
28-Pin, 8-Bit 'Enhanced Baseline' Microcontroller Product Brief

Description:

This document describes the 28-pin 'Enhanced Baseline' device with Flash program memory self-write capability, interrupts and op amps.

Processor Features:

- Interrupt Capability
- PIC16F570 Operating Speed:
 - DC – 20 MHz Crystal oscillator
 - DC – 200 ns Instruction cycle
- High Endurance Program and Flash Data Memory Cells:
 - 2048 x 12 user execution memory
 - 64 x 8 self-writable data memory
 - 100,000 write program memory endurance
 - 1,000,000 write Flash data memory endurance
 - Program and Flash data retention: >40 years
- General Purpose Registers (SRAM):
 - 132 x 8 memory
- Only 36 Single-Word Instructions to Learn:
 - Modified baseline CPU
 - Added `RETURN` and `RETFIE` instructions
 - Added `MOVLB` instruction
- All Instructions are Single-Cycle except for Program Branches which are Two-Cycle
- Four-Level Deep Hardware Stack
- Direct, Indirect and Relative Addressing modes for Data and Instructions

Peripheral Features:

- Device Features:
 - 24 I/Os
 - Individual direction control
 - High-current source/sink
- 8-Bit Real-Time Clock/Counter (TMR0) with 8-Bit Programmable Prescaler
- In-Circuit Serial Programming™ (ICSP™) via Two External Pin Connections
- Analog Comparator (CMP):
 - Two analog comparators
 - Absolute and programmable references
- Analog-to-Digital Converter (ADC):
 - 8-bit resolution
 - 8 external input channels
 - 0.6V reference input
- Operational Amplifiers (op amps):
 - Two operational amplifiers
 - Fully-accessible visibility

Microcontroller Features:

- Brown-out Reset (BOR)
- Power-on Reset (POR)
- Device Reset Timer (DRT)
- Watchdog Timer (WDT) with its own on-chip RC Oscillator for Reliable Operation
- Programmable Code Protection (CP)
- Power-Saving Sleep mode with Wake-up on Change Feature
- Selectable Oscillator Options:
 - INTOSC: Precision 4 or 8 MHz internal oscillator
 - EXTRC: Low-cost external RC oscillator
 - LP: Power-saving, low-frequency crystal
 - XT: Standard crystal/resonator
 - HS: High-speed crystal/resonator
 - EC: High-speed external clock
- Variety of Packaging Options:
 - 28-Lead SPDIP, SOIC, SSOP, QFN

CMOS Technology:

- Low-Power, High-Speed CMOS Flash Technology
- Fully-Static Design
- Wide Operating Voltage and Temperature Range:
 - Industrial: 2.0V to 5.5V
 - Extended: 2.0V to 5.5V
- Operating Current:
 - 170 uA @ 2V, 4 MHz, typical
 - 15 uA @ 2V, 32 kHz, typical
- Standby Current:
 - 100 nA @ 2V, typical

PIC16F570

PIC16F570 Family Types

Device	Pins/I/O Pins	Flash	Data EE (B)	SRAM (B)	8-Bit ADC Channels	Op Amp	Comparator	8-Bit Timers	BOR	Stack Levels	Interrupts	8 MHz Int. Osc.	Interrupt-on-change Pins	Weak Pull-up Pins
PIC16F570	28/24	2KW	64	132	8	2	2	1	Y	4	Y	Y	8	8

FIGURE 1: 28-PIN PDIP, SOIC, SSOP DIAGRAM FOR PIC16F570

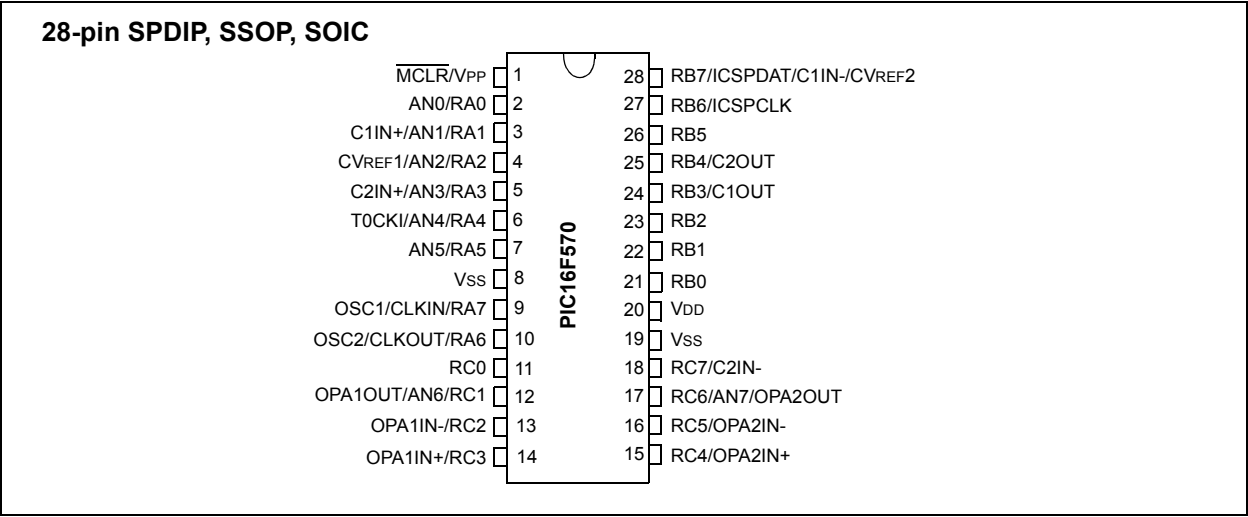
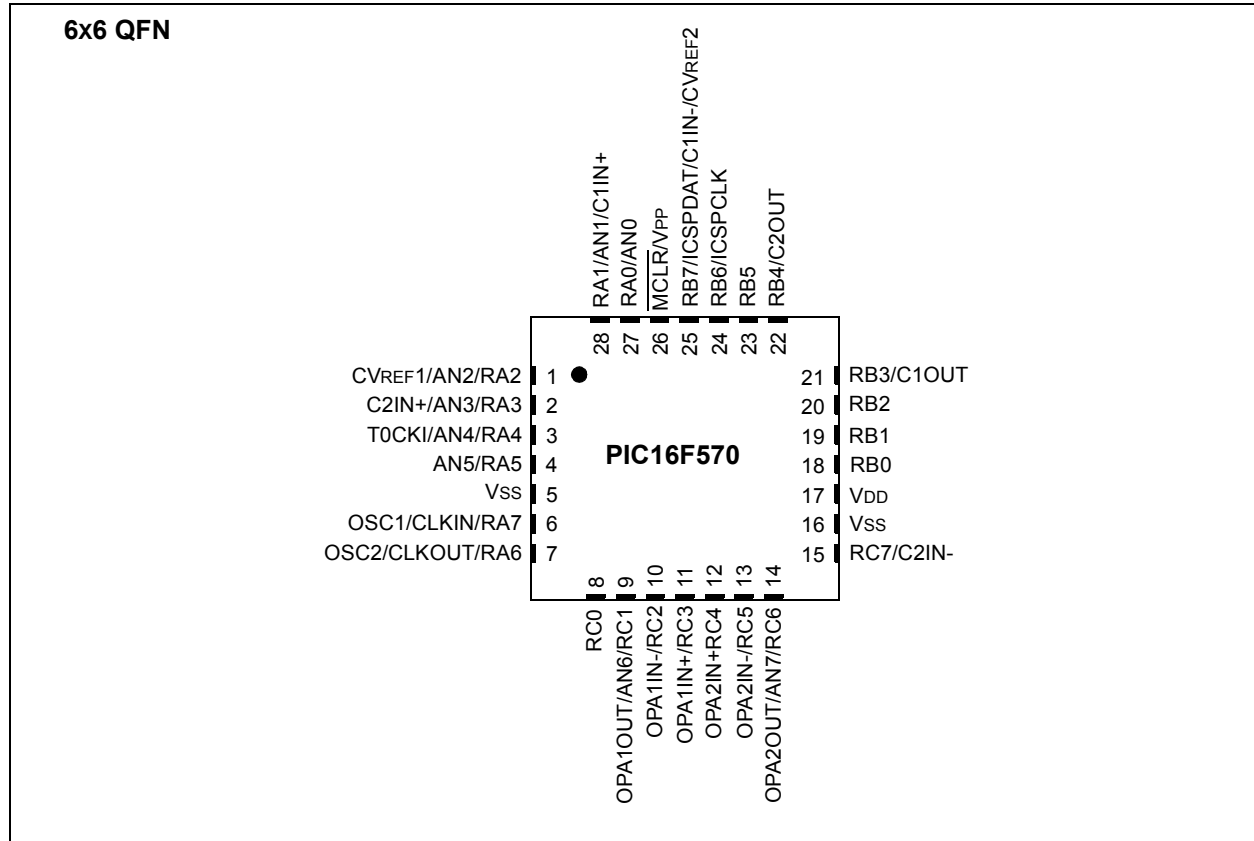


FIGURE 2: 28-PIN QFN DIAGRAM FOR PIC16F570



PIC16F570

TABLE 1: PIC16F570 PIN SUMMARY

I/O	28-Pin SPDIP	28-Pin QFN	A/D	Reference	Comparator	Op Amp	Timers	IOC	Pull-up	Basic
MCLR	1	26	—	—	—	—	—	N	Y	MCLR V _{PP}
RA0	2	27	AN0	—	—	—	—	N	N	—
RA1	3	28	AN1	—	C1IN+	—	—	N	N	—
RA2	4	1	AN2	CVREF1	—	—	—	N	N	—
RA3	5	2	AN3	—	C2IN+	—	—	N	N	—
RA4	6	3	AN4	—	—	—	T0CKI	N	N	—
RA5	7	4	AN5	—	—	—	—	N	N	—
RA6	10	7	—	—	—	—	—	N	N	OSC2 CLKOUT
RA7	9	6	—	—	—	—	—	N	N	OSC1 CLKIN
RB0	21	18	—	—	—	—	—	Y	Y	—
RB1	22	19	—	—	—	—	—	Y	Y	—
RB2	23	20	—	—	—	—	—	Y	Y	—
RB3	24	21	—	—	C1OUT	—	—	Y	Y	—
RB4	25	22	—	—	C2OUT	—	—	Y	Y	—
RB5	26	23	—	—	—	—	—	Y	Y	—
RB6	27	24	—	—	—	—	—	Y	Y	ICSPCLK
RB7	28	25	—	CVREF2	C1IN-	—	—	Y	Y	ICSPDAT
RC0	11	8	—	—	—	—	—	N	N	—
RC1	12	9	AN6	—	—	OPA1OUT	—	N	N	—
RC2	13	10	—	—	—	OPA1IN-	—	N	N	—
RC3	14	11	—	—	—	OPA1IN+	—	N	N	—
RC4	15	12	—	—	—	OPA2IN+	—	N	N	—
RC5	16	13	—	—	—	OPA2IN-	—	N	N	—
RC6	17	14	AN7	—	—	OPA2OUT	—	N	N	—
RC7	18	15	—	—	C2IN-	—	—	N	N	—
V _{DD}	20	17	—	—	—	—	—	—	—	V _{DD}
V _{SS}	8, 19	5, 16	—	—	—	—	—	—	—	V _{SS}

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