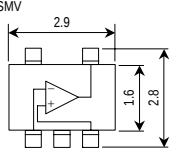
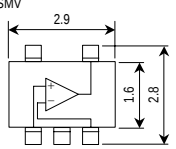


# General-Purpose Linear ICs

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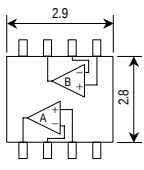
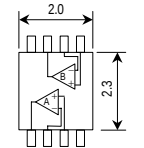
## Operational Amplifier ICs & Comparator ICs

### Operational Amplifier ICs & Comparator ICs (Bipolar, Single-Circuit Type)

| Function           | Part Number | Package | Marking | Features                                           | Operating Voltage                         | Pin Configuration (top view)<br>(Unit: mm)                                          |
|--------------------|-------------|---------|---------|----------------------------------------------------|-------------------------------------------|-------------------------------------------------------------------------------------|
| Bipolar comparator | TA75S393F   | SMV     | TA      | Single/dual power supply,<br>open-collector output | 2 to 36 V<br>or<br>$\pm 1$ to $\pm 18$ V  |  |
| Bipolar op amp     | TA75S01F    | SMV     | SA      | Single/dual power supply,<br>unity gain available  | 3 to 12 V<br>or<br>$\pm 1.5$ to $\pm 6$ V |  |
|                    | TA75S558F   | SMV     | SB      | Dual power supply                                  | $\pm 4$ to $\pm 18$ V                     |                                                                                     |

Note: Please note that the pin configurations of the input pins of the single operational amps and comparator differ. The US8 and SM8 types have the same pin configuration.

### (Bipolar, Dual-Circuit Type)

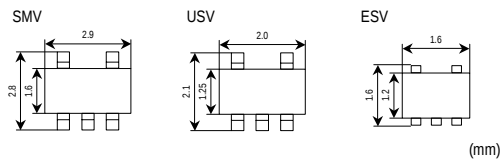
| Function           | Part Number | Package | Marking | Features                                           | Operating Voltage                         | Pin Configuration (top view)<br>(Unit: mm)                                            |
|--------------------|-------------|---------|---------|----------------------------------------------------|-------------------------------------------|---------------------------------------------------------------------------------------|
| Bipolar comparator | TA75W393FU  | SM8     | 5W393   | Single/dual power supply,<br>open-collector output | 2 to 36 V<br>or<br>$\pm 1$ to $\pm 18$ V  |    |
| Bipolar op amp     | TA75W01FU   | SM8     | 5W01    | Single/dual power supply,<br>unity gain available  | 3 to 12 V<br>or<br>$\pm 1.5$ to $\pm 6$ V |  |
|                    | TA75W558FU  | SM8     | 5W558   | Dual power supply                                  | $\pm 4$ to $\pm 18$ V                     |                                                                                       |

## (CMOS, Single-Circuit Type)

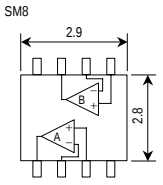
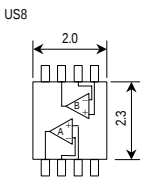
| Function        | Part Number | Package | Marking | Features                                                                                                   | Operating Voltage                   | Pin Configuration |
|-----------------|-------------|---------|---------|------------------------------------------------------------------------------------------------------------|-------------------------------------|-------------------|
| CMOS comparator | TC75S56F    | SMV     | TC      | Single/dual power supply,<br>push-pull output,<br>ultra-low current consumption                            | 1.8 to 7 V<br>or<br>±0.9 to ±3.5 V  |                   |
|                 | TC75S56FU   | USV     |         |                                                                                                            |                                     |                   |
|                 | TC75S56FE   | ESV     |         |                                                                                                            |                                     |                   |
|                 | TC75S57F    | SMV     | TD      | Single/dual power supply,<br>push-pull output,<br>low current consumption                                  | 1.8 to 7 V<br>or<br>±0.9 to ±3.5 V  |                   |
|                 | TC75S57FU   | USV     |         |                                                                                                            |                                     |                   |
|                 | TC75S57FE   | ESV     |         |                                                                                                            |                                     |                   |
|                 | TC75S58F    | SMV     | TE      | Single/dual power supply,<br>open-drain output,<br>ultra-low current consumption                           | 1.8 to 7 V<br>or<br>±0.9 to ±3.5 V  |                   |
|                 | TC75S58FU   | USV     |         |                                                                                                            |                                     |                   |
|                 | TC75S58FE   | ESV     |         |                                                                                                            |                                     |                   |
|                 | TC75S59F    | SMV     | TF      | Single/dual power supply,<br>open-drain output,<br>low current consumption                                 | 1.8 to 7 V<br>or<br>±0.9 to ±3.5 V  |                   |
| TC75S59FU       | USV         |         |         |                                                                                                            |                                     |                   |
| TC75S59FE       | ESV         |         |         |                                                                                                            |                                     |                   |
| CMOS op amp     | TC75S51F    | SMV     | SC      | Single/dual power supply,<br>low-voltage operation                                                         | 1.5 to 7 V<br>or<br>±0.75 to ±3.5 V |                   |
|                 | TC75S51FU   | USV     |         |                                                                                                            |                                     |                   |
|                 | TC75S51FE   | ESV     |         |                                                                                                            |                                     |                   |
|                 | TC75S54F    | SMV     | SE      | Single/dual power supply,<br>low-voltage operation,<br>low current consumption                             | 1.8 to 7 V<br>or<br>±0.9 to ±3.5 V  |                   |
|                 | TC75S54FU   | USV     |         |                                                                                                            |                                     |                   |
|                 | TC75S54FE   | ESV     |         |                                                                                                            |                                     |                   |
|                 | TC75S55F    | SMV     | SF      | Single/dual power supply,<br>low-voltage operation,<br>ultra-low current consumption                       | 1.8 to 7 V<br>or<br>±0.9 to ±3.5 V  |                   |
|                 | TC75S55FU   | USV     |         |                                                                                                            |                                     |                   |
|                 | TC75S55FE   | ESV     |         |                                                                                                            |                                     |                   |
|                 | * TC75S60F  | SMV     | SH      | Single/dual power supply,<br>high slew rate, high fr,<br>low-voltage operation,<br>low current consumption | 1.8 to 7 V<br>or<br>±0.9 to ±3.5 V  |                   |
|                 | * TC75S60FU | USV     |         |                                                                                                            |                                     |                   |

Note: Please note that the pin configurations of the input pins of the single operational amps and comparator differ. The US8 and SM8 types have the same pin configuration.

\*: New product



## (CMOS, Dual-Circuit Type)

| Function        | Part Number | Package | Marking | Features                                                                                                   | Operating Voltage                   | Pin Configuration (top view)<br>(Unit: mm)                                            |
|-----------------|-------------|---------|---------|------------------------------------------------------------------------------------------------------------|-------------------------------------|---------------------------------------------------------------------------------------|
| CMOS comparator | TC75W56FU   | SM8     | 5W56    | Single/dual power supply,<br>push-pull output,<br>ultra-low current consumption                            | 1.8 to 7 V<br>or<br>±0.9 to ±3.5 V  |  |
|                 | TC75W56FK   | US8     |         |                                                                                                            |                                     |                                                                                       |
|                 | TC75W57FU   | SM8     | 5W57    | Single/dual power supply,<br>push-pull output,<br>low current consumption                                  | 1.8 to 7 V<br>or<br>±0.9 to ±3.5 V  |                                                                                       |
|                 | TC75W57FK   | US8     |         |                                                                                                            |                                     |                                                                                       |
|                 | TC75W58FU   | SM8     | 5W58    | Single/dual power supply,<br>open-drain output,<br>ultra-low current consumption                           | 1.8 to 7 V<br>or<br>±0.9 to ±3.5 V  |                                                                                       |
|                 | TC75W58FK   | US8     |         |                                                                                                            |                                     |                                                                                       |
|                 | TC75W59FU   | SM8     | 5W59    | Single/dual power supply,<br>open-drain output,<br>low current consumption                                 | 1.8 to 7 V<br>or<br>±0.9 to ±3.5 V  |                                                                                       |
|                 | TC75W59FK   | US8     |         |                                                                                                            |                                     |                                                                                       |
| CMOS op amp     | TC75W51FU   | SM8     | 5W51    | Single/dual power supply,<br>low-voltage operation                                                         | 1.5 to 7 V<br>or<br>±0.75 to ±3.5 V |  |
|                 | TC75W51FK   | US8     |         |                                                                                                            |                                     |                                                                                       |
|                 | TC75W54FU   | SM8     | 5W54    | Single/dual power supply,<br>low-voltage operation,<br>low current consumption                             | 1.8 to 7 V<br>or<br>±0.9 to ±3.5 V  |                                                                                       |
|                 | TC75W54FK   | US8     |         |                                                                                                            |                                     |                                                                                       |
|                 | TC75W55FU   | SM8     | 5W55    | Single/dual power supply,<br>low-voltage operation,<br>ultra-low current consumption                       | 1.8 to 7 V<br>or<br>±0.9 to ±3.5 V  |                                                                                       |
|                 | TC75W55FK   | US8     |         |                                                                                                            |                                     |                                                                                       |
|                 | * TC75W60FU | SM8     | 5W60    | Single/dual power supply,<br>high slew rate, high fr,<br>low-voltage operation,<br>low current consumption | 1.8 to 7 V<br>or<br>±0.9 to ±3.5 V  |                                                                                       |
|                 | * TC75W60FK | US8     |         |                                                                                                            |                                     |                                                                                       |

\*: New product

## Power Op-Amp

| Circuit | Part Number | Package | Maximum Ratings     |                    | Remarks                         |
|---------|-------------|---------|---------------------|--------------------|---------------------------------|
|         |             |         | V <sub>CC</sub> (V) | I <sub>O</sub> (A) |                                 |
| Dual    | TA7256P     | HSIP10  | ±18                 | 0.5                | Internally phase-corrected type |
|         | TA7272P     | HSIP10  | ±18                 | 1.2                | Internally phase-corrected type |

### Calculation Amplifier IC Series (Op-Amp Series)

| Classification                 | Use/Function                  | Circuit | Part Number | Package | V <sub>io</sub> (mV)<br>Max | I <sub>io</sub> (nA)<br>Max | I <sub>i</sub> (nA)<br>Max | f <sub>r</sub> (MHz)<br>Typ. | SR (V/μs)<br>Typ. | I <sub>cc</sub> (mA)<br>Max | Recommen-<br>ded<br>V <sub>cc</sub> (V) | Remarks | Equivalent  |
|--------------------------------|-------------------------------|---------|-------------|---------|-----------------------------|-----------------------------|----------------------------|------------------------------|-------------------|-----------------------------|-----------------------------------------|---------|-------------|
| Single power supply<br>op-amps | High-speed,<br>low-power      | Dual    | TA75358F    | SOP8    | 7                           | 50                          | 250                        | 1.5                          | 0.8               | 1.2                         | 3 to 36                                 |         | —           |
|                                |                               |         | TA75358P    | DIP8    |                             |                             |                            |                              |                   |                             |                                         |         |             |
|                                | General-purpose,<br>low-power | Dual    | TA75358CF   | SOP8    | 7                           | 50                          | 250                        | 0.6                          | 0.3               | 1.2                         | 3 to 36                                 |         | 358<br>2904 |
|                                |                               |         | TA75358CP   | DIP8    |                             |                             |                            |                              |                   |                             |                                         |         |             |
|                                |                               | Quad    | TA75902F    | SOP14   | 7                           | 30                          | 150                        | —                            | —                 | 1.2                         | 3 to 36                                 |         | 2902        |
| Dual power supply<br>op-amps   | General-purpose               | Dual    | TA75458F    | SOP8    |                             |                             |                            |                              |                   |                             |                                         |         |             |
|                                |                               |         | TA75458P    | DIP8    | 5                           | 200                         | 500                        | 1.1                          | 0.8               | 6                           | ±15                                     |         | 1458        |

### (Comparator ICs)

| Part Number | Circuit | Package | Power Supply<br>(V) | Input Offset Current<br>Max | Input Offset Voltage<br>Max | Input Bias Current<br>Max | Response Speed<br>Typ.                             | Remarks                                         | Equivalent        |
|-------------|---------|---------|---------------------|-----------------------------|-----------------------------|---------------------------|----------------------------------------------------|-------------------------------------------------|-------------------|
| TA7522S     | Dual    | SIP9    | +18                 | 0.3 μA                      | 10 mV                       | −2 μA                     | —                                                  | Open-collector output                           | —                 |
| TA7522F     | Dual    | SOP8    | +18                 | 0.3 μA                      | 10 mV                       | −2 μA                     | —                                                  | Open-collector output                           | —                 |
| TA75339P    | Quad    | DIP14   | ±18<br>or<br>+36    | 50 nA                       | 5 mV                        | 250 nA                    | t <sub>r</sub> = 1.3 μs                            |                                                 | LM339N<br>LM2901N |
| TA75339AP   |         |         |                     | 70 nA                       | 10 mV                       | 250 nA                    | t <sub>r</sub> = 1.0 μs                            | High output current: 100 mA Typ.                | —                 |
| TA75339F    |         | SOP14   |                     | 50 nA                       | 5 mV                        | 250 nA                    | t <sub>r</sub> = 1.3 μs                            |                                                 | —                 |
| TA75393P    | Dual    | DIP8    | ±18<br>or<br>+36    | 50 nA                       | 5 mV                        | 250 nA                    | t <sub>r</sub> = 1.3 μs                            |                                                 | LM393N<br>LM2903N |
| TA75393AP   |         |         |                     | 50 nA                       | 7 mV                        | 250 nA                    | t <sub>r</sub> = 1.3 μs                            | High output current: 100 mA Typ.                | —                 |
| TA75393F    |         | SOP8    |                     | 50 nA                       | 5 mV                        | 250 nA                    | t <sub>r</sub> = 1.3 μs                            |                                                 | —                 |
| TA8504F     | Single  | SOP8    | −5                  | 10 μA                       | ±10 mV                      | 40 μA                     | t <sub>r</sub> = 1.0 ns<br>t <sub>f</sub> = 0.7 ns | ECL output                                      | —                 |
| TA8517F     | Dual    | SOP16   | +5                  | 3 μA                        | ±10 mV                      | 6 μA                      | t <sub>r</sub> = 4.0 ns<br>t <sub>f</sub> = 2.0 ns | TTL output<br>Comes with offset adjustment pin. | —                 |

# Intelligent Power Devices (IPD)

## 60 V Series

| Part Number | Use/Function         | Outline                                          | Operating Supply Voltage (V) | Operating Temperature Topr (°C) | Junction (Channel) Temperature Tj (°C) | Power Dissipation Pd (W)                | Protective Functions                   |                          |                     | Diagnostic Functions |             |                  |             | Input/ Output | Package          |
|-------------|----------------------|--------------------------------------------------|------------------------------|---------------------------------|----------------------------------------|-----------------------------------------|----------------------------------------|--------------------------|---------------------|----------------------|-------------|------------------|-------------|---------------|------------------|
|             |                      |                                                  |                              |                                 |                                        |                                         | Overcurrent Is (A)                     | Over Temperature Ts (°C) | Overvoltage Vs (V)  | Short load           | Open load   | Over Temperature | Overvoltage |               |                  |
| TPD1008SA   | High-side switch     | Vbss 60 V<br>Io 4 A<br>Rds(ON) = 0.2 Ω Max       | 5 to 18                      | -40 to 110                      | 150                                    | 30                                      | 6 Typ.                                 | 160 Typ.                 | —                   | ○<br>DIAG L          | ○<br>DIAG H | ○<br>DIAG L      | —           | H/H           | TO-220(NIS) 5PIN |
| TPD1009S    | High-side switch     | Vbss 60 V<br>Io 8 A<br>Rds(ON) = 0.06 Ω Max      | 5 to 18                      |                                 |                                        |                                         | 12 Typ.                                | 160 Typ.                 | —                   | ○<br>DIAG L          | ○<br>DIAG H | ○<br>DIAG L      | —           | H/H           | TO-220(NIS) 5PIN |
| TPD1011S    | High-side switch     | Vbss 60 V<br>Io 15 A<br>Rds(ON) = 0.06 Ω Max     | 5 to 18                      |                                 |                                        |                                         | 40 Typ.                                | 160 Typ.                 | —                   | ○<br>DIAG L          | ○<br>DIAG H | ○<br>DIAG L      | —           | H/H           | TO-220(IS) 5PIN  |
| TPD1018F    | High-side switch     | Vbss 60 V<br>Io 0.5 A<br>Rds(ON) = 0.8 Ω Max     | 5 to 25                      | -40 to 125                      |                                        | 0.3                                     | 1.5 Typ.                               | 160 Typ.                 | 30 Typ.             | ○<br>DIAG L          | —           | ○<br>DIAG L      | ○<br>DIAG L | H/H           | SSOP-10PIN       |
| TPD1024S    | Low-side switch      | Vds(DC) 40 V<br>Io 1.5 A<br>Rds(ON) = 0.5 Ω Max  | up to 18                     | -40 to 85                       |                                        | 1                                       | 3.5 Typ.                               | 160 Typ.                 | Active clamp 40 Min | —                    | —           | —                | —           | H/L           | PW-MOLD 3PIN     |
| TPD1024AS   | Low-side switch      | Vds(DC) 40 V<br>Io 1.5 A<br>Rds(ON) = 0.5 Ω Max  | up to 18                     | -40 to 85                       |                                        | 1.2                                     | 3.5 Typ.                               | 160 Typ.                 | Active clamp 40 Min | —                    | —           | —                | —           | H/L           | TPS 3PIN         |
| TPD1030F    | 2-ch low-side switch | Vds(DC) 40 V<br>Io 1 A<br>Rds(ON) = 0.6 Ω Max    | up to 40                     | -40 to 110                      |                                        | 2.0<br>(t = 10 s)<br>(mounted on board) | 1 Min                                  | 160 Typ.                 | Active clamp 40 Min | —                    | —           | —                | —           | H/L           | SOP-8PIN         |
| TPD1031AF   | Low-side switch      | Vds(DC) 50 V<br>Io 8 A<br>Rds(ON) = 0.065 Ω Max  | up to 18                     |                                 |                                        | 50<br>(Tc=25°C)                         | 8 Min                                  | 160 Typ.                 | Active clamp 50 Min | —                    | —           | —                | —           | H/L           | TO-220SM 3PIN    |
| TPD1032F    | 2-ch low-side switch | Vds(DC) 20 V<br>Io 3 A<br>Rds(ON) = 0.4 Ω Max    | up to 20                     |                                 |                                        | 2.0<br>(t = 10 s)<br>(mounted on board) | 3 Min                                  | 160 Typ.                 | Active clamp 40 Min | —                    | —           | —                | —           | H/L           | SOP-8PIN         |
| TPD1033F    | High-side switch     | Vbss 60 V<br>Io 4 A<br>Rds(ON) = 0.22 Ω Max      | 5 to 18                      |                                 |                                        | 2.4<br>(t = 10 s)<br>(mounted on board) | 6 Typ.                                 | 160 Typ.                 | —                   | ○<br>DIAG L          | ○<br>DIAG H | ○<br>DIAG L      | —           | H/H           | SOP-8PIN         |
| TPD1034F    | High-side switch     | Vbss 60 V<br>Io 8 A<br>Rds(ON) = 0.08 Ω Max      |                              |                                 |                                        | 12 Typ.                                 | 160 Typ.                               | —                        | ○<br>DIAG L         | ○<br>DIAG H          | ○<br>DIAG L | —                | H/H         | SOP-8PIN      |                  |
| TPD1036F    | 2-ch low-side switch | Vds(DC) 30 V<br>Io 1.5 A<br>Rds(ON) = 0.5 Ω Max  | up to 30                     |                                 |                                        | 2.0<br>(t = 10 s)<br>(mounted on board) | 1.5 Min                                | 160 Typ.                 | Active clamp 40 Min | —                    | —           | —                | —           | H/L           | SOP-8PIN         |
| TPD1037BS   | Low-side switch      | Vds(DC) 40 V<br>Io 1.5 A<br>Rds(ON) = 0.25 Ω Max | up to 40                     | -40 to 85                       |                                        | 0.9                                     | In-rush 10 Typ.<br>Shorted load 3 Typ. | 160 Typ.                 | Active clamp 40 Min | —                    | —           | —                | —           | H/L           | TO-92MOD 3PIN    |
| TPD1038F    | High-side switch     | Vbss 60 V<br>Io 3 A<br>Rds(ON) = 0.12 Ω Max      | 6 to 18                      | -40 to 110                      |                                        | 1.1<br>(mounted on board)               | 3 Min                                  | 150 Min                  | Active clamp 50 Min | ○<br>DIAG L          | ○<br>DIAG H | ○<br>DIAG L      | —           | H/H           | SOP-8PIN         |
| TPD1039F    | Low-side switch      | Vds(DC) 45 V<br>Io 1.5 A<br>Rds(ON) = 0.25 Ω Max | up to 45                     | -40 to 85                       |                                        | 1.1<br>(mounted on board)               | 5 Typ.                                 | 125 Min                  | Active clamp 45 Min | —                    | —           | —                | —           | H/L           | SOP-8PIN         |
| TPD1039S    | Low-side switch      | Vds(DC) 45 V<br>Io 1.5 A<br>Rds(ON) = 0.25 Ω Max | up to 45                     | -40 to 85                       |                                        | 0.9                                     | 5 Typ.                                 | 125 Min                  | Active clamp 45 Min | —                    | —           | —                | —           | H/L           | TO-92MOD 3PIN    |
| TPD1042F    | High-side switch     | Vbss 60 V<br>Io 7 A<br>Rds(ON) = 0.18 Ω Max      | 6 to 18                      | -40 to 115                      |                                        | 1.1<br>(mounted on board)               | 7 Min                                  | 150 Min                  | —                   | ○<br>DIAG L          | ○<br>DIAG H | ○<br>DIAG L      | —           | H/H           | SOP-8PIN         |
| TPD1044F    | Low-side switch      | Vds(DC) 41 V<br>Io 1 A<br>Rds(ON) = 0.6 Ω Max    | up to 41                     | -40 to 125                      |                                        | 0.9<br>(mounted on board)               | 1 Min                                  | 160 Typ.                 | Active clamp 41 Min | —                    | —           | —                | —           | H/L           | PS-8             |
| ** TPD1045F | Low-side switch      | Vds(DC) 50 V<br>Io 5 A<br>Rds(ON) = 0.1 Ω Max    | up to 18                     | -40 to 125                      |                                        | 1.1<br>(mounted on board)               | 5 Min                                  | 170 Typ.                 | Active clamp 50 Min | —                    | —           | —                | —           | H/L           | SOP-8PIN         |

\*\* : Under development

| Part Number | Use/Function                                                           | Outline                                                                      | Operating Supply Voltage (V)                              | Operating Temperature Topr (°C) | Junction (Channel) Temperature Tj (°C) | Power Dissipation Pd (W) | Protective Functions               |                          |                                                      | Diagnostic Functions                                                                                                                                                                                                    |           |                  |                                   | Input/ Output                            | Package    |
|-------------|------------------------------------------------------------------------|------------------------------------------------------------------------------|-----------------------------------------------------------|---------------------------------|----------------------------------------|--------------------------|------------------------------------|--------------------------|------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|------------------|-----------------------------------|------------------------------------------|------------|
|             |                                                                        |                                                                              |                                                           |                                 |                                        |                          | Overcurrent Is (A)                 | Over Temperature Ts (°C) | Overvoltage Vs (V)                                   | Short load                                                                                                                                                                                                              | Open load | Over Temperature | Overvoltage                       |                                          |            |
| ✧ TPD2004F  | Air bag<br>2-ch squib driver<br>(high-side SS)                         | V <sub>BB</sub> 30 V<br>R <sub>DS(ON)</sub> = 1 Ω Max                        | V <sub>BE</sub> =4 to 25<br>V <sub>CC</sub> =4.75 to 5.25 | -40 to 85                       | 150                                    | 0.8                      | —                                  | —                        | —                                                    | 1) Squib-short, short-to-battery, short-to-ground and open-circuit detection<br>2) When an abnormal condition is diagnosed, the safing sensor is turned on.<br>3) Diagnosis performed on squib driver's internal MOSFET |           |                  |                                   | When LSD = L and HSD = H, squib ignites. | SSOP-24PIN |
| ✧ TPD2005F  | 8-ch high-side switch                                                  | V <sub>DD</sub> 45 V<br>Io 1 A<br>R <sub>DS(ON)</sub> = 1.2 Ω Max            | 8 to 40                                                   |                                 |                                        | 0.8                      | 1.0 Min                            | 160 Typ.                 | —                                                    | —                                                                                                                                                                                                                       | —         | —                | H/H                               | SSOP-24PIN                               |            |
| ✧ TPD2007F  | 8-ch low-side switch                                                   | V <sub>DS(DC)</sub> 40 V<br>Io 1 A<br>R <sub>DS(ON)</sub> = 1.4 Ω Max        | up to 40                                                  |                                 |                                        | 0.8                      | 1.0 Min                            | 160 Typ.                 | Active clamp 40 Min                                  | —                                                                                                                                                                                                                       | —         | —                | —                                 | H/L                                      | SSOP-24PIN |
| ✧ TPD7000AF | 4-ch low-side Power MOSFET driver                                      | V <sub>DD</sub> 25 V<br>Io 20 mA Max                                         | V <sub>OH</sub> =8 to 18<br>V <sub>OL</sub> =4.5 to 5.5   | -40 to 110                      |                                        | 0.5                      | V <sub>DS</sub> monitor 1.0 V Typ. | —                        | Active clamp 35 V Typ.                               | ○ DIAG L                                                                                                                                                                                                                | ○ DIAG H  | —                | —                                 | H/H (ENB="H")                            | SSOP-24PIN |
| ✧ TPD7100F  | 2-ch high-side Power MOSFET driver<br>(with built-in charge pump)      | V <sub>DD</sub> 30 V<br>Source current 0.1 A Typ.<br>Sink current 0.1 A Typ. | 8 to 18                                                   |                                 |                                        | 0.8                      | Adjustable                         | —                        | ○ (Undervoltage detected at 4.5 V Max)               | Overcurrent                                                                                                                                                                                                             | —         | —                | —                                 | H/H                                      | SSOP-24PIN |
| ✧ TPD7201F  | 3-phase full-bridge Power MOSFET driver<br>(with built-in charge pump) | V <sub>DD</sub> 30 V<br>Source current 1 A Max<br>Sink current 1 A Max       | 7 to 18                                                   |                                 |                                        | 0.8                      | —                                  | —                        | ○ 22 V Typ.<br>(Undervoltage detected at 6.0 V Typ.) | —                                                                                                                                                                                                                       | —         | —                | ○ FAULT H<br>(and undervoltage)   | H/H                                      | SSOP-24PIN |
| ✧ TPD7202F  | H bridge Power MOSFET driver<br>(with built-in charge pump)            | V <sub>DD</sub> 30 V<br>Source current 1 A Max<br>Sink current 1 A Max       | 7 to 18                                                   | -40 to 125                      |                                        | 0.8                      | —                                  | —                        | ○ 22 V Typ.<br>(Undervoltage detected at 6.0 V Typ.) | —                                                                                                                                                                                                                       | —         | —                | ○ FAULT H<br>(and undervoltage)   | H/H                                      | SSOP-24PIN |
| ✧ TPD7203F  | 3-phase full-bridge Power MOSFET driver<br>(with built-in charge pump) | V <sub>DD</sub> 30 V<br>Source current 1 A Max<br>Sink current 1 A Max       | 7 to 18                                                   |                                 |                                        | 0.8                      | —                                  | —                        | ○ (Undervoltage detected at 6.0 V Typ.)              | —                                                                                                                                                                                                                       | —         | —                | ○ FAULT H<br>(only under voltage) | H/H                                      | SSOP-24PIN |

✧: Dry-packed product

## 250 V/500 V Series

| Part Number  | Features                                         | Rating     | Output Type            | Functions                                                     | Protective Functions |                  |              | Package |
|--------------|--------------------------------------------------|------------|------------------------|---------------------------------------------------------------|----------------------|------------------|--------------|---------|
|              |                                                  |            |                        |                                                               | Overcurrent          | Over temperature | Undervoltage |         |
| TPD4101K     | High-voltage PWM<br>DC brushless<br>motor driver | 250 V/±1 A | 3-phase<br>full-bridge | Hall IC input, bootstrap circuit, PWM, 3-phase decoder        | ○                    | ○                | ○            | HZIP23  |
| TPD4102K     | High-voltage PWM<br>DC brushless<br>motor driver | 500 V/±1 A | 3-phase<br>full-bridge | Hall IC input, bootstrap circuit, PWM, 3-phase decoder        | ○                    | ○                | ○            | HZIP23  |
| TPD4103K     | High-voltage PWM<br>DC brushless<br>motor driver | 500 V/±1 A | 3-phase<br>full-bridge | 6-input, low-side driver, high-side driver                    | ○                    | ○                | ○            | HZIP23  |
| TPD4103AK    | High-voltage PWM<br>DC brushless<br>motor driver | 500 V/±1 A | 3-phase<br>full-bridge | 6-input, low-side driver, high-side driver                    | —                    | ○                | ○            | HZIP23  |
| TPD4104K     | High-voltage PWM<br>DC brushless<br>motor driver | 500 V/±2 A | 3-phase<br>full-bridge | 6-input, low-side driver, high-side driver                    | ○                    | ○                | ○            | HZIP23  |
| TPD4104AK    | High-voltage PWM<br>DC brushless<br>motor driver | 500 V/±2 A | 3-phase<br>full-bridge | 6-input, low-side driver, high-side driver                    | —                    | ○                | ○            | HZIP23  |
| ** TPD4105K  | High-voltage PWM<br>DC brushless<br>motor driver | 500 V/±3 A | 3-phase<br>full-bridge | 6-input, low-side driver, high-side driver                    | ○                    | ○                | ○            | HZIP23  |
| ** TPD4105AK | High-voltage PWM<br>DC brushless<br>motor driver | 500 V/±3 A | 3-phase<br>full-bridge | 6-input, low-side driver, high-side driver                    | —                    | ○                | ○            | HZIP23  |
| ** TPD4111K  | High-voltage PWM<br>DC brushless<br>motor driver | 250 V/±1 A | 3-phase<br>full-bridge | Hall amplifier input, bootstrap circuit, PWM, 3-phase decoder | ○                    | ○                | ○            | HZIP23  |
| ** TPD4112K  | High-voltage PWM<br>DC brushless<br>motor driver | 500 V/±1 A | 3-phase<br>full-bridge | Hall amplifier input, bootstrap circuit, PWM, 3-phase decoder | ○                    | ○                | ○            | HZIP23  |

\*\* : Under development

## Interface Drivers

### Transistor Arrays (Transistor Array/Interface Driver Series)

| Part Number          | Device Type                                  | No. of Circuits | Output Clamp Diode | Output Breakdown Voltage (V) | Output Current (mA) | Input Resistor ( $\Omega$ ) | Recommended System Supply Voltage (V) | Package               |
|----------------------|----------------------------------------------|-----------------|--------------------|------------------------------|---------------------|-----------------------------|---------------------------------------|-----------------------|
| TD62001AP/AF         | Darlington driver                            | 7               | ○                  | 50                           | 500                 | NA                          | Any                                   | DIP16/SOP16           |
| TD62002AP/AF         | Darlington driver                            | 7               | ○                  | 50                           | 500                 | 10.5 k + 7 VZ.D.            | 14 to 15                              | DIP16/SOP16           |
| TD62003AP/AF         | Darlington driver                            | 7               | ○                  | 50                           | 500                 | 2.7 k                       | 5                                     | DIP16/SOP16           |
| TD62004AP/AF         | Darlington driver                            | 7               | ○                  | 50                           | 500                 | 10.5 k                      | 6 to 15                               | DIP16/SOP16           |
| TD62006P/F           | Darlington driver                            | 6               | ○                  | 22                           | 150                 | 20 k                        | 6 to 20                               | DIP14/SOP14           |
| TD62008AP/AF         | Darlington driver                            | 7               | ○                  | 50                           | 400                 | 20 k                        | 6 to 20                               | DIP16/SOP16           |
| TD62064AP/AF/BP-1/BF | High-current darlington driver               | 4               | ○                  | 50/50/80/80                  | 1500                | 230                         | 5                                     | DIP16/<br>HSOP16      |
| TD62074AP/AF         | Isolated-type high-current darlington driver | 4               |                    | 50                           | 1500                | 230                         | 5                                     | DIP16/<br>HSOP16      |
| TD62081AP/AF         | Darlington driver                            | 8               | ○                  | 50                           | 500                 | NA                          | Any                                   | DIP18/SOP18           |
| TD62082AP/AF         | Darlington driver                            | 8               | ○                  | 50                           | 500                 | 10.5 k + 7 VZ.D.            | 14 to 25                              | DIP18/SOP18           |
| TD62083AP/AF/AFN     | Darlington driver                            | 8               | ○                  | 50                           | 500                 | 2.7 k                       | 5                                     | DIP18/SOP18<br>SSOP18 |
| TD62084AP/AF/AFN     | Darlington driver                            | 8               | ○                  | 50                           | 500                 | 10.5 k                      | 6 to 15                               | DIP18/SOP18<br>SSOP18 |
| TD62101P/F           | Darlington driver                            | 7               |                    | 25                           | 500                 | NA                          | Any                                   | DIP16/SOP16           |
| TD62103P/F           | Darlington driver                            | 7               |                    | 25                           | 500                 | 2.7 k                       | 5                                     | DIP16/SOP16           |
| TD62104P/F           | Darlington driver                            | 7               |                    | 25                           | 500                 | 10.5 k                      | 6 to 15                               | DIP16/SOP16           |
| TD62105P/F           | Darlington driver                            | 7               |                    | 25                           | 500                 | 20 k                        | 12 to 25                              | DIP16/SOP16           |
| TD62107P/F           | Darlington driver (with Enable pin)          | 4               | ○                  | 45/35                        | 750                 | LS-, TTL-compatible         | 5                                     | DIP16/<br>HSOP16      |
| TD62164AP/BP/AF/BF   | High-current, low-saturation driver          | 4               | ○                  | 50/80/50/80                  | 700                 | 2 k                         | 5 to 15                               | DIP16/<br>HSOP16      |
| TD62304AP/AF/AFN     | Low-input-active darlington driver           | 7               |                    | 50                           | 500                 | 14 k                        | 5                                     | DIP16/SOP16<br>SSOP16 |
| TD62305AP/AF/AFN     | Low-input-active darlington driver           | 7               |                    | 50                           | 500                 | 14 k + D.                   | 5                                     | DIP16/SOP16<br>SSOP16 |
| TD62307P/F           | Low-saturation driver                        | 7               | ○                  | 20                           | 150                 | 20 k                        | 5 to 18                               | DIP16/SOP16           |
| TD62308AP/AF/BP-1/BF | Low-input-active darlington driver           | 4               | ○                  | 50/50/80/80                  | 1500                | 4 k                         | 5                                     | DIP16/<br>HSOP16      |
| TD62309P/F           | Low-saturation driver                        | 6               | ○                  | 20                           | 700                 | 2 k                         | 5                                     | DIP16/<br>HSOP16      |
| TD62318AP/BP/AF/BF   | Low-input-active, low-saturation driver      | 4               | ○                  | 50/80/50/80                  | 700                 | 4 k                         | 5                                     | DIP16/<br>HSOP16      |
| TD62381P/F/FN        | Low-saturation driver                        | 8               |                    | 15                           | 500                 | 2.7 k                       | 5 to 18                               | DIP18/SOP18<br>SSOP18 |
| TD62382AP/AF/AFN     | Low-input-active, low-saturation driver      | 8               |                    | 50                           | 50                  | 14 k                        | 5 to 18                               | DIP18/SOP18<br>SSOP18 |
| TD62383P             | Low-input-active, low-saturation driver      | 8               | ○                  | 10                           | 500                 | 14 k + D.                   | 5 to 18                               | DIP20                 |
| TD62384AP/AF         | Low-input-active darlington driver           | 8               |                    | 50                           | 500                 | 14 k                        | 5 to 18                               | DIP18/SOP18           |
| TD62385AP/AF         | Low-input-active darlington driver           | 8               |                    | 50                           | 500                 | 14 k + D.                   | 5 to 18                               | DIP18/SOP18           |
| TD62386AP/AF         | Low-input-active darlington driver           | 8               | ○                  | 50                           | 500                 | 14 k                        | 5 to 7                                | DIP20/SOP20           |

# Transistor Arrays (Transistor Array/Interface Driver Series) (continued)

| Part Number      | Device Type                                                    | No. of Circuits | Output Clamp Diode | Output Breakdown Voltage (V) | Output Current (mA) | Input Resistor ( $\Omega$ ) | Recommended System Supply Voltage (V) | Package               |
|------------------|----------------------------------------------------------------|-----------------|--------------------|------------------------------|---------------------|-----------------------------|---------------------------------------|-----------------------|
| TD62387AP/AF/AFN | Low-input-active darlington driver                             | 8               | ○                  | 50                           | 500                 | 14 k + D.                   | 5 to 7                                | DIP20/SOP20<br>SSOP20 |
| TD62388AP/AF/AFN | Low-input-active darlington driver                             | 8               | ○                  | 50                           | 500                 | 14 k + D.                   | 5 to 7                                | DIP20/SOP20<br>SSOP20 |
| TD62501P/F       | Single-transistor array (common-emitter)                       | 7               |                    | 35                           | 200                 | NA                          | Any                                   | DIP16/SOP16           |
| TD62502P/F/FN    | Single-transistor array (common-emitter)                       | 7               |                    | 35                           | 200                 | 10.5 k + 7 VZ.D.            | 14 to 25                              | DIP16/SOP16<br>SSOP16 |
| TD62503P/F/FN    | Single-transistor array (common-emitter)                       | 7               |                    | 35                           | 200                 | 2.7 k                       | 5                                     | DIP16/SOP16<br>SSOP16 |
| TD62504P/F/FN    | Single-transistor array (common-emitter)                       | 7               |                    | 35                           | 200                 | 10.5 k                      | 6 to 15                               | DIP16/SOP16<br>SSOP16 |
| TD62505P/F       | Single-transistor array (common-collector)                     | 7               |                    | 35                           | −200                | NA                          | Any                                   | DIP16/SOP16           |
| TD62506P/F       | Single-transistor array (common-collector)                     | 7               |                    | 35                           | −200                | 2.7 k                       | 5                                     | DIP16/SOP16           |
| TD62507P/F       | Isolated-type single-transistor array                          | 5               |                    | 35                           | −200                | NA                          | Any                                   | DIP16/SOP16           |
| TD62551S         | Single-transistor array (common-emitter)                       | 4               |                    | 25                           | 150                 | NA                          | Any                                   | SIP9                  |
| TD62553S         | Single-transistor array (common-emitter)                       | 4               |                    | 25                           | 150                 | 2.7 k                       | 5                                     | SIP9                  |
| TD62554S         | Single-transistor array (common-emitter)                       | 4               |                    | 25                           | 150                 | 10.5 k                      | 6 to 15                               | SIP9                  |
| TD62555S         | Single-transistor array (common-emitter)                       | 4               |                    | 25                           | 150                 | 20 k                        | 12 to 25                              | SIP9                  |
| TD62583AP/AF     | Single-transistor array (common-emitter)                       | 8               |                    | 50                           | 50                  | 2.7 k                       | 5                                     | DIP18/SOP18           |
| TD62591AP        | Single-transistor array (common-emitter)                       | 8               |                    | 50                           | 200                 | NA                          | Any                                   | DIP18                 |
| TD62592AP        | Single-transistor array (common-emitter)                       | 8               |                    | 50                           | 200                 | 10.5 k + 7 VZ.D.            | 14 to 25                              | DIP18                 |
| TD62593AP/AFN    | Single-transistor array (common-emitter)                       | 8               |                    | 50                           | 200                 | 2.7 k                       | 5                                     | DIP18/SSOP18          |
| TD62594AP/AFN    | Single-transistor array (common-emitter)                       | 8               |                    | 50                           | 200                 | 10.5 k                      | 6 to 15                               | DIP18/SSOP18          |
| TD62595AP/AF     | Single-transistor array (common-emitter)                       | 8               | ○                  | 50                           | 200                 | NA                          | Any                                   | DIP18/SOP18           |
| TD62596AP/AF     | Single-transistor array (common-emitter)                       | 8               | ○                  | 50                           | 200                 | 10.5 k + 7 VZ.D.            | 14 to 25                              | DIP18/SOP18           |
| TD62597AP/AF/AFN | Single-transistor array (common-emitter)                       | 8               | ○                  | 50                           | 200                 | 2.7 k                       | 5                                     | DIP18/SOP18<br>SSOP18 |
| TD62598AP/AF/AFN | Single-transistor array (common-emitter)                       | 8               | ○                  | 50                           | 200                 | 10.5 k                      | 6 to 15                               | DIP18/SOP18<br>SSOP18 |
| TD62601P/F       | Threshold-free driver (inverted output)                        | 6               |                    | 20                           | 10                  | 1 M                         | 4 to 18                               | DIP16/SOP16           |
| TD62602P/F       | Threshold-free driver<br>(inverted output, open-collector)     | 6               |                    | 20                           | 10                  | 1 M                         | 4 to 18                               | DIP16/SOP16           |
| TD62603P/F       | Threshold-free driver (non-inverted output)                    | 6               |                    | 20                           | 10                  | 1 M                         | 4 to 18                               | DIP16/SOP16           |
| TD62604P/F       | Threshold-free driver<br>(non-inverted output, open-collector) | 6               |                    | 20                           | 10                  | 1 M                         | 4 to 18                               | DIP16/SOP16           |
| TD62703P/F       | High breakdown voltage, source-type driver                     | 6               |                    | 60                           | −50                 | 2.7 k                       | 5                                     | DIP14/SOP14           |
| TD62705P/F       | High breakdown voltage, source-type driver                     | 6               |                    | 60                           | −50                 | 47 k                        | 6 to 15                               | DIP16/SOP16           |
| TD62706P/F       | High breakdown voltage, source-type driver                     | 6               |                    | 60                           | −50                 | 10 k                        | 5                                     | DIP16/SOP16           |
| TD62708N         | Source-type darlington driver<br>(with Enable pin)             | 8               |                    | 40                           | −1800               | NA                          | 5                                     | DIP24N                |
| TD62781AP        | Source-type darlington driver<br>(with pull-down resistor)     | 8               |                    | 60                           | −50                 | 10 k                        | 5                                     | DIP18                 |
| TD62782F         | Source-type darlington driver<br>(with pull-down resistor)     | 8               |                    | 35                           | −50                 | 20 k                        | 6 to 15                               | SOP18                 |
| TD62783AP/AF/AFN | Source-type darlington driver                                  | 8               | ○                  | 50                           | −500                | 10 k                        | 5                                     | DIP18/SOP18<br>SSOP18 |
| TD62784AP/AF/AFN | Source-type darlington driver                                  | 8               | ○                  | 50                           | −500                | 10 k                        | 6 to 15                               | DIP18/SOP18<br>SSOP18 |
| TD62785P/F       | Source-type darlington driver                                  | 8               |                    | 7                            | −500                | 5.6-k<br>pull-up            | 5                                     | DIP18/SOP18           |
| TD62786AP/AF/AFN | Source-type darlington driver                                  | 8               | ○                  | 50                           | −500                | 14 k                        | 5                                     | DIP18/SOP18<br>SSOP18 |
| TD62787AP/AF     | Source-type darlington driver                                  | 8               | ○                  | 50                           | −500                | 14 k + D.                   | 5                                     | DIP18/SOP18           |

## (DMOS Array Series)

| Part Number | Package     | Use               | Structure                                               |
|-------------|-------------|-------------------|---------------------------------------------------------|
| TB62003F/P  | SOP20/DIP20 | 8-bit DMOS driver | 8-bit DMOS driver with inverter gate, 35 V / 200 mA     |
| TB62004F/P  | SOP20/DIP20 | 8-bit DMOS driver | 8-bit DMOS driver with non-inverter gate, 35 V / 200 mA |
| TB62006F/P  | SOP20/DIP20 | 8-bit DMOS driver | 8-bit DMOS driver with NAND gate, 35 V / 200 mA         |
| TB62007F/P  | SOP20/DIP20 | 8-bit DMOS driver | 8-bit DMOS driver with AND gate, 35 V / 200 mA          |
| TB62008F/P  | SOP20/DIP20 | 8-bit DMOS driver | 8-bit DMOS driver with NOR gate, 35 V / 200 mA          |
| TB62009F/P  | SOP20/DIP20 | 8-bit DMOS driver | 8-bit DMOS driver with OR gate, 35 V / 200 mA           |

## (Multi-Chip Transistor Array Series)

| Part Number  | Device Type                                | Output Breakdown Voltage<br>(V) | Output Current<br>(A) | Package          |
|--------------|--------------------------------------------|---------------------------------|-----------------------|------------------|
| TD62M4700F   | 2-ch push-pull driver, low-saturation type | 10                              | ±2.0                  | SSOP16           |
| TD62M2701F   | 2-ch push-pull driver, low-saturation type | 10                              | ±2.0                  | SSOP16           |
| TD62M2702F   | 2-ch push-pull driver, low-saturation type | 10                              | ±2.0                  | SSOP16           |
| TD62M3600F   | 3-ch source driver, low-saturation type    | 10                              | -2.0                  | SSOP10           |
| TD62M3601F   | 3-ch source driver, low-saturation type    | 30                              | -1.5                  | SSOP10           |
| TD62M3700F   | 3-ch push-pull driver, low-saturation type | 30                              | ±1.5                  | SSOP16           |
| TD62M3701F   | 3-ch push-pull driver, low-saturation type | 10                              | ±2.0                  | SSOP16           |
| TD62M3702F   | 3-ch push-pull driver, low-saturation type | 15                              | ±2.0                  | SSOP16           |
| TD62M3704F   | 3-ch push-pull driver, low-saturation type | 10                              | -0.4                  | SSOP16           |
| TD62M4500F   | 4-ch sink driver, low-saturation type      | 10                              | 2.0                   | SSOP16           |
| TD62M4501F   | 4-ch sink driver, low-saturation type      | 20                              | 2.0                   | SSOP16           |
| TD62M4503AFN | 4-ch power MOSFET sink driver + diode      | 60                              | 0.8                   | SSOP24 (0.65 mm) |
| TD62M4600F   | 4-ch source driver, low-saturation type    | 10                              | -2.0                  | SSOP16           |
| TD62M4601F   | 4-ch source driver, low-saturation type    | 20                              | -2.0                  | SSOP16           |
| TD62M8500F   | 8-ch sink driver, low-saturation type      | 10                              | 2.0                   | HSOP16           |
| TD62M8501F   | 8-ch sink driver, low-saturation type      | 20                              | 2.0                   | HSOP16           |
| TD62M8600F   | 8-ch source driver, low-saturation type    | 10                              | -2.0                  | HSOP16           |
| TD62M8601F   | 8-ch source driver, low-saturation type    | 20                              | -2.0                  | HSOP16           |
| TD62M8603F   | 8-ch source driver, low-saturation type    | 30                              | -1.5                  | HSOP16           |
| TD62M8604AF  | 8-ch source driver, low-saturation type    | 50                              | -2.0                  | HSOP16           |

## LED Driver ICs (LED Panel Driver ICs)

| Part Number      | Package             | Use                  | Structure                                                                                                                                       |
|------------------|---------------------|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| TB62702P/F       | DIP20/SOP20         | 10-segment display   | 10-bit DMOS sink driver (SIPO, latch), 30 V/30 mA                                                                                               |
| TB62705CP/CF/CFN | DIP16/SSOP16        | Small LED panel      | 8-bit constant-current sink driver (SIPO, latch), 17 V/90 mA                                                                                    |
| TB62706BN/BF     | SDIP24N/SSOP24      | Large LED panel      | 16-bit constant-current sink driver (SIPO, latch), 17 V/90 mA                                                                                   |
| TB62707F         | SSOP24              | Full-color LED panel | 8-bit constant-current sink driver (PIPO, latch), 17 V/90 mA                                                                                    |
| TB62708N         | SDIP30N             | Large LED panel      | 16-bit constant-current source driver (SIPO, latch), 17 V/-90 mA                                                                                |
| TB62709N/F       | SDIP24N/SSOP24      | 7-segment display    | 4-digit 7-segment display (anode common) decoder + constant-current driver (SIPO), 17 V/50 mA, -400 mA/digit                                    |
| TB62710P/F/FN    | DIP20/SSOP24/SSOP20 | Small LED panel      | 8-bit constant-current source driver (SIPO, latch), 17 V/-90 mA                                                                                 |
| TB62713N/F       | SDIP24N/SSOP24      | 7 × 5 dot display    | 7 × 5 dot display (common cathode rows) decoder + constant-current driver (SIPO), 17 V/60 mA, -420 mA/digit                                     |
| TB62715FN        | SSOP20              | Small LED panel      | 8-bit constant-current sink driver (SIPO, latch), 17 V/150 mA                                                                                   |
| TB62717N/F       | SDIP42N/QFP48       | Full-color LED panel | 24-bit constant-current sink driver (SIPO, latch), 17 V/50 mA                                                                                   |
| TB62718AF        | HQFP64              | Full-color LED panel | PWM control 256-level gray scale + current compensation, 16-bit constant-current sink driver, 26 V/80 mA                                        |
| TB62719AF        | HQFP64              | Full-color LED panel | PWM control 256-level gray scale + current compensation, 16-bit constant-current sink driver, 26 V/80 mA (upward compatible with the TB62718AF) |
| TB62725BP/BF/BFN | DIP16/SSOP16/SSOP16 | Small LED panel      | 3.3-V to 5-V drive, 8-bit constant-current sink driver (SIPO, latch), 17 V/90 mA                                                                |
| TB62726AN/AF     | SDIP24N/SSOP24      | Large LED panel      | 3.3-V to 5-V drive, 16-bit constant-current sink driver (SIPO, latch), 17 V/90 mA                                                               |
| TB62727FN        | SSOP30              | Full-color LED panel | 16-bit constant-current sink driver with current compensate (SIPO, latch), 17 V/60 mA                                                           |

SIPO: Serial-in parallel-out

PIPO: Parallel-in parallel-out

Toshiba manufactures the products in bold in the factories in Malaysia and Thailand as well as in Japan. We ship the products from the factories for overseas assembly of end products.

## (White LED Driver ICs)

| Part Number   | Package    | Use                               | Structure                                                                                                                                  |
|---------------|------------|-----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| TB62731FUG    | SOT23-6pin | White color LED back light driver | Constant current step-up DC/DC converter (output: 320 mW, efficiency: 80%, maximum output voltage: 30 V, maximum switching current: 0.3 A) |
| TB62732FUG    |            |                                   |                                                                                                                                            |
| ** TB62733FTG | VQON24     | White color LED back light driver | Charge-pump type DC/DC converter (2ch output), output current: 200 mA                                                                      |
| TB62734FMG    | SON8       | White color LED back light driver | Constant current step-up DC/DC converter, efficiency: 85% (max), output: 600 mW, (with over voltage protection function)                   |
| ** TB62735FTG | QFN16      | White color LED back light driver | Charge-pump DC/DC converter + constant-current driver (4ch)                                                                                |
| ** TB62736FUG | SOT23-6pin | White color LED back light driver | Constant current step-up DC/DC converter, efficiency: 85% (max)                                                                            |
| ** TB62737FUG | SOT23-6pin | White color LED back light driver | Constant current step-up DC/DC converter, efficiency: 85% (max), (with over voltage protection function)                                   |

\*\* : Under development

## CCD Clock Driver ICs (CCD Clock Driver ICs)

| Part Number | Package | Use                     | Structure                                            |
|-------------|---------|-------------------------|------------------------------------------------------|
| TB62801F    | HSOP16  | CCD linear image sensor | Linear CCD clock driver                              |
| TB62802F    | HSOP16  | CCD linear image sensor | Linear CCD clock driver (EMI noise measures product) |

## Thermal Head Driver ICs

| Part Number | Package | Device Type           | Structure                                                                                          |
|-------------|---------|-----------------------|----------------------------------------------------------------------------------------------------|
| TD62C805F   | QFP80   | 48-bit TPH driver     | 8-bit parallel input, 6-stage shift register latch drivers (30 V / 100 mA)                         |
| TD62C851P   | DIP20   | 8-bit solenoid driver | 8-bit shift register latch drivers (50 V / 200 mA)                                                 |
| TD62C852P   | DIP20   | 8-bit solenoid driver | 8-bit shift register latch drivers (50 V / 500 mA)                                                 |
| TD62C854AF  | SSOP24  | 8-bit LED driver      | With Power ON Reset, 8-bit shift register latch drivers (50 V / 500 mA)                            |
| TB62600F    | QFP100  | 64-bit TPH driver     | 8-bit parallel input, 8-stage (1 bit input, 64-stage) shift register latch drivers (30 V / 130 mA) |

## Vending Machine Driver ICs

| Part Number | Package         | Use                           | Structure                                                                       |                                                                                          |
|-------------|-----------------|-------------------------------|---------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
| TD62650F    | SSOP30 (1.0 mm) | Vending machine system driver | 5-V power supply and power supply monitor +<br>24-V communications interface IC | Power supply monitor level: 92% of 5 V or less<br>Built-in resistor for reset timer      |
| TD62651F    |                 |                               |                                                                                 | Power supply monitor level: 85% of 5 V or less<br>With external resistor for timer reset |
| TD62652F    |                 |                               |                                                                                 | Power supply monitor level: 92% of 5 V or less<br>With external resistor for timer reset |

## Other Driver ICs

| Part Number | Package               | Use                                              | Structure                                          |
|-------------|-----------------------|--------------------------------------------------|----------------------------------------------------|
| TD62930P/F  | DIP16/SSOP16 (1.0 mm) | IGBT gate driver for home appliances (inverters) | 3-ch small-signal push-pull driver (30 V/± 100 mA) |
| TD62C854F   | SSOP24 (1 mm)         | General purpose use                              | 8 outputs darlington driver                        |
| TD62C854AF  | SSOP24 (1 mm)         |                                                  | 8 outputs darlington driver with Power ON Reset    |

## Motor Drivers

### Brush Motor Driver ICs (Bridge Driver ICs)

| Part Number    | Package      | Features                                                                                                                                                                                                                                                              |
|----------------|--------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| TA7354P        | SIP9         | I <sub>OUT</sub> = 0.2 A (avg), 0.6 A (peak), built-in diode, 4 modes                                                                                                                                                                                                 |
| TA7257P        | HSIP7        | I <sub>OUT</sub> = 1.5 A (avg), 4.5 A (peak), built-in diode, 4 modes                                                                                                                                                                                                 |
| TA7267BP       | HSIP7        | I <sub>OUT</sub> = 1.0 A (avg), 3.0 A (peak), built-in diode, 4 modes                                                                                                                                                                                                 |
| TA7279AP/P     | HDIP14       | 2-channel 4-mode driver, I <sub>OUT</sub> = 1.0 A (avg), 3.0 A (peak), built-in diode, built-in thermal shutdown circuit                                                                                                                                              |
| TA7288P        | HSIP10       | Sequential dual driver with V <sub>REF</sub> , I <sub>OUT</sub> = 1.0 A (avg), 2.0 A (peak), built-in diode, 4 modes, built-in thermal shutdown circuit/output pin protection circuit, built-in shoot through current protection circuit, hysteresis for all inputs   |
| TA8400P        | DIP16        | Sequential dual driver with V <sub>REF</sub> A and V <sub>REF</sub> B, I <sub>OUT</sub> = 1.0 A (peak), built-in diode, 4 modes, built-in thermal shutdown circuit, built-in shoot through current protection circuit, hysteresis for all inputs                      |
| TA8405S        | SIP9         | Sequential dual driver, I <sub>OUT</sub> = 1.0 A (peak), built-in diode, 4 modes, built-in thermal shutdown circuit, built-in shoot through current protection circuit, hysteresis for all inputs                                                                     |
| TA8409S        | SIP9         | 4-mode driver, I <sub>OUT</sub> = 0.4 A (avg), 1.0 A (peak), V <sub>CC</sub> (max) = 25 V, built-in diode, built-in thermal shutdown circuit, built-in standby circuit, hysteresis for all inputs                                                                     |
| TA8409F        | SSOP10       |                                                                                                                                                                                                                                                                       |
| TA7291P        | HSIP10       | 4-mode driver, I <sub>OUT</sub> = 1.0 A (avg), 2.0 A (peak), built-in diode, with V <sub>REF</sub> , V <sub>CC</sub> (max) = 25 V (P)/30 V (AP), built-in thermal shutdown circuit/output pin protection circuit, built-in standby circuit, hysteresis for all inputs |
| TA7291S        | SIP9         | 4-mode driver, I <sub>OUT</sub> = 0.4 A (avg), 1.2 A (peak), built-in diode, with V <sub>REF</sub> , V <sub>CC</sub> (max) = 25 V (S)/30 V (AS), built-in thermal shutdown circuit/output pin protection circuit, built-in standby circuit, hysteresis for all inputs |
| TA7291F        | HSOP16       | 4-mode driver, I <sub>OUT</sub> = 0.4 A (avg), 1.2 A (peak), built-in diode, with V <sub>REF</sub> , V <sub>CC</sub> (max) = 25 V (F)/30 V (AF), built-in thermal shutdown circuit/output pin protection circuit, built-in standby circuit, hysteresis for all inputs |
| TA8428K        | HSIP7        | 4-mode driver, I <sub>OUT</sub> = 1.5 A (avg), 3.0 A (peak), V <sub>CC</sub> (max) = 30 V, built-in diode, built-in thermal shutdown circuit/overcurrent protection circuit                                                                                           |
| TA8428F        | HSOP20       | 4-mode driver, I <sub>OUT</sub> = 0.8 A (avg), 2.4 A (peak), V <sub>CC</sub> (max) = 30 V, built-in diode, built-in thermal shutdown circuit/overcurrent protection circuit                                                                                           |
| TA8429H        | HZIP12       | 4-mode driver, I <sub>OUT</sub> = 3.0 A (avg), 4.5 A (peak), V <sub>CC</sub> (max) = 30 V, built-in thermal shutdown circuit/overcurrent protection circuit, HZIP power package                                                                                       |
| TD62M4700F     | SSOP16       | Ultra-low voltage, low-saturation voltage type, I <sub>OUT</sub> = 2.0 A                                                                                                                                                                                              |
| TA7733F        | SSOP16       | Low-voltage use (V <sub>CC</sub> (min) = 1.8 V), I <sub>OUT</sub> = 0.5 A, 4 modes, wide operating voltage range, can be used as interface driver, high-efficient drive                                                                                               |
| TA8401F        | SSOP16       | Low-voltage use (V <sub>CC</sub> (min) = 3.0 V), I <sub>OUT</sub> = 0.5 A, 4 modes, wide operating voltage range, can be used as interface driver, high-efficient drive                                                                                               |
| TA8440H        | HZIP12       | Bridge H switch 50 V, I <sub>OUT</sub> = 1.5 A (avg), 3.0 A (peak), driver with phase-chopper pin, 4 modes, built-in diode, built-in thermal shutdown circuit, CMOS compatible input                                                                                  |
| ✧ TA8482FN     | SSOP30       | Bridge driver + sensor amp in a single chip, V <sub>CC</sub> (min) = 2.7 V, I <sub>OUT</sub> = 0.6 A (peak), 4 modes, built-in current limiter, built-in thermal shutdown circuit, built-in tape top/end sensor amp                                                   |
| ✧ TA8496FL     | QON24        | Constant-current operation, I <sub>OUT</sub> = 20 mA, built-in low-noise high-gain amp, magnetic head read/write IC for cameras, writing and detecting of magnetic recording signals                                                                                  |
| TB6501P        | DIP16        | H switch 25 V with rotation detector, 1 A, with V <sub>REF</sub> , 4 modes, rotation detection using back-EMF, built-in thermal shutdown circuit, output voltage control                                                                                              |
| TB6524FN       | SSOP16       | 2-channel driver, I <sub>OUT</sub> = 0.1 A, constant-current operation possible (V <sub>CC</sub> = 2.0 V to 7.0 V), 3 modes, built-in diode, Enable pin                                                                                                               |
| TB6549P/PG     | DIP16        | PWM control bridge driver, I <sub>OUT</sub> (max) = 3.5 A, V <sub>CC</sub> (max) = 30 V, 4 modes, PWM control, standby function, built-in thermal shutdown (TSD) circuit/overcurrent protection circuit                                                               |
| TB6549F/FG     | HSOP20       |                                                                                                                                                                                                                                                                       |
| *** TB6549HQ   | HZIP25       | PWM control bridge driver, I <sub>OUT</sub> (max) = 4.5 A, V <sub>CC</sub> (max) = 30 V, 4 modes, PWM control, standby function, built-in thermal shutdown (TSD) circuit/overcurrent protection circuit                                                               |
| ✧ TB62300F     | HSOP-36-0.65 | PWM chopper type, constant-current dual DC motor driver, 40 V/0.8 A (peak), 4 modes, constant-current PWM control, standby function, built-in thermal shutdown (TSD) circuit/overcurrent protection circuit                                                           |
| ✧ TB6552FL/FLG | QON24        | 2-ch PWM bridge driver, 1.5 V/0.8 A (peak), 4 modes, standby function, built-in thermal shutdown (TSD) circuit, direct PWM control                                                                                                                                    |
| ✧ TB6552FN/FNG | SSOP16       | 2-ch PWM bridge driver, 1.5 V/0.8 A (peak), 4 modes, standby function, built-in thermal shutdown (TSD) circuit, direct PWM control                                                                                                                                    |
| ✧ TB6592FL/FLG | QON24        | 2-ch PWM bridge driver, 6 V/0.8 A (peak), 4 modes, standby function, built-in thermal shutdown (TSD) circuit, direct PWM control                                                                                                                                      |
| ✧* TB6555FLG   | QON36        | 4-ch PWM bridge driver, 15 V/0.8 A (peak), 4 modes, standby function, built-in thermal shutdown (TSD) circuit, direct PWM control                                                                                                                                     |
| ✧* TB6595FLG   | QON36        | 4-ch PWM bridge driver, 6 V/0.8 A (peak), 4 modes, standby function, built-in thermal shutdown (TSD) circuit, direct PWM control                                                                                                                                      |
| ✧ TB6591FL/FLG | QON48        | 7-ch PWM bridge driver (6-ch full-bridge driver + 1-ch constant-current bridge driver), 6.0 V/0.8 A (peak), 4 modes, output PWM control, standby function, built-in thermal shutdown (TSD) circuit                                                                    |
| ✧ TB6557FLG    | QON36        | 6-ch PWM bridge driver, 15 V/0.8 A (peak), 4 modes, standby function, built-in thermal shutdown (TSD) circuit, direct PWM control, built-in serial interface decoder with 6 bit EVR DAC, weight register                                                              |
| ✧*** TB6558FLG | QON24        | 2-ch PWM chopper type, constant-current driver, 15 V/0.8 A (peak), 4 modes, constant-current PWM control, standby function, built-in thermal shutdown (TSD) circuit                                                                                                   |
| *** TB6561NG   | SDIP24       | 2-ch PWM bridge driver, 40 V/1.5 A (peak), 4 modes, on-chip V <sub>DD</sub> (5 V) regulator for internal circuit, constant-current PWM control, standby function, built-in thermal shutdown (TSD) circuit                                                             |

✧: Dry-packed product

\*: New product

\*\*: Under development

(Power Op-Amp)

| Circuit | Part Number | Package | Maximum Ratings     |                    | Remarks                         |
|---------|-------------|---------|---------------------|--------------------|---------------------------------|
|         |             |         | V <sub>CC</sub> (V) | I <sub>O</sub> (A) |                                 |
| Dual    | TA7256P     | HSIP10  | ±18                 | 0.5                | Internally phase-corrected type |
|         | TA7272P     | HSIP10  | ±18                 | 1.2                | Internally phase-corrected type |

## Brushless Motor Driver ICs (3-phase Controllers/Drivers)

| Part Number | Package          | Maximum Ratings |        | Features                                                                                                                            |
|-------------|------------------|-----------------|--------|-------------------------------------------------------------------------------------------------------------------------------------|
|             |                  | Io (A)          | Vo (V) |                                                                                                                                     |
| TA7712P     | DIP20            | 0.025           | 8      | General-purpose motor driver, external transistor system, 3-phase full-wave driver, rotation signal output function, brake function |
| TA7712F     | SSOP24           | 0.025           | 8      |                                                                                                                                     |
| TA7713P     | DIP20            | 0.025           | 8      |                                                                                                                                     |
| TB6539N     | SDIP24           | 0.02            | 18     | 3-phase full-wave sine-wave current PWM controller                                                                                  |
| TB6539F     | SSOP30           | 0.02            | 18     |                                                                                                                                     |
| TB6551F     | SSOP24           | 0.002           | 12     |                                                                                                                                     |
| TB6556F     | SSOP30           | 0.002           | 12     | 3-phase full-wave sine-wave current PWM controller, automatic lead angle control                                                    |
| * TB6581HG  | HZIP25           | 2.0             | 500    | 3-phase full-wave sine-wave PWM brushless driver, multi-chip package of sine-wave controller and TPD4103AK                          |
| TA7259P     | HDIP14           | 1.2             | 26     | 3-phase full-wave driver, current control type                                                                                      |
| TA7259P(LB) | HSOP14           | 1.2             | 26     |                                                                                                                                     |
| TA7259F     | HSOP20           | 1.2             | 26     |                                                                                                                                     |
| TA7262P     | HDIP14           | 1.5             | 25     | 3-phase full-wave driver, voltage control type                                                                                      |
| TA7262P(LB) | HSOP14           | 1.5             | 25     |                                                                                                                                     |
| TA7262F     | HSOP20           | 1.5             | 25     |                                                                                                                                     |
| TA7736P     | DIP16            | 1.0             | 26     | 3-phase full-wave driver, current control type                                                                                      |
| TA7736F     | HSOP16           | 1.0             | 26     |                                                                                                                                     |
| TA7745P     | DIP16            | 1.0             | 18     | 3-phase full-wave/half-wave driver, voltage control type, suitable for low-voltage use                                              |
| TA7745F     | SSOP16           | 1.0             | 18     |                                                                                                                                     |
| TA8416F     | SSOP16           | 0.7             | 8      | 3-phase full-wave/half-wave driver, suitable for low-voltage use, 2 hall sensor drive                                               |
| TA8423P     | DIP16            | 1.2             | 18     | 3-phase full-wave driver, 1-terminal input control, current control type, built-in reference voltage circuit for control amp        |
| TA8423F     | HSOP16           | 1.2             | 18     |                                                                                                                                     |
| TA8424F     | HSOP20           | 1.2             | 18     | 3-phase full-wave driver, Low-noise drive, built-in FG amp                                                                          |
| TA8463F     | HQFP30           | 0.6             | 8      | 3-phase full-wave driver, digital servo, Low-noise drive, built-in index amp                                                        |
| TA8466AF    | HSOP16           | 0.7             | 18     | 3-phase full-wave driver, 1-terminal input control, Low-noise drive, semi-linear type, reduced external parts                       |
| TA8470AF    | HSOP20           | 1.2             | 18     | Low-noise drive, built-in FG amp                                                                                                    |
| TA8483CP    | HDIP14           | 2.0             | 35     | 3-phase full-wave driver, PWM sensorless drive with the TB6520P                                                                     |
| TA84005F    | SSOP30           | 1.0             | 25     | 3-phase full-wave driver, PWM sensorless drive with the TB6548F                                                                     |
| TA84006F    | SSOP30           | 1.0             | 25     | 3-phase full-wave driver                                                                                                            |
| TA8486F     | SSOP24           | 2.0             | 15     | Low-saturation voltage multi-chip transistor array, 3-phase + H bridge                                                              |
| TA8490AF    | SSOP30           | 1.2             | 16     | CD-ROM spindle motor driver                                                                                                         |
| TA8492P     | DIP16            | 1.5             | 20     | 3-phase full-wave driver, voltage control type                                                                                      |
| TA8493F     | SSOP30           | 1.2             | 16     | CD-ROM spindle motor driver, direct PWM control system                                                                              |
| TA8493AF    | SSOP30           | 1.2             | 16     |                                                                                                                                     |
| TA8493BF    | SSOP30           | 1.2             | 16     |                                                                                                                                     |
| TA8499F     | SSOP30           | 1.2             | 16     |                                                                                                                                     |
| ◇ TB6519F   | QFP64 (0.5 mm)   | 0.01            | 14     | Movie cylinder motor and capstan motor controller                                                                                   |
| ◇ TB6525F   | QFP64 (0.5 mm)   | 0.015           | 8      | Movie cylinder motor and loading motor controller                                                                                   |
| ◇ TB6534F   | QFP64 (0.5 mm)   | 0.01            | 12     | Movie cylinder motor and capstan motor controller                                                                                   |
| TB6520P     | DIP16            | 0.0002          | 7      | PWM type, sensorless motor controller, Vcc = 5 V, with TA8483CP                                                                     |
| TB6537P/F   | DIP18/SSOP24     | 0.02            | 5.5    | PWM type, sensorless motor controller, Vcc = 5 V, external transistor system                                                        |
| TB6548F     | SSOP24           | 0.02            | 5.5    | PWM type, sensorless motor controller, Vcc = 5 V, with TA84005F                                                                     |
| * TB6575FNG | SSOP24 (0.65 mm) | 0.02            | 5.5    | PWM type, sensorless motor controller, analog speed control input, function to improve startup                                      |

◇: Dry-packed product

\*: New product

## (2-phase Fan Driver Controllers)

| Part Number | Package          | Maximum Ratings |        | Features                                                              |
|-------------|------------------|-----------------|--------|-----------------------------------------------------------------------|
|             |                  | Io (A)          | Vo (V) |                                                                       |
| TA8420AF    | SSOP10           | 2.0             | 15     | Fan motor driver, with FG output                                      |
| TA8421AF    | SSOP10           | 2.0             | 15     | Fan motor driver, with motor status detection pin                     |
| TA8462F     | SSOP10           | 1.5             | 15     | Fan motor driver, with FG output and motor status detection pin       |
| TA8473F     | SSOP16           | 1.2             | 13.8   | Fan motor driver, variable speed type, with radio noise reduction pin |
| TA8473FN    | SSOP16 (0.65 mm) | 1.2             | 13.8   |                                                                       |

## Stepping Motor Driver ICs (Bipolar)

| Part Number    | Package      | Maximum Ratings |        | Features                                                                                                                                                                       |
|----------------|--------------|-----------------|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                |              | Io (A)          | Vo (V) |                                                                                                                                                                                |
| TA8411L        | HDIP24       | 0.8             | 30     | Serial input system driver for fax machines and printers                                                                                                                       |
| TB6500AH       | HZIP25       | 0.8             | 30     |                                                                                                                                                                                |
| TA8435H        | HZIP25       | 1.5             | 40     | Pseudo sine-wave drive (PWM chopper type), reset and monitor pins, built-in micro-step decoder, clock input                                                                    |
| ◇ TB62201AF    | HSOP-36-0.65 | 1.5             | 40     | Pseudo sine-wave drive (PWM chopper type), dual-stepping motor driver                                                                                                          |
| ◇ TB62202AFG   | HSOP-36-0.65 | 1.0             | 40     | Pseudo sine-wave drive (PWM chopper type), dual-stepping motor driver                                                                                                          |
| ◇ TB62205FG    | HSOP-36-0.65 | 0.7             | 30     | Built-in 2-ch step-down DC/DC converter, pseudo sine-wave drive (PWM chopper type), on-chip V <sub>DD</sub> (5 V) regulator for internal circuit                               |
| TB62206FG      | HSOP20-1.00  | 1.8             | 40     | PWM chopper type, phase input, 2-phase/1-2 phase excitation                                                                                                                    |
| ◇* TB62207BFG  | HSOP-36-0.65 | 8.0             | 37     | Pseudo sine-wave drive (PWM chopper type), dual-stepping motor driver<br>Built-in 2-ch step-down DC/DC converter, on-chip V <sub>DD</sub> (5 V) regulator for internal circuit |
| ◇ TB62209FG    | HSOP-36-0.65 | 1.8             | 40     | Pseudo sine-wave drive (PWM chopper type), built-in micro-step decoder, clock input                                                                                            |
| ◇** TB62217AFG | THQFP64      | 8.0             | 50     | Pseudo sine-wave drive (PWM chopper type), dual-stepping motor driver<br>Built-in 3-ch step-down DC/DC converter, on-chip V <sub>DD</sub> (5 V) regulator for internal circuit |
| TB6504F        | SSOP24       | 0.15            | 18     | Pseudo sine-wave drive (PWM chopper type), reset and monitor pins, built-in micro-step decoder, clock input                                                                    |
| TB6512AF       | SSOP24       | 0.12            | 12     | Pseudo sine-wave drive (PWM chopper type), reset and monitor pins                                                                                                              |
| TB6526AF       | SSOP24       | 0.12            | 10     | Pseudo sine-wave drive (PWM chopper type), reset and monitor pins, built-in micro-step decoder, external PNP transistor                                                        |
| TA8430AF       | HSOP16       | 0.6             | 8      | 2-phase bipolar stepping motor driver, with Enable and output voltage adjustment pins                                                                                          |
| TA84002F       | HSOP20       | 1.0             | 35     | Bipolar PWM chopper type, phase input, 2-phase/1-2 phase excitation                                                                                                            |
| TA7289P        | HDIP14       | 1.5             | 30     | Bipolar PWM chopper type, built-in 4-bit DA conversion                                                                                                                         |
| TA7289F        | HSOP20       | 0.7             | 30     |                                                                                                                                                                                |
| TA7774P        | DIP16        | 0.4             | 17     | 2-phase bipolar drive, switchable power supply system                                                                                                                          |
| TA7774F        | HSOP16       | 0.4             | 17     |                                                                                                                                                                                |
| ◇** TB6598FNG  | SSOP16       | 0.8             | 15     | PWM chopper type, phase input, 2-phase/1-2 phase excitation                                                                                                                    |
| ** TB6562ANG   | SDIP24       | 1.5             | 40     | PWM chopper type, phase input, 2-phase/1-2 phase excitation, on-chip V <sub>DD</sub> (5 V) regulator for internal circuit                                                      |

◇: Dry-packed product

\*: New product

\*\* : Under development

## (Unipolar)

| Part Number    | Package      | Maximum Ratings |        | Features                                                                                                     |
|----------------|--------------|-----------------|--------|--------------------------------------------------------------------------------------------------------------|
|                |              | Io (A)          | Vo (V) |                                                                                                              |
| TD62064AP/AF   | DIP16/HSOP16 | 1.5             | 50     | NPN darlington transistor array containing 4 circuits, with clamp diode, active-High                         |
| TD62064BP-1/BF | DIP16/HSOP16 | 1.5             | 80     | NPN darlington transistor array containing 4 circuits, with clamp diode, active-High                         |
| TD62107P       | DIP16        | 0.75            | 45     | NPN darlington transistor array containing 4 circuits, with clamp diode and Enable pin                       |
| TD62164AP/AF   | DIP16/HSOP16 | 0.7             | 50     | NPN single transistor array containing 4 circuits, with clamp diode, active-High                             |
| TD62164BP/BF   | DIP16/HSOP16 | 0.7             | 80     | NPN single transistor array containing 4 circuits, with clamp diode, active-High                             |
| TD62308AP/AF   | DIP16/HSOP16 | 1.5             | 50     | NPN darlington transistor array containing 4 circuits, with clamp diode, active-Low                          |
| TD62308BP-1/BF | DIP16/HSOP16 | 1.5             | 80     | NPN darlington transistor array containing 4 circuits, with clamp diode, active-Low                          |
| TD62318AP/AF   | DIP16/HSOP16 | 0.7             | 50     | NPN single transistor array containing 4 circuits, with clamp diode, active-Low                              |
| TD62318BP/BF   | DIP16/HSOP16 | 0.7             | 80     | NPN single transistor array containing 4 circuits, with clamp diode, active-Low                              |
| TA8415P        | DIP16        | 0.4             | 28     | Capable of 1-phase, 2-phase and 1-2 phase excitation of 3-phase/4-phase motors, unipolar system, clock input |

## (5-phase Controller)

| Part Number | Package | Maximum Ratings |        | Features                     |
|-------------|---------|-----------------|--------|------------------------------|
|             |         | Io (A)          | Vo (V) |                              |
| TB6528P     | DIP24   | 0.03            | 20     | 5-phase universal controller |

## Power Supply ICs

### Point Regulators (LDO Regulators)

Point regulators are small regulator ICs which can be individually assigned to circuit blocks as necessary. These devices incorporate an ON/OFF control function, which facilitates power management.

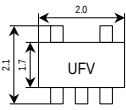
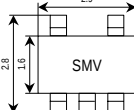
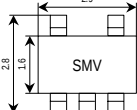
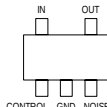
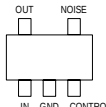
#### < Features >

- Small package
- Low saturation voltage
- Low noise
- High ripple rejection
- Built-in ON/OFF control function
- Built-in overtemperature and overcurrent protection circuits
- Capable to use a ceramic capacitor

#### < Low-Dropout Voltage Regulator Series >



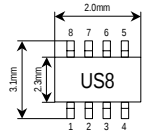
(Single Output Type)

| Output Voltage<br>(V) | Part Number                                                                               |                                                                                           |                                                                                            | Rating                 |                            |
|-----------------------|-------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|------------------------|----------------------------|
|                       | <br>(mm) | <br>(mm) | <br>(mm) | Output Current<br>(mA) | Power Dissipation*<br>(mW) |
| 1.5                   | TAR5S15U                                                                                  | TAR5S15                                                                                   | TAR5SB15                                                                                   | 200                    | 450<br>(UFB)               |
| 1.6                   | TAR5S16U                                                                                  | TAR5S16                                                                                   | TAR5SB16                                                                                   |                        |                            |
| 1.7                   | TAR5S17U                                                                                  | TAR5S17                                                                                   | TAR5SB17                                                                                   |                        |                            |
| 1.8                   | TAR5S18U                                                                                  | TAR5S18                                                                                   | TAR5SB18                                                                                   |                        |                            |
| 1.9                   | TAR5S19U                                                                                  | TAR5S19                                                                                   | TAR5SB19                                                                                   |                        |                            |
| 2.0                   | TAR5S20U                                                                                  | TAR5S20                                                                                   | TAR5SB20                                                                                   |                        |                            |
| 2.1                   | TAR5S21U                                                                                  | TAR5S21                                                                                   | TAR5SB21                                                                                   |                        |                            |
| 2.2                   | TAR5S22U                                                                                  | TAR5S22                                                                                   | TAR5SB22                                                                                   |                        |                            |
| 2.3                   | TAR5S23U                                                                                  | TAR5S23                                                                                   | TAR5SB23                                                                                   |                        |                            |
| 2.4                   | TAR5S24U                                                                                  | TAR5S24                                                                                   | TAR5SB24                                                                                   |                        |                            |
| 2.5                   | TAR5S25U                                                                                  | TAR5S25                                                                                   | TAR5SB25                                                                                   |                        |                            |
| 2.6                   | TAR5S26U                                                                                  | TAR5S26                                                                                   | TAR5SB26                                                                                   |                        |                            |
| 2.7                   | TAR5S27U                                                                                  | TAR5S27                                                                                   | TAR5SB27                                                                                   |                        |                            |
| 2.8                   | TAR5S28U                                                                                  | TAR5S28                                                                                   | TAR5SB28                                                                                   |                        |                            |
| 2.9                   | TAR5S29U                                                                                  | TAR5S29                                                                                   | TAR5SB29                                                                                   |                        |                            |
| 3.0                   | TAR5S30U                                                                                  | TAR5S30                                                                                   | TAR5SB30                                                                                   |                        | 380<br>(SMV)               |
| 3.1                   | TAR5S31U                                                                                  | TAR5S31                                                                                   | TAR5SB31                                                                                   |                        |                            |
| 3.2                   | TAR5S32U                                                                                  | TAR5S32                                                                                   | TAR5SB32                                                                                   |                        |                            |
| 3.3                   | TAR5S33U                                                                                  | TAR5S33                                                                                   | TAR5SB33                                                                                   |                        |                            |
| 3.4                   | TAR5S34U                                                                                  | TAR5S34                                                                                   | TAR5SB34                                                                                   |                        |                            |
| 3.5                   | TAR5S35U                                                                                  | TAR5S35                                                                                   | TAR5SB35                                                                                   |                        |                            |
| 3.6                   | TAR5S36U                                                                                  | TAR5S36                                                                                   | TAR5SB36                                                                                   |                        |                            |
| 3.7                   | TAR5S37U                                                                                  | TAR5S37                                                                                   | TAR5SB37                                                                                   |                        |                            |
| 3.8                   | TAR5S38U                                                                                  | TAR5S38                                                                                   | TAR5SB38                                                                                   |                        |                            |
| 3.9                   | TAR5S39U                                                                                  | TAR5S39                                                                                   | TAR5SB39                                                                                   |                        |                            |
| 4.0                   | TAR5S40U                                                                                  | TAR5S40                                                                                   | TAR5SB40                                                                                   |                        |                            |
| 4.1                   | TAR5S41U                                                                                  | TAR5S41                                                                                   | TAR5SB41                                                                                   |                        |                            |
| 4.2                   | TAR5S42U                                                                                  | TAR5S42                                                                                   | TAR5SB42                                                                                   |                        |                            |
| 4.3                   | TAR5S43U                                                                                  | TAR5S43                                                                                   | TAR5SB43                                                                                   |                        |                            |
| 4.4                   | TAR5S44U                                                                                  | TAR5S44                                                                                   | TAR5SB44                                                                                   |                        |                            |
| 4.5                   | TAR5S45U                                                                                  | TAR5S45                                                                                   | TAR5SB45                                                                                   |                        |                            |
| 4.6                   | TAR5S46U                                                                                  | TAR5S46                                                                                   | TAR5SB46                                                                                   |                        |                            |
| 4.7                   | TAR5S47U                                                                                  | TAR5S47                                                                                   | TAR5SB47                                                                                   |                        |                            |
| 4.8                   | TAR5S48U                                                                                  | TAR5S48                                                                                   | TAR5SB48                                                                                   |                        |                            |
| 4.9                   | TAR5S49U                                                                                  | TAR5S49                                                                                   | TAR5SB49                                                                                   |                        |                            |
| 5.0                   | TAR5S50U                                                                                  | TAR5S50                                                                                   | TAR5SB50                                                                                   |                        |                            |
| Pin Configuration     |        |                                                                                           |        |                        |                            |

\*: A result of an evaluation on a glass-epoxy board. (30 mm × 30 mm), Ta = 25°C

Please ask your local retailer about the devices with other output voltage.

## (Dual Output Type)

| Description              | Part Number |     | Output Voltage (V) | Output Current (mA) | Power Dissipation ♦ | Internal Connection                                                                                          | Package                                                                             |
|--------------------------|-------------|-----|--------------------|---------------------|---------------------|--------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Synchronous switch type  | TAR8H01K    | Ach | 2.8                | 100                 | 400                 | 1. CONTROL<br>2. Noise(A)<br>3. Noise(B)<br>4. GND<br>5. Vout(B)<br>6. Vin(B)<br>7. Vin(A)<br>8. Vout(A)     |                                                                                     |
|                          |             | Bch | 3.0                | 150                 |                     |                                                                                                              |                                                                                     |
|                          | TAR8H02K    | Ach | 2.8                | 100                 |                     |                                                                                                              |                                                                                     |
|                          |             | Bch | 2.8                | 150                 |                     |                                                                                                              |                                                                                     |
|                          | TAR8H03K    | Ach | 2.5                | 100                 |                     |                                                                                                              |                                                                                     |
|                          |             | Bch | 2.8                | 150                 |                     |                                                                                                              |                                                                                     |
|                          | TAR8H04K    | Ach | 2.5                | 100                 |                     |                                                                                                              |                                                                                     |
|                          |             | Bch | 3.0                | 150                 |                     |                                                                                                              |                                                                                     |
|                          | TAR8H05K    | Ach | 1.8                | 100                 |                     |                                                                                                              |                                                                                     |
|                          |             | Bch | 2.8                | 150                 |                     |                                                                                                              |                                                                                     |
|                          | TAR8H06K    | Ach | 1.5                | 100                 |                     |                                                                                                              |                                                                                     |
|                          |             | Bch | 2.5                | 150                 |                     |                                                                                                              |                                                                                     |
| Independent control type | TAR8D01K    | Ach | 2.5                | 100                 | 400                 | 1. Noise(A)<br>2. Noise(B)<br>3. CONTROL(A)<br>4. GND<br>5. CONTROL(B)<br>6. Vout(B)<br>7. Vin<br>8. Vout(A) |  |
|                          |             | Bch | 2.8                |                     |                     |                                                                                                              |                                                                                     |
|                          | TAR8D02K    | Ach | 2.0                |                     |                     |                                                                                                              |                                                                                     |
|                          |             | Bch | 2.8                |                     |                     |                                                                                                              |                                                                                     |
|                          | TAR8D03K    | Ach | 2.8                |                     |                     |                                                                                                              |                                                                                     |
|                          |             | Bch | 3.0                |                     |                     |                                                                                                              |                                                                                     |
|                          | TAR8D04K    | Ach | 1.5                |                     |                     |                                                                                                              |                                                                                     |
|                          |             | Bch | 1.5                |                     |                     |                                                                                                              |                                                                                     |
|                          | TAR8D05K    | Ach | 2.8                |                     |                     |                                                                                                              |                                                                                     |
|                          |             | Bch | 2.8                |                     |                     |                                                                                                              |                                                                                     |
|                          | TAR8D06K    | Ach | 2.9                |                     |                     |                                                                                                              |                                                                                     |
|                          |             | Bch | 2.9                |                     |                     |                                                                                                              |                                                                                     |
|                          | TAR8D07K    | Ach | 3.0                |                     |                     |                                                                                                              |                                                                                     |
|                          |             | Bch | 3.0                |                     |                     |                                                                                                              |                                                                                     |
|                          | * TAR8D08K  | Ach | 2.8                |                     |                     |                                                                                                              |                                                                                     |
|                          |             | Bch | 2.85               |                     |                     |                                                                                                              |                                                                                     |

♦: A result of an evaluation on a glass-epoxy board. (30 mm × 30 mm), Ta = 25°C

\*: New product

The output voltage of A and B channels can be set from 1.5V to 5.0V at 0.1V intervals. (Semi-customization of the output voltage is supported.)

## Series Regulators

| Polarity                | Part Number                                                                                                                                   | Use/Function                                                      | Output Voltage (typ.) (V)                                        | Output Current (max) (mA) | Input Voltage (max) (V)                      | Drop-out Voltage (typ.) (V) | Bias Current (typ.) (mA)                            | Output Voltage Tolerance (%)            | Power Dissipation (W)                                                     | Package     | Equivalent |
|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|------------------------------------------------------------------|---------------------------|----------------------------------------------|-----------------------------|-----------------------------------------------------|-----------------------------------------|---------------------------------------------------------------------------|-------------|------------|
| Positive-voltage output | TA7805F<br>TA78057F<br>TA7806F<br>TA7807F<br>TA7808F<br>TA7809F<br>TA7810F<br>TA7812F<br>TA7815F<br>TA7818F<br>TA7820F<br>TA7824F             | High-current output<br>Surface-mount PW-MOLD package              | 5<br>5.7<br>6<br>7<br>8<br>9<br>10<br>12<br>15<br>18<br>20<br>24 | 1000                      | 35<br><br><br><br><br><br><br><br><br><br>40 | 2.0<br>( $I_o = 1000$ mA)   | 4.2<br><br><br>4.3<br><br><br><br>4.4<br>4.5<br>4.6 | $\pm 4$<br>( $T_j = 25^\circ\text{C}$ ) | 1.0<br>( $T_a = 25^\circ\text{C}$ )<br>10<br>( $T_c = 25^\circ\text{C}$ ) | PW-MOLD     | 78XX       |
|                         | TA7805S<br>TA78057S<br>TA7806S<br>TA7807S<br>TA7808S<br>TA7809S<br>TA7810S<br>TA7812S<br>TA7815S<br>TA7818S<br>TA7820S<br>TA7824S             | High-current output<br>Isolation package                          | 5<br>5.7<br>6<br>7<br>8<br>9<br>10<br>12<br>15<br>18<br>20<br>24 | 1000                      | 35<br><br><br><br><br><br><br><br><br><br>40 | 2.0<br>( $I_o = 1000$ mA)   | 4.2<br><br><br>4.3<br><br><br><br>4.4<br>4.5<br>4.6 | $\pm 4$<br>( $T_j = 25^\circ\text{C}$ ) | 2.0<br>( $T_a = 25^\circ\text{C}$ )<br>20<br>( $T_c = 25^\circ\text{C}$ ) | TO-220(NIS) | 78XX       |
|                         | TA7805SB<br>TA78057SB<br>TA7806SB<br>TA7807SB<br>TA7808SB<br>TA7809SB<br>TA7810SB<br>TA7812SB<br>TA7815SB<br>TA7818SB<br>TA7820SB<br>TA7824SB | High-current output<br>Radial tape packing for automatic mounting | 5<br>5.7<br>6<br>7<br>8<br>9<br>10<br>12<br>15<br>18<br>20<br>24 | 1000                      | 35<br><br><br><br><br><br><br><br><br><br>40 | 2.0<br>( $I_o = 1000$ mA)   | 4.2<br><br><br>4.3<br><br><br><br>4.4<br>4.5<br>4.6 | $\pm 4$<br>( $T_j = 25^\circ\text{C}$ ) | 1.8<br>( $T_a = 25^\circ\text{C}$ )                                       | TPL         | 78XX       |
|                         | TA78033LF<br>TA7804LF<br>TA7805LF<br>TA7807LF<br>TA7808LF<br>TA7809LF                                                                         | High-current output<br>Surface-mount PW-MOLD package              | 3.3<br>4<br>5<br>7<br>8<br>9                                     | 1000                      | 20                                           | 2.0<br>( $I_o = 1000$ mA)   | 3.0                                                 | $\pm 3$<br>( $T_j = 25^\circ\text{C}$ ) | 1.0<br>( $T_a = 25^\circ\text{C}$ )<br>10<br>( $T_c = 25^\circ\text{C}$ ) | PW-MOLD     | 78XX       |
|                         | TA78033LS<br>TA7804LS<br>TA7805LS<br>TA7807LS<br>TA7808LS<br>TA7809LS                                                                         | High-current output<br>Isolation package                          | 3.3<br>4<br>5<br>7<br>8<br>9                                     | 1000                      | 20                                           | 2.0<br>( $I_o = 1000$ mA)   | 3.0                                                 | $\pm 3$<br>( $T_j = 25^\circ\text{C}$ ) | 2.0<br>( $T_a = 25^\circ\text{C}$ )<br>15<br>( $T_c = 25^\circ\text{C}$ ) | TO-220(NIS) | 78XX       |
|                         | TA78M05F<br>TA78M06F<br>TA78M08F<br>TA78M09F<br>TA78M10F<br>TA78M12F<br>TA78M15F<br>TA78M18F<br>TA78M20F<br>TA78M24F                          | Medium-current output<br>Surface-mount PW-MOLD package            | 5<br>6<br>8<br>9<br>10<br>12<br>15<br>18<br>20<br>24             | 500                       | 35<br><br><br><br><br><br><br><br><br><br>40 | 1.7<br>( $I_o = 350$ mA)    | 4.5<br><br>4.6<br>4.7<br>4.8<br>4.9<br>5.0          | $\pm 4$<br>( $T_j = 25^\circ\text{C}$ ) | 1.0<br>( $T_a = 25^\circ\text{C}$ )<br>10<br>( $T_c = 25^\circ\text{C}$ ) | PW-MOLD     | 78MXX      |

| Polarity                | Part Number                                                                                                                                                                        | Use/Function                                                        | Output Voltage (typ.) (V)                                                | Output Current (max) (mA) | Input Voltage (max) (V) | Drop-out Voltage (typ.) (V)      | Bias Current (typ.) (mA)               | Output Voltage Tolerance (%)  | Power Dissipation (W)                                  | Package             | Equivalent |
|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|--------------------------------------------------------------------------|---------------------------|-------------------------|----------------------------------|----------------------------------------|-------------------------------|--------------------------------------------------------|---------------------|------------|
| Positive-voltage output | TA78M05S<br>TA78M06S<br>TA78M08S<br>TA78M09S<br>TA78M10S<br>TA78M12S<br>TA78M15S<br>TA78M18S<br>TA78M20S<br>TA78M24S                                                               | Medium-current output<br>Isolation package                          | 5<br>6<br>8<br>9<br>10<br>12<br>15<br>18<br>20<br>24                     | 500                       | 35<br><br>40            | 1.7<br>(I <sub>o</sub> = 350 mA) | 4.5<br>4.6<br>4.7<br>4.8<br>4.9<br>5.0 | ±4<br>(T <sub>j</sub> = 25°C) | 2.0<br>(Ta = 25°C)<br>20<br>(Tc = 25°C)                | TO-220(NIS)         | 78MXX      |
|                         | TA78M05SB<br>TA78M06SB<br>TA78M08SB<br>TA78M09SB<br>TA78M10SB<br>TA78M12SB<br>TA78M15SB<br>TA78M18SB<br>TA78M20SB<br>TA78M24SB                                                     | Medium-current output<br>Radial tape packing for automatic mounting | 5<br>6<br>8<br>9<br>10<br>12<br>15<br>18<br>20<br>24                     | 500                       | 35<br><br>40            | 1.7<br>(I <sub>o</sub> = 350 mA) | 4.5<br>4.6<br>4.7<br>4.8<br>4.9<br>5.0 | ±4<br>(T <sub>j</sub> = 25°C) | 1.8<br>(Ta = 25°C)                                     | TPL                 | 78MXX      |
|                         | TA78L005AP<br>TA78L006AP<br>TA78L007AP<br>TA78L075AP<br>TA78L008AP<br>TA78L009AP<br>TA78L010AP<br>TA78L012AP<br>TA78L132AP<br>TA78L015AP<br>TA78L018AP<br>TA78L020AP<br>TA78L024AP | Low-current output<br>Radial tape packing for automatic mounting    | 5<br>6<br>7<br>7.5<br>8<br>9<br>10<br>12<br>13.2<br>15<br>18<br>20<br>24 | 150                       | 35<br><br>40            | 1.7<br>(I <sub>o</sub> = 150 mA) | 3.1<br><br>3.2<br>3.3<br>3.5           | ±4<br>(T <sub>j</sub> = 25°C) | 0.8<br>(Ta = 25°C)                                     | TO-92MOD            | 78LXX      |
|                         | TA78L05F<br>TA78L06F<br>TA78L07F<br>TA78L08F<br>TA78L09F<br>TA78L10F<br>TA78L12F<br>TA78L15F<br>TA78L18F<br>TA78L20F<br>TA78L24F                                                   | Low-current output<br>Surface-mount<br>PW-MINI (SOT-89) package     | 5<br>6<br>7<br>8<br>9<br>10<br>12<br>15<br>18<br>20<br>24                | 150                       | 35<br><br>40            | 1.7<br>(I <sub>o</sub> = 150 mA) | 3.1<br>3.2<br>3.3<br>3.5               | ±5<br>(T <sub>j</sub> = 25°C) | 0.5<br>(Ta = 25°C)                                     | PW-MINI<br>(SOT-89) | 78LXX      |
|                         | TA78L05PF<br>TA78L06PF<br>TA78L07PF<br>TA78L08PF<br>TA78L09PF<br>TA78L10PF<br>TA78L12PF<br>TA78L15PF                                                                               | Low-current output<br>Small thin surface-mount PS-8 package         | 5<br>6<br>7<br>8<br>9<br>10<br>12<br>15                                  | 150                       | 35                      | 2.0<br>(I <sub>o</sub> = 150 mA) | 3.1<br>3.2                             | ±4<br>(T <sub>j</sub> = 25°C) | 1.3<br>(Ta = 25°C)<br>Mounted on glass-epoxy substrate | PS-8                | 78LXX      |
|                         | TA78L05S<br>TA78L07S<br>TA78L08S<br>TA78L09S<br>TA78L10S<br>TA78L12S<br>TA78L15S                                                                                                   | Low-current output<br>Radial tape packing for automatic mounting    | 5<br>7<br>8<br>9<br>10<br>12<br>15                                       | 100                       | 35                      | 1.7<br>(I <sub>o</sub> = 100 mA) | 3.1<br>3.2<br>3.3                      | ±4<br>(T <sub>j</sub> = 25°C) | 0.6<br>(Ta = 25°C)                                     | TO-92               | 78LXX      |

# Series Regulators (continued)

| Polarity                              | Part Number                                                                                           | Use/Function                                                           | Output Voltage (typ.) (V)               | Output Current (max) (mA) | Input Voltage (max) (V)  | Drop-out Voltage (typ.) (V)                         | Bias Current (typ.) (mA)                                             | Output Voltage Tolerance (%)          | Power Dissipation (W)                                           | Package     | Equivalent |
|---------------------------------------|-------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|-----------------------------------------|---------------------------|--------------------------|-----------------------------------------------------|----------------------------------------------------------------------|---------------------------------------|-----------------------------------------------------------------|-------------|------------|
| Positive-voltage output (low dropout) | TA48015F<br>TA48018F<br>TA4802F<br>TA48025F<br>TA4803F<br>TA48033F<br>TA4805F                         | High-current output<br>Low drop-out<br>Surface-mount PW-MOLD package   | 1.5<br>1.8<br>2<br>2.5<br>3<br>3.3<br>5 | 1000                      | 16                       | 0.8 Max<br><br>0.5 Max<br>(I <sub>o</sub> = 500 mA) | 0.8<br>(I <sub>o</sub> = 0 A)                                        | ±4.5<br>(T <sub>j</sub> = 0 to 125°C) | 1.0<br>(T <sub>a</sub> = 25°C)<br>10<br>(T <sub>c</sub> = 25°C) | PW-MOLD     |            |
|                                       | TA48018S<br>TA4802S<br>TA48025S<br>TA4803S<br>TA48033S<br>TA4805S                                     | High-current output<br>Low drop-out<br>Isolation package               | 1.8<br>2<br>2.5<br>3<br>3.3<br>5        | 1000                      | 16                       | 0.5 Max<br>(I <sub>o</sub> = 500 mA)                | 0.8<br>(I <sub>o</sub> = 0 A)                                        | ±4.5<br>(T <sub>j</sub> = 0 to 125°C) | 2.0<br>(T <sub>a</sub> = 25°C)<br>20<br>(T <sub>c</sub> = 25°C) | TO-220(NIS) |            |
|                                       | ** TA48015AF<br>** TA48018AF<br>** TA48025AF<br>** TA48033AF<br>** TA4805AF<br>** TA4809AF            | High-current output<br>Low drop-out<br>Surface-mount PW-MOLD package   | 1.5<br>1.8<br>2.5<br>3.3<br>5<br>9      | 1000                      | 16                       | 0.8 Max<br><br>0.5 Max<br>(I <sub>o</sub> = 500 mA) | 0.8<br>(I <sub>o</sub> = 0 A)                                        | ±4<br>(T <sub>j</sub> = 0 to 125°C)   | 1.0<br>(T <sub>a</sub> = 25°C)<br>10<br>(T <sub>c</sub> = 25°C) | PW-MOLD     |            |
|                                       | ** TA48015AS<br>** TA48018AS<br>** TA48025AS<br>** TA48033AS<br>** TA4805AS<br>** TA4809AS            | High-current output<br>Low drop-out<br>Isolation package               | 1.5<br>1.8<br>2.5<br>3.3<br>5<br>9      | 1000                      | 16                       | 0.8 Max<br><br>0.5 Max<br>(I <sub>o</sub> = 500 mA) | 0.8<br>(I <sub>o</sub> = 0 A)                                        | ±4<br>(T <sub>j</sub> = 0 to 125°C)   | 2.0<br>(T <sub>a</sub> = 25°C)<br>20<br>(T <sub>c</sub> = 25°C) | TO-220(NIS) |            |
|                                       | TA48M025F<br>TA48M03F<br>TA48M033F<br>TA48M0345F<br>TA48M04F<br>TA48M05F                              | Medium-current output<br>Low drop-out<br>Surface-mount PW-MOLD package | 2.5<br>3<br>3.3<br>3.45<br>4<br>5       | 500                       | 29                       | 0.65 Max<br>(I <sub>o</sub> = 500 mA)               | 0.8<br><br>0.9<br>(I <sub>o</sub> = 0 A)                             | ±5<br>(T <sub>j</sub> = 0 to 125°C)   | 1.0<br>(T <sub>a</sub> = 25°C)<br>10<br>(T <sub>c</sub> = 25°C) | PW-MOLD     |            |
|                                       | TA78DM05S<br>TA78DM08S<br>TA78DM09S<br>TA78DM12S                                                      | Medium-current output<br>Low drop-out<br>Isolation package             | 5<br>8<br>9<br>12                       | 500                       | 29<br>(load dump = 60 V) | 0.75 Max<br>(I <sub>o</sub> = 500 mA)               | 0.8<br>0.9<br>1.0<br>(I <sub>o</sub> = 0 A)                          | ±6<br>(T <sub>j</sub> = 25°C)         | 2.0<br>(T <sub>a</sub> = 25°C)<br>20<br>(T <sub>c</sub> = 25°C) | TO-220(NIS) |            |
|                                       | ** TA58L05F<br>** TA58L06F<br>** TA58L08F<br>** TA58L09F<br>** TA58L10F<br>** TA58L12F<br>** TA58L15F | Medium-current output<br>Low drop-out<br>Surface-mount PW-MOLD package | 5<br>6<br>8<br>9<br>10<br>12<br>15      | 250                       | 29<br>(load dump = 60 V) | 0.4 Max<br>(I <sub>o</sub> = 200 mA)                | 0.45<br>0.5<br>0.55<br>0.6<br>0.65<br>0.75<br>(I <sub>o</sub> = 0 A) | ±4<br>(T <sub>a</sub> = -40 to 105°C) | 1.0<br>(T <sub>a</sub> = 25°C)<br>10<br>(T <sub>c</sub> = 25°C) | PW-MOLD     |            |
|                                       | TA58L05S<br>TA58L06S<br>TA58L08S<br>TA58L09S<br>TA58L10S<br>TA58L12S<br>TA58L15S                      | Medium-current output<br>Low drop-out<br>Isolation package             | 5<br>6<br>8<br>9<br>10<br>12<br>15      | 250                       | 29<br>(load dump = 60 V) | 0.4 Max<br>(I <sub>o</sub> = 200 mA)                | 0.45<br>0.5<br>0.55<br>0.6<br>0.65<br>0.75<br>(I <sub>o</sub> = 0 A) | ±4<br>(T <sub>a</sub> = -40 to 105°C) | 2.0<br>(T <sub>a</sub> = 25°C)<br>20<br>(T <sub>c</sub> = 25°C) | TO-220(NIS) |            |

\*\* : Under development

| Polarity                              | Part Number                                                      | Use/Function                                                                     | Output Voltage (typ.) (V) | Output Current (max) (mA) | Input Voltage (max) (V)         | Drop-out Voltage (typ.) (V)          | Bias Current (typ.) (mA)      | Output Voltage Tolerance (%)                        | Power Dissipation (W)                                           | Package          | Equivalent |
|---------------------------------------|------------------------------------------------------------------|----------------------------------------------------------------------------------|---------------------------|---------------------------|---------------------------------|--------------------------------------|-------------------------------|-----------------------------------------------------|-----------------------------------------------------------------|------------------|------------|
| Positive-voltage output (low dropout) | TA48L018F                                                        | Low-current output<br>Low drop-out<br>Surface-mount PW-MINI (SOT-89) package     | 1.8                       | 150                       | 16                              | 0.5 Max<br>(I <sub>o</sub> = 100 mA) | 0.4<br>(I <sub>o</sub> = 0 A) | ±5<br>(T <sub>j</sub> = 0 to 125°C)                 | 0.5<br>(T <sub>a</sub> = 25°C)                                  | PW-MINI (SOT-89) |            |
|                                       | TA48L02F                                                         |                                                                                  | 2                         |                           |                                 |                                      |                               |                                                     |                                                                 |                  |            |
|                                       | TA48L025F                                                        |                                                                                  | 2.5                       |                           |                                 |                                      |                               |                                                     |                                                                 |                  |            |
|                                       | TA48L03F                                                         |                                                                                  | 3                         |                           |                                 |                                      |                               |                                                     |                                                                 |                  |            |
|                                       | TA48L033F                                                        |                                                                                  | 3.3                       |                           |                                 |                                      |                               |                                                     |                                                                 |                  |            |
|                                       | TA48L05F                                                         |                                                                                  | 5                         |                           |                                 |                                      |                               |                                                     |                                                                 |                  |            |
|                                       | TA78DS05BP                                                       | Low-current output<br>Low drop-out<br>Radial tape packing for automatic mounting | 5                         | 30                        | 29<br>(load dump = 60 V)        | 0.3 Max<br>(I <sub>o</sub> = 10 mA)  | 0.6                           | BP: ±10<br>CP: ±5<br>(T <sub>a</sub> = -40 to 85°C) | 0.8<br>(T <sub>a</sub> = 25°C)                                  | TO-92MOD         |            |
|                                       | TA78DS05CP                                                       |                                                                                  | 5                         |                           |                                 |                                      |                               |                                                     |                                                                 |                  |            |
|                                       | TA78DS06BP                                                       |                                                                                  | 6                         |                           |                                 |                                      |                               |                                                     |                                                                 |                  |            |
|                                       | TA78DS08BP                                                       |                                                                                  | 8                         |                           |                                 |                                      |                               |                                                     |                                                                 |                  |            |
|                                       | TA78DS09BP                                                       |                                                                                  | 9                         |                           |                                 |                                      |                               |                                                     |                                                                 |                  |            |
|                                       | TA78DS10BP                                                       |                                                                                  | 10                        |                           |                                 |                                      |                               |                                                     |                                                                 |                  |            |
|                                       | TA78DS12BP                                                       |                                                                                  | 12                        |                           |                                 |                                      |                               |                                                     |                                                                 |                  |            |
|                                       | TA78DS15BP                                                       | 15                                                                               |                           |                           |                                 |                                      |                               |                                                     |                                                                 |                  |            |
|                                       | TA78DS05F                                                        | Low-current output<br>Low drop-out<br>Surface-mount PW-MINI (SOT-89) package     | 5                         | 30                        | 29<br>(load dump = 60 V)        | 0.3 Max<br>(I <sub>o</sub> = 10 mA)  | 0.6                           | F: ±10<br>AF: ±5<br>(T <sub>a</sub> = -40 to 85°C)  | 0.5<br>(T <sub>a</sub> = 25°C)                                  | PW-MINI (SOT-89) |            |
|                                       | TA78DS05AF                                                       |                                                                                  | 5                         |                           |                                 |                                      |                               |                                                     |                                                                 |                  |            |
|                                       | TA78DS06F                                                        |                                                                                  | 6                         |                           |                                 |                                      |                               |                                                     |                                                                 |                  |            |
|                                       | TA78DS08F                                                        |                                                                                  | 8                         |                           |                                 |                                      |                               |                                                     |                                                                 |                  |            |
|                                       | TA78DS09F                                                        |                                                                                  | 9                         |                           |                                 |                                      |                               |                                                     |                                                                 |                  |            |
|                                       | TA78DS10F                                                        |                                                                                  | 10                        |                           |                                 |                                      |                               |                                                     |                                                                 |                  |            |
|                                       | TA78DS12F                                                        |                                                                                  | 12                        |                           |                                 |                                      |                               |                                                     |                                                                 |                  |            |
|                                       | TA78DS15F                                                        | 15                                                                               |                           |                           |                                 |                                      |                               |                                                     |                                                                 |                  |            |
| Negative-voltage output               | TA79005S                                                         | High-current output<br>Isolation package                                         | -5                        | 1000                      | -35                             | 2.0<br>(I <sub>o</sub> = 1.0 A)      | 4.3                           | ±4<br>(T <sub>j</sub> = 25°C)                       | 2.0<br>(T <sub>a</sub> = 25°C)<br>20<br>(T <sub>c</sub> = 25°C) | TO-220(NIS)      | 79XX       |
|                                       | TA79006S                                                         |                                                                                  | -6                        |                           |                                 |                                      |                               |                                                     |                                                                 |                  |            |
|                                       | TA79007S                                                         |                                                                                  | -7                        |                           |                                 |                                      |                               |                                                     |                                                                 |                  |            |
|                                       | TA79008S                                                         |                                                                                  | -8                        |                           |                                 |                                      |                               |                                                     |                                                                 |                  |            |
|                                       | TA79009S                                                         |                                                                                  | -9                        |                           |                                 |                                      |                               |                                                     |                                                                 |                  |            |
|                                       | TA79010S                                                         |                                                                                  | -10                       |                           |                                 |                                      |                               |                                                     |                                                                 |                  |            |
|                                       | TA79012S                                                         |                                                                                  | -12                       |                           |                                 |                                      |                               |                                                     |                                                                 |                  |            |
|                                       | TA79015S                                                         |                                                                                  | -15                       |                           |                                 |                                      |                               |                                                     |                                                                 |                  |            |
|                                       | TA79018S                                                         |                                                                                  | -18                       |                           |                                 |                                      |                               |                                                     |                                                                 |                  |            |
|                                       | TA79020S                                                         |                                                                                  | -20                       |                           |                                 |                                      |                               |                                                     |                                                                 |                  |            |
|                                       | TA79024S                                                         |                                                                                  | -24                       |                           |                                 |                                      |                               |                                                     |                                                                 |                  |            |
|                                       | TA79005SB                                                        | High-current output<br>Radial tape packing for automatic mounting                | -5                        | 1000                      | -35                             | 2.0<br>(I <sub>o</sub> = 1.0 A)      | 4.3                           | ±4<br>(T <sub>j</sub> = 25°C)                       | 1.8<br>(T <sub>a</sub> = 25°C)                                  | TPL              | 79XX       |
|                                       | TA79006SB                                                        |                                                                                  | -6                        |                           |                                 |                                      |                               |                                                     |                                                                 |                  |            |
|                                       | TA79007SB                                                        |                                                                                  | -7                        |                           |                                 |                                      |                               |                                                     |                                                                 |                  |            |
|                                       | TA79008SB                                                        |                                                                                  | -8                        |                           |                                 |                                      |                               |                                                     |                                                                 |                  |            |
|                                       | TA79009SB                                                        |                                                                                  | -9                        |                           |                                 |                                      |                               |                                                     |                                                                 |                  |            |
|                                       | TA79010SB                                                        |                                                                                  | -10                       |                           |                                 |                                      |                               |                                                     |                                                                 |                  |            |
|                                       | TA79012SB                                                        |                                                                                  | -12                       |                           |                                 |                                      |                               |                                                     |                                                                 |                  |            |
|                                       | TA79015SB                                                        |                                                                                  | -15                       |                           |                                 |                                      |                               |                                                     |                                                                 |                  |            |
|                                       | TA79018SB                                                        |                                                                                  | -18                       |                           |                                 |                                      |                               |                                                     |                                                                 |                  |            |
|                                       | TA79020SB                                                        |                                                                                  | -20                       |                           |                                 |                                      |                               |                                                     |                                                                 |                  |            |
|                                       | TA79024SB                                                        |                                                                                  | -24                       |                           |                                 |                                      |                               |                                                     |                                                                 |                  |            |
|                                       | TA79L05F                                                         | Low-current output<br>Surface-mount PW-MINI (SOT-89) package                     | -5                        | 150                       | -35                             | 1.7<br>(I <sub>o</sub> = 40 mA)      | 3.1                           | ±4<br>(T <sub>j</sub> = 25°C)                       | 0.5<br>(T <sub>a</sub> = 25°C)                                  | PW-MINI (SOT-89) | 79LXX      |
|                                       | TA79L06F                                                         |                                                                                  | -6                        |                           |                                 |                                      |                               |                                                     |                                                                 |                  |            |
|                                       | TA79L08F                                                         |                                                                                  | -8                        |                           |                                 |                                      |                               |                                                     |                                                                 |                  |            |
|                                       | TA79L09F                                                         |                                                                                  | -9                        |                           |                                 |                                      |                               |                                                     |                                                                 |                  |            |
|                                       | TA79L10F                                                         |                                                                                  | -10                       |                           |                                 |                                      |                               |                                                     |                                                                 |                  |            |
|                                       | TA79L12F                                                         |                                                                                  | -12                       |                           |                                 |                                      |                               |                                                     |                                                                 |                  |            |
|                                       | TA79L15F                                                         |                                                                                  | -15                       |                           |                                 |                                      |                               |                                                     |                                                                 |                  |            |
|                                       | TA79L18F                                                         |                                                                                  | -18                       |                           |                                 |                                      |                               |                                                     |                                                                 |                  |            |
|                                       | TA79L20F                                                         |                                                                                  | -20                       |                           |                                 |                                      |                               |                                                     |                                                                 |                  |            |
|                                       | TA79L24F                                                         |                                                                                  | -24                       |                           |                                 |                                      |                               |                                                     |                                                                 |                  |            |
| TA79L005P                             | Low-current output<br>Radial tape packing for automatic mounting | -5                                                                               | 150                       | -35                       | 1.7<br>(I <sub>o</sub> = 40 mA) | 3.1                                  | ±4<br>(T <sub>j</sub> = 25°C) | 0.8<br>(T <sub>a</sub> = 25°C)                      | TO-92MOD                                                        | 79LXX            |            |
| TA79L006P                             |                                                                  | -6                                                                               |                           |                           |                                 |                                      |                               |                                                     |                                                                 |                  |            |
| TA79L008P                             |                                                                  | -8                                                                               |                           |                           |                                 |                                      |                               |                                                     |                                                                 |                  |            |
| TA79L009P                             |                                                                  | -9                                                                               |                           |                           |                                 |                                      |                               |                                                     |                                                                 |                  |            |
| TA79L010P                             |                                                                  | -10                                                                              |                           |                           |                                 |                                      |                               |                                                     |                                                                 |                  |            |
| TA79L012P                             |                                                                  | -12                                                                              |                           |                           |                                 |                                      |                               |                                                     |                                                                 |                  |            |
| TA79L015P                             |                                                                  | -15                                                                              |                           |                           |                                 |                                      |                               |                                                     |                                                                 |                  |            |
| TA79L018P                             |                                                                  | -18                                                                              |                           |                           |                                 |                                      |                               |                                                     |                                                                 |                  |            |
| TA79L020P                             |                                                                  | -20                                                                              |                           |                           |                                 |                                      |                               |                                                     |                                                                 |                  |            |
| TA79L024P                             |                                                                  | -24                                                                              |                           |                           |                                 |                                      |                               |                                                     |                                                                 |                  |            |

## Shunt Regulators

| Polarity                | Part Number                  | Use/Function                                                                   | Reference Voltage (typ.) (V) | Output Voltage (typ.) (V) | Cathode Current (max) (mA) | Cathode Voltage (max) (V) | Minimum Cathode Current (max) (mA) | Reference Voltage Tolerance (%) | Power Dissipation (W)                                      | Package             | Equivalent |
|-------------------------|------------------------------|--------------------------------------------------------------------------------|------------------------------|---------------------------|----------------------------|---------------------------|------------------------------------|---------------------------------|------------------------------------------------------------|---------------------|------------|
| Positive-voltage output | TA76431F/FR                  | Variable output voltage<br>Surface-mount PW-MINI (SOT-89) package              | 2.495                        | Variable<br>2.495 to 36   | Sink<br>150                | 37                        | 1.0                                | ±2.2<br>(Ta = 25°C)             | 0.5<br>(Ta = 25°C)                                         | PW-MINI<br>(SOT-89) | 431        |
|                         | TA76431S                     | Variable output voltage<br>Radial tape packing for automatic mounting          |                              |                           |                            |                           |                                    |                                 | 0.8<br>(Ta = 25°C)                                         | TO-92MOD            | 431        |
|                         | TA76L431FT                   | Variable output voltage<br>Small thin surface-mount UFV package                | 2.49                         | Variable<br>2.49 to 19    | Sink<br>50                 | 20                        | 0.5                                | ±1.0<br>(Ta = 25°C)             | 0.45<br>(Ta = 25°C)<br>Mounted on<br>glass-epoxy substrate | UFV                 | 431        |
|                         | TA76L431S                    | Variable output voltage<br>Radial tape packing for automatic mounting          |                              |                           |                            |                           |                                    |                                 | 0.8<br>(Ta = 25°C)                                         | TO-92MOD            | 431        |
|                         | TA76432FT<br>TA76432AFT      | Variable output voltage<br>Small thin surface-mount UFV package                | 1.26                         | Variable<br>1.26 to 19    | Sink<br>20                 | 20                        | 0.4                                | ±1.4<br>A: ±1.0<br>(Ta = 25°C)  | 0.45<br>(Ta = 25°C)<br>Mounted on<br>glass-epoxy substrate | UFV                 |            |
|                         | TA76432FC                    | Variable output voltage<br>Surface-mount SMV package                           |                              |                           |                            |                           |                                    |                                 | 0.38<br>(Ta = 25°C)<br>Mounted on<br>glass-epoxy substrate | SMV                 |            |
|                         | TA76432F/FR<br>TA76432AF/AFR | Variable output voltage<br>Surface-mount PW-MINI (SOT-89) package              |                              |                           |                            |                           |                                    |                                 | 0.5<br>(Ta = 25°C)                                         | PW-MINI<br>(SOT-89) |            |
|                         | TA76432S<br>TA76432AS        | Variable output voltage<br>Radial tape packing for automatic mounting          |                              |                           |                            |                           |                                    |                                 | 0.8<br>(Ta = 25°C)                                         | TO-92MOD            |            |
|                         | TA76433FC                    | Cathod separation type<br>Variable output voltage<br>Surface-mount SMV package | 1.26                         | Variable<br>1.26 to 14    | Sink<br>20                 | 15                        | 0.4                                | ±1.4<br>(Ta = 25°C)             | 0.38<br>(Ta = 25°C)<br>Mounted on<br>glass-epoxy substrate | SMV                 |            |

## Multi-Functional Regulators

| Polarity                              | Part Number                                                             | Use/Function                                                                                                                                     | Output Voltage (typ.) (V)        | Output Current (max) (mA) | Input Voltage (max) (V) | Drop-out Voltage (typ.) (V) | Bias Current (typ.) (mA) | Output Voltage Tolerance (%) | Power Dissipation (W)                   | Package          | Equivalent |
|---------------------------------------|-------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|---------------------------|-------------------------|-----------------------------|--------------------------|------------------------------|-----------------------------------------|------------------|------------|
| Positive-voltage output (low dropout) | TA48S018F<br>TA48S02F<br>TA48S025F<br>TA48S03F<br>TA48S033F<br>TA48S05F | High-current output<br>Low drop-out<br>Built-in ON/OFF control function<br>Bias current (OFF): 5 µA (max)<br>Surface-mount 5-pin PW-MOLD package | 1.8<br>2<br>2.5<br>3<br>3.3<br>5 | 1000                      | 16                      | 0.5 Max<br>(Io = 500 mA)    | 0.8<br>(Io = 0 A)        | ±4.5<br>(Tj = 0 to 125°C)    | 1.0<br>(Ta = 25°C)<br>10<br>(Tc = 25°C) | PW-MOLD<br>5 pin |            |
|                                       | TA8004SA                                                                | Medium-current output<br>Built-in power-on reset timer function<br>Low drop-out                                                                  | 5                                |                           |                         |                             |                          |                              |                                         |                  |            |

## AC-DC Converter ICs

| Part Number  | Package                                | Use                                  | Functions/Features                                                                                                                                      | Operating Supply Voltage Range |
|--------------|----------------------------------------|--------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|
| TA1294N/F    | P-SDIP24-300-1.78<br>P-SSOP24-300-1.78 | AC/DC switching power supply control | Power factor correction + PWM control, $f_h = 30$ kHz to 110 kHz<br>Can be used for both flyback (external synchronization) and half-bridge converters. | 7.0 to 14.0 V                  |
| TA1307P      | P-DIP8-300-2.54A                       |                                      | Reduced standby power consumption by intermittent control, $f_h = 20$ kHz to 150 kHz                                                                    | 7.5 to 11.5 V                  |
| TA1319AP/AF  | P-DIP8-300-2.54A<br>P-SOP8-225-1.27    |                                      | PWM control (for power supply at 50 W or less),<br>AC wide input voltage, automatic frequency reduction at standby mode                                 | 9.5 to 24.0 V                  |
| ** TA1361P/F | P-DIP8-300-2.54A<br>P-SOP8-225-1.27    |                                      | RCC control (for power supply at 140 W or less),<br>AC wide input voltage, automatic frequency reduction at standby mode                                | 9.0 to 23.5 V                  |
| TC90A75P/F   | DIP8-C-300A<br>DIP8-F-255C             |                                      | AC transformer control, reduced standby power consumption to maximum by intermittent control                                                            | 8.5 to 14.0 V                  |

\*\* : Under development

## Other Power Supply ICs

| Part Number   | Package | Use                                                | Structure                                                                                                                      |
|---------------|---------|----------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|
| * TB62501F    | VQFP64  | Power supply monitor + controller for notebook PCs | Power management IC for notebook PCs                                                                                           |
| TB62503FM     | SON8    | Step-down power supply                             | Step-down DC/DC converter, 1.3-V output, efficiency = 85%                                                                      |
| * TB62504FMG  | SON8    | System power supply for cellular phone PAs         | Step-down DC/DC converter (variable output) + switching MOSFET, output current capability 300 mA                               |
| TB6807F       | VQFP64  | Power supply monitor + controller for notebook PCs | Power management IC for notebook PCs                                                                                           |
| TB6808F       | VQFP64  | Power supply monitor + controller for notebook PCs | Power management IC for notebook PCs                                                                                           |
| ** TB62507FMG | SON8    | System power supply for cellular phone PAs         | Step-down DC/DC converter (variable output) + switching MOSFET, output current capability 500 mA                               |
| ** TB62505FTG | VQON24  | System power supply for cellular phone PAs         | Step-down DC/DC converter (variable output) + switching MOSFET, output current capability 500 mA + reference regulator (285 V) |

\*: New product

\*\* : Under development

## Small-Signal MMICs (High-Frequency Cell-pack)

### Wide Band Amplifiers

| Part Number | Package | Structure                             | Applications                                      | Electrical Characteristics (Ta = 25°C)                                        |
|-------------|---------|---------------------------------------|---------------------------------------------------|-------------------------------------------------------------------------------|
| TA4000F     | SM6     | Bipolar linear wideband amp           | BS tuners, communications equipment, VHF/UHF amps | B/W = 1.3 GHz<br>Gp = 15dB @f = 400 MHz, Vcc = 5 V                            |
| TA4001F     | SMQ     | Bipolar linear wideband amp           | BS tuners, communications equipment, VHF/UHF amps | B/W = 2.4 GHz<br>Gp = 12.5dB @f = 500 MHz, Vcc = 5 V                          |
| TA4002F     | SMQ     | Bipolar linear wideband amp           | BS tuners, communications equipment, VHF/UHF amps | B/W = 1.3 GHz<br>Gp = 23dB @f = 500 MHz, Vcc = 5 V                            |
| TA4004F     | SMV     | Bipolar linear wideband amp           | Communications equipment, VHF/UHF amps            | B/W = 1.2 GHz<br>Gp = 10.5dB @f = 500 MHz, Vcc = 2 V                          |
| TA4011AFE   | ESV     | Bipolar linear wideband amp           | Communications equipment, UHF amp                 | B/W = 2.4 GHz,<br>PoidB = -6dBmW @Vcc = 2 V                                   |
| TA4011FU    | USV     | Bipolar linear wideband amp           | Communications equipment, UHF amp                 | B/W = 2.4 GHz,<br>PoidB = -6dBmW @Vcc = 2 V                                   |
| TA4012AFE   | ESV     | Bipolar linear wideband amp           | Communications equipment, UHF amp                 | B/W = 2.0 GHz,<br>PoidB = 0dBmW @Vcc = 2 V                                    |
| TA4012FU    | USV     | Bipolar linear wideband amp           | Communications equipment, UHF amp                 | B/W = 2.0 GHz,<br>PoidB = 0dBmW @Vcc = 2 V                                    |
| TA4016AFE   | ES6     | Bipolar linear wideband amp           | Communications equipment, UHF amp                 | B/W = 3.2 GHz<br>Gp = 19dB @f = 1.5 GHz, Vcc = 2 V                            |
| TA4017FT    | TU6     | Bipolar differential amp              | CATV, IF amp                                      | S21  <sup>2</sup> = 13dB, PoidB = 2dBmW @Vcc = 5 V,<br>f = 45 MHz             |
| TA4018F     | SM8     | Bipolar differential gain control amp | CATV, IF variable amp                             | S21  <sup>2</sup> = 11dB, Gr = 37dB @Vcc = 5 V,<br>f = 45 MHz                 |
| TA4019F     | SM8     | Bipolar differential amp              | CATV, IF amp                                      | S21  <sup>2</sup> = 30dB, IM3 = 53dB @Vcc = 5 V,<br>f = 45 MHz, Pin = -35dBmW |

### Frequency Converters

| Part Number | Package | Structure                              | Applications              | Electrical Characteristics (Ta = 25°C)                                     |
|-------------|---------|----------------------------------------|---------------------------|----------------------------------------------------------------------------|
| TA4107F     | SM8     | Bipolar linear down converter          | CATV analog digital tuner | C·Gain = -0.5dB, IIP3 = 12dBmW @fRF = 1 GHz,<br>fLO = 950 MHz, Vcc = 4.5 V |
| TA4303F     | SSOP-20 | Bipolar linear down converter, Si-MMIC | BS tuner OSC + DBC + IF   | C·Gain = 18dB/1.6 GHz,<br>IP3 = 17dBmW Vcc = 5 V, Icc = 74 mA              |

### High-Frequency Oscillators (VCO, TCXO)

| Part Number | Package | Structure                        | Applications | Electrical Characteristics (Ta = 25°C)                         |
|-------------|---------|----------------------------------|--------------|----------------------------------------------------------------|
| TA4014FT    | TU6     | Bipolar linear OSC & buffer      | TCXO<br>VCXO | Icc = 1.2 mA @Vcc = 3.0 V<br>Vosc = 1.2 Vp-p (reference value) |
| TA4014FE    | ES6     | Bipolar linear OSC & buffer      | TCXO<br>VCXO |                                                                |
| TA4014FC    | CS6     | Bipolar linear OSC & buffer      | TCXO<br>VCXO |                                                                |
| TA4015FT    | TU6     | Bipolar linear OSC & buffer      | TCXO<br>VCXO | Icc = 1.3 mA @Vcc = 3.0 V<br>Vosc = 1.2 Vp-p (reference value) |
| TA4015FE    | ES6     | Bipolar linear OSC & buffer      | TCXO<br>VCXO |                                                                |
| * TA4203F   | QS16    | Bipolar linear OSC & buffer & SW | GSM/DCS VCO  | Icc = 40 mA @Vcc = 2.7 V<br>Po = +10dBmW                       |
| * TA4205FC  | CS6     | Bipolar linear OSC & buffer      | VCO          | Icc = 8 mA @Vcc = 2.7 V<br>Vosc = 0.63 Vp-p (reference value)  |

\*: New product

## High-Frequency Switches

| Part Number | Package | Structure                                                                | Applications                              | Electrical Characteristics (Ta = 25°C)                                        |
|-------------|---------|--------------------------------------------------------------------------|-------------------------------------------|-------------------------------------------------------------------------------|
| TG2210FT    | TU6     | GaAs low-power SPDT switch                                               | RF general-purpose SPDT switch, bluetooth | Loss = 0.4dB, ISL = 30dB<br>P1dB = 18dBmW (min)<br>@f = 1 GHz, Vc = 0 V/2.5 V |
| TG2211FT    | TU6     | GaAs low-power SPDT switch, built-in inverter                            | RF general-purpose SPDT switch, bluetooth | Loss = 0.55dB, ISL = 17dB<br>P1dB = 22dBmW @f = 2.5 GHz, Vc = 0 V/2.7 V       |
| TG2213S     | sES6    | GaAs low-power SPDT switch, small type                                   | RF general-purpose SPDT switch, bluetooth | Loss = 0.45dB, ISL = 22dB<br>P1dB = 17dBmW @f = 2.5 GHz, Vc = 0 V/2.7 V       |
| TG2214S     | sES6    | GaAs low-power SPDT switch, small type<br>Reverse logic type of TG2213S. | RF general-purpose SPDT switch, bluetooth | Loss = 0.45dB, ISL = 22dB<br>P1dB = 17dBmW @f = 2.5 GHz, Vc = 0 V/2.7 V       |
| TG2216TU    | UF6     | GaAs medium-power SPDT switch                                            | Cellular phone, bluetooth, wireless LAN   | Loss = 0.7dB, ISL = 23dB<br>P1dB = 28dBmW<br>@f = 2.5 GHz, Vc = 0 V/2.7 V     |

