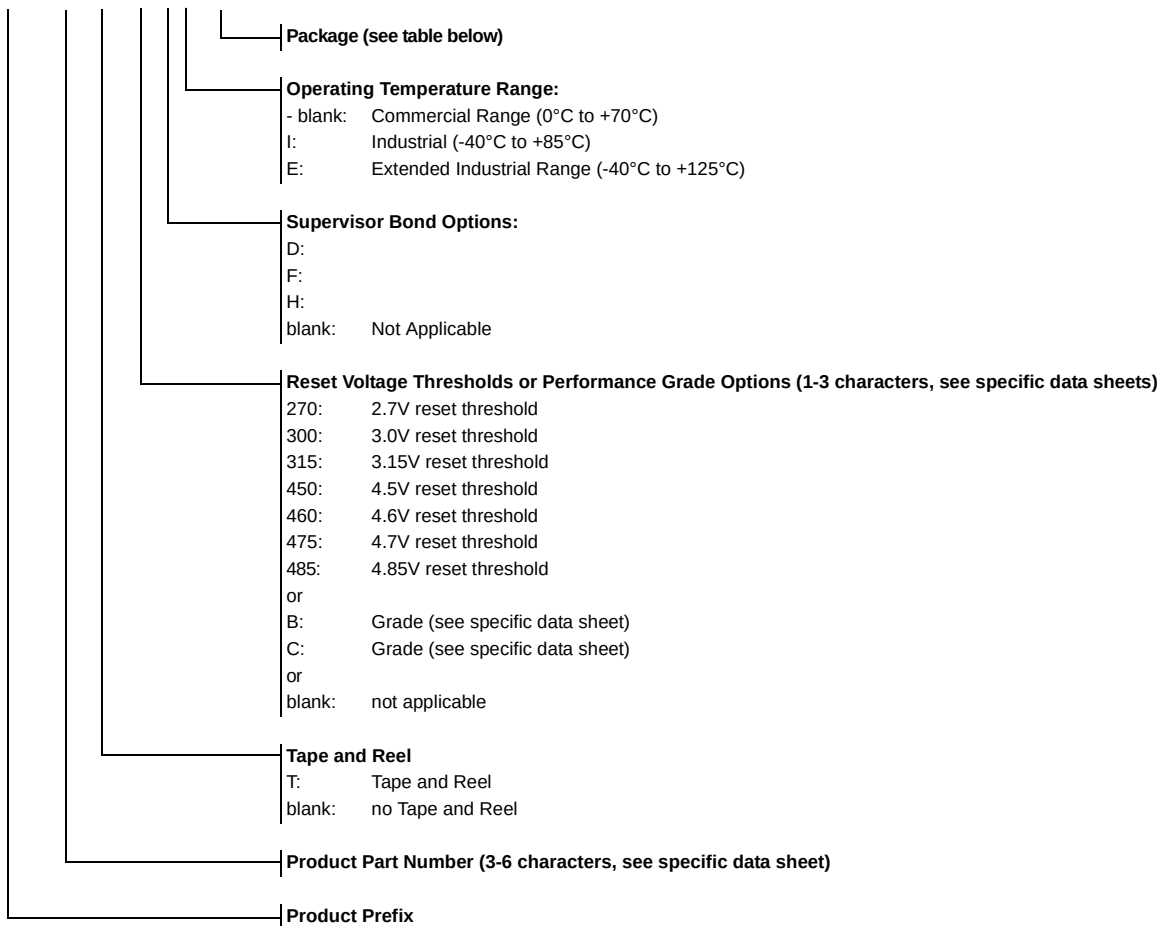
| Package | Description     | # of Pins |
|---------|-----------------|-----------|
| AB      | TO-220          | 3         |
| AK      | TO-220          | 7         |
| AT      | TO-220          | 5         |
| AV      | TO-220 (Formed) | 5         |
| BB      | TO-220B         | 3         |
| CB      | SOT-23A         | 3         |
| CH      | SOT-23A         | 6         |
| CT      | SOT-23A         | 5         |
| DB      | SOT-223         | 3         |
| EB      | DDPAK           | 3         |
| EK      | DDPAK           | 7         |
| ET      | DDPAK           | 5         |
| HA      | SOP             | 8         |
| JA      | CDIP (N)        | 8         |
| JD      | CDIP (N)        | 14        |
| JE      | CDIP (N)        | 16        |
| JG      | CDIP (W)        | 24        |
| JI      | CDIP (W)        | 28        |
| JL      | CDIP (W)        | 40        |
| KU      | MQFP            | 64        |
| KW      | MQFP            | 44        |
| LB      | SC-70           | 3         |
| LI      | PLCC            | 28        |
| LS      | PLCC            | 68        |
| LT      | SC-70           | 5         |
| LW      | PLCC            | 44        |

| Package | Description | # of Pins |
|---------|-------------|-----------|
| MB      | SOT-89      | 3         |
| MF      | DFN (3x3)   | 8         |
| MT      | SOT-89      | 5         |
| NB      | SOT-23B     | 3         |
| OA      | SOIC (N)    | 8         |
| OD      | SOIC (N)    | 14        |
| OE      | SOIC (W)    | 16        |
| OG      | SOIC (W)    | 24        |
| OI      | SOIC (W)    | 28        |
| OR      | SOIC (N)    | 16        |
| PA      | PDIP (N)    | 8         |
| PD      | PDIP (N)    | 14        |
| PE      | PDIP (N)    | 16        |
| PF      | PDIP (N)    | 24        |
| PG      | PDIP (W)    | 24        |
| PI      | PDIP (W)    | 28        |
| PJ      | PDIP (W)    | 28        |
| PL      | PDIP (W)    | 40        |
| QR      | QSOP (N)    | 16        |
| RC      | SOT-143     | 4         |
| SI      | SSOP (W)    | 28        |
| UA      | MSOP        | 8         |
| UN      | MSOP        | 10        |
| VB      | DDPAK       | 3         |
| ZB      | TO-92       | 3         |
| ZM      | TO-92       | 2         |

## Part Number Suffix Designations

Ordering Information for all Microchip Analog Products beginning with "MCP" Prefix Parts

MCP xxxxx T - yyy z h / qq



| Package | Description | # of Pins | Tube/Bag Qty. | Reel Qty. |
|---------|-------------|-----------|---------------|-----------|
| TO      | TO-92       | 3         | 1000          | n/a       |
| TT      | SOT-23      | 3         | n/a           | 3000      |
| OT      | SOT-23      | 5         | n/a           | 3000      |
| P       | PDIP        | 8         | 60            | n/a       |
| SN      | SOIC        | 8         | 100           | 3300      |
| ST      | TSSOP       | 8         | 100           | 2500      |
| MS      | MSOP        | 8         | 100           | 2500      |
| MF      | DFN (3x3)   | 8         | 50            | 3300      |
| ST      | TSSOP       | 14        | 96            | 2500      |
| P       | PDIP        | 14        | 30            | n/a       |
| SL      | SOIC        | 14        | 57            | 2600      |
| P       | PDIP        | 18        | 25            | n/a       |
| SO      | SOIC        | 18        | 42            | 1100      |
| ST      | TSSOP       | 20        | 74            | 2500      |
| SS      | SSOP        | 20        | 67            | 1600      |
| ML      | QFN (6x6)   | 28        | 50            | 1600      |
| ML      | QFN (4x4)   | 16        | 91            | 3300      |

| ABBREVIATIONS         |                                                          |
|-----------------------|----------------------------------------------------------|
| ADC                   | Analog-to-Digital Converter                              |
| ASK                   | Amplitude Shift Key                                      |
| AUSART                | Addressable USART (RS-232, RS-485)                       |
| BOR                   | Brown-Out Detection/Reset                                |
| CAN                   | Controller Area Network                                  |
| CAP                   | Capture                                                  |
| CCP                   | Capture/Compare/PWM                                      |
| CRC                   | Cyclic Redundancy Check                                  |
| DAC                   | Digital-to-Analog Converter                              |
| 3 $\phi$              | 3 Phase PWMs                                             |
| 4 $\phi$              | 4 Phase PWMs                                             |
| E2                    | EEPROM (Reprogrammable)                                  |
| ECAN                  | Enhanced Controller Area Network                         |
| ECCP                  | Enhanced Capture/Compare/4-ch PWM with program dead time |
| EMA                   | External Memory Addressing                               |
| EnhFI                 | Enhanced Flash                                           |
| EUSART                | Enhanced USART (RS232, RS485, LIN)                       |
| FSK                   | Frequency Shift Key                                      |
| I <sup>2</sup> C      | Inter-integrated Circuit Bus                             |
| ICSP                  | In-Circuit Serial Programming                            |
| ICD                   | # of In-Circuit Debug Breakpoints                        |
| IntOSC                | Internal Oscillator                                      |
| LNA                   | Low Noise Amplifier                                      |
| LVD                   | Low Voltage Detection                                    |
| LIN XCVR              | Local Interconnection Network Transceiver                |
| MI <sup>2</sup> C/SPI | Master I <sup>2</sup> C/SPI                              |
| nW                    | nanoWatt                                                 |
| OTP                   | One-Time Programmable                                    |
| PBOR                  | Programmable Brown-Out Detection/Reset                   |
| PLVD                  | Programmable Low-Voltage Detection                       |
| PSMC                  | Programmable Switch Mode Controller                      |
| PSP                   | Parallel Slave Port                                      |
| PSMC                  | Programmable Switch Mode Controller                      |
| PWM                   | Pulse Width Modulator                                    |
| ROM-less              | External ROM necessary                                   |
| RSSI                  | Received Signal Strength Indicator                       |
| SLAC                  | Slope A/D Converter, up to 16 bits                       |
| SMB                   | System Management Bus                                    |
| SPI                   | Serial Peripheral Interface                              |
| StdFI                 | Standard Flash                                           |
| ULPW                  | Ultra Low Power Wake-up                                  |
| USART                 | Universal Synchronous/Asynchronous Receiver/Transmitter  |
| USB                   | Universal Serial Bus                                     |
| VREF                  | Voltage Reference                                        |
| WDT                   | Watchdog Timer                                           |
| ✓P                    | Programmable                                             |
| x12                   | 12-bit Instruction Width                                 |
| x14                   | 14-bit Instruction Width                                 |
| x16                   | 16-bit Instruction Width                                 |

# Microchip Technology's Quality Policy

**In order to meet or exceed customer expectations at a reduced cost, we encourage our employees to support continuous improvement, anticipate problems and implement root cause solutions.**

## **Aggregate Approach**

Microchip has instituted an "aggregate" approach to understand, align, integrate and unite all company resources. Microchip consciously designed the enterprise as an aggregate system in which company culture, systems, practices, policies and employees work in unison to achieve Microchip's mission and goals. This aggregate system and culture is taught in the Microchip Culture class required for all new hires and taught by Executive Staff members.

The Quality Culture of Microchip is that every organization, business unit and individual owns the quality of their output, whether it is product, process, software or service.

A company must aggressively pursue continuous improvement, employee development, team deployment and statistical techniques to successfully achieve individual accountability of quality.

## **Continuous Improvement**

Microchip promotes a culture of continuous improvement. As stated above, each employee is measured on how they contribute to improvement. Continuous improvement teams are constantly looking to solve problems, allowing us to maximize our value to our customers.

## **Employee Development and Team Deployment**

Every employee has access to a full suite of training. Each employee is measured on Quality and Quantity of work, Teamwork, Continuous Improvement and Customer Satisfaction. Supervisors are measured on how their employees improve and learn. Employees have regular One-on-Ones with their supervisors and open door is a policy that is really practiced.

## **Statistical Techniques**

Microchip uses statistical process techniques in all aspects of our business. Decision-making, experiment definition and process control are a few areas where these techniques are applied. Every manufacturing employee is trained in SPC before they start their job, since they are the people closest to the product quality.

## **QS-9000 Certification**

Microchip Technology's Quality System is based on QS-9000 requirements. QS-9000 is rapidly becoming the standard Quality System for many industries including Semiconductors. All Microchip product facilities and major subcontractors are QS registered. Development Systems and Mountain View products are designed, manufactured and certified to ISO-9001 requirements.

## **Quality Systems and Reliability Information**

Visit [www.microchip.com](http://www.microchip.com) for detailed Quality Systems and Reliability information.

Microchip's Quality System is fully described in the *Microchip Overview, Quality Systems and Customer Interface Systems Handbook* (DS00169) available on our web site.

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