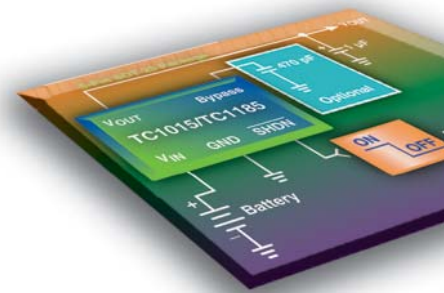
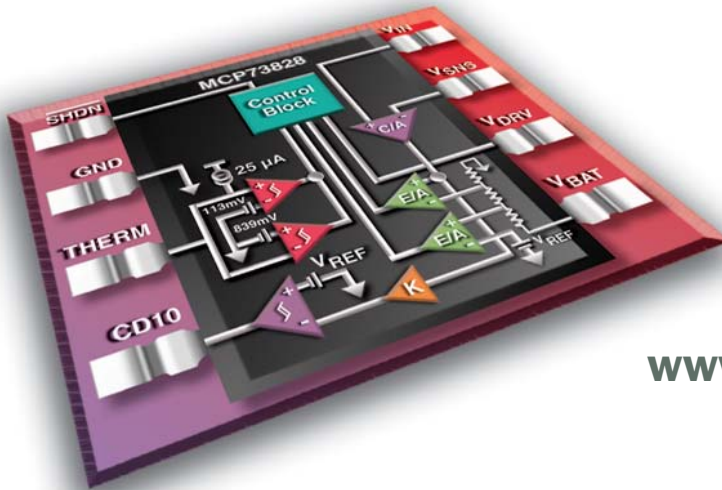


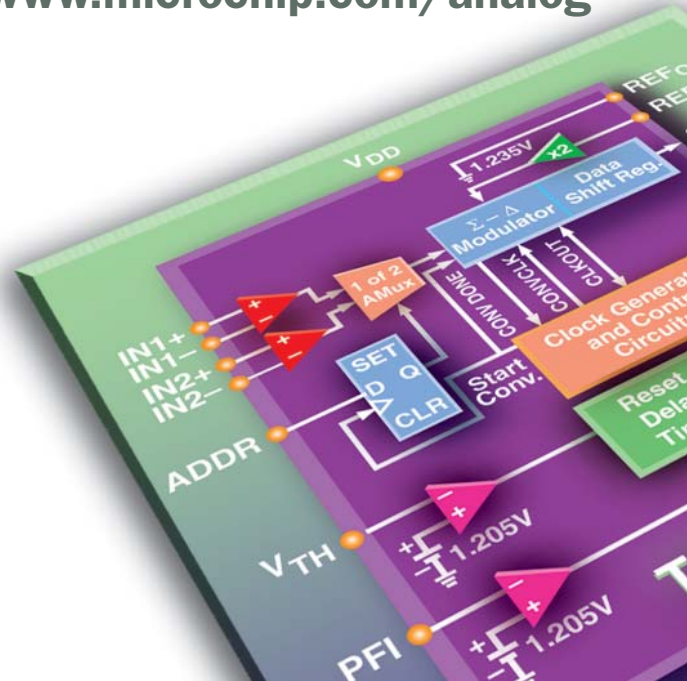


## Analog and Interface Product Selector Guide

- Thermal Management
- Battery Management
- Interface Peripherals
- Power Management
- Linear & Mixed-Signal
- Safety & Security



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# Are you Looking for Complete Analog & Interface Design Solutions?

Microchip's integrated analog technology, peripherals and features are engineered to meet today's demanding design requirements. Our broad spectrum of analog products addresses thermal management, power management, battery management, mixed-signal, linear, interface and safety & security solutions. Combined with "Intelligent Analog" microcontrollers, Microchip offers an extensive analog portfolio for thousands of high-performance design applications in the automotive, communications (wireless), consumer, computing and industrial control markets.

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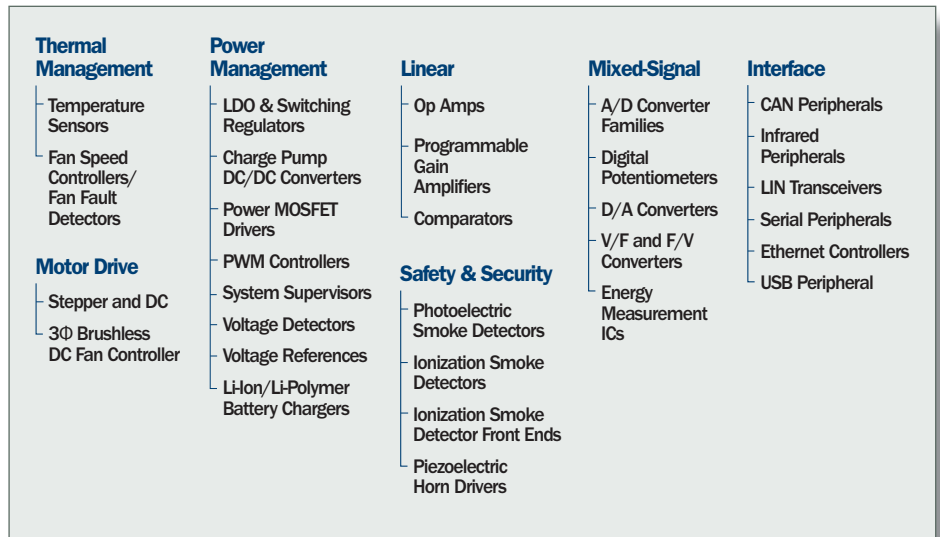
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## THERMAL MANAGEMENT

| THERMAL MANAGEMENT PRODUCTS – Temperature Sensors |                       |                              |                                |               |                             |   |  |
|---|-----------------------|------------------------------|--------------------------------|---------------|-----------------------------|---|--|
| Part #  | Typical Accuracy (°C) | Maximum Accuracy @ 25°C (°C) | Maximum Temperature Range (°C) | Vcc Range (V) | Maximum Supply Current (µA) | Features  | Packages                                   |
| <b>Logic Output Temperature Sensors</b>           |                       |                              |                                |               |                             |   |  |
| TC6501  | ±0.5                  | ±3                           | -55 to +125                    | +2.7 to +5.5  | 40                          | Cross to MAX6501, Open-drain  | 5-pin SOT-23A                              |
| TC6502  | ±0.5                  | ±3                           | -55 to +125                    | +2.7 to +5.5  | 40                          | Cross to MAX6502, Push-pull   | 5-pin SOT-23A                              |
| TC6503  | ±0.5                  | ±3                           | -55 to +125                    | +2.7 to +5.5  | 40                          | Cross to MAX6503, Open-drain  | 5-pin SOT-23A                              |
| TC6504  | ±0.5                  | ±3                           | -55 to +125                    | +2.7 to +5.5  | 40                          | Cross to MAX6504, Push-pull   | 5-pin SOT-23A                              |
| TC620   | ±1                    | ±3                           | -40 to +125                    | +4.5 to +18   | 400                         | Two resistor-programmable trip points   | 8-pin PDIP, 8-pin SOIC                     |
| TC621   | Note 1                | Note 1                       | -40 to +85                     | +4.5 to +18   | 400                         | Requires external thermistor, resistor-programmable trip points   | 8-pin PDIP, 8-pin SOIC                     |
| TC622   | ±1                    | ±5                           | -40 to +125                    | +4.5 to +18   | 600                         | Dual output, TO-220 for heat sink mounting, resistor-programmable trip points   | 8-pin PDIP, 8-pin SOIC, 5-pin TO-220       |
| TC623   | ±1                    | ±3                           | -40 to +125                    | +2.7 to +4.5  | 250                         | Two resistor-programmable trip points   | 8-pin PDIP, 8-pin SOIC                     |
| TC624   | ±1                    | ±5                           | -40 to +125                    | +2.7 to +4.5  | 300                         | Dual output, resistor-programmable trip points  | 8-pin PDIP, 8-pin SOIC                     |
| MCP9509   | ±0.5                  | NS                           | -40 to +125                    | +2.7 to +5.5  | 50                          | Resistor-programmable temperature switch  | 5-pin SOT-23                               |
| MCP9510   | ±0.5                  | NS                           | -40 to +125                    | +2.7 to +5.5  | 80                          | Resistor-programmable temperature switch  | 6-pin SOT-23                               |
| <b>Voltage Output Temperature Sensors</b>         |                       |                              |                                |               |                             |   |  |
| MCP9700   | ±1                    | ±4                           | -40 to +125                    | +2.3 to +5.5  | 12                          | Linear Active Thermistor® IC, Temperature slope: 10 mV/°C   | 3-pin TO-92, 5-pin SC-70, 3-pin SOT-23     |
| MCP9701   | ±1                    | ±4                           | -10 to +125                    | +3.1 to +5.5  | 12                          | Linear Active Thermistor® IC, Temperature slope: 19.53 mV/°C, cross to MAX6612  | 3-pin TO-92, 5-pin SC-70, 3-pin SOT-23     |
| MCP9700A  | ±1                    | ±2                           | -40 to +125                    | +2.3 to +5.5  | 12                          | Linear Active Thermistor® IC, Temperature slope: 10 mV/°C   | 3-pin TO-92, 5-pin SC-70, 3-pin SOT-23     |
| MCP9701A  | ±1                    | ±2                           | -40 to +125                    | +3.1 to +5.5  | 12                          | Linear Active Thermistor® IC, Temperature slope: 19.53 mV/°C, cross to MAX6612  | 3-pin TO-92, 5-pin SC-70, 3-pin SOT-23     |
| TC1046  | ±0.5                  | ±2                           | -40 to +125                    | +2.7 to +4.4  | 60                          | High precision temperature-to-voltage converter, 6.25 mV/°C   | 3-pin SOT-23B                              |
| TC1047  | ±0.5                  | ±2                           | -40 to +125                    | +2.7 to +4.4  | 60                          | High precision temperature-to-voltage converter, 10 mV/°C   | 3-pin SOT-23B                              |
| TC1047A   | ±0.5                  | ±2                           | -40 to +125                    | +2.5 to +5.5  | 60                          | High precision temperature-to-voltage converter, 10 mV/°C   | 3-pin SOT-23B                              |
| <b>Serial Output Temperature Sensors</b>          |                       |                              |                                |               |                             |   |  |
| MCP9800   | ±0.5                  | ±1                           | -55 to +125                    | +2.7 to +5.5  | 400                         | SMbus/I <sup>2</sup> C™ compatible interface, 0.0625°C to 0.5°C adj. resolution, power-saving one-shot temperature measurement  | 5-pin SOT-23                               |
| MCP9801   | ±0.5                  | ±1                           | -55 to +125                    | +2.7 to +5.5  | 400                         | SMbus/I <sup>2</sup> C™ compatible interface, 0.0625°C to 0.5°C adj. resolution, power-saving one-shot temperature measurement, multi-drop capability                   | 8-pin MSOP, 8-pin SOIC                     |
| MCP9802   | ±0.5                  | ±1                           | -55 to +125                    | +2.7 to +5.5  | 400                         | SMbus/I <sup>2</sup> C™ compatible interface with time out, 0.0625°C to 0.5°C adj. resolution, power-saving one-shot temperature measurement                            | 5-pin SOT-23                               |
| MCP9803   | ±0.5                  | ±1                           | -55 to +125                    | +2.7 to +5.5  | 400                         | SMbus/I <sup>2</sup> C™ compatible interface with time out, 0.0625°C to 0.5°C adj. resolution, power-saving one-shot temperature measurement, multi-drop capability     | 8-pin MSOP, 8-pin SOIC                     |
| MCP9804   | ±0.25                 | ±1                           | -40 to +125                    | +2.7 to +5.5  | 400                         | User programmable temperature limits with alert output, 1°C temp. accuracy from -40°C to +125°C   | 8-pin MSOP, 8-pin 2x3 DFN                  |
| MCP9805   | ±0.5                  | ±1 <sup>(2)</sup>            | -20 to +125                    | +3.0 to +3.6  | 400                         | JEDEC compatible register set, SMbus/I <sup>2</sup> C™ compatible interface, programmable, shut-down modes and EVENT output   | 8-pin TSSOP, 8-pin 2x3 DFN                 |
| MCP9843   | ±0.5                  | ±1 <sup>(2)</sup>            | -20 to +125                    | +3.0 to +3.6  | 500                         | Compliant to JEDEC TS2002 specification   | 8-pin TSSOP, 8-pin 2x3 DFN, 8-pin 2x3 TDFN |
| MCP98242  | ±0.5                  | ±1 <sup>(2)</sup>            | -20 to +125                    | +3.0 to +3.6  | 400                         | Same temperature sensor as MCP9805 plus integrated DDR2 Serial Presence Detect EEPROM   | 8-pin TSSOP, 8-pin 2x3 DFN                 |
| MCP98243  | ±1                    | ±3                           | -40 to +125                    | +3.0 to +3.6  | 500                         | Serial output temperature sensor with integrated EEPROM   | 8-pin TSSOP, 8-pin 2x3 DFN, 8-pin 2x3 TDFN |
| TC77  | ±0.5                  | ±1                           | -55 to +125                    | +2.7 to +5.5  | 400                         | SPI compatible interface, 0.0625°C temperature resolution   | 5-pin SOT-23A, 8-pin SOIC                  |
| TC72  | ±0.5                  | ±1                           | -55 to +125                    | +2.65 to +5.5 | 400                         | SPI compatible interface, power-saving one-shot temperature measurement, 0.25°C temperature resolution  | 8-pin MSOP, 8-pin 3x3 DFN                  |
| TC74  | ±0.5                  | ±2                           | -40 to +125                    | +2.7 to +5.5  | 350                         | SMbus/I <sup>2</sup> C™ compatible interface, 1°C temperature resolution  | 5-pin SOT-23A, 5-pin TO-220                |
| TCN75A  | ±0.5                  | ±2                           | -40 to +125                    | +2.7 to +5.5  | 500                         | SMbus/I <sup>2</sup> C™ compatible interface, power-saving one-shot temperature measurement, multi-drop capability, 0.0625°C to 0.5°C adjustable temperature resolution | 8-pin MSOP, 8-pin SOIC                     |
| TCN75   | ±0.5                  | ±2                           | -55 to +125                    | +2.7 to +5.5  | 1,000 <sup>(3)</sup>        | SMbus/I <sup>2</sup> C™ compatible interface, multi-drop capability, interrupt output, 0.5°C temperature resolution   | 8-pin MSOP, 8-pin SOIC                     |

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

**2:** Maximum accuracy measured at 85°C.

**3:** TCN75 idle current is 250 µA. This device also has a Software Shutdown mode that reduces supply current to <1 µA.

| THERMAL MANAGEMENT PRODUCTS – Brushless DC Fan Controllers and Fan Fault Detectors |                               |                       |                              |                                |               |                             |  |                                    |
|--|-------------------------------|-----------------------|------------------------------|--------------------------------|---------------|-----------------------------|--|------------------------------------|
| Part #   | Description                   | Typical Accuracy (°C) | Maximum Accuracy @ 25°C (°C) | Maximum Temperature Range (°C) | Vcc Range (V) | Maximum Supply Current (µA) | Features   | Packages                           |
| TC642  | Fan Manager                   | Note 1                | Note 1                       | -40 to +85                     | +3.0 to +5.5  | 1,000                       | FanSense™ Fan Monitor, minimum fan speed control                   | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP |
| TC642B   | Fan Manager                   | Note 1                | Note 1                       | -40 to +85                     | +3.0 to +5.5  | 400                         | FanSense™ Fan Monitor, minimum fan speed control, fan auto-restart | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP |
| TC646  | Fan Manager                   | Note 1                | Note 1                       | -40 to +85                     | +3.0 to +5.5  | 1,000                       | FanSense™ Fan Monitor, auto-shutdown                               | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP |
| TC646B   | Fan Manager                   | Note 1                | Note 1                       | -40 to +85                     | +3.0 to +5.5  | 400                         | FanSense™ Fan Monitor, auto-shutdown, fan auto-restart             | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP |
| TC647  | Fan Manager                   | Note 1                | Note 1                       | -40 to +85                     | +3.0 to +5.5  | 1,000                       | FanSense™ Fan Monitor, minimum fan speed control                   | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP |
| TC647B   | Fan Manager                   | Note 1                | Note 1                       | -40 to +85                     | +3.0 to +5.5  | 400                         | FanSense™ Fan Monitor, minimum fan speed control, fan auto-restart | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP |
| TC648  | Fan Manager                   | Note 1                | Note 1                       | -40 to +85                     | +3.0 to +5.5  | 1,000                       | Over-temperature alert, auto-shutdown                              | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP |
| TC648B   | Fan Manager                   | Note 1                | Note 1                       | -40 to +85                     | +3.0 to +5.5  | 400                         | Over-temperature alert, auto-shutdown, fan auto-restart            | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP |
| TC649  | Fan Manager                   | Note 1                | Note 1                       | -40 to +85                     | +3.0 to +5.5  | 1,000                       | FanSense™ Fan Monitor, auto-shutdown                               | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP |
| TC649B   | Fan Manager                   | Note 1                | Note 1                       | -40 to +85                     | +3.0 to +5.5  | 400                         | FanSense™ Fan Monitor, auto-shutdown, fan auto-restart             | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP |
| TC650  | Fan Manager                   | ±1                    | ±3                           | -40 to +125                    | +2.8 to +5.5  | 90                          | Over-temperature alert   | 8-pin MSOP                         |
| TC651  | Fan Manager                   | ±1                    | ±3                           | -40 to +125                    | +2.8 to +5.5  | 90                          | Over-temperature alert, auto-shutdown                              | 8-pin MSOP                         |
| TC652  | Fan Manager                   | ±1                    | ±3                           | -40 to +125                    | +2.8 to +5.5  | 90                          | FanSense™ Fan Monitor, over-temperature alert                      | 8-pin MSOP                         |
| TC653  | Fan Manager                   | ±1                    | ±3                           | -40 to +125                    | +2.8 to +5.5  | 90                          | FanSense™ Fan Monitor, over-temperature alert, auto-shutdown       | 8-pin MSOP                         |
| TC654  | Dual SMBus Fan Manager        | Note 1                | Note 1                       | -40 to +85                     | +3.0 to +5.5  | 320                         | FanSense™ Fan Monitor, RPM data                                    | 10-pin MSOP                        |
| TC655  | Dual SMBus Fan Manager        | Note 1                | Note 1                       | -40 to +85                     | +3.0 to +5.5  | 320                         | FanSense™ Fan Monitor, RPM data, over-temperature alert            | 10-pin MSOP                        |
| TC664  | Single SMBus Fan Manager      | Note 1                | Note 1                       | -40 to +85                     | +3.0 to +5.5  | 320                         | FanSense™ Fan Monitor, RPM data                                    | 10-pin MSOP                        |
| TC665  | Single SMBus Fan Manager      | Note 1                | Note 1                       | -40 to +85                     | +3.0 to +5.5  | 320                         | FanSense™ Fan Monitor, RPM data, over-temperature alert            | 10-pin MSOP                        |
| TC670  | Predictive Fan Fault Detector | N/A                   | N/A                          | -40 to +85                     | +3.0 to +5.5  | 150                         | FanSense™ Fan Monitor, programmable threshold                      | 6-pin SOT-23                       |

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

## MOTOR DRIVERS

| MOTOR DRIVER PRODUCTS - Stepper Motors, DC Motors and 3 Phase BLDC Fan Controllers |  |                         |                        |                     |  |                     |  |                                  |  |                 |
|--|--|-------------------------|------------------------|---------------------|--|---------------------|--|----------------------------------|--|-----------------|
| Part #   | Motor Type                                 | Input Voltage Range (V) | Internal/External FETs | Output Current (mA) | Control Scheme   | Motor Speed Output  | Shutdown Protection  | Temperature Operating Range (°C) | Features   | Packages        |
| MTS62C19A  | One Bipolar Stepper Motor or Two DC Motors | 10.0 to 40.0            | Internal               | 750                 | Direct PWM Input, Current Limit Control, Microstepping | No                  | Overcurrent, Overtemperature, Under Voltage                | -20 to +85                       | Dual Full Bridge Motor Driver for Stepper Motors, pin compatible with Allegro 6219 | 24-pin SOIC     |
| MTS2916A   | One Bipolar Stepper Motor or Two DC Motors | 10.0 to 40.0            | Internal               | 750                 | Direct PWM Input, Current Limit Control, Microstepping | No                  | Overcurrent, Overtemperature, Under Voltage                | -20 to +85                       | Dual Full Bridge Motor Driver for Stepper Motors, pin compatible with Allegro 2916 | 24-pin SOIC     |
| MTD6501C   | 3 Phase Brushless Fan                      | 2.0 to 14.0             | Internal               | 800                 | Sensorless Sinusoidal                                  | Frequency Generator | Overcurrent, Short Circuit, Overtemperature, Motor Lock-up | -10 to +85                       | 3-Phase BLDC Sinusoidal Sensorless Fan Motor Driver                                | 8-pin SOIC      |
| MTD6501D   | 3 Phase Brushless Fan                      | 2.0 to 14.0             | Internal               | 500                 | Sensorless Sinusoidal                                  | Frequency Generator | Overcurrent, Short Circuit, Overtemperature, Motor Lock-up | -30 to +95                       | 3-Phase BLDC Sinusoidal Sensorless Fan Motor Driver                                | 10-pin MSOP     |
| MTD6502B   | 3 Phase Brushless Fan                      | 2.0 to 5.5              | Internal               | 500                 | Sensorless Sinusoidal                                  | Frequency Generator | Overcurrent, Short Circuit, Overtemperature, Motor Lock-up | -40 to +85                       | 3-Phase BLDC Sinusoidal Sensorless Fan Motor Driver, Direction control             | 10-pin TDFN 3x3 |

## POWER MANAGEMENT

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

| POWER MANAGEMENT – Linear Regulators          |                        |   |                     |                                 |                             |  |                                     |   |                            |
|---|------------------------|---|---------------------|---------------------------------|-----------------------------|--|-------------------------------------|---|----------------------------|
| Part #  | Max. Input Voltage (V) | Output Voltage (V)                                | Output Current (mA) | Junction Temperature Range (°C) | Typical Active Current (µA) | Typical Dropout Voltage @ Max. Iout (mV) | Typical Output Voltage Accuracy (%) | Features  | Packages                   |
| 50 mA to 250 mA Low-Dropout Linear Regulators |                        |   |                     |                                 |                             |  |                                     |   |                            |
| TC2014  | 6.0                    | 1.8, 2.7, 2.8, 3.0, 3.3                           | 50                  | -40 to +125                     | 55                          | 45                                       | ±0.4                                | Ceramic output capacitor stable, Shutdown, Reference bypass input | 5-pin SOT-23A              |
| TC1014  | 6.0                    | 1.8, 2.5, 2.7, 2.8, 2.85, 3.0, 3.3, 3.6, 4.0, 5.0 | 50                  | -40 to +125                     | 50                          | 85                                       | ±0.5                                | Shutdown, Reference bypass input                                  | 5-pin SOT-23A              |
| TC2054  | 6.0                    | 1.8, 2.7, 2.8, 3.0, 3.3                           | 50                  | -40 to +125                     | 55                          | 45                                       | ±0.4                                | Ceramic output capacitor stable, Shutdown, Error output           | 5-pin SOT-23A              |
| TC1054  | 6.0                    | 1.8, 2.5, 2.7, 2.8, 2.85, 3.0, 3.3, 3.6, 4.0, 5.0 | 50                  | -40 to +125                     | 50                          | 85                                       | ±0.5                                | Shutdown, Error output  | 5-pin SOT-23A              |
| TC1070  | 6.0                    | 1.23 → VIN  | 50                  | -40 to +125                     | 50                          | 85                                       | –                                   | Shutdown, Adjustable  | 5-pin SOT-23A              |
| TC1072  | 6.0                    | 2.5, 2.7, 2.8, 2.85, 3.0, 3.3, 3.6, 4.0, 5.0      | 50                  | -40 to +125                     | 50                          | 85                                       | ±0.5                                | Shutdown, Reference bypass input, Error output                    | 6-pin SOT-23A              |
| TC1223  | 6.0                    | 2.5, 2.7, 2.8, 3.0, 3.3, 3.6, 4.0, 5.0            | 50                  | -40 to +125                     | 50                          | 85                                       | ±0.5                                | Shutdown  | 5-pin SOT-23A              |
| MCP1790                                       | 30                     | 3.0, 3.3, 5.0                                     | 70                  | -40 to +125                     | 70                          | 500                                      | ±0.2                                | Ceramic output capacitor stable                                   | 3-pin SOT-223, 3-pin DPAK  |
| MCP1791                                       | 30                     | 3.0, 3.3, 5.0                                     | 70                  | -40 to +125                     | 70                          | 500                                      | ±0.2                                | Ceramic output capacitor stable, Shutdown, Power good             | 5-pin SOT-223, 5-pin DPAK  |
| TC1016  | 6.0                    | 1.8, 2.7, 2.8, 3.0                                | 80                  | -40 to +125                     | 50                          | 150                                      | ±0.5                                | Ceramic output capacitor stable, Shutdown                         | 5-pin SC-70, 5-pin SOT-23A |
| TC2015  | 6.0                    | 1.8, 2.5, 2.6, 2.7, 2.8, 2.85, 3.0, 3.3, 3.6, 5.0 | 100                 | -40 to +125                     | 55                          | 90                                       | ±0.4                                | Ceramic output capacitor stable, Shutdown, Reference bypass input | 5-pin SOT-23A              |
| TC1015  | 6.0                    | 1.8, 2.5, 2.7, 2.8, 2.85, 3.0, 3.3, 3.6, 4.0, 5.0 | 100                 | -40 to +125                     | 50                          | 180                                      | ±0.5                                | Shutdown, Reference bypass input                                  | 5-pin SOT-23A              |
| TC2055  | 6.0                    | 1.8, 2.7, 2.8, 3.0, 3.3                           | 100                 | -40 to +125                     | 55                          | 90                                       | ±0.4                                | Ceramic output capacitor stable, Shutdown, Error output           | 5-pin SOT-23A              |
| TC1055  | 6.0                    | 1.8, 2.5, 2.7, 2.8, 2.85, 3.0, 3.3, 3.6, 4.0, 5.0 | 100                 | -40 to +125                     | 50                          | 180                                      | ±0.5                                | Shutdown, Error output  | 5-pin SOT-23A              |
| TC1071  | 6.0                    | 1.23 → VIN  | 100                 | -40 to +125                     | 50                          | 180                                      | –                                   | Shutdown, Adjustable  | 5-pin SOT-23A              |
| TC1073  | 6.0                    | 2.5, 2.7, 2.8, 2.85, 3.0, 3.3, 3.6, 4.0, 5.0      | 100                 | -40 to +125                     | 50                          | 180                                      | ±0.5                                | Shutdown, Reference bypass input, Error output                    | 6-pin SOT-23A              |
| TC1224  | 6.0                    | 2.5, 2.7, 2.8, 3.0, 3.3, 3.6, 4.0, 5.0            | 100                 | -40 to +125                     | 50                          | 180                                      | ±0.5                                | Shutdown  | 5-pin SOT-23A              |
| TC1188  | 6.0                    | 1.8, 2.8, 2.84, 3.15                              | 120                 | -40 to +125                     | 50                          | 130                                      | ±0.5                                | Shutdown  | 5-pin SOT-23A              |
| TC1189  | 6.0                    | 1.8, 2.8, 2.84, 3.15                              | 120                 | -40 to +125                     | 50                          | 130                                      | ±0.5                                | Shutdown  | 5-pin SOT-23A              |
| TC2185  | 6.0                    | 1.8, 2.7, 2.8, 3.0, 3.3                           | 150                 | -40 to +125                     | 55                          | 140                                      | ±0.4                                | Ceramic output capacitor stable, Shutdown, Reference bypass input | 5-pin SOT-23A              |
| TC1185  | 6.0                    | 1.8, 2.5, 2.7, 2.8, 2.85, 3.0, 3.3, 3.6, 4.0, 5.0 | 150                 | -40 to +125                     | 50                          | 270                                      | ±0.5                                | Shutdown, Reference bypass input                                  | 5-pin SOT-23A              |
| TC2186  | 6.0                    | 1.8, 2.7, 2.8, 3.0, 3.3                           | 150                 | -40 to +125                     | 55                          | 140                                      | ±0.4                                | Ceramic output capacitor stable, Shutdown, Error output           | 5-pin SOT-23A              |
| TC1186  | 6.0                    | 1.8, 2.5, 2.7, 2.8, 2.85, 3.0, 3.3, 3.6, 4.0, 5.0 | 150                 | -40 to +125                     | 50                          | 270                                      | ±0.5                                | Shutdown, Error output  | 5-pin SOT-23A              |
| TC1187  | 6.0                    | 1.23 → VIN  | 150                 | -40 to +125                     | 50                          | 270                                      | –                                   | Shutdown, Adjustable  | 5-pin SOT-23A              |

| POWER MANAGEMENT – Linear Regulators (Continued)                 |                        |  |                     |                                 |                             |  |                                     |   |   |
|--|------------------------|--|---------------------|---------------------------------|-----------------------------|--|-------------------------------------|---|---|
| Part #   | Max. Input Voltage (V) | Output Voltage (V)   | Output Current (mA) | Junction Temperature Range (°C) | Typical Active Current (µA) | Typical Dropout Voltage @ Max. I <sub>out</sub> (mV) | Typical Output Voltage Accuracy (%) | Features  | Packages  |
| <b>50 mA to 250 mA Low-Dropout Linear Regulators (Continued)</b> |                        |  |                     |                                 |                             |  |                                     |   |   |
| TC1017   | 6.0                    | 1.8, 2.6, 2.7, 2.8, 2.85, 2.9, 3.3, 3.4                            | 150                 | -40 to +125                     | 53                          | 285  | ±0.5                                | Ceramic output capacitor stable, Shutdown   | 5-pin SOT-23A, 5-pin SC-70                              |
| MCP1801  | 10                     | 0.9, 1.2, 1.8, 2.5, 3.0, 3.3, 5.0, 6.0                             | 150                 | -40 to +85                      | 25                          | 250  | ±0.4                                | Ceramic output capacitor stable, Shutdown, High PSRR                                  | 5-pin SOT-23A   |
| MCP1804  | 28                     | 1.8 to 18  | 150                 | -40 to +85                      | 50                          | 1300   | ±2                                  | Shutdown, High PSRR   | 5-pin SOT-23, 5-pin SOT-89, 3-pin SOT-89, 3-pin SOT-223 |
| MCP1700  | 6.0                    | 1.2, 1.8, 2.5, 3.0, 3.3, 5.0                                       | 250                 | -40 to +125                     | 1.6                         | 300  | ±0.4                                | 1.0 µF ceramic cap stable, Short-circuit protection                                   | 3-pin TO-92, 3-pin SOT-23A, 3-pin SOT-89                |
| MCP1701A   | 10                     | 1.8, 2.5, 3.0, 3.3, 5.0  | 250                 | -40 to +85                      | 1.6                         | 380  | ±0.5                                | 10V max. input voltage  | 3-pin TO-92, 3-pin SOT-23A, 3-pin SOT-89                |
| MCP1702  | 13.2                   | 1.2, 1.5, 1.8, 2.5, 2.8, 3.0, 3.3, 4.0, 5.0                        | 250                 | -40 to +125                     | 2                           | 650  | ±0.4                                | Ceramic output capacitor stable, Ultra-low ground current, 13.2V V <sub>IN</sub> max. | 3-pin TO-92, 3-pin SOT-23A, 3-pin SOT-89                |
| MCP1703  | 16                     | 1.2, 1.5, 1.8, 2.5, 2.8, 3.0, 3.3, 4.0, 5.0                        | 250                 | -40 to +125                     | 2                           | 650  | ±0.4                                | Ceramic output capacitor stable, Ultra-low ground current, 16V V <sub>IN</sub> max.   | 3-pin SOT-23A, 3-pin SOT-89, 3-pin SOT-223              |
| <b>300 mA Low-Dropout Linear Regulators</b>                      |                        |  |                     |                                 |                             |  |                                     |   |   |
| TC1107   | 6.0                    | 2.5, 2.7, 2.8, 3.0, 3.3, 5.0                                       | 300                 | -40 to +125                     | 50                          | 240  | ±0.5                                | Shutdown, Reference bypass input  | 8-pin MSOP, 8-pin SOIC                                  |
| TC1108   | 6.0                    | 2.5, 2.7, 2.8, 3.0, 3.3, 5.0                                       | 300                 | -40 to +125                     | 50                          | 240  | ±0.5                                |   | 3-pin SOT-223   |
| TC1173   | 6.0                    | 2.5, 2.7, 2.8, 3.0, 3.3, 5.0                                       | 300                 | -40 to +125                     | 50                          | 240  | ±0.5                                | Shutdown, Reference bypass input, Error output  | 8-pin MSOP, 8-pin SOIC                                  |
| TC1174   | 6.0                    | 1.23 → V <sub>IN</sub>   | 300                 | -40 to +125                     | 50                          | 240  | –                                   | Shutdown, Reference bypass input, Adjustable  | 8-pin MSOP, 8-pin SOIC                                  |
| TC1269   | 6.0                    | 2.5, 2.8, 3.0, 3.3, 5.0  | 300                 | -40 to +125                     | 50                          | 240  | ±0.5                                | Shutdown, Reference bypass input  | 8-pin MSOP  |
| MCP1802  | 10                     | 0.9, 1.2, 1.8, 2.5, 3.0, 3.3, 5.0, 6.0                             | 300                 | -40 to +85                      | 25                          | 250  | ±0.4                                | Ceramic output capacitor stable, Shutdown, High PSRR                                  | 5-pin SOT-23A   |
| MCP1824  | 6.0                    | Fixed: 0.8, 1.2, 1.8, 2.5, 3.0, 3.3, 5.0<br>Adjustable: 0.8 to 5.0 | 300                 | -40 to +125                     | 120                         | 200  | ±0.5                                | Ceramic output capacitor stable, Shutdown, Power Good                                 | 5-pin SOT-223, 5-pin SOT-23                             |
| MCP1824S   | 6.0                    | 0.8, 1.2, 1.8, 2.5, 3.0, 3.3, 5.0                                  | 300                 | -40 to +125                     | 120                         | 200  | ±0.5                                | Ceramic output capacitor stable   | 3-pin SOT-223   |
| <b>500 mA to 800 mA Low-Dropout Linear Regulators</b>            |                        |  |                     |                                 |                             |  |                                     |   |   |
| TC1262   | 6.0                    | 2.5, 2.8, 3.0, 3.3, 5.0  | 500                 | -40 to +125                     | 80                          | 350  | ±0.5                                | Over-temperature protection, Over-current protection                                  | 3-pin TO-220, 3-pin DDDPAK, 3-pin SOT-223               |
| TC1263   | 6.0                    | 2.5, 2.8, 3.0, 3.3, 5.0  | 500                 | -40 to +125                     | 80                          | 350  | ±0.5                                | Shutdown, Reference bypass input, Error output  | 8-pin SOIC, 5-pin TO-220, 5-pin DDDPAK                  |
| TC1268   | 6.0                    | 2.5  | 500                 | -40 to +125                     | 80                          | 350  | ±0.5                                | Shutdown, Reference bypass input, Error output  | 8-pin SOIC  |
| MCP1725  | 6.0                    | 0.8, 1.2, 1.8, 2.5, 3.0, 3.3, 5.0                                  | 500                 | -40 to +125                     | 120                         | 210  | ±0.5                                | Ceramic output capacitor stable, Shutdown, C <sub>delay</sub> , Power Good            | 8-pin 2x3 DFN, 8-pin SOIC                               |
| MCP1825  | 6.0                    | Fixed: 0.8, 1.2, 1.8, 2.5, 3.0, 3.3, 5.0<br>Adjustable: 0.8 to 5.0 | 500                 | -40 to +125                     | 120                         | 210  | ±0.5                                | Ceramic output capacitor stable, Shutdown, Power Good                                 | 5-pin TO-220, 5-pin DDDPAK, 5-pin SOT-223               |
| MCP1825S   | 6.0                    | 0.8, 1.2, 1.8, 2.5, 3.0, 3.3, 5.0                                  | 500                 | -40 to +125                     | 120                         | 210  | ±0.5                                | Ceramic output capacitor stable   | 3-pin TO-220, 3-pin DDDPAK, 3-pin SOT-223               |
| TC1264   | 6.0                    | 1.8, 2.5, 3.0, 3.3   | 800                 | -40 to +125                     | 80                          | 450  | ±0.5                                | Over-temperature protection, Over-current protection                                  | 3-pin TO-220, 3-pin DDDPAK, 3-pin SOT-223               |
| TC1265   | 6.0                    | 1.8, 2.5, 3.0, 3.3   | 800                 | -40 to +125                     | 80                          | 450  | ±0.5                                | Shutdown, Reference bypass input, Error output  | 8-pin SOIC, 5-pin TO-220, 5-pin DDDPAK                  |
| TC2117   | 6.0                    | 1.8, 2.5, 3.0, 3.3   | 800                 | -40 to +125                     | 80                          | 600  | ±0.5                                | Over-temperature protection, Over-current protection                                  | 3-pin SOT-223, 3-pin DDDPAK                             |

| POWER MANAGEMENT – Linear Regulators (Continued)          |                        |  |                      |                                 |                             |  |                                     |   |   |
|---|------------------------|--|----------------------|---------------------------------|-----------------------------|--|-------------------------------------|---|---|
| Part #  | Max. Input Voltage (V) | Output Voltage (V)   | Output Current (mA)  | Junction Temperature Range (°C) | Typical Active Current (µA) | Typical Dropout Voltage @ Max. I <sub>out</sub> (mV) | Typical Output Voltage Accuracy (%) | Features  | Packages                                |
| <b>1A and Above Low-Dropout Linear Regulators</b>         |                        |  |                      |                                 |                             |  |                                     |   |   |
| MCP1726   | 6.0                    | Fixed: 0.8, 1.2, 1.8, 2.5, 3.0, 3.3, 5<br>Adjustable: 0.8 to 5.0 | 1000                 | -40 to +125                     | 140                         | 300  | ±0.4                                | Ceramic output capacitor stable, Shutdown, Cdelay, Power Good | 8-pin 3x3 DFN, 8-pin SOIC               |
| MCP1826   | 6.0                    | Fixed: 0.8, 1.2, 1.8, 2.5, 3.0, 3.3, 5<br>Adjustable: 0.8 to 5.0 | 1000                 | -40 to +125                     | 140                         | 300  | ±0.5                                | Ceramic output capacitor stable, Shutdown, Power Good         | 5-pin TO-220, 5-pin DPAK, 5-pin SOT-223 |
| MCP1826S  | 6.0                    | 0.8, 1.2, 1.8, 2.5, 3.0, 3.3, 5                                  | 1000                 | -40 to +125                     | 140                         | 300  | ±0.5                                | Ceramic output capacitor stable                               | 3-pin TO-220, 3-pin DPAK, 3-pin SOT-223 |
| MCP1727   | 6.0                    | Fixed: 0.8, 1.2, 1.8, 2.5, 3.0, 3.3, 5<br>Adjustable: 0.8 to 5.0 | 1500                 | -40 to +125                     | 140                         | 330  | ±0.5                                | Ceramic output capacitor stable, Shutdown, Cdelay, Power Good | 8-pin 3x3 DFN, 8-pin SOIC               |
| MCP1827   | 6.0                    | Fixed: 0.8, 1.2, 1.8, 2.5, 3.0, 3.3, 5<br>Adjustable: 0.8 to 5.0 | 1500                 | -40 to +125                     | 140                         | 330  | ±0.5                                | Ceramic output capacitor stable, Shutdown, Power Good         | 5-pin DPAK, 5-pin TO-220                |
| MCP1827S  | 6.0                    | 0.8, 1.2, 1.8, 2.5, 3.0, 3.3, 5                                  | 1500                 | -40 to +125                     | 140                         | 330  | ±0.5                                | Ceramic output capacitor stable                               | 3-pin DPAK, 3-pin TO-220                |
| <b>Application Specific Low-Dropout Linear Regulators</b> |                        |  |                      |                                 |                             |  |                                     |   |   |
| TC1266  | 6.0                    | 3.3  | 200                  | -5 to +70                       | 230                         | 200  | ±1.0                                | PCI compliant   | 8-pin SOIC, 8-pin MSOP                  |
| TC1267  | 6.0                    | 3.3  | 400                  | -5 to +70                       | 230                         | 300  | ±1.0                                | PCI compliant   | 5-pin DPAK                              |
| TC57  | 8                      | 2.5, 3.0, 3.3  | 4,000 <sup>(1)</sup> | -40 to +85                      | 50                          | 100 <sup>(1)</sup>                                   | ±2.0                                | Shutdown, External transistor                                 | 5-pin SOT-23A                           |
| TC59  | -10                    | -3.0, -5.0   | 100                  | -40 to +85                      | 3                           | 380  | ±0.5                                | Negative LDO  | 3-pin SOT-23A                           |

Note 1: Depending on external transistor configuration.

| POWER MANAGEMENT – Combination Products |     |                                |                        |             |     |                        |      |   |                           |
|---|-----|--------------------------------|------------------------|-------------|-----|------------------------|------|---|---------------------------|
| TC1300 <sup>(1)</sup>                   | 6.0 | 2.5, 2.7, 2.8, 2.85, 3.0, 3.3  | 300                    | -40 to +125 | 80  | 210                    | ±0.5 | Shutdown, Reference bypass input, LDO plus Reset output   | 8-pin MSOP                |
| TC1301A <sup>(1)</sup>                  | 6.0 | LDO1: 1.5-3.3<br>LDO2: 1.5-3.3 | LDO1: 300<br>LDO2: 150 | -40 to +125 | 103 | LDO1: 104<br>LDO2: 150 | ±0.5 | Dual LDO plus Reset output, Shutdown, Reference bypass, Voltage detect                                | 8-pin MSOP, 8-pin 3x3 DFN |
| TC1301B <sup>(1)</sup>                  | 6.0 | LDO1: 1.5-3.3<br>LDO2: 1.5-3.3 | LDO1: 300<br>LDO2: 150 | -40 to +125 | 114 | LDO1: 104<br>LDO2: 150 | ±0.5 | Dual LDO plus Reset, per channel output shutdown, Reference bypass                                    | 8-pin MSOP, 8-pin 3x3 DFN |
| TC1302A <sup>(1)</sup>                  | 6.0 | LDO1: 1.5-3.3<br>LDO2: 1.5-3.3 | LDO1: 300<br>LDO2: 150 | -40 to +125 | 103 | LDO1: 104<br>LDO2: 150 | ±0.5 | Dual LDO, Output shutdown reference bypass, Voltage detect  | 8-pin MSOP, 8-pin 3x3 DFN |
| TC1302B <sup>(1)</sup>                  | 6.0 | LDO1: 1.5-3.3<br>LDO2: 1.5-3.3 | LDO1: 300<br>LDO2: 150 | -40 to +125 | 114 | LDO1: 104<br>LDO2: 150 | ±0.5 | Dual LDO, per channel output shutdown, Reference bypass   | 8-pin MSOP, 8-pin 3x3 DFN |
| TC1305                                  | 6.0 | 2.5, 2.8, 3.0                  | 150 <sup>(1)</sup>     | -40 to +125 | 120 | 240                    | ±0.5 | Dual LDO plus Reset output, Reference bypass input, Shutdown, Select Mode™ selectable output voltages | 10-pin MSOP               |
| TC1306                                  | 6.0 | 1.8, 2.8, 3.0                  | 150 <sup>(1)</sup>     | -40 to +125 | 120 | 240                    | ±0.5 | Dual LDO plus Reset output, Shutdown, Select Mode™ selectable output voltages                         | 8-pin MSOP                |
| TC1307 <sup>(1)</sup>                   | 6.0 | 1.8, 2.5, 2.8, 3.0             | 150 <sup>(1)</sup>     | -40 to +125 | 220 | 200                    | ±0.5 | Quad LDO plus Reset output, Shutdown, Select Mode™ selectable output voltage                          | 16-pin QSOP               |

Note 1: LDOs with shutdown (except Power Management Combination Products as indicated) have typical shutdown currents of 0.05 mA.



**POWER MANAGEMENT – Combination Products (Continued)**

| Part # | Description                                  | Input Voltage Range (V) | Output Voltage (V)                   | Operating Temperature Range (°C) | Control Scheme | Switching Frequency (kHz) | Typical Active Current (µA) | Output Current (mA)          | Features                                  | Packages                       |
|--------|--|-------------------------|--------------------------------------|----------------------------------|----------------|---------------------------|-----------------------------|------------------------------|---|--------------------------------|
| TC1303 | Synchronous Buck Regulator, LDO w/Power Good | 2.7 to 5.5              | DC/DC: 0.8 to 4.5<br>LDO: 1.5 to 3.3 | -40 to +85                       | PFM/PWM        | 2000                      | 65/600                      | DC/DC: 500 mA<br>LDO: 300 mA | PFM/PWM auto-switching, Power Good output | 10-pin MSOP,<br>10-pin 3x3 DFN |
| TC1304 | Synchronous Buck Regulator, LDO              | 2.7 to 5.5              | DC/DC: 0.8 to 4.5<br>LDO: 1.5 to 3.3 | -40 to +85                       | PFM/PWM        | 2000                      | 65/600                      | DC/DC: 500 mA<br>LDO: 300 mA | PFM/PWM auto-switching, Power sequencing  | 10-pin MSOP,<br>10-pin 3x3 DFN |
| TC1313 | Synchronous Buck Regulator, LDO              | 2.7 to 5.5              | DC/DC: 0.8 to 4.5<br>LDO: 1.5 to 3.3 | -40 to +85                       | PFM/PWM        | 2000                      | 65/600                      | DC/DC: 500 mA<br>LDO: 300 mA | PFM/PWM auto-switching                    | 10-pin MSOP,<br>10-pin 3x3 DFN |

**POWER MANAGEMENT – Switching Regulators**

| Part #        | Description                | Input Voltage Range (V) | Output Voltage (V)      | Operating Temperature Range (°C) | Control Scheme                 | Switching Frequency (kHz) | Typical Active Current (µA) | Output Current (mA) | Features  | Packages                        |
|---------------|----------------------------|-------------------------|-------------------------|----------------------------------|--------------------------------|---------------------------|-----------------------------|---------------------|---|---------------------------------|
| MCP1601       | Synchronous Buck Regulator | 2.7 to 5.5              | 0.9V to V <sub>IN</sub> | -40 to +85                       | PFM/PWM/LDO                    | 750                       | 825 (PWM)<br>125 (PFM)      | 500                 | UVLO, Auto-switching, LDO   | 8-pin MSOP                      |
| MCP1602       | Synchronous Buck Regulator | 2.7 to 5.5              | 0.8 to 4.5              | -40 to +85                       | PFM/PWM                        | 2000                      | 35                          | 500                 | PFM, PWM auto-switching, UVLO, soft start, Power Good indicator   | 10-pin MSOP,<br>10-pin 3x3 DFN  |
| MCP1603       | Synchronous Buck Regulator | 2.7 to 5.5              | 0.8 to 4.0              | -40 to +85                       | PFM/PWM                        | 2000                      | 45                          | 500                 | Over-temperature and Over-current protection  | 5-pin TSOT-23,<br>8-pin 3x3 DFN |
| MCP1612       | Synchronous Buck Regulator | 2.7 to V <sub>IN</sub>  | 0.8 to 5.5              | -40 to +85                       | Constant frequency, PWM        | 1400                      | 10,000                      | 1000                | Overall efficiency >94% soft start, over-temperature and over-current protection  | 8-pin MSOP,<br>8-pin 3x3 DFN    |
| MCP1640/B/C/D | Step-up DC/DC Regulator    | 0.65 to 6               | 2.0 to 5.5              | -40 to +85                       | PWM or PWM/PFM                 | 500                       | 19                          | 350                 | Integrated synchronous boost regulator, 0.65V start-up voltage, soft-start, True load disconnect or input-to-output bypass option | 6-pin SOT-23,<br>8-pin 2x3 DFN  |
| MCP1650       | Step-up DC/DC Controller   | 2.7 to 5.5              | 2.5 to ext. tx limited  | -40 to +125                      | Constant frequency,            | 750                       | 120                         | 560/440             | 2 duty cycles for min. and max. loads, shutdown control, UVLO, soft start   | 8-pin MSOP                      |
| MCP1651       | Step-up DC/DC Controller   | 2.7 to 5.5              | 2.5 to ext. tx limited  | -40 to +125                      | Constant frequency, 2 fixed DC | 750                       | 120                         | 560/440             | 2 duty cycles for min. and max. loads, shutdown control, low battery detect, UVLO, soft start                                     | 8-pin MSOP                      |
| MCP1652       | Step-up DC/DC Controller   | 2.7 to 5.5              | 2.5 to ext. tx limited  | -40 to +125                      | Constant frequency, 2 fixed DC | 750                       | 120                         | 560/440             | 2 duty cycles for min. and max. loads, shutdown control, Power Good indicator, UVLO, soft start                                   | 8-pin MSOP                      |
| MCP1653       | Step-up DC/DC Controller   | 2.7 to 5.5              | 2.5 to ext. tx limited  | -40 to +125                      | Constant frequency, 2 fixed DC | 750                       | 120                         | 560/440             | 2 duty cycles for min. and max. loads, shutdown control, low battery detect, Power Good indicator, UVLO, soft start               | 10-pin MSOP                     |
| TC105         | Step-down DC/DC Controller | 2.2 to 10               | 3.0, 3.3, 5.0           | -40 to +85                       | PFM/PWM                        | 300                       | 57                          | 1,000               | Low-Power Shutdown mode   | 5-pin SOT-23A                   |
| TC115         | Step-up DC/DC Regulator    | 0.9 to 10               | 3.0, 3.3, 5.0           | -40 to +85                       | PFM/PWM                        | 100                       | 80                          | 140                 | Feedback voltage sensing, Low-Power Shutdown mode   | 5-pin SOT-89                    |
| TC110         | Step-up DC/DC Controller   | 2.0 to 10               | 3.0, 3.3, 5.0           | -40 to +85                       | PFM/PWM                        | 100/300                   | 50/120                      | 300                 | Soft-start, Low-Power Shutdown mode   | 5-pin SOT-23A                   |

**POWER MANAGEMENT – PWM Controllers**

| Part #   | Description  | Input Voltage Range (V) | Operating Temperature Range (°C) | Switching Frequency (kHz) | Typical Active Current (mA) | Features   | Packages                                     |
|----------|--|-------------------------|----------------------------------|---------------------------|-----------------------------|--|--|
| MCP1630  | Current mode, high-speed PWM to use with PIC® MCUs | 3.0 to 5.5              | -40 to +125                      | 1000                      | 2.8                         | UVLO, Short Circuit and Overtemperature Protection, Integrated MOSFET driver                           | 8-pin MSOP, 8-pin 2x3 DFN                    |
| MCP1630V | Voltage mode, high-speed PWM to use with PIC® MCUs | 3.0 to 5.5              | -40 to +125                      | 1000                      | 2.8                         | UVLO, Short Circuit and Overtemperature Protection, Integrated MOSFET driver                           | 8-pin MSOP, 8-pin 2x3 DFN                    |
| MCP1631  | Current mode, high-speed PWM to use with PIC® MCUs | 3.0 to 5.5              | -40 to +125                      | 2000                      | 3.7                         | UVLO, Integrated error, current and voltage sense amplifiers, overvoltage comparator and MOSFET driver | 20-pin SSOP, 20-pin TSSOP,<br>20-pin 4x4 QFN |

| POWER MANAGEMENT – PWM Controllers (Continued) |  |                         |                                  |                           |                             |  |   |
|--|--|-------------------------|----------------------------------|---------------------------|-----------------------------|--|---|
| Part #   | Description  | Input Voltage Range (V) | Operating Temperature Range (°C) | Switching Frequency (kHz) | Typical Active Current (µA) | Features   | Packages                                  |
| MCP1631HV                                      | Current mode, high-speed PWM to use with PIC® MCUs | 3.5 to 16               | -40 to +125                      | 2000                      | 3.7                         | Integrated 16V LDO, UVLO, Integrated error, current and voltage sense amplifiers, overvoltage comparator and MOSFET driver | 20-pin SSOP, 20-pin TSSOP                 |
| MCP1631V                                       | Voltage mode, high-speed PWM to use with PIC® MCUs | 3.0 to 5.5              | -40 to +125                      | 2000                      | 3.7                         | UVLO, Integrated error, current and voltage sense amplifiers, overvoltage comparator and MOSFET driver                     | 20-pin SSOP, 20-pin TSSOP, 20-pin 4x4 QFN |
| MCP1631VHV                                     | Voltage mode, high-speed PWM to use with PIC® MCUs | 3.5 to 16               | -40 to +125                      | 2000                      | 3.7                         | Integrated 16V LDO, UVLO, Integrated error, current and voltage sense amplifiers, overvoltage comparator and MOSFET driver | 20-pin SSOP, 20-pin TSSOP                 |

| POWER MANAGEMENT – Charge Pump DC-to-DC Converters |                              |  |                                  |   |                                    |   |                                    |
|--|------------------------------|--|----------------------------------|---|------------------------------------|---|------------------------------------|
| Part #   | Input Voltage Range (V)      | Output Voltage (V)                                 | Operating Temperature Range (°C) | Maximum Input Current <sup>(1)</sup> (µA) | Typical Active Output Current (mA) | Features                                    | Packages                           |
| <b>Inverting or Doubling Charge Pumps</b>          |                              |  |                                  |   |                                    |   |                                    |
| TC1044S  | 1.5 to 12                    | $V_{OUT} = -V_{IN}$ or $V_{OUT} = 2 V_{IN}$        | -40 to +85                       | 160                                       | 20                                 | 85 kHz oscillator, Boost mode               | 8-pin PDIP, 8-pin SOIC             |
| TC7660   | 1.5 to 10                    | $V_{OUT} = -V_{IN}$ or $V_{OUT} = 2 V_{IN}$        | -40 to +85                       | 180                                       | 20                                 | 10 kHz oscillator                           | 8-pin PDIP, 8-pin SOIC             |
| TC7660H  | 1.5 to 10                    | $V_{OUT} = -V_{IN}$ or $V_{OUT} = 2 V_{IN}$        | -40 to +85                       | 1,000                                     | 20                                 | 120 kHz oscillator                          | 8-pin PDIP, 8-pin SOIC             |
| TC7660S  | 1.5 to 12                    | $V_{OUT} = -V_{IN}$ or $V_{OUT} = 2 V_{IN}$        | -40 to +85                       | 160                                       | 20                                 | 45 kHz oscillator, Boost mode               | 8-pin PDIP, 8-pin SOIC             |
| TC7662B  | 1.5 to 15                    | $V_{OUT} = -V_{IN}$ or $V_{OUT} = 2 V_{IN}$        | -40 to +85                       | 180                                       | 20                                 | 35 kHz oscillator, Boost mode               | 8-pin PDIP, 8-pin SOIC             |
| TC1219   | 1.5 to 5.5                   | $V_{OUT} = -V_{IN}$ or $V_{OUT} = 2 V_{IN}$        | -40 to +85                       | 115                                       | 25                                 | 12 kHz oscillator, Low-Power Shutdown mode  | 6-pin SOT-23A                      |
| TC1220   | 1.5 to 5.5                   | $V_{OUT} = -V_{IN}$ or $V_{OUT} = 2 V_{IN}$        | -40 to +85                       | 325                                       | 25                                 | 35 kHz oscillator, Low-Power Shutdown mode  | 6-pin SOT-23A                      |
| TC1221   | 1.8 to 5.5                   | $V_{OUT} = -V_{IN}$ or $V_{OUT} = 2 V_{IN}$        | -40 to +85                       | 600                                       | 25                                 | Shutdown, 125 kHz oscillator                | 6-pin SOT-23A                      |
| TC1222   | 1.8 to 5.5                   | $V_{OUT} = -V_{IN}$ or $V_{OUT} = 2 V_{IN}$        | -40 to +85                       | 2,800                                     | 25                                 | Shutdown, 750 kHz oscillator                | 6-pin SOT-23A                      |
| TCM828   | 1.5 to 5.5                   | $V_{OUT} = -V_{IN}$ or $V_{OUT} = 2 V_{IN}$        | -40 to +85                       | 90  | 25                                 | 12 kHz oscillator                           | 5-pin SOT-23A                      |
| TCM829   | 1.5 to 5.5                   | $V_{OUT} = -V_{IN}$ or $V_{OUT} = 2 V_{IN}$        | -40 to +85                       | 260                                       | 25                                 | 35 kHz oscillator                           | 5-pin SOT-23A                      |
| TC1240   | 2.5 to 4.0                   | $V_{OUT} = 2 V_{IN}$                               | -40 to +85                       | 900                                       | 40                                 | Shutdown, 160 kHz oscillator                | 6-pin SOT-23A                      |
| TC1240A  | 2.5 to 5.5                   | $V_{OUT} = 2 V_{IN}$                               | -40 to +85                       | 900                                       | 40                                 | Shutdown, 160 kHz oscillator                | 6-pin SOT-23A                      |
| TC7662A  | 3.0 to 18                    | $V_{OUT} = -V_{IN}$ or $V_{OUT} = 2 V_{IN}$        | -40 to +85                       | 200                                       | 40                                 | 12 kHz oscillator                           | 8-pin PDIP, 8-pin SOIC             |
| TC962  | 3.0 to 18                    | $V_{OUT} = -V_{IN}$ or $V_{OUT} = 2 V_{IN}$        | -40 to +85                       | 200                                       | 80                                 | Selectable 12 kHz or 24 kHz oscillator      | 8-pin PDIP, 16-pin SOIC            |
| TC1121   | 2.4 to 5.5                   | $V_{OUT} = -V_{IN}$ or $V_{OUT} = 2 V_{IN}$        | -40 to +85                       | 100                                       | 100                                | Low-Power Shutdown mode                     | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP |
| <b>Inverting and Doubling Charge Pumps</b>         |                              |  |                                  |   |                                    |   |                                    |
| TC682  | 2.4 to 5.5                   | $V_{OUT} = -2 V_{IN}$                              | -40 to +85                       | 400                                       | 10                                 | 12 kHz oscillator                           | 8-pin PDIP, 8-pin SOIC             |
| <b>Regulated Charge Pumps</b>                      |                              |  |                                  |   |                                    |   |                                    |
| MCP1252  | 2.1/2.7 to 5.5<br>2.0 to 5.5 | Selectable 3.3V or 5.0V or Adjustable 1.5V to 5.5V | -40 to +85                       | 120                                       | 120 mA for $V_{IN} > 3.0V$         | Power Good output, 650 kHz oscillator       | 8-pin MSOP                         |
| MCP1253  | 2.1/2.7 to 5.5<br>2.0 to 5.5 | Selectable 3.3V or 5.0V or Adjustable 1.5V to 5.5V | -40 to +85                       | 120                                       | 120 mA for $V_{IN} > 3.0V$         | Power Good output, 1 MHz oscillator         | 8-pin MSOP                         |
| MCP1256  | 1.8 to 3.6                   | 3.3  | -40 to +85                       | 100                                       | 100                                | Power Good, Sleep mode                      | 10-pin MSOP, 10-pin 3x3 DFN        |
| MCP1257  | 1.8 to 3.6                   | 3.3  | -40 to +85                       | 100                                       | 100                                | Sleep mode, low battery indication          | 10-pin MSOP, 10-pin 3x3 DFN        |
| MCP1258  | 1.8 to 3.6                   | 3.3  | -40 to +85                       | 100                                       | 100                                | Power Good output, input/output bypass      | 10-pin MSOP, 10-pin 3x3 DFN        |
| MCP1259  | 1.8 to 3.6                   | 3.3  | -40 to +85                       | 100                                       | 100                                | Low battery indication, input/output bypass | 10-pin MSOP, 10-pin 3x3 DFN        |

Note 1: Measured at  $V_{DD} = 5.0V$  at 25°C and no load.

| POWER MANAGEMENT – CPU/System Supervisors |               |                                  |   |                 |                                |                                |                             |  |   |              |
|---|---------------|----------------------------------|---|-----------------|--------------------------------|--------------------------------|-----------------------------|--|---|--------------|
| Part #                                    | Vcc Range (V) | Operating Temperature Range (°C) | Nominal Reset Voltage (V)                 | Reset Type      | Output                         | Typical Reset Pulse Width (ms) | Typical Supply Current (µA) | Additional Features  | Packages                                | Bond Options |
| MCP102                                    | 1.0 to 5.5    | -40 to +125                      | 4.63, 4.38, 3.08, 2.93, 2.63, 2.32, 1.9   | Active-Low      | CMOS Push-Pull                 | 120                            | 1                           |  | 3-pin SOT-23B, 3-pin SC-70, 3-pin TO-92 | N/A          |
| MCP103                                    | 1.0 to 5.5    | -40 to +125                      | 4.63, 4.38, 3.08, 2.93, 2.63, 2.32, 1.9   | Active-Low      | CMOS Push-Pull                 | 120                            | 1                           | Max. 809 Pinout  | 3-pin SOT-23B, 3-pin SC-70, 3-pin TO-92 | N/A          |
| MCP121                                    | 1.0 to 5.5    | -40 to +125                      | 4.63, 4.38, 3.08, 2.93, 2.63, 2.32, 1.9   | Active-Low      | Open-Drain                     | 120                            | 1                           |  | 3-pin SOT-23B, 3-pin SC-70, 3-pin TO-92 | N/A          |
| MCP131                                    | 1.0 to 5.5    | -40 to +125                      | 4.63, 4.38, 3.08, 2.93, 2.63, 2.32, 1.9   | Active-Low      | Open-Drain                     | 120                            | 1                           | 100 kΩ Internal Pull-up Resistor   | 3-pin SOT-23B, 3-pin SC-70, 3-pin TO-92 | N/A          |
| MCP1319                                   | 1.0 to 5.5    | -40 to +125                      | 4.6, 2.9 <sup>(1)</sup>                   | Active-Low/High | CMOS Push-Pull                 | 200                            | 1                           | Manual Reset   | 5-pin SOT-23                            | N/A          |
| MCP1322                                   | 1.0 to 5.5    | -40 to +125                      | 4.6, 2.9 <sup>(1)</sup>                   | Active-High     | Open-Drain/<br>CMOS Push-Pull  | 200                            | 1                           | Manual Reset, two Reset outputs (Active-Low Open-Drain, Active-High Push-Pull)                         | 5-pin SOT-23                            | N/A          |
| MCP1316                                   | 1.0 to 5.5    | -40 to +125                      | 4.6, 2.9 <sup>(1)</sup>                   | Active-Low      | CMOS Push-Pull                 | 200                            | 5                           | Watchdog Input (WDI), Time-out = 1.6 sec., Manual Reset  | 5-pin SOT-23                            | N/A          |
| MCP1317                                   | 1.0 to 5.5    | -40 to +125                      | 4.6, 2.9 <sup>(1)</sup>                   | Active-High     | CMOS Push-Pull                 | 200                            | 5                           | Watchdog Input (WDI), Time-out = 1.6 sec., Manual Reset  | 5-pin SOT-23                            | N/A          |
| MCP1318                                   | 1.0 to 5.5    | -40 to +125                      | 4.6, 2.9 <sup>(1)</sup>                   | Active-Low/High | CMOS Push-Pull                 | 200                            | 5                           | Watchdog Input (WDI), Time-out = 1.6 sec.  | 5-pin SOT-23                            | N/A          |
| MCP1320                                   | 1.0 to 5.5    | -40 to +125                      | 4.6, 2.9 <sup>(1)</sup>                   | Active-Low      | Open-Drain                     | 200                            | 5                           | Watchdog Input (WDI), Time-out = 1.6 sec., Manual Reset  | 5-pin SOT-23                            | N/A          |
| MCP1321                                   | 1.0 to 5.5    | -40 to +125                      | 4.6, 2.9 <sup>(1)</sup>                   | Active-Low      | Open-Drain/<br>CMOS Push-Pull  | 200                            | 5                           | Watchdog Input (WDI), Time-out = 1.6 sec., Manual Reset (Active-Low Open-Drain, Active-High Push-Pull) | 5-pin SOT-23                            | N/A          |
| TC1270A                                   | 1.0 to 5.5    | -40 to +125                      | 4.63, 4.38, 3.08, 2.93, 2.63              | Active-Low      | CMOS Push-Pull                 | 280                            | 7                           | Manual Reset   | 4-pin SOT-143, 5-pin SOT-23             | N/A          |
| TC1271A                                   | 1.0 to 5.5    | -40 to +125                      | 4.63, 4.38, 3.08, 2.93, 2.63              | Active-High     | CMOS Push-Pull                 | 280                            | 7                           | Manual Reset   | 4-pin SOT-143, 5-pin SOT-23             | N/A          |
| TC1270AN                                  | 1.0 to 5.5    | -40 to +125                      | 4.63, 4.38, 3.08, 2.93, 2.63              | Active-Low      | Open-Drain                     | 0                              | 7                           | Manual Reset   | 4-pin SOT-143, 5-pin SOT-23             | N/A          |
| TCM809                                    | 1.2 to 5.5    | -40 to +85                       | 4.63, 4.38, 4.00, 3.08, 2.93, 2.63, 2.32  | Active-Low      | CMOS Push-Pull                 | 240                            | 12                          |  | 3-pin SOT-23B, 3-pin SC-70              | N/A          |
| TCM810                                    | 1.2 to 5.5    | -40 to +85                       | 4.63, 4.38, 4.00, 3.08, 2.93, 2.63, 2.32  | Active-High     | CMOS Push-Pull                 | 240                            | 12                          |  | 3-pin SOT-23B, 3-pin SC-70              | N/A          |
| MCP100                                    | 1.0 to 5.5    | -40 to +85                       | 4.72, 4.62, 4.47, 4.37, 3.075, 2.92, 2.62 | Active-Low      | CMOS Push-Pull                 | 350                            | 45                          |  | 3-pin TO-92, 3-pin SOT-23B              | D, H         |
| MCP809                                    | 1.0 to 5.5    | -40 to +85                       | 4.72, 4.62, 4.47, 4.37, 3.075, 2.92, 2.62 | Active-Low      | CMOS Push-Pull                 | 350                            | 45                          |  | 3-pin SOT-23B                           | N/A          |
| MCP101                                    | 1.0 to 5.5    | -40 to +85                       | 4.72, 4.62, 4.47, 4.37, 3.075, 2.92, 2.62 | Active-High     | CMOS Push-Pull                 | 350                            | 45                          |  | 3-pin TO-92, 3-pin SOT-23B              | D, H         |
| MCP810                                    | 1.0 to 5.5    | -40 to +85                       | 4.72, 4.62, 4.47, 4.37, 3.075, 2.92, 2.62 | Active-High     | CMOS Push-Pull                 | 350                            | 45                          |  | 3-pin SOT-23B                           | N/A          |
| MCP120                                    | 1.0 to 5.5    | -40 to +85                       | 4.72, 4.62, 4.47, 4.37, 3.075, 2.92, 2.62 | Active-Low      | Open-Drain                     | 350                            | 45                          |  | 3-pin TO-92, 3-pin SOT-23, 8-pin SOIC   | D, G, H      |
| MCP130                                    | 1.0 to 5.5    | -40 to +85                       | 4.72, 4.62, 4.47, 4.37, 3.075, 2.92, 2.62 | Active-Low      | Open-Drain<br>w/5 kOhm Pull-up | 350                            | 45                          |  | 3-pin TO-92, 3-pin SOT-23, 8-pin SOIC   | D, F, H      |
| TC1232                                    | 4.5 to 5.5    | -40 to +85                       | 4.62, 4.37                                | Active-Low/High | Open-Drain                     | 610                            | 50                          | Watchdog Timer   | 8-pin PDIP, 8-pin SOIC, 16-pin SOIC     | N/A          |
| TC32M                                     | 4.5 to 5.5    | -40 to +85                       | 4.5                                       | Active-Low      | Open-Drain                     | 700                            | 50                          | Watchdog Timer   | 3-pin TO-92, 3-pin SOT-223              | N/A          |

Note 1: Other reset voltage options available: 2.0V to 4.7V in 100 mV increments. Contact local Microchip sales office.

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

| POWER MANAGEMENT – Power MOSFET Drivers                   |  |                                  |                         |   |                            |   |   |
|---|--|----------------------------------|-------------------------|---|----------------------------|---|---|
| Part #  | Configuration                              | Operating Temperature Range (°C) | Peak Output Current (A) | Output Resistance (R <sub>H</sub> /R <sub>L</sub> ) (Max. Ω @ 25°C) | Maximum Supply Voltage (V) | Input/Output Delay (to1, to2) <sup>(1)</sup> (ns) | Packages                                      |
| <b>Low-Side Drivers, 0.5A to 1.2A Peak Output Current</b> |  |                                  |                         |   |                            |   |   |
| MCP1401   | Single, Inverting                          | -40 to +125                      | 0.5                     | 18/16   | 18                         | 40/40   | 5-pin SOT-23                                  |
| MCP1402   | Single, Non-inverting                      | -40 to +125                      | 0.5                     | 18/16   | 18                         | 40/40   | 5-pin SOT-23                                  |
| TC1410  | Single, Inverting                          | -40 to +85                       | 0.5                     | 22/22   | 16                         | 30/30   | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP            |
| TC1410N   | Single, Non-inverting                      | -40 to +85                       | 0.5                     | 22/22   | 16                         | 30/30   | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP            |
| TC1411  | Single, Inverting                          | -40 to +85                       | 1.0                     | 11/11   | 16                         | 30/30   | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP            |
| TC1411N   | Single, Non-inverting                      | -40 to +85                       | 1.0                     | 11/11   | 16                         | 30/30   | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP            |
| TC1426  | Dual, Inverting                            | 0 to +70                         | 1.2                     | 18/18   | 16                         | 75/75   | 8-pin PDIP, 8-pin SOIC                        |
| TC1427  | Dual, Non-inverting                        | 0 to +70                         | 1.2                     | 18/18   | 16                         | 75/75   | 8-pin PDIP, 8-pin SOIC                        |
| TC1428  | Dual, Inverting and Non-inverting          | 0 to +70                         | 1.2                     | 18/18   | 16                         | 75/75   | 8-pin PDIP, 8-pin SOIC                        |
| TC4467  | Quad, Inverting                            | -40 to +85                       | 1.2                     | 15/15   | 18                         | 40/40   | 14-pin PDIP, 16-pin SOIC (W)                  |
| TC4468  | Quad, Non-inverting                        | -40 to +85                       | 1.2                     | 15/15   | 18                         | 40/40   | 14-pin PDIP, 16-pin SOIC (W)                  |
| TC4469  | Quad, Non-inverting                        | -40 to +85                       | 1.2                     | 15/15   | 18                         | 40/40   | 14-pin PDIP, 16-pin SOIC (W)                  |
| <b>Low-Side Drivers, 1.5A Peak Output Current</b>         |  |                                  |                         |   |                            |   |   |
| MCP1415   | Single, Inverting                          | -40 to +125                      | 1.5                     | 7.5/5.5   | 18                         | 50/55   | 5-pin SOT-23                                  |
| MCP1416   | Single, Non-inverting                      | -40 to +125                      | 1.5                     | 7.5/5.5   | 18                         | 50/55   | 5-pin SOT-23                                  |
| TC4403  | Single, Non-inverting Floating Load Driver | -40 to +85                       | 1.5                     | 5/5   | 18                         | 33/38   | 8-pin PDIP                                    |
| TC4404  | Dual, Inverting                            | -40 to +85                       | 1.5                     | 10/10   | 18                         | 15/32   | 8-pin PDIP, 8-pin SOIC                        |
| TC4405  | Dual, Non-inverting                        | -40 to +85                       | 1.5                     | 10/10   | 18                         | 15/32   | 8-pin PDIP, 8-pin SOIC                        |
| TC4426A   | Dual, Inverting                            | -40 to +125                      | 1.5                     | 9/9   | 18                         | 30/30   | 8-pin PDIP, 8-pin SOIC, 8-pin DFN             |
| TC4427A   | Dual, Non-inverting                        | -40 to +125                      | 1.5                     | 9/9   | 18                         | 30/30   | 8-pin PDIP, 8-pin SOIC, 8-pin DFN             |
| TC4428A   | Dual, Inverting and Non-inverting          | -40 to +125                      | 1.5                     | 9/9   | 18                         | 30/30   | 8-pin PDIP, 8-pin SOIC, 8-pin DFN             |
| TC4426  | Dual, Inverting                            | -40 to +125                      | 1.5                     | 10/10   | 18                         | 20/40   | 8-pin PDIP, 8-pin SOIC, 8-pin DFN, 8-pin MSOP |
| TC4427  | Dual, Non-inverting                        | -40 to +125                      | 1.5                     | 10/10   | 18                         | 20/40   | 8-pin PDIP, 8-pin SOIC, 8-pin DFN, 8-pin MSOP |
| TC4428  | Dual, Inverting and Non-inverting          | -40 to +125                      | 1.5                     | 10/10   | 18                         | 20/40   | 8-pin PDIP, 8-pin SOIC, 8-pin DFN, 8-pin MSOP |
| TC426   | Dual, Inverting                            | -40 to +85                       | 1.5                     | 15/10   | 18                         | 50/75   | 8-pin PDIP, 8-pin SOIC                        |
| TC427   | Dual, Non-inverting                        | -40 to +85                       | 1.5                     | 15/10   | 18                         | 50/75   | 8-pin PDIP, 8-pin SOIC                        |
| TC428   | Dual, Inverting and Non-inverting          | -40 to +85                       | 1.5                     | 15/10   | 18                         | 50/75   | 8-pin PDIP, 8-pin SOIC                        |

**Note 1:** to1 = delay time from input low-to-high transition to output transition. to2 = delay time from input high-to-low transition to output transition.

| POWER MANAGEMENT – Power MOSFET Drivers (Continued)        |                                   |                                  |                         |   |                                     |   |   |
|--|-----------------------------------|----------------------------------|-------------------------|---|-------------------------------------|---|---|
| Part #   | Configuration                     | Operating Temperature Range (°C) | Peak Output Current (A) | Output Resistance (R <sub>OL</sub> /R <sub>OL</sub> ) (Max. Ω @ 25°C) | Maximum Supply Voltage (V)          | Input/Output Delay (to1, to2) <sup>(1)</sup> (ns) | Packages  |
| <b>Low-Side Drivers, 2.0A to 12.0A Peak Output Current</b> |                                   |                                  |                         |   |                                     |   |   |
| TC1412   | Single, Inverting                 | -40 to +85                       | 2                       | 6/6   | 16                                  | 35/35   | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP                                |
| TC1412N  | Single, Non-inverting             | -40 to +85                       | 2                       | 6/6   | 16                                  | 35/35   | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP                                |
| TC1413   | Single, Inverting                 | -40 to +85                       | 3                       | 4/4   | 16                                  | 35/35   | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP                                |
| TC1413N  | Single, Non-inverting             | -40 to +85                       | 3                       | 4/4   | 16                                  | 35/35   | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP                                |
| TC4423A  | Dual, Inverting                   | -40 to +125                      | 3                       | 3 (typ)/4 (typ)   | 18                                  | 40 (typ)/40 (typ)                                 | 8-pin PDIP, 8-pin SOIC, 8-pin DFN                                 |
| TC4424A  | Dual, Non-inverting               | -40 to +125                      | 3                       | 3 (typ)/4 (typ)   | 18                                  | 40 (typ)/40 (typ)                                 | 8-pin PDIP, 8-pin SOIC, 8-pin DFN                                 |
| TC4425A  | Dual, Inverting and Non-inverting | -40 to +125                      | 3                       | 3 (typ)/4 (typ)   | 18                                  | 40 (typ)/40 (typ)                                 | 8-pin PDIP, 8-pin SOIC, 8-pin DFN                                 |
| TC4423   | Dual, Inverting                   | -40 to +125                      | 3                       | 5/5   | 18                                  | 33/38   | 8-pin PDIP, 16-pin SOIC (W), 8-pin DFN                            |
| TC4424   | Dual, Non-inverting               | -40 to +125                      | 3                       | 5/5   | 18                                  | 33/38   | 8-pin PDIP, 16-pin SOIC (W), 8-pin DFN                            |
| TC4425   | Dual, Inverting and Non-inverting | -40 to +125                      | 3                       | 5/5   | 18                                  | 33/38   | 8-pin PDIP, 16-pin SOIC (W), 8-pin DFN                            |
| MCP14E3  | Dual, Inverting                   | -40 to +125                      | 4.0                     | 3.5/3.0   | 18                                  | 55/55   | 8-pin PDIP, 8-pin SOIC, 8-pin 6x5 DFN                             |
| MCP14E4  | Dual, Non-inverting               | -40 to +125                      | 4.0                     | 3.5/3.0   | 18                                  | 55/55   | 8-pin PDIP, 8-pin SOIC, 8-pin 6x5 DFN                             |
| MCP14E5  | Dual, Inverting and Non-inverting | -40 to +125                      | 4.0                     | 3.5/3.0   | 18                                  | 55/55   | 8-pin PDIP, 8-pin SOIC, 8-pin 6x5 DFN                             |
| MCP1403  | Dual, Inverting                   | -40 to +125                      | 4.5                     | 3/3.5   | 18                                  | 48/48   | 8-pin PDIP, 8-pin SOIC, 8-pin 6x5 DFN, 16-pin SOIC                |
| MCP1404  | Dual, Non-inverting               | -40 to +125                      | 4.5                     | 3/3.5   | 18                                  | 48/48   | 8-pin PDIP, 8-pin SOIC, 8-pin 6x5 DFN, 16-pin SOIC                |
| MCP1405  | Dual, Inverting and Non-inverting | -40 to +125                      | 4.5                     | 3/3.5   | 18                                  | 48/48   | 8-pin PDIP, 8-pin SOIC, 8-pin 6x5 DFN, 16-pin SOIC                |
| MCP1406  | Single, Inverting                 | -40 to +125                      | 6                       | 1.8 (typ)/2.0 (typ)   | 18                                  | 30/30   | 5-pin TO-220, 8-pin PDIP, 8-pin 6x5 DFN, 8-pin SOIC               |
| MCP1407  | Single, Non-inverting             | -40 to +125                      | 6                       | 1.8 (typ)/2.0 (typ)   | 18                                  | 30/30   | 5-pin TO-220, 8-pin PDIP, 8-pin 6x5 DFN, 8-pin SOIC               |
| TC429  | Single, Inverting                 | -40 to +85                       | 6                       | 2.5/2.5   | 18                                  | 53/60   | 8-pin PDIP, 8-pin DFN, 8-pin SOIC                                 |
| TC4420   | Single, Non-inverting             | -40 to +125                      | 6                       | 2.8/2.5   | 18                                  | 55/55   | 8-pin PDIP, 8-pin SOIC, 5-pin TO-220, 8-pin DFN                   |
| TC4429   | Single, Inverting                 | -40 to +125                      | 6                       | 2.8/2.5   | 18                                  | 55/55   | 8-pin PDIP, 8-pin SOIC, 5-pin TO-220, 8-pin DFN                   |
| TC4421   | Single, Inverting                 | -40 to +125                      | 9                       | 1.4 (typ)/1.7   | 18                                  | 30/33   | 8-pin PDIP, 5-pin TO-220, 8-pin DFN                               |
| TC4421A  | Single, Inverting                 | -40 to +125                      | 9                       | 1.25 (typ)/1.5  | 18                                  | 38/42   | 8-pin PDIP, 8-pin SOIC, 5-pin TO-220, 8-pin 6x5 DFN               |
| TC4422   | Single, Non-inverting             | -40 to +125                      | 9                       | 1.4 (typ)/1.7   | 18                                  | 30/33   | 8-pin PDIP, 5-pin TO-220, 8-pin DFN                               |
| TC4422A  | Single, Non-inverting             | -40 to +125                      | 9                       | 1.25 (typ)/1.5  | 18                                  | 38/42   | 8-pin PDIP, 8-pin SOIC, 5-pin TO-220, 8-pin 6x5 DFN               |
| TC4451   | Single, Inverting                 | -40 to +125                      | 12                      | 0.6 (typ)/1.5   | 18                                  | 15/15   | 8-pin SOIC, 8-pin PDIP, 8-pin 6x5 DFN, 5-pin TO-220, 5-pin DDPACK |
| TC4452   | Single, Non-inverting             | -40 to +125                      | 12                      | 0.6 (typ)/1.5   | 18                                  | 15/15   | 8-pin SOIC, 8-pin PDIP, 8-pin 6x5 DFN, 5-pin TO-220, 5-pin DDPACK |
| <b>High-Side/Low-Side Drivers</b>                          |                                   |                                  |                         |   |                                     |   |   |
| TC4626   | Single, Inverting                 | -40 to +85                       | 1.5                     | 15/10   | 6                                   | 35/45   | 8-pin PDIP, 16-pin SOIC (W)                                       |
| TC4627   | Single, Non-inverting             | -40 to +85                       | 1.5                     | 15/10   | 6                                   | 35/45   | 8-pin PDIP, 16-pin SOIC (W)                                       |
| TC4431   | Single, Inverting                 | -40 to +85                       | 1.5                     | 10/10   | 30                                  | 62/78   | 8-pin PDIP, 8-pin SOIC  |
| TC4432   | Single, Non-inverting             | -40 to +85                       | 1.5                     | 10/10   | 30                                  | 62/78   | 8-pin PDIP, 8-pin SOIC  |
| <b>Synchronous Buck High-Side Drivers</b>                  |                                   |                                  |                         |   |                                     |   |   |
| MCP14628   | Dual, Non-inverting               | -40 to +85                       | 2                       | 2.5/2.5   | 5 (V <sub>DD</sub> ), 36 (Boot Pin) | 18/20   | 8-pin SOIC, 8-pin 3x3 DFN   |
| MCP14700   | Dual, Non-inverting               | -40 to +125                      | 2                       | 2.5/2.5   | 5 (V <sub>DD</sub> ), 36 (Boot Pin) | 25/25   | 8-pin SOIC, 8-pin 3x3 DFN   |

**Note 1:** to1 = delay time from input low-to-high transition to output transition. to2 = delay time from input high-to-low transition to output transition.

| POWER MANAGEMENT – Battery Chargers |        |                   |            |               |                     |                               |                             |             |  |                             |
|-------------------------------------|--------|-------------------|------------|---------------|---------------------|-------------------------------|-----------------------------|-------------|--|-----------------------------|
| Part #                              | Mode   | Cell Type         | # of Cells | Vcc Range (V) | Cell Voltage (V)    | Maximum Charging Current (mA) | Max. Voltage Regulation (%) | Int/Ext FET | Features   | Packages                    |
| MCP73113                            | Linear | Li-ion/Li-Polymer | 1          | 4 to 16       | 4.1, 4.2, 4.35, 4.4 | 1100                          | ±0.5                        | Int         | 6.5V Overvoltage Protection  | 10-pin 3x3 DFN              |
| MCP73114                            | Linear | Li-ion/Li-Polymer | 1          | 4 to 16       | 4.1, 4.2, 4.35, 4.4 | 1100                          | ±0.5                        | Int         | 5.8V Overvoltage Protection  | 10-pin 3x3 DFN              |
| MCP73123                            | Linear | LiFePO4           | 1          | 4 to 16       | 3.6                 | 1100                          | ±0.5                        | Int         | 6.5V Overvoltage Protection, LiFePO4 charging  | 10-pin 3x3 DFN              |
| MCP73213                            | Linear | Li-ion/Li-Polymer | 2          | 4 to 16       | 8.2, 8.4, 8.7, 8.8  | 1100                          | ±0.6                        | Int         | 13V Overvoltage Protection   | 10-pin 3x3 DFN              |
| MCP73223                            | Linear | LiFePO4           | 2          | 4 to 16       | 7.2                 | 1100                          | ±0.6                        | Int         | 13V Overvoltage Protection, LiFePO4 charging   | 10-pin 3x3 DFN              |
| MCP73826                            | Linear | Li-ion/Li-Polymer | 1          | 4.5 to 5.5    | 4.1, 4.2            | N/A                           | ±1.0                        | Ext         | Small size, charge current set by external FET   | 6-pin SOT-23                |
| MCP73827                            | Linear | Li-ion/Li-Polymer | 1          | 4.5 to 5.5    | 4.1, 4.2            | N/A                           | ±1.0                        | Ext         | Mode indicator, Charge Current monitor, charge current set by external FET   | 8-pin MSOP                  |
| MCP73828                            | Linear | Li-ion/Li Polymer | 1          | 4.5 to 5.5    | 4.1, 4.2            | N/A                           | ±1.0                        | Ext         | Temperature monitor, charge current set by external FET  | 8-pin MSOP                  |
| MCP73841                            | Linear | Li-ion/Li-Polymer | 1          | 4.5 to 12     | 4.1, 4.2            | N/A                           | ±0.5                        | Ext         | Safety charge timers, Temperature monitor, charge current set by external FET  | 10-pin MSOP                 |
| MCP73842                            | Linear | Li-ion/Li-Polymer | 2          | 8.7 to 12     | 8.2, 8.4            | N/A                           | ±0.5                        | Ext         | Safety charge timers, Temperature monitor, charge current set by external FET  | 10-pin MSOP                 |
| MCP73843                            | Linear | Li-ion/Li-Polymer | 1          | 4.5 to 12     | 4.1, 4.2            | N/A                           | ±0.5                        | Ext         | Safety charge timers, charge current set by external FET   | 8-pin MSOP                  |
| MCP73844                            | Linear | Li-ion/Li-Polymer | 2          | 8.7 to 12     | 8.2, 8.4            | N/A                           | ±0.5                        | Ext         | Safety charge timers, charge current set by external FET   | 8-pin MSOP                  |
| MCP73811                            | Linear | Li-ion/Li-Polymer | 1          | 3.7 to 6.0    | 4.2                 | 500                           | ±1.0                        | Int         | Selectable charge current (100 mA, 500 mA), Charge enable input  | 5-pin SOT-23                |
| MCP73812                            | Linear | Li-ion/Li Polymer | 1          | 3.7 to 6.0    | 4.2                 | 500                           | ±1.0                        | Int         | Programmable charge current (100 mA, 500 mA), Charge enable input  | 5-pin SOT-23                |
| MCP73831                            | Linear | Li-ion/Li-Polymer | 1          | 3.7 to 6.0    | 4.2, 4.35, 4.4, 4.5 | 500                           | ±0.75                       | Int         | UVLO, Thermal regulation, Programmable charge current, tri-state STAT pin  | 5-pin SOT-23, 8-pin 2x3 DFN |
| MCP73832                            | Linear | Li-ion/Li-Polymer | 1          | 3.7 to 6.0    | 4.2, 4.35, 4.4, 4.5 | 500                           | ±0.75                       | Int         | UVLO, Thermal regulation, Programmable charge current, open-drain STAT pin   | 5-pin SOT-23, 8-pin 2x3 DFN |
| MCP73853                            | Linear | Li-ion/Li-Polymer | 1          | 4.5 to 5.5    | 4.1, 4.2            | 500                           | ±0.5                        | Int         | USB control, Safety charge timers, Temperature monitor, Thermal regulation   | 16-pin 4x4 QFN              |
| MCP73855                            | Linear | Li-ion/Li-Polymer | 1          | 4.5 to 5.5    | 4.1, 4.2            | 500                           | ±0.5                        | Int         | USB control, Safety charge timers, Thermal regulation  | 10-pin 3x3 DFN              |
| MCP73833                            | Linear | Li-ion/Li-Polymer | 1          | 3.7 to 6.0    | 4.2, 4.35, 4.4, 4.5 | 1000                          | ±0.75                       | Int         | UVLO, Thermal regulation, Thermistor input, LDO Test mode, Multiple V <sub>REG</sub> outputs, Safety timer, Power Good output  | 10-pin 3x3 DFN, 10-pin MSOP |
| MCP73834                            | Linear | Li-ion/Li-Polymer | 1          | 3.7 to 6.0    | 4.2, 4.35, 4.4, 4.5 | 1000                          | ±0.75                       | Int         | UVLO, Thermal regulation, Thermistor input, LDO Test mode, Multiple V <sub>REG</sub> outputs, Safety timer, Timer enable input | 10-pin 3x3 DFN, 10-pin MSOP |
| MCP73837                            | Linear | Li-ion/Li-Polymer | 1          | 3.7 to 6.0    | 4.2, 4.35, 4.4, 4.5 | 1000                          | ±0.75                       | Int         | Dual input (USB, DC input from adapter) auto-switching, UVLO, Thermal regulation, Thermistor input, Power Good output          | 10-pin 3x3 DFN, 10-pin MSOP |
| MCP73838                            | Linear | Li-ion/Li Polymer | 1          | 3.7 to 6.0    | 4.2, 4.35, 4.4, 4.5 | 1000                          | ±0.75                       | Int         | Dual input (USB, DC input from adapter) auto-switching, UVLO, Thermal regulation, Timer enable input                           | 10-pin 3x3 DFN, 10-pin MSOP |
| MCP73861                            | Linear | Li-ion/Li-Polymer | 1          | 4.5 to 12     | 4.1, 4.2            | 1000                          | ±0.5                        | Int         | Safety charge timers, Temperature monitor, Thermal regulation, flashing STAT1 output on charge complete                        | 16-pin 4x4 QFN, 16-pin SOIC |
| MCP73862                            | Linear | Li-ion/Li-Polymer | 2          | 8.7 to 12     | 8.2, 8.4            | 1000                          | ±0.5                        | Int         | Safety charge timers, Temperature monitor, Thermal regulation, hi-Z STAT1 output on charge complete                            | 16-pin 4x4 QFN, 16-pin SOIC |
| MCP73863                            | Linear | Li-ion/Li-Polymer | 1          | 4.5 to 12     | 4.1, 4.2            | 1000                          | ±0.5                        | Int         | Safety charge timers, Temperature monitor, Thermal regulation, hi-Z STAT1 output on charge complete                            | 16-pin 4x4 QFN, 16-pin SOIC |
| MCP73864                            | Linear | Li-ion/Li-Polymer | 2          | 8.7 to 12     | 8.2, 8.4            | 1000                          | ±0.5                        | Int         | Safety charge timers, Temperature monitor, Thermal regulation, hi-Z STAT1 output on charge complete                            | 16-pin 4x4 QFN, 16-pin SOIC |
| MCP73871                            | Linear | Li-ion/Li-Polymer | 1          | 3.75 to 6.0   | 4.2, 4.35, 4.4      | 1500 (A/C Adapter) 500 (USB)  | ±0.5                        | Int         | Simultaneous charging of load and battery, load-dependent charging, multiple programmable charge currents                      | 20-pin 4x4 QFN, 20-pin SSOP |

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

## LINEAR

| LINEAR – Op Amps |               |         |                             |                          |                                 |                                      |                       |                        |   |  |
|------------------|---------------|---------|-----------------------------|--------------------------|---------------------------------|--------------------------------------|-----------------------|------------------------|---|--|
| Part #           | # per Package | GBWP    | I <sub>o</sub> Typical (µA) | V <sub>os</sub> Max (mV) | Typical Input Bias Current (pA) | Input Voltage Noise Density (nV/√Hz) | Operating Voltage (V) | Temperature Range (°C) | Features  | Packages   |
| MCP6441          | 1             | 9 kHz   | 0.45                        | 4.5                      | 1                               | 190 <sup>(1)</sup>                   | 1.8 to 6.0            | -40 to +125            | Rail-to-Rail Input/Output                           | 5-pin SOT-23 <sup>(S)</sup> , 5-pin SC-70 <sup>(S)</sup>   |
| MCP6031          | 1             | 10 kHz  | 0.9                         | 0.15                     | 1                               | 165 <sup>(1)</sup>                   | 1.8 to 5.5            | -40 to +125            | Rail-to-Rail Input/Output                           | 8-pin SOIC, 8-pin MSOP, 8-pin 2x3 DFN, 5-pin SOT-23  |
| MCP6032          | 2             | 10 kHz  | 0.9                         | 0.15                     | 1                               | 165 <sup>(1)</sup>                   | 1.8 to 5.5            | -40 to +125            | Rail-to-Rail Input/Output                           | 8-pin SOIC, 8-pin MSOP   |
| MCP6033          | 1             | 10 kHz  | 0.9                         | 0.15                     | 1                               | 165 <sup>(1)</sup>                   | 1.8 to 5.5            | -40 to +125            | Rail-to-Rail Input/Output, Chip Select              | 8-pin SOIC, 8-pin MSOP, 8-pin 2x3 DFN  |
| MCP6034          | 4             | 10 kHz  | 0.9                         | 0.15                     | 1                               | 165 <sup>(1)</sup>                   | 1.8 to 5.5            | -40 to +125            | Rail-to-Rail Input/Output                           | 14-pin SOIC, 14-pin TSSOP  |
| MCP6041          | 1             | 14 kHz  | 0.6                         | 3                        | 1                               | 170 <sup>(1)</sup>                   | 1.4 to 6.0            | -40 to +125            | Rail-to-Rail Input/Output                           | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP, 5-pin SOT-23 <sup>(S)</sup>  |
| MCP6042          | 2             | 14 kHz  | 0.6                         | 3                        | 1                               | 170 <sup>(1)</sup>                   | 1.4 to 6.0            | -40 to +125            | Rail-to-Rail Input/Output                           | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP   |
| MCP6043          | 1             | 14 kHz  | 0.6                         | 3                        | 1                               | 170 <sup>(1)</sup>                   | 1.4 to 6.0            | -40 to +125            | Rail-to-Rail Input/Output, Chip Select              | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP, 6-pin SOT-23 <sup>(S)</sup>  |
| MCP6044          | 4             | 14 kHz  | 0.6                         | 3                        | 1                               | 170 <sup>(1)</sup>                   | 1.4 to 6.0            | -40 to +125            | Rail-to-Rail Input/Output                           | 14-pin PDIP, 14-pin SOIC, 14-pin TSSOP   |
| MCP6141          | 1             | 100 kHz | 0.6                         | 3                        | 1                               | 170 <sup>(1)</sup>                   | 1.4 to 6.0            | -40 to +125            | Rail-to-Rail Input/Output, G>10 stable              | 5-pin SOT-23 <sup>(S)</sup> , 8-pin PDIP, 8-pin SOIC, 8-pin MSOP   |
| MCP6142          | 2             | 100 kHz | 0.6                         | 3                        | 1                               | 170 <sup>(1)</sup>                   | 1.4 to 6.0            | -40 to +125            | Rail-to-Rail Input/Output, G>10 stable              | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP   |
| MCP6143          | 1             | 100 kHz | 0.6                         | 3                        | 1                               | 170 <sup>(1)</sup>                   | 1.4 to 6.0            | -40 to +125            | Rail-to-Rail Input/Output, G>10 stable, Chip Select | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP, 6-pin SOT-23 <sup>(S)</sup>  |
| MCP6144          | 4             | 100 kHz | 0.6                         | 3                        | 1                               | 170 <sup>(1)</sup>                   | 1.4 to 6.0            | -40 to +125            | Rail-to-Rail Input/Output, G>10 stable              | 14-pin PDIP, 14-pin SOIC, 14-pin TSSOP   |
| MCP606           | 1             | 155 kHz | 19                          | 0.25                     | 1                               | 38 <sup>(1)</sup>                    | 2.5 to 6.0            | -40 to +125            | Rail-to-Rail Output                                 | 8-pin PDIP, 8-pin SOIC, 8-pin TSSOP, 5-pin SOT23 <sup>(S)</sup>  |
| MCP607           | 2             | 155 kHz | 19                          | 0.25                     | 1                               | 38 <sup>(1)</sup>                    | 2.5 to 6.0            | -40 to +85             | Rail-to-Rail Output                                 | 8-pin PDIP, 8-pin SOIC, 8-pin TSSOP  |
| MCP608           | 1             | 155 kHz | 19                          | 0.25                     | 1                               | 38 <sup>(1)</sup>                    | 2.5 to 6.0            | -40 to +85             | Rail-to-Rail Output, Chip Select                    | 8-pin PDIP, 8-pin SOIC, 8-pin TSSOP  |
| MCP609           | 4             | 155 kHz | 19                          | 0.25                     | 1                               | 38 <sup>(1)</sup>                    | 2.5 to 6.0            | -40 to +85             | Rail-to-Rail Output                                 | 14-pin PDIP, 14-pin SOIC, 14-pin TSSOP   |
| MCP616           | 1             | 190 kHz | 19                          | 0.15                     | 15000                           | 32 <sup>(1)</sup>                    | 2.3 to 5.5            | -40 to +85             | Rail-to-Rail Output, PNP Input                      | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP   |
| MCP617           | 2             | 190 kHz | 19                          | 0.15                     | 15000                           | 32 <sup>(1)</sup>                    | 2.3 to 5.5            | -40 to +85             | Rail-to-Rail Output, PNP                            | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP   |
| MCP618           | 1             | 190 kHz | 19                          | 0.15                     | 15000                           | 32 <sup>(1)</sup>                    | 2.3 to 5.5            | -40 to +85             | Rail-to-Rail Output, Chip Select, PNP Input         | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP   |
| MCP619           | 4             | 190 kHz | 19                          | 0.15                     | 15000                           | 32 <sup>(1)</sup>                    | 2.3 to 5.5            | -40 to +85             | Rail-to-Rail Output, PNP Input                      | 14-pin PDIP, 14-pin SOIC, 14-pin TSSOP   |
| MCP6231          | 1             | 300 kHz | 20                          | 5                        | 1                               | 52 <sup>(1)</sup>                    | 1.8 to 6.0            | -40 to +125            | Rail-to-Rail Input/Output                           | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP, 8-pin 2x3 TDFN, 5-pin SC-70 <sup>(U)</sup> , 5-pin SOT-23 <sup>(S,R,U)</sup> |
| MCP6232          | 2             | 300 kHz | 20                          | 5                        | 1                               | 52 <sup>(1)</sup>                    | 1.8 to 6.0            | -40 to +125            | Rail-to-Rail Input/Output                           | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP, 8-pin 2x3 TDFN   |
| MCP6234          | 4             | 300 kHz | 20                          | 5                        | 1                               | 52 <sup>(1)</sup>                    | 1.8 to 6.0            | -40 to +125            | Rail-to-Rail Input/Output                           | 14-pin PDIP, 14-pin SOIC, 14-pin TSSOP   |
| MCP6051          | 1             | 385 kHz | 30                          | 0.15                     | 1                               | 34 <sup>(2)</sup>                    | 1.8 to 6.0            | -40 to +125            | Rail-to-Rail Input/Output                           | 8-pin SOIC, 8-pin 2x3 DFN, 5-pin SOT-23 <sup>(S)</sup>   |
| MCP6052          | 2             | 385 kHz | 30                          | 0.15                     | 1                               | 34 <sup>(2)</sup>                    | 1.8 to 6.0            | -40 to +125            | Rail-to-Rail Input/Output                           | 8-pin SOIC, 8-pin 2x3 DFN  |
| MCP6054          | 4             | 385 kHz | 30                          | 0.15                     | 1                               | 34 <sup>(2)</sup>                    | 1.8 to 6.0            | -40 to +125            | Rail-to-Rail Input/Output                           | 14-pin SOIC, 14-pin TSSOP  |

Legend: S = Standard Pinout; R = Reverse Pinout; U = Alternative Pinout

Note 1: Values are typical at 1 kHz  
 2: Values are typical at 10 kHz

| LINEAR – Op Amps (Continued) |               |         |                             |                          |                                 |                                      |  |                        |  |  |
|------------------------------|---------------|---------|-----------------------------|--------------------------|---------------------------------|--------------------------------------|--|------------------------|--|--|
| Part #                       | # per Package | GBWP    | I <sub>o</sub> Typical (µA) | V <sub>os</sub> Max (mV) | Typical Input Bias Current (pA) | Input Voltage Noise Density (nV/√Hz) | Operating Voltage (V)                                  | Temperature Range (°C) | Features   | Packages   |
| MCP6241                      | 1             | 550 kHz | 50                          | 5                        | 1                               | 45 <sup>(1)</sup>                    | 1.8 to 5.5   | -40 to +125            | Rail-to-Rail Input/Output                              | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP, 8-pin 2x3 TDFN, 5-pin SC-70 <sup>(U)</sup> , 5-pin SOT-23 <sup>(S,R,U)</sup> |
| MCP6242                      | 2             | 550 kHz | 50                          | 5                        | 1                               | 45 <sup>(1)</sup>                    | 1.8 to 5.5   | -40 to +125            | Rail-to-Rail Input/Output                              | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP   |
| MCP6244                      | 4             | 550 kHz | 50                          | 5                        | 1                               | 45 <sup>(1)</sup>                    | 1.8 to 5.5   | -40 to +125            | Rail-to-Rail Input/Output                              | 14-pin PDIP, 14-pin SOIC, 14-pin TSSOP   |
| MCP6061                      | 1             | 730 kHz | 60                          | 0.15                     | 1                               | 25 <sup>(2)</sup>                    | 1.8 to 6.0   | -40 to +125            | Rail-to-Rail Input/Output                              | 8-pin SOIC, 8-pin 2x3 DFN, 5-pin SOT-23 <sup>(S)</sup>   |
| MCP6062                      | 2             | 730 kHz | 60                          | 0.15                     | 1                               | 25 <sup>(2)</sup>                    | 1.8 to 6.0   | -40 to +125            | Rail-to-Rail Input/Output                              | 8-pin SOIC, 8-pin 2x3 DFN  |
| MCP6064                      | 4             | 730 kHz | 60                          | 0.15                     | 1                               | 25 <sup>(2)</sup>                    | 1.8 to 6.0   | -40 to +125            | Rail-to-Rail Input/Output                              | 14-pin SOIC, 14-pin TSSOP  |
| MCP6001                      | 1             | 1 MHz   | 100                         | 4.5                      | 1                               | 28 <sup>(1)</sup>                    | 1.8 to 6.0   | -40 to +125            | Rail-to-Rail Input/Output                              | 5-pin SOT-23 <sup>(S,R,U)</sup> , 5-pin SC-70 <sup>(R)</sup>   |
| MCP6002                      | 2             | 1 MHz   | 100                         | 4.5                      | 1                               | 28 <sup>(1)</sup>                    | 1.8 to 6.0   | -40 to +125            | Rail-to-Rail Input/Output                              | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP, 8-pin 2x3 DFN  |
| MCP6004                      | 4             | 1 MHz   | 100                         | 4.5                      | 1                               | 28 <sup>(1)</sup>                    | 1.8 to 6.0   | -40 to +125            | Rail-to-Rail Input/Output                              | 14-pin PDIP, 14-pin SOIC, 14-pin TSSOP   |
| MCP6401                      | 1             | 1 MHz   | 45                          | 4.5                      | 1                               | 28 <sup>(1)</sup>                    | 1.8 to 6.0   | -40 to +125            | Rail-to-Rail Input/Output                              | 5-pin SOT-23 <sup>(S,R,U)</sup> , 5-pin SC-70 <sup>(R)</sup>   |
| MCP6402                      | 2             | 1 MHz   | 45                          | 4.5                      | 1                               | 28 <sup>(1)</sup>                    | 1.8 to 6.0   | -40 to +125            | Rail-to-Rail Input/Output                              | 8-pin SOIC, 8-pin 2x3 TDFN   |
| MCP6404                      | 4             | 1 MHz   | 45                          | 4.5                      | 1                               | 28 <sup>(1)</sup>                    | 1.8 to 6.0   | -40 to +125            | Rail-to-Rail Input/Output                              | 14-pin SOIC, 14-pin TSSOP  |
| MCP6L01                      | 1             | 1 MHz   | 85                          | 5                        | 2                               | 24 <sup>(2)</sup>                    | 1.8 to 6.0   | -40 to +125            | Rail-to-Rail Input/Output                              | 5-pin SOT-23 <sup>(S,R,U)</sup> , 5-pin SC-70 <sup>(S)</sup>   |
| MCP6L02                      | 2             | 1 MHz   | 85                          | 5                        | 2                               | 24 <sup>(2)</sup>                    | 1.8 to 6.0   | -40 to +125            | Rail-to-Rail Input/Output                              | 8-pin SOIC, 8-pin MSOP   |
| MCP6L04                      | 4             | 1 MHz   | 85                          | 5                        | 2                               | 24 <sup>(2)</sup>                    | 1.8 to 6.0   | -40 to +125            | Rail-to-Rail Input/Output                              | 14-pin SOIC, 14-pin TSSOP  |
| MCP6071                      | 1             | 1.2 MHz | 110                         | 0.15                     | 1                               | 19 <sup>(2)</sup>                    | 1.8 to 6.0   | -40 to +125            | Rail-to-Rail Input/Output                              | 8-pin SOIC, 8-pin 2x3 DFN, 5-pin SOT-23 <sup>(S)</sup>   |
| MCP6072                      | 2             | 1.2 MHz | 110                         | 0.15                     | 1                               | 19 <sup>(2)</sup>                    | 1.8 to 6.0   | -40 to +125            | Rail-to-Rail Input/Output                              | 8-pin SOIC, 8-pin 2x3 DFN  |
| MCP6074                      | 4             | 1.2 MHz | 110                         | 0.15                     | 1                               | 19 <sup>(2)</sup>                    | 1.8 to 6.0   | -40 to +125            | Rail-to-Rail Input/Output                              | 14-pin SOIC, 14-pin TSSOP  |
| MCP6H01                      | 1             | 1.2 MHz | 135                         | 3.5                      | 10                              | 35 <sup>(1)</sup>                    | Single Supply: 3.5 to 16<br>Dual Supply: ± 1.75 to ± 8 | -40 to +125            | Rail-to-Rail Output                                    | 8-pin SOIC, 8-pin 2x3 TDFN   |
| MCP6H02                      | 2             | 1.2 MHz | 135                         | 3.5                      | 10                              | 35 <sup>(1)</sup>                    | Single Supply: 3.5 to 16<br>Dual Supply: ± 1.75 to ± 8 | -40 to +125            | Rail-to-Rail Output                                    | 8-pin SOIC, 8-pin 2x3 TDFN   |
| MCP6271                      | 1             | 2 MHz   | 170                         | 3                        | 1                               | 20 <sup>(1)</sup>                    | 2.0 to 6.0   | -40 to +125            | Rail-to-Rail Input/Output                              | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP, 5-pin SOT-23 <sup>(S,R)</sup>  |
| MCP6272                      | 2             | 2 MHz   | 170                         | 3                        | 1                               | 20 <sup>(1)</sup>                    | 2.0 to 6.0   | -40 to +125            | Rail-to-Rail Input/Output                              | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP   |
| MCP6273                      | 1             | 2 MHz   | 170                         | 3                        | 1                               | 20 <sup>(1)</sup>                    | 2.0 to 6.0   | -40 to +125            | Rail-to-Rail Input/Output, Chip Select                 | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP, 6-pin SOT-23 <sup>(S)</sup>  |
| MCP6274                      | 4             | 2 MHz   | 170                         | 3                        | 1                               | 20 <sup>(1)</sup>                    | 2.0 to 6.0   | -40 to +125            | Rail-to-Rail Input/Output                              | 14-pin PDIP, 14-pin SOIC, 14-pin TSSOP   |
| MCP6275                      | 2             | 2 MHz   | 150                         | 3                        | 1                               | 20 <sup>(1)</sup>                    | 2.0 to 6.0   | -40 to +125            | Rail-to-Rail Input/Output, Dual Connected, Chip Select | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP   |
| MCP6L71                      | 1             | 2 MHz   | 150                         | 4                        | 1                               | 19 <sup>(2)</sup>                    | 2.0 to 6.0   | -40 to +125            | Rail-to-Rail Input/Output                              | 8-pin SOIC <sup>(S)</sup> , 8-pin MSOP <sup>(S)</sup> , 5-pin SOT-23 <sup>(S,R)</sup>                            |
| MCP6L72                      | 2             | 2 MHz   | 150                         | 4                        | 1                               | 19 <sup>(2)</sup>                    | 2.0 to 6.0   | -40 to +125            | Rail-to-Rail Input/Output                              | 8-pin SOIC, 8-pin MSOP   |
| MCP6L74                      | 4             | 2 MHz   | 150                         | 4                        | 1                               | 19 <sup>(2)</sup>                    | 2.0 to 6.0   | -40 to +125            | Rail-to-Rail Input/Output                              | 14-pin SOIC, 14-pin TSSOP  |
| MCP601                       | 1             | 2.8 MHz | 230                         | 2                        | 1                               | 29 <sup>(1)</sup>                    | 2.7 to 6.0   | -40 to +125            | Rail-to-Rail Output                                    | 8-pin PDIP, 8-pin SOIC, 8-pin TSSOP, 5-pin SOT-23 <sup>(S,R)</sup>   |
| MCP602                       | 2             | 2.8 MHz | 230                         | 2                        | 1                               | 29 <sup>(1)</sup>                    | 2.7 to 6.0   | -40 to +125            | Rail-to-Rail Output                                    | 8-pin PDIP, 8-pin SOIC, 8-pin TSSOP  |
| MCP603                       | 1             | 2.8 MHz | 230                         | 2                        | 1                               | 29 <sup>(1)</sup>                    | 2.7 to 6.0   | -40 to +125            | Rail-to-Rail Output, Chip Select                       | 8-pin PDIP, 8-pin SOIC, 8-pin TSSOP, 6-pin SOT-23 <sup>(S)</sup>   |
| MCP604                       | 4             | 2.8 MHz | 230                         | 2                        | 1                               | 29 <sup>(1)</sup>                    | 2.7 to 6.0   | -40 to +125            | Rail-to-Rail Output                                    | 14-pin PDIP, 14-pin SOIC, 14-pin TSSOP   |
| MCP6L1                       | 1             | 2.8 MHz | 200                         | 3                        | 1                               | 21 <sup>(2)</sup>                    | 2.7 to 6.0   | -40 to +125            | Rail-to-Rail Output                                    | 8-pin SOIC <sup>(S)</sup> , 8-pin MSOP <sup>(S)</sup> , 5-pin SOT-23 <sup>(S,R)</sup>                            |

Legend: S = Standard Pinout; R = Reverse Pinout; U = Alternative Pinout  
Note 1: Values are typical at 1 kHz  
Note 2: Values are typical at 10 kHz



| LINEAR – Op Amps (Continued) |               |         |                             |                          |                                 |                                      |                       |                        |  |   |
|------------------------------|---------------|---------|-----------------------------|--------------------------|---------------------------------|--------------------------------------|-----------------------|------------------------|--|---|
| Part #                       | # per Package | GBWP    | I <sub>o</sub> Typical (μA) | V <sub>os</sub> Max (mV) | Typical Input Bias Current (pA) | Input Voltage Noise Density (nV/√Hz) | Operating Voltage (V) | Temperature Range (°C) | Features   | Packages  |
| MCP6L2                       | 2             | 2.8 MHz | 200                         | 3                        | 1                               | 21 <sup>(2)</sup>                    | 2.7 to 6.0            | -40 to +125            | Rail-to-Rail Output  | 8-pin SOIC, 8-pin MSOP  |
| MCP6L4                       | 4             | 2.8 MHz | 200                         | 3                        | 1                               | 21 <sup>(2)</sup>                    | 2.7 to 6.0            | -40 to +125            | Rail-to-Rail Output  | 14-pin SOIC, 14-pin TSSOP   |
| MCP6281                      | 1             | 5 MHz   | 445                         | 3                        | 1                               | 16 <sup>(1)</sup>                    | 2.2 to 6.0            | -40 to +125            | Rail-to-Rail Input/Output  | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP, 5-pin SOT-23 <sup>(S,R)</sup>                     |
| MCP6282                      | 2             | 5 MHz   | 445                         | 3                        | 1                               | 16 <sup>(1)</sup>                    | 2.2 to 6.0            | -40 to +125            | Rail-to-Rail Input/Output  | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP  |
| MCP6283                      | 1             | 5 MHz   | 445                         | 3                        | 1                               | 16 <sup>(1)</sup>                    | 2.2 to 6.0            | -40 to +125            | Rail-to-Rail Input/Output, Chip Select                                       | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP, 6-pin SOT-23 <sup>(S,R)</sup>                     |
| MCP6284                      | 4             | 5 MHz   | 445                         | 3                        | 1                               | 16 <sup>(1)</sup>                    | 2.2 to 6.0            | -40 to +125            | Rail-to-Rail Input/Output  | 14-pin PDIP, 14-pin SOIC, 14-pin TSSOP  |
| MCP6285                      | 2             | 5 MHz   | 400                         | 3                        | 1                               | 16 <sup>(1)</sup>                    | 2.2 to 6.0            | -40 to +125            | Rail-to-Rail Input/Output, Dual Connected, Chip Select                       | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP  |
| MCP6286                      | 1             | 3.5 MHz | 540                         | 1.5                      | 1                               | 5.4 <sup>(2)</sup>                   | 2.2 to 5.5            | -40 to +125            | Rail-to-Rail Output, Low Noise   | 5-pin SOT-23 <sup>(S,R)</sup>   |
| MCP6021                      | 1             | 10 MHz  | 1000                        | 0.5                      | 1                               | 8.7 <sup>(2)</sup>                   | 2.5 to 5.5            | -40 to +125            | Rail-to-Rail Input/Output, 1/2 V <sub>CC</sub> V <sub>REF</sub>              | 8-pin PDIP, 8-pin SOIC, 8-pin TSSOP, 8-pin MSOP, 5-pin SOT-23 <sup>(S,R)</sup>        |
| MCP6022                      | 2             | 10 MHz  | 1000                        | 0.5                      | 1                               | 8.7 <sup>(2)</sup>                   | 2.5 to 5.5            | -40 to +125            | Rail-to-Rail Input/Output  | 8-pin PDIP, 8-pin SOIC, 8-pin TSSOP   |
| MCP6023                      | 1             | 10 MHz  | 1000                        | 0.5                      | 1                               | 8.7 <sup>(2)</sup>                   | 2.5 to 5.5            | -40 to +125            | Rail-to-Rail Input/Output, Chip Select, 1/2 V <sub>CC</sub> V <sub>REF</sub> | 8-pin PDIP, 8-pin SOIC, 8-pin TSSOP   |
| MCP6024                      | 4             | 10 MHz  | 1000                        | 0.5                      | 1                               | 8.7 <sup>(2)</sup>                   | 2.5 to 5.5            | -40 to +125            | Rail-to-Rail Input/Output  | 14-pin PDIP, 14-pin SOIC, 14-pin TSSOP  |
| MCP6291                      | 1             | 10 MHz  | 1000                        | 3                        | 1                               | 8.7 <sup>(2)</sup>                   | 2.4 to 6.0            | -40 to +125            | Rail-to-Rail Input/Output  | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP, 5-pin SOT-23 <sup>(S,R)</sup>                     |
| MCP6292                      | 2             | 10 MHz  | 1000                        | 3                        | 1                               | 8.7 <sup>(2)</sup>                   | 2.4 to 6.0            | -40 to +125            | Rail-to-Rail Input/Output  | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP  |
| MCP6293                      | 1             | 10 MHz  | 1000                        | 3                        | 1                               | 8.7 <sup>(2)</sup>                   | 2.4 to 6.0            | -40 to +125            | Rail-to-Rail Input/Output, Chip Select                                       | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP, 6-pin SOT-23 <sup>(S)</sup>                       |
| MCP6294                      | 4             | 10 MHz  | 1000                        | 3                        | 1                               | 8.7 <sup>(2)</sup>                   | 2.4 to 6.0            | -40 to +125            | Rail-to-Rail Input/Output  | 14-pin PDIP, 14-pin SOIC, 14-pin TSSOP  |
| MCP6295                      | 2             | 10 MHz  | 1100                        | 3                        | 1                               | 8.7 <sup>(2)</sup>                   | 2.4 to 6.0            | -40 to +125            | Rail-to-Rail Input/Output, Dual Connected, Chip Select                       | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP  |
| MCP6L91                      | 1             | 10 MHz  | 850                         | 4                        | 1                               | 9.4 <sup>(2)</sup>                   | 2.4 to 6.0            | -40 to +125            | Rail-to-Rail Input/Output  | 8-pin SOIC <sup>(S)</sup> , 8-pin MSOP <sup>(S)</sup> , 5-pin SOT-23 <sup>(S,R)</sup> |
| MCP6L92                      | 2             | 10 MHz  | 850                         | 4                        | 1                               | 9.4 <sup>(2)</sup>                   | 2.4 to 6.0            | -40 to +125            | Rail-to-Rail Input/Output  | 8-pin SOIC, 8-pin MSOP  |
| MCP6L94                      | 4             | 10 MHz  | 850                         | 4                        | 1                               | 9.4 <sup>(2)</sup>                   | 2.4 to 6.0            | -40 to +125            | Rail-to-Rail Input/Output  | 14-pin SOIC, 14-pin TSSOP   |
| MCP621                       | 1             | 20 MHz  | 2500                        | 0.2                      | 5                               | 13 <sup>(3)</sup>                    | 2.5 to 5.5            | -40 to +125            | Rail-to-Rail Output, Chip Select, mCal Technology                            | 8-pin SOIC  |
| MCP622                       | 2             | 20 MHz  | 2500                        | 0.2                      | 5                               | 13 <sup>(3)</sup>                    | 2.5 to 5.5            | -40 to +125            | Rail-to-Rail Output, mCal Technology   | 8-pin SOIC, 8-pin 3x3 DFN   |
| MCP625                       | 2             | 20 MHz  | 2500                        | 0.2                      | 5                               | 13 <sup>(3)</sup>                    | 2.5 to 5.5            | -40 to +125            | Rail-to-Rail Output, Chip Selects, mCal Technology                           | 10-pin MSOP, 10-pin 3x3 DFN   |
| MCP631                       | 1             | 24 MHz  | 2500                        | 8                        | 4                               | 10 <sup>(3)</sup>                    | 2.5 to 5.5            | -40 to +125            | Rail-to-Rail Output  | 8-pin SOIC  |
| MCP632                       | 2             | 24 MHz  | 2500                        | 8                        | 4                               | 10 <sup>(3)</sup>                    | 2.5 to 5.5            | -40 to +125            | Rail-to-Rail Output  | 8-pin SOIC, 8-pin 3x3 DFN   |
| MCP633                       | 1             | 24 MHz  | 2500                        | 8                        | 4                               | 10 <sup>(3)</sup>                    | 2.5 to 5.5            | -40 to +125            | Rail-to-Rail Output, Chip Select   | 8-pin SOIC  |
| MCP635                       | 2             | 24 MHz  | 2500                        | 8                        | 4                               | 10 <sup>(3)</sup>                    | 2.5 to 5.5            | -40 to +125            | Rail-to-Rail Output, Chip Selects  | 10-pin MSOP, 10-pin 3x3 DFN   |
| MCP651                       | 1             | 50 MHz  | 6000                        | 0.2                      | 6                               | 7.5 <sup>(3)</sup>                   | 2.5 to 5.5            | -40 to +125            | Rail-to-Rail Output, Chip Select, mCal Technology                            | 8-pin SOIC  |
| MCP652                       | 2             | 50 MHz  | 6000                        | 0.2                      | 6                               | 7.5 <sup>(3)</sup>                   | 2.5 to 5.5            | -40 to +125            | Rail-to-Rail Output, mCal Technology   | 8-pin SOIC, 8-pin 3x3 DFN   |
| MCP655                       | 2             | 50 MHz  | 6000                        | 0.2                      | 6                               | 7.5 <sup>(3)</sup>                   | 2.5 to 5.5            | -40 to +125            | Rail-to-Rail Output, Chip Selects, mCal Technology                           | 10-pin MSOP, 10-pin 3x3 DFN   |

Legend: S = Standard Pinout; R = Reverse Pinout; U = Alternative Pinout

Note 1: Values are typical at 1 kHz  
2: Values are typical at 10 kHz  
3: Values are typical at 1 MHz

| LINEAR – Op Amps (Continued) |               |        |                             |                          |                                 |                                       |                       |                        |                                   |                             |
|------------------------------|---------------|--------|-----------------------------|--------------------------|---------------------------------|---------------------------------------|-----------------------|------------------------|-----------------------------------|-----------------------------|
| Part #                       | # per Package | GBWP   | I <sub>o</sub> Typical (μA) | V <sub>os</sub> Max (mV) | Typical Input Bias Current (pA) | Input Voltage Noise Density (nV/rtHz) | Operating Voltage (V) | Temperature Range (°C) | Features                          | Packages                    |
| MCP661                       | 1             | 60 MHz | 6000                        | 8                        | 6                               | 6.8 <sup>(3)</sup>                    | 2.5 to 5.5            | -40 to +125            | Rail-to-Rail Output               | 8-pin SOIC                  |
| MCP662                       | 2             | 60 MHz | 6000                        | 8                        | 6                               | 6.8 <sup>(3)</sup>                    | 2.5 to 5.5            | -40 to +125            | Rail-to-Rail Output               | 8-pin SOIC, 8-pin 3x3 DFN   |
| MCP663                       | 1             | 60 MHz | 6000                        | 8                        | 6                               | 6.8 <sup>(3)</sup>                    | 2.5 to 5.5            | -40 to +125            | Rail-to-Rail Output, Chip Select  | 8-pin SOIC                  |
| MCP665                       | 2             | 60 MHz | 6000                        | 8                        | 6                               | 6.8 <sup>(3)</sup>                    | 2.5 to 5.5            | -40 to +125            | Rail-to-Rail Output, Chip Selects | 10-pin MSOP, 10-pin 3x3 DFN |

Legend: S = Standard Pinout; R = Reverse Pinout; U = Alternative Pinout  
**Note 1:** Values are typical at 1 kHz  
**Note 2:** Values are typical at 10 kHz  
**Note 3:** Values are typical at 1 MHz

| LINEAR – High Precision Operational Amplifiers |               |         |                         |                  |                       |                       |                        |  |                            |  |
|--|---------------|---------|-------------------------|------------------|-----------------------|-----------------------|------------------------|--|----------------------------|--|
| Part #   | # per Package | GBWP    | I <sub>o</sub> Max (mA) | Typical Vos (μV) | Vos Drift Max (μV/°C) | Operating Voltage (V) | Temperature Range (°C) | Features                               | Packages                   |  |
| <b>Chopper Stabilized</b>                      |               |         |                         |                  |                       |                       |                        |  |                            |  |
| TC7650   | 1             | 2.0 MHz | 3.5                     | 5                | 0.05                  | 4.5 to 16             | 0 to +70               | Single and Split Supply                | 8-pin PDIP, 14-pin PDIP    |  |
| TC7652   | 1             | 0.4 MHz | 3                       | 5                | 0.05                  | 5 to 16               | 0 to +70               | Single and Split Supply, Low Noise     | 8-pin PDIP, 14-pin PDIP    |  |
| <b>Auto-Zero</b>                               |               |         |                         |                  |                       |                       |                        |  |                            |  |
| MCP6V01  | 1             | 1.3 MHz | 0.4                     | 2                | 0.05                  | 1.8 to 5.5            | -40 to +125            | Rail-to-Rail Input/Output              | 8-pin SOIC, 8-pin 2x3 TDFN |  |
| MCP6V02  | 2             | 1.3 MHz | 0.4                     | 2                | 0.05                  | 1.8 to 5.5            | -40 to +125            | Rail-to-Rail Input/Output              | 8-pin SOIC, 8-pin 4x4 DFN  |  |
| MCP6V03  | 1             | 1.3 MHz | 0.4                     | 2                | 0.05                  | 1.8 to 5.5            | -40 to +125            | Rail-to-Rail Input/Output, Chip Select | 8-pin SOIC, 8-pin 2x3 TDFN |  |
| MCP6V06  | 1             | 1.3 MHz | 0.4                     | 3                | 0.05                  | 1.8 to 5.5            | -40 to +125            | Rail-to-Rail Input/Output              | 8-pin SOIC, 8-pin 2x3 TDFN |  |
| MCP6V07  | 2             | 1.3 MHz | 0.4                     | 3                | 0.05                  | 1.8 to 5.5            | -40 to +125            | Rail-to-Rail Input/Output              | 8-pin SOIC, 8-pin 4x4 DFN  |  |
| MCP6V08  | 1             | 1.3 MHz | 0.4                     | 3                | 0.05                  | 1.8 to 5.5            | -40 to +125            | Rail-to-Rail Input/Output, Chip Select | 8-pin SOIC, 8-pin 2x3 TDFN |  |
| TC913A/B                                       | 2             | 1.5 MHz | 1.1                     | 15               | 0.15/0.30             | 7 to 16               | 0 to +70               | Single and Split Supply                | 8-pin PDIP, 8-pin SOIC     |  |

| LINEAR – Programmable Gain Amplifiers (PGA) |          |               |                          |                      |                       |                        |   |  |  |  |
|---|----------|---------------|--------------------------|----------------------|-----------------------|------------------------|---|--|--|--|
| Part #                                      | Channels | -3dB BW (MHz) | I <sub>o</sub> Typ. (mA) | V <sub>os</sub> (μV) | Operating Voltage (V) | Temperature Range (°C) | Features  | Packages                               |  |  |
| MCP6S21                                     | 1        | 2 to 12       | 1.1                      | 275                  | 2.5 to 5.5            | -40 to +85             | SPI, 8 Gain Steps, Software Shutdown                        | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP     |  |  |
| MCP6S22                                     | 2        | 2 to 12       | 1.1                      | 275                  | 2.5 to 5.5            | -40 to +85             | SPI, 8 Gain Steps, Software Shutdown                        | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP     |  |  |
| MCP6S26                                     | 6        | 2 to 12       | 1.1                      | 275                  | 2.5 to 5.5            | -40 to +85             | SPI, 8 Gain Steps, Software Shutdown                        | 14-pin PDIP, 14-pin SOIC, 14-pin TSSOP |  |  |
| MCP6S28                                     | 8        | 2 to 12       | 1.1                      | 275                  | 2.5 to 5.5            | -40 to +85             | SPI, 8 Gain Steps, Software Shutdown                        | 16-pin PDIP, 16-pin SOIC               |  |  |
| MCP6S91                                     | 1        | 1 to 18       | 1.0                      | 4000                 | 2.5 to 5.5            | -40 to +125            | SPI, 8 Gain Steps, Software Shutdown, V <sub>REF</sub>      | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP     |  |  |
| MCP6S92                                     | 2        | 1 to 18       | 1.0                      | 4000                 | 2.5 to 5.5            | -40 to +125            | SPI, 8 Gain Steps, Software Shutdown                        | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP     |  |  |
| MCP6S93                                     | 2        | 1 to 18       | 1.0                      | 4000                 | 2.5 to 5.5            | -40 to +125            | SPI, 8 Gain Steps, Software Shutdown, V <sub>REF</sub> , SO | 10-pin MSOP                            |  |  |

| LINEAR – Selectable Gain Amplifiers (SGA) |          |               |                     |                      |                       |                        |                  |                                    |  |  |
|---|----------|---------------|---------------------|----------------------|-----------------------|------------------------|------------------|------------------------------------|--|--|
| Part #                                    | Channels | -3dB BW (kHz) | I <sub>o</sub> (μA) | V <sub>os</sub> (mV) | Operating Voltage (V) | Temperature Range (°C) | Gain Steps (V/V) | Features                           | Packages                                     |  |
| MCP6G01                                   | 1        | 900           | 110                 | 4.5                  | 1.8 to 5.5            | -40 to +125            | 1, 10, 50        | Tri-State Control Pin              | 8-pin SOIC, 8-pin MSOP, 5-pin SOT-23 (S,R,U) |  |
| MCP6G02                                   | 2        | 900           | 110                 | 4.5                  | 1.8 to 5.5            | -40 to +125            | 1, 10, 50        | Tri-State Control Pin              | 8-pin SOIC, 8-pin MSOP                       |  |
| MCP6G03                                   | 1        | 900           | 110                 | 4.5                  | 1.8 to 5.5            | -40 to +125            | 1, 10, 50        | Tri-State Control Pin, Chip Select | 8-pin SOIC, 8-pin MSOP                       |  |
| MCP6G04                                   | 4        | 900           | 110                 | 4.5                  | 1.8 to 5.5            | -40 to +125            | 1, 10, 50        | Tri-State Control Pin              | 14-pin SOIC, 14-pin TSSOP                    |  |

## LINEAR – Comparators

| Part #   | # per Package | V <sub>REF</sub> (V) | Typical Propagation Delay (µs) | I <sub>Q</sub> Typical (µA) | V <sub>OS</sub> Max (mV) | Operating Voltage (V) | Temperature Range (°C) | Features  | Packages  |
|----------|---------------|----------------------|--------------------------------|-----------------------------|--------------------------|-----------------------|------------------------|---|---|
| MCP6541  | 1             | –                    | 4                              | 1                           | 5                        | 1.6 to 5.5            | -40 to +125            | Push-Pull, Rail-to-Rail Input/Output                    | 5-pin SOT-23 <sup>(S,R,U)</sup> , 5-pin SC-70 <sup>(S,U)</sup> , 8-pin PDIP, 8-pin SOIC, 8-pin MSOP |
| MCP6542  | 2             | –                    | 4                              | 1                           | 5                        | 1.6 to 5.5            | -40 to +125            | Push-Pull, Rail-to-Rail Input/Output                    | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP  |
| MCP6543  | 1             | –                    | 4                              | 1                           | 5                        | 1.6 to 5.5            | -40 to +125            | Push-Pull, Rail-to-Rail Input/Output, Chip Select       | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP  |
| MCP6544  | 4             | –                    | 4                              | 1                           | 5                        | 1.6 to 5.5            | -40 to +125            | Push-Pull, Rail-to-Rail Input/Output                    | 14-pin PDIP, 14-pin SOIC, 14-pin TSSOP  |
| MCP6546  | 1             | –                    | 4                              | 1                           | 5                        | 1.6 to 5.5            | -40 to +125            | Open-drain, 9V, Rail-to-Rail Input/Output               | 5-pin SOT-23 <sup>(S,R,U)</sup> , 5-pin SC-70 <sup>(S,U)</sup> , 8-pin PDIP, 8-pin SOIC, 8-pin MSOP |
| MCP6547  | 2             | –                    | 4                              | 1                           | 5                        | 1.6 to 5.5            | -40 to +125            | Open-drain, 9V, Rail-to-Rail Input/Output               | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP  |
| MCP6548  | 1             | –                    | 4                              | 1                           | 5                        | 1.6 to 5.5            | -40 to +125            | Open-drain, 9V, Rail-to-Rail Input/Output, Chip Select  | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP  |
| MCP6549  | 4             | –                    | 4                              | 1                           | 5                        | 1.6 to 5.5            | -40 to +125            | Open-drain, 9V, Rail-to-Rail Input/Output               | 14-pin PDIP, 14-pin SOIC, 14-pin TSSOP  |
| MCP65R41 | 1             | 1.21/2.4             | 4                              | 2.5                         | 10                       | 1.8 to 5.5            | -40 to +125            | Push-Pull, Rail-to-Rail Input/Output, V <sub>REF</sub>  | 6-pin SOT-23  |
| MCP65R46 | 1             | 1.21/2.4             | 4                              | 2.5                         | 10                       | 1.8 to 5.5            | -40 to +125            | Open Drain, Rail-to-Rail Input/Output, V <sub>REF</sub> | 6-pin SOT-23  |
| MCP6561  | 1             | –                    | 0.047                          | 100                         | 10                       | 1.8 to 5.5            | -40 to +125            | Push-Pull, Rail-to-Rail Input/Output                    | 5-pin SOT-23 <sup>(S,R,U)</sup> , 5-pin SC-70 <sup>(S)</sup>  |
| MCP6562  | 2             | –                    | 0.047                          | 100                         | 10                       | 1.8 to 5.5            | -40 to +125            | Push-Pull, Rail-to-Rail Input/Output                    | 8-pin SOIC, 8-pin MSOP  |
| MCP6564  | 4             | –                    | 0.047                          | 100                         | 10                       | 1.8 to 5.5            | -40 to +125            | Push-Pull, Rail-to-Rail Input/Output                    | 14-pin SOIC, 14-pin TSSOP   |
| MCP6566  | 1             | –                    | 0.047                          | 100                         | 10                       | 1.8 to 5.5            | -40 to +125            | Open-Drain, Rail-to-Rail Input/Output                   | 5-pin SOT-23 <sup>(S,R,U)</sup> , 5-pin SC-70 <sup>(S)</sup>  |
| MCP6567  | 2             | –                    | 0.047                          | 100                         | 10                       | 1.8 to 5.5            | -40 to +125            | Open-Drain, Rail-to-Rail Input/Output                   | 8-pin SOIC, 8-pin MSOP  |
| MCP6569  | 4             | –                    | 0.047                          | 100                         | 10                       | 1.8 to 5.5            | -40 to +125            | Open-Drain, Rail-to-Rail Input/Output                   | 14-pin SOIC, 14-pin TSSOP   |

Legend: S = Standard Pinout; R = Reverse Pinout; U = Alternative Pinout

## MIXED SIGNAL

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

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

| MIXED SIGNAL – Delta-Sigma A/D Converters |                   |                                     |                     |                   |                          |                                   |                   |                                   |   |                                       |
|---|-------------------|-------------------------------------|---------------------|-------------------|--------------------------|-----------------------------------|-------------------|-----------------------------------|---|---------------------------------------|
| Part #                                    | Resolution (bits) | Maximum Sampling Rate (samples/sec) | # of Input Channels | Interface         | Supply Voltage Range (V) | Typical Supply Current ( $\mu$ A) | Typical INL (ppm) | Temperature Range ( $^{\circ}$ C) | Features  | Packages                              |
| MCP3421                                   | 18 to 12          | 4 to 240                            | 1 Diff              | I <sup>2</sup> C™ | 2.7 to 5.5               | 155                               | 10                | -40 to +125                       | PGA, V <sub>REF</sub>   | 6-pin SOT-23A                         |
| MCP3422                                   | 18 to 12          | 4 to 240                            | 2 Diff              | I <sup>2</sup> C™ | 2.7 to 5.5               | 145                               | 10                | -40 to +125                       | PGA, V <sub>REF</sub>   | 8-pin SOIC, 8-pin MSOP, 8-pin 2x3 DFN |
| MCP3423                                   | 18 to 12          | 4 to 240                            | 2 Diff              | I <sup>2</sup> C™ | 2.7 to 5.5               | 145                               | 10                | -40 to +125                       | PGA, V <sub>REF</sub> , Selectable I <sup>2</sup> C™ addressing | 10-pin MSOP, 10-pin 3x3 DFN           |
| MCP3424                                   | 18 to 12          | 4 to 240                            | 4 Diff              | I <sup>2</sup> C™ | 2.7 to 5.5               | 145                               | 10                | -40 to +125                       | PGA, V <sub>REF</sub> , Selectable I <sup>2</sup> C™ addressing | 14-pin SOIC, 14-pin TSSOP             |
| MCP3425                                   | 16 to 12          | 15 to 240                           | 1 Diff              | I <sup>2</sup> C™ | 2.7 to 5.5               | 155                               | 10                | -40 to +125                       | PGA, V <sub>REF</sub>   | 6-pin SOT-23A                         |
| MCP3426                                   | 16 to 12          | 15 to 240                           | 2 Diff              | I <sup>2</sup> C™ | 2.7 to 5.5               | 145                               | 10                | -40 to +125                       | PGA, V <sub>REF</sub>   | 8-pin SOIC, 8-pin MSOP, 8-pin 2x3 DFN |
| MCP3427                                   | 16 to 12          | 15 to 240                           | 2 Diff              | I <sup>2</sup> C™ | 2.7 to 5.5               | 145                               | 10                | -40 to +125                       | PGA, V <sub>REF</sub> , Selectable I <sup>2</sup> C™ addressing | 10-pin MSOP, 10-pin 3x3 DFN           |
| MCP3428                                   | 16 to 12          | 15 to 240                           | 4 Diff              | I <sup>2</sup> C™ | 2.7 to 5.5               | 145                               | 10                | -40 to +125                       | PGA, V <sub>REF</sub> , Selectable I <sup>2</sup> C™ addressing | 14-pin SOIC, 14-pin TSSOP             |
| MCP3550-50                                | 22                | 13                                  | 1 Diff              | SPI               | 2.7 to 5.5               | 120                               | 2                 | -40 to +125                       | 50 Hz rejection   | 8-pin SOIC, 8-pin MSOP                |
| MCP3550-60                                | 22                | 15                                  | 1 Diff              | SPI               | 2.7 to 5.5               | 140                               | 2                 | -40 to +125                       | 60 Hz rejection   | 8-pin SOIC, 8-pin MSOP                |
| MCP3551                                   | 22                | 14                                  | 1 Diff              | SPI               | 2.7 to 5.5               | 120                               | 2                 | -40 to +125                       | Simultaneous 50/60 Hz rejection                                 | 8-pin SOIC, 8-pin MSOP                |
| MCP3553                                   | 20                | 60                                  | 1 Diff              | SPI               | 2.7 to 5.5               | 140                               | 2                 | -40 to +125                       |   | 8-pin SOIC, 8-pin MSOP                |

| MIXED SIGNAL – Energy Measurement ICs |                   |                              |                    |                         |                                 |                        |                          |                                   |                     |                             |
|---------------------------------------|-------------------|------------------------------|--------------------|-------------------------|---------------------------------|------------------------|--------------------------|-----------------------------------|---------------------|-----------------------------|
| Part #                                | Dynamic Range     | Typical Measurement Accuracy | Gain               | Output Type             | Typical Voltage Reference Drift | Typical Supply Current | Supply Voltage Range (V) | Temperature Range ( $^{\circ}$ C) | Features            | Packages                    |
| MCP3905A                              | 500:1             | 0.1%                         | 1, 2, 8, 16        | Active power pulse      | 15 ppm                          | 3.9 mA                 | 4.5 to 5.5               | -40 to +85                        |                     | 24-pin SSOP                 |
| MCP3905L                              | 500:1             | 0.1%                         | 1, 2, 8, 16        | Active power pulse      | 15 ppm                          | 3.9 mA                 | 4.5 to 5.5               | -40 to +85                        | Low power settings  | 24-pin SSOP                 |
| MCP3906A                              | 1000:1            | 0.1%                         | 1, 8, 16, 32       | Active power pulse      | 15 ppm                          | 3.9 mA                 | 4.5 to 5.5               | -40 to +85                        |                     | 24-pin SSOP                 |
| MCP3901                               | 24-bit resolution | –                            | 1, 2, 4, 8, 16, 32 | SPI                     | 15 ppm                          | 3.6 mA                 | 4.5 to 5.5               | -40 to +125                       | Phase correction    | 20-pin SSOP, 20-pin 4x4 QFN |
| MCP3907                               | 1000:1            | 0.1%                         | 1, 8, 16, 32       | Active power pulse/SPI  | 15 ppm                          | 3.9 mA                 | 4.5 to 5.5               | -40 to +85                        | Internal Oscillator | 24-pin SSOP                 |
| MCP3909                               | 1000:1            | 0.1%                         | 1, 2, 8, 16        | Active power pulse /SPI | 15 ppm                          | 3.9 mA                 | 4.5 to 5.5               | -40 to +85                        |                     | 24-pin SSOP                 |

| MIXED SIGNAL – Dual Slope A/D Converters |                        |  |                       |                        |                |                         |                                   |  |   |  |
|--|------------------------|--|-----------------------|------------------------|----------------|-------------------------|-----------------------------------|--|---|--|
| Part #                                   | Supply Voltage (V)     | Input Voltage Range                              | Resolution            | Sampling Rate (Conv/s) | Input Channels | Data Interface          | Temperature Range ( $^{\circ}$ C) | Features   | Packages                                |  |
| TC500                                    | $\pm$ 4.5 to $\pm$ 7.5 | V <sub>SS</sub> + 1.5V to V <sub>DD</sub> – 1.5V | Up to 16 bits         | 4 to 10                | 1              | 3-Wire                  | 0 to +70                          | Differential input range, Programmable resolution/conversion time                              | 16-pin PDIP, 16-pin SOIC, 16-pin CerDIP |  |
| TC500A                                   | $\pm$ 4.5 to $\pm$ 7.5 | V <sub>SS</sub> + 1.5V to V <sub>DD</sub> – 1.5V | Up to 17 bits         | 4 to 10                | 1              | 3-Wire                  | 0 to +70                          | Differential input range, Programmable resolution/conversion time                              | 16-pin PDIP, 16-pin SOIC, 16-pin CerDIP |  |
| TC510                                    | +4.5 to +5.5           | V <sub>SS</sub> + 1.5V to V <sub>DD</sub> – 1.5V | Up to 17 bits         | 4 to 10                | 1              | 3-Wire                  | 0 to +70                          | Differential input range, Programmable resolution/conversion time, Charge pump (-V) output pin | 24-pin PDIP, 24-pin SOIC                |  |
| TC514                                    | +4.5 to +5.5           | V <sub>SS</sub> + 1.5V to V <sub>DD</sub> – 1.5V | Up to 17 bits         | 4 to 10                | 4              | 3-Wire                  | 0 to +70                          | Differential input range, Programmable resolution/conversion time, Charge pump (-V) output pin | 28-pin PDIP, 28-pin SOIC                |  |
| TC520A                                   | +4.5 to +5.5           | –  | –                     | –                      | –              | Serial port             | 0 to +70                          | Optional serial interface adapter for TC500/500A/510/514                                       | 14-pin PDIP, 16-pin SOIC                |  |
| TC7109                                   | $\pm$ 4.5 to $\pm$ 5.5 | V <sub>SS</sub> + 1.5V to V <sub>DD</sub> – 1.0V | 12 bits plus sign bit | 2 to 10                | 1              | Parallel or Serial port | -25 to +85                        | Differential input range   | 40-pin PDIP, 44-pin PLCC, 44-pin MQFP   |  |
| TC7109A                                  | $\pm$ 4.5 to $\pm$ 5.5 | V <sub>SS</sub> + 1.5V to V <sub>DD</sub> – 1.0V | 12 bits plus sign bit | 2 to 10                | 1              | Parallel or Serial port | -25 to +85                        | Differential input range   | 40-pin PDIP, 44-pin PLCC, 44-pin MQFP   |  |

| MIXED SIGNAL – Binary and BCD A/D Converters |             |                    |  |                     |                     |                |                |                        |  |                                       |
|--|-------------|--------------------|--|---------------------|---------------------|----------------|----------------|------------------------|--|---------------------------------------|
| Part #                                       | Description | Supply Voltage (V) | Input Voltage Range                              | Resolution (Digits) | Resolution (Counts) | Max Power (mW) | Data Interface | Temperature Range (°C) | Features                               | Packages                              |
| TC850  | Binary A/D  | ±5                 | V <sub>SS</sub> + 1.5V to V <sub>DD</sub> – 1.5V | 15-bit              | ±32,768             | 35             | 8-bit parallel | -25 to +70             | Highest conversion speed (40 conv/sec) | 44-pin PLCC, 40-pin PDIP              |
| TC14433                                      | BCD A/D     | ±4.5 to ±8         | ±199.9 mV to 1.999V                              | 3½                  | ±2,000              | 20             | MUXed BCD      | -40 to +85             | For DMM, DPM, Data loggers             | 24-pin SOIC, 24-pin PDIP, 28-pin PLCC |
| TC14433A                                     | BCD A/D     | ±4.5 to ±8         | ±199.9 mV to 1.999V                              | 3½                  | ±2,000              | 20             | MUXed BCD      | -40 to +85             | For DMM, DPM, Data loggers             | 24-pin PDIP, 28-pin PLCC              |

| MIXED SIGNAL – Display A/D Converters |              |                    |                     |                     |            |                        |  |                                       |  |  |
|---------------------------------------|--------------|--------------------|---------------------|---------------------|------------|------------------------|--|---------------------------------------|--|--|
| Part #                                | Display Type | Supply Voltage (V) | Resolution (Digits) | Resolution (Counts) | Power (mW) | Temperature Range (°C) | Features                               | Packages                              |  |  |
| TC7106                                | LCD          | 9                  | 3½                  | ±2,000              | 10         | -25 to +85             | For DMM, DPM, Data logger applications | 40-pin PDIP, 44-pin PLCC, 44-pin MQFP |  |  |
| TC7106A                               | LCD          | 9                  | 3½                  | ±2,000              | 10         | -25 to +85             | For DMM, DPM, Data logger applications | 40-pin PDIP, 44-pin PLCC, 44-pin MQFP |  |  |
| TC7107                                | LED          | ±5                 | 3½                  | ±2,000              | 10         | -25 to +85             | For DMM, DPM, Data logger applications | 40-pin PDIP, 44-pin PLCC, 44-pin MQFP |  |  |
| TC7107A                               | LED          | ±5                 | 3½                  | ±2,000              | 10         | -25 to +85             | For DMM, DPM, Data logger applications | 40-pin PDIP, 44-pin PLCC, 44-pin MQFP |  |  |
| TC7116                                | LCD          | 9                  | 3½                  | ±2,000              | 10         | -25 to +85             | Hold function                          | 40-pin PDIP, 44-pin PLCC, 44-pin MQFP |  |  |
| TC7116A                               | LCD          | 9                  | 3½                  | ±2,000              | 10         | -25 to +85             | Hold function                          | 40-pin PDIP, 44-pin PLCC, 44-pin MQFP |  |  |
| TC7117                                | LED          | ±5                 | 3½                  | ±2,000              | 10         | -25 to +85             | Hold function                          | 40-pin PDIP, 44-pin PLCC, 44-pin MQFP |  |  |
| TC7117A                               | LED          | ±5                 | 3½                  | ±2,000              | 10         | -25 to +85             | Hold function                          | 40-pin PDIP, 44-pin PLCC, 44-pin MQFP |  |  |
| TC7126                                | LCD          | 9                  | 3½                  | ±2,000              | 0.5        | -25 to +85             | Low-power TC7106                       | 40-pin PDIP, 44-pin PLCC, 44-pin MQFP |  |  |
| TC7126A                               | LCD          | 9                  | 3½                  | ±2,000              | 0.5        | -25 to +85             | Low-power TC7106                       | 40-pin PDIP, 44-pin PLCC, 44-pin MQFP |  |  |
| TC7129                                | LCD          | 9                  | 4½                  | ±20,000             | 4.5        | 0 to +70               | Lowest noise ±3 mV sensitivity         | 40-pin PDIP, 44-pin PLCC, 44-pin MQFP |  |  |

| MIXED SIGNAL – Digital Potentiometers |                |             |                    |                   |                    |           |           |                        |   |  |
|---------------------------------------|----------------|-------------|--------------------|-------------------|--------------------|-----------|-----------|------------------------|---|--|
| Part #                                | Number of Taps | Memory      | Number per Package | Interface         | Resistance (kOhms) | INL (max) | DNL (max) | Temperature Range (°C) | Comments  | Packages   |
| MCP4011                               | 64             | Volatile    | 1                  | Up/Down           | 2.1, 5, 10, 50     | 0.5       | 0.5       | -40 to +125            | Potentiometer mode  | 8-pin SOIC, 8-pin MSOP, 8-pin 2x3 DFN                  |
| MCP4012                               | 64             | Volatile    | 1                  | Up/Down           | 2.1, 5, 10, 50     | 0.5       | 0.5       | -40 to +125            | Rheostat mode   | 6-pin SOT-23   |
| MCP4013                               | 64             | Volatile    | 1                  | Up/Down           | 2.1, 5, 10, 50     | 0.5       | 0.5       | -40 to +125            | Potentiometer to V <sub>SS</sub>                              | 6-pin SOT-23   |
| MCP4014                               | 64             | Volatile    | 1                  | Up/Down           | 2.1, 5, 10, 50     | 0.5       | 0.5       | -40 to +125            | Rheostat to V <sub>SS</sub>                                   | 5-pin SOT-23   |
| MCP4017                               | 128            | Volatile    | 1                  | I <sup>2</sup> C™ | 5, 10, 50, 100     | 0.5       | 0.25      | -40 to +125            | 7-bit, Volatile, I <sup>2</sup> C Digital Potentiometer       | 6-pin SC-70  |
| MCP4018                               | 128            | Volatile    | 1                  | I <sup>2</sup> C™ | 5, 10, 50, 100     | 0.5       | 0.25      | -40 to +125            | 7-bit, Volatile, I <sup>2</sup> C Digital Potentiometer       | 6-pin SC-70  |
| MCP4019                               | 128            | Volatile    | 1                  | I <sup>2</sup> C™ | 5, 10, 50, 100     | 0.5       | 0.25      | -40 to +125            | 7-bit, Volatile, I <sup>2</sup> C Digital Potentiometer       | 5-pin SC-70  |
| MCP40D17                              | 128            | Volatile    | 1                  | I <sup>2</sup> C™ | 5, 10, 50, 100     | 0.5       | 0.25      | -40 to +125            | 7-bit, Volatile, I <sup>2</sup> C Digital Potentiometer       | 6-pin SC-70  |
| MCP40D18                              | 128            | Volatile    | 1                  | I <sup>2</sup> C™ | 5, 10, 50, 100     | 0.5       | 0.25      | -40 to +125            | 7-bit, Volatile, I <sup>2</sup> C Digital Potentiometer       | 6-pin SC-70  |
| MCP40D19                              | 128            | Volatile    | 1                  | I <sup>2</sup> C™ | 5, 10, 50, 100     | 0.5       | 0.25      | -40 to +125            | 7-bit, Volatile, I <sup>2</sup> C Digital Potentiometer       | 5-pin SC-70  |
| MCP4021                               | 64             | Nonvolatile | 1                  | Up/Down           | 2.1, 5, 10, 50     | 0.5       | 0.5       | -40 to +125            | Potentiometer mode, Shutdown, WiperLock™ Technology           | 8-pin SOIC, 8-pin MSOP, 8-pin 2x3 DFN                  |
| MCP4022                               | 64             | Nonvolatile | 1                  | Up/Down           | 2.1, 5, 10, 50     | 0.5       | 0.5       | -40 to +125            | Rheostat mode, Shutdown, WiperLock™ Technology                | 6-pin SOT-23   |
| MCP4023                               | 64             | Nonvolatile | 1                  | Up/Down           | 2.1, 5, 10, 50     | 0.5       | 0.5       | -40 to +125            | Potentiometer to V <sub>SS</sub> , WiperLock™ Technology      | 6-pin SOT-23   |
| MCP4024                               | 64             | Nonvolatile | 1                  | Up/Down           | 2.1, 5, 10, 50     | 0.5       | 0.5       | -40 to +125            | Rheostat to V <sub>SS</sub> , Shutdown, WiperLock™ Technology | 5-pin SOT-23   |
| MCP4141                               | 128            | Nonvolatile | 1                  | SPI               | 5, 10, 50, 100     | 0.5       | 0.25      | -40 to +125            | Potentiometer mode, Shutdown                                  | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP, 8-pin 3x3 DFN      |
| MCP4142                               | 128            | Nonvolatile | 1                  | SPI               | 5, 10, 50, 100     | 0.8       | 0.25      | -40 to +125            | Rheostat mode, Shutdown                                       | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP, 8-pin 3x3 DFN      |
| MCP4241                               | 128            | Nonvolatile | 2                  | SPI               | 5, 10, 50, 100     | 0.5       | 0.25      | -40 to +125            | Potentiometer mode, Shutdown, WiperLock™ Technology           | 14-pin PDIP, 14-pin SOIC, 14-pin TSSOP, 16-pin 4x4 QFN |
| MCP4242                               | 128            | Nonvolatile | 2                  | SPI               | 5, 10, 50, 100     | 0.8       | 0.25      | -40 to +125            | Rheostat mode, Shutdown                                       | 10-pin MSOP, 10-pin 3x3 DFN                            |

| MIXED SIGNAL – Digital Potentiometers (Continued) |                |             |                    |                   |                    |           |           |                        |  |  |
|---|----------------|-------------|--------------------|-------------------|--------------------|-----------|-----------|------------------------|--|--|
| Part #  | Number of Taps | Memory      | Number per Package | Interface         | Resistance (kOhms) | INL (max) | DNL (max) | Temperature Range (°C) | Comments   | Packages   |
| MCP4131   | 128            | Volatile    | 1                  | SPI               | 5, 10, 50, 100     | 0.5       | 0.25      | -40 to +125            | Potentiometer mode, Shutdown   | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP, 8-pin 3x3 DFN      |
| MCP4132   | 128            | Volatile    | 1                  | SPI               | 5, 10, 50, 100     | 0.8       | 0.25      | -40 to +125            | Rheostat mode, Shutdown  | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP, 8-pin 3x3 DFN      |
| MCP4231   | 128            | Volatile    | 2                  | SPI               | 5, 10, 50, 100     | 0.5       | 0.25      | -40 to +125            | Potentiometer mode, Shutdown, WiperLock™ Technology                  | 14-pin PDIP, 14-pin SOIC, 14-pin TSSOP, 16-pin 4x4 QFN |
| MCP4232   | 128            | Volatile    | 2                  | SPI               | 5, 10, 50, 100     | 0.8       | 0.25      | -40 to +125            | Rheostat mode, Shutdown  | 10-pin MSOP, 10-pin 3x3 DFN                            |
| MCP41010  | 256            | Volatile    | 1                  | SPI               | 10                 | 1         | 1         | -40 to +85             | Potentiometer mode, Shutdown   | 8-pin PDIP, 8-pin SOIC                                 |
| MCP41050  | 256            | Volatile    | 1                  | SPI               | 50                 | 1         | 1         | -40 to +85             | Potentiometer mode, Shutdown   | 8-pin PDIP, 8-pin SOIC                                 |
| MCP41100  | 256            | Volatile    | 1                  | SPI               | 100                | 1         | 1         | -40 to +85             | Potentiometer mode, Shutdown   | 8-pin PDIP, 8-pin SOIC                                 |
| MCP4151   | 256            | Volatile    | 1                  | SPI               | 5, 10, 50, 100     | 1         | 0.5       | -40 to +125            | Potentiometer mode, Shutdown   | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP, 8-pin 3x3 DFN      |
| MCP4152   | 256            | Volatile    | 1                  | SPI               | 5, 10, 50, 100     | 1         | 0.5       | -40 to +125            | Rheostat mode, Shutdown  | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP, 8-pin 3x3 DFN      |
| MCP4161   | 256            | Nonvolatile | 1                  | SPI               | 5, 10, 50, 100     | 1         | 0.5       | -40 to +125            | Potentiometer mode, Shutdown   | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP, 8-pin 3x3 DFN      |
| MCP4162   | 256            | Nonvolatile | 1                  | SPI               | 5, 10, 50, 100     | 1         | 0.5       | -40 to +125            | Rheostat mode, Shutdown  | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP, 8-pin 3x3 DFN      |
| MCP42010  | 256            | Volatile    | 2                  | SPI               | 10                 | 1         | 1         | -40 to +85             | Potentiometer mode, Shutdown   | 14-pin PDIP, 14-pin SOIC, 14-pin TSSOP                 |
| MCP42100  | 256            | Volatile    | 2                  | SPI               | 100                | 1         | 1         | -40 to +85             | Potentiometer mode, Shutdown   | 14-pin PDIP, 14-pin SOIC, 14-pin TSSOP                 |
| MCP4251   | 256            | Volatile    | 2                  | SPI               | 5, 10, 50, 100     | 1         | 0.5       | -40 to +125            | Potentiometer mode, Shutdown, WiperLock™ Technology                  | 14-pin PDIP, 14-pin SOIC, 14-pin TSSOP, 16-pin 4x4 QFN |
| MCP4252   | 256            | Volatile    | 2                  | SPI               | 5, 10, 50, 100     | 1         | 0.5       | -40 to +125            | Rheostat mode, Shutdown  | 10-pin MSOP, 10-pin 3x3 DFN                            |
| MCP4261   | 256            | Nonvolatile | 2                  | SPI               | 5, 10, 50, 100     | 1         | 0.5       | -40 to +125            | Potentiometer mode, Shutdown, WiperLock™ Technology                  | 14-pin PDIP, 14-pin SOIC, 14-pin TSSOP, 16-pin 4x4 QFN |
| MCP4262   | 256            | Nonvolatile | 2                  | SPI               | 5, 10, 50, 100     | 1         | 0.5       | -40 to +125            | Rheostat mode, Shutdown  | 10-pin MSOP, 10-pin 3x3 DFN                            |
| MCP4341   | 129            | Nonvolatile | 4                  | I <sup>2</sup> C™ | 5, 10, 50, 100     | 0.8       | 0.375     | -40 to +125            | 7-bit, Volatile potentiometer with an I <sup>2</sup> C interface     | 20-pin TSSOP, 20-pin 4x4 QFN                           |
| MCP4342   | 129            | Nonvolatile | 4                  | I <sup>2</sup> C™ | 5, 10, 50, 100     | 0.8       | 0.375     | -40 to +125            | 7-bit, Volatile rheostat with an I <sup>2</sup> C interface          | 14-pin TSSOP   |
| MCP4361   | 257            | Nonvolatile | 4                  | I <sup>2</sup> C™ | 5, 10, 50, 100     | 1         | 0.5       | -40 to +125            | 8-bit, Non-volatile potentiometer with an I <sup>2</sup> C interface | 20-pin TSSOP, 20-pin 4x4 QFN                           |
| MCP4362   | 257            | Nonvolatile | 4                  | I <sup>2</sup> C™ | 5, 10, 50, 100     | 1         | 0.5       | -40 to +125            | 8-bit, Non-volatile rheostat with an I <sup>2</sup> C interface      | 14-pin TSSOP   |
| MCP4331   | 129            | Volatile    | 4                  | I <sup>2</sup> C™ | 5, 10, 50, 100     | 0.8       | 0.375     | -40 to +125            | 7-bit, Volatile potentiometer with an I <sup>2</sup> C interface     | 20-pin TSSOP, 20-pin 4x4 QFN                           |
| MCP4332   | 129            | Volatile    | 4                  | I <sup>2</sup> C™ | 5, 10, 50, 100     | 0.8       | 0.375     | -40 to +125            | 7-bit, Volatile rheostat with an I <sup>2</sup> C interface          | 14-pin TSSOP   |
| MCP4351   | 257            | Volatile    | 4                  | I <sup>2</sup> C™ | 5, 10, 50, 100     | 1         | 0.5       | -40 to +125            | 8-bit, Non-volatile potentiometer with an I <sup>2</sup> C interface | 20-pin TSSOP, 20-pin 4x4 QFN                           |
| MCP4352   | 257            | Volatile    | 4                  | I <sup>2</sup> C™ | 5, 10, 50, 100     | 1         | 0.5       | -40 to +125            | 8-bit, Non-volatile rheostat with an I <sup>2</sup> C interface      | 14-pin TSSOP   |
| MCP4441   | 129            | Nonvolatile | 4                  | I <sup>2</sup> C™ | 5, 10, 50, 100     | 0.5       | 0.25      | -40 to +125            | Potentiometer mode, WiperLock™ Technology                            | 20-pin TSSOP, 20-pin 4x4 QFN                           |
| MCP4442   | 129            | Nonvolatile | 4                  | I <sup>2</sup> C™ | 5, 10, 50, 101     | 0.8       | 0.375     | -40 to +125            | Rheostat mode, WiperLock™ Technology                                 | 14-pin TSSOP   |
| MCP4461   | 257            | Nonvolatile | 4                  | I <sup>2</sup> C™ | 5, 10, 50, 102     | 1         | 0.5       | -40 to +125            | Potentiometer mode, WiperLock™ Technology                            | 20-pin TSSOP, 20-pin 4x4 QFN                           |
| MCP4462   | 257            | Nonvolatile | 4                  | I <sup>2</sup> C™ | 5, 10, 50, 103     | 1         | 0.5       | -40 to +125            | Rheostat mode, WiperLock™ Technology                                 | 14-pin TSSOP   |
| MCP4531   | 128            | Volatile    | 1                  | I <sup>2</sup> C™ | 5, 10, 50, 100     | 0.5       | 0.25      | -40 to +125            | Potentiometer mode   | 8-pin MSOP   |
| MCP4631   | 128            | Volatile    | 2                  | I <sup>2</sup> C™ | 5, 10, 50, 100     | 0.5       | 0.25      | -40 to +125            | Potentiometer mode   | 14-pin TSSOP, 16-pin 4x4 QFN                           |
| MCP4541   | 128            | Nonvolatile | 1                  | I <sup>2</sup> C™ | 5, 10, 50, 100     | 0.5       | 0.25      | -40 to +125            | Potentiometer mode, WiperLock™ Technology                            | 8-pin MSOP   |
| MCP4641   | 128            | Nonvolatile | 2                  | I <sup>2</sup> C™ | 5, 10, 50, 100     | 0.5       | 0.25      | -40 to +125            | Potentiometer mode, WiperLock™ Technology                            | 14-pin TSSOP, 16-pin 4x4 QFN                           |
| MCP4551   | 256            | Volatile    | 1                  | I <sup>2</sup> C™ | 5, 10, 50, 100     | 1         | 0.5       | -40 to +125            | Potentiometer mode   | 8-pin MSOP   |
| MCP4651   | 256            | Volatile    | 2                  | I <sup>2</sup> C™ | 5, 10, 50, 100     | 1         | 0.5       | -40 to +125            | Potentiometer mode   | 14-pin TSSOP, 16-pin 4x4 QFN                           |
| MCP4561   | 256            | Nonvolatile | 1                  | I <sup>2</sup> C™ | 5, 10, 50, 100     | 1         | 0.5       | -40 to +125            | Potentiometer mode, WiperLock™ Technology                            | 8-pin MSOP   |

| MIXED SIGNAL – Digital Potentiometers (Continued) |                |             |                    |                   |                    |           |           |                        |   |                              |
|---|----------------|-------------|--------------------|-------------------|--------------------|-----------|-----------|------------------------|---|------------------------------|
| Part #  | Number of Taps | Memory      | Number per Package | Interface         | Resistance (kOhms) | INL (max) | DNL (max) | Temperature Range (°C) | Comments                                  | Packages                     |
| MCP4661   | 256            | Nonvolatile | 2                  | I <sup>2</sup> C™ | 5, 10, 50, 100     | 1         | 0.5       | -40 to +125            | Potentiometer mode, WiperLock™ Technology | 14-pin TSSOP, 16-pin 4x4 QFN |
| MCP4532   | 128            | Nonvolatile | 1                  | I <sup>2</sup> C™ | 5, 10, 50, 100     | 0.8       | 0.375     | -40 to +125            | Rheostat mode                             | 8-pin MSOP, 8-pin 3x3 DFN    |
| MCP4632   | 128            | Nonvolatile | 2                  | I <sup>2</sup> C™ | 5, 10, 50, 100     | 0.8       | 0.375     | -40 to +125            | Rheostat mode                             | 10-pin MSOP, 10-pin 3x3 DFN  |
| MCP4542   | 128            | Nonvolatile | 1                  | I <sup>2</sup> C™ | 5, 10, 50, 100     | 0.8       | 0.375     | -40 to +125            | Rheostat mode, WiperLock™ Technology      | 8-pin MSOP, 8-pin 3x3 DFN    |
| MCP4642   | 128            | Nonvolatile | 2                  | I <sup>2</sup> C™ | 5, 10, 50, 100     | 0.8       | 0.375     | -40 to +125            | Rheostat mode, WiperLock™ Technology      | 10-pin MSOP, 10-pin 3x3 DFN  |
| MCP4552   | 256            | Nonvolatile | 1                  | I <sup>2</sup> C™ | 5, 10, 50, 100     | 1         | 0.5       | -40 to +125            | Rheostat mode                             | 8-pin MSOP, 8-pin 3x3 DFN    |
| MCP4652   | 256            | Nonvolatile | 2                  | I <sup>2</sup> C™ | 5, 10, 50, 100     | 1         | 0.5       | -40 to +125            | Rheostat mode                             | 10-pin MSOP, 10-pin 3x3 DFN  |
| MCP4562   | 256            | Nonvolatile | 1                  | I <sup>2</sup> C™ | 5, 10, 50, 100     | 1         | 0.5       | -40 to +125            | Rheostat mode, WiperLock™ Technology      | 8-pin MSOP, 8-pin 3x3 DFN    |
| MCP4662   | 256            | Nonvolatile | 2                  | I <sup>2</sup> C™ | 5, 10, 50, 100     | 1         | 0.5       | -40 to +125            | Rheostat mode, WiperLock™ Technology      | 10-pin MSOP, 10-pin 3x3 DFN  |

| MIXED SIGNAL – Frequency-to-Voltage/Voltage-to-Frequency Converters |                       |                        |                     |                        |                          |
|---|-----------------------|------------------------|---------------------|------------------------|--------------------------|
| Part #  | Frequency Range (kHz) | Full Scale (ppm FS/°C) | Non-linearity (%FS) | Temperature Range (°C) | Packages                 |
| TC9400  | 100                   | ±40                    | ±0.05               | -40 to +85             | 14-pin PDIP, 14-pin SOIC |
| TC9401  | 100                   | ±40                    | ±0.02               | -40 to +85             | 14-pin PDIP, 14-pin SOIC |
| TC9402  | 100                   | ±100                   | ±0.25               | -40 to +85             | 14-pin PDIP, 14-pin SOIC |

| MIXED SIGNAL – D/A Converters |                   |                  |                   |                     |                           |           |                              |                                |                        |   |
|-------------------------------|-------------------|------------------|-------------------|---------------------|---------------------------|-----------|------------------------------|--------------------------------|------------------------|---|
| Part #                        | Resolution (Bits) | DACs per Package | Interface         | V <sub>REF</sub>    | Output Settling Time (µs) | DNL (LSB) | Typical Standby Current (µA) | Typical Operating Current (µA) | Temperature Range (°C) | Packages                                      |
| TC1320                        | 8                 | 1                | SMbus             | Ext                 | 10                        | ±0.8      | 0.1                          | 350                            | -40 to +85             | 8-pin MSOP, 8-pin SOIC                        |
| TC1321                        | 10                | 1                | SMbus             | Ext                 | 10                        | ±2        | 0.1                          | 350                            | -40 to +85             | 8-pin MSOP, 8-pin SOIC                        |
| MCP4725                       | 12                | 1                | I <sup>2</sup> C™ | V <sub>DD</sub>     | 6                         | 0.75      | 1                            | 210                            | -40 to +125            | 6-pin SOT-23                                  |
| MCP4728                       | 12                | 4                | I <sup>2</sup> C™ | Int/V <sub>DD</sub> | 6                         | 0.75      | 0.04                         | 800                            | -40 to +125            | 10-pin MSOP                                   |
| MCP4801                       | 8                 | 1                | SPI               | Int                 | 4.5                       | 0.5       | 0.3                          | 330                            | -40 to +125            | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP, 8-pin DFN |
| MCP4802                       | 8                 | 2                | SPI               | Int                 | 4.5                       | 0.5       | 3.3                          | 415                            | -40 to +125            | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP            |
| MCP4811                       | 10                | 1                | SPI               | Int                 | 4.5                       | 0.5       | 0.3                          | 330                            | -40 to +125            | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP, 8-pin DFN |
| MCP4812                       | 10                | 2                | SPI               | Int                 | 4.5                       | 0.5       | 3.3                          | 415                            | -40 to +125            | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP            |
| MCP4821                       | 12                | 1                | SPI               | Int                 | 4.5                       | 1         | 0.3                          | 330                            | -40 to +125            | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP, 8-pin DFN |
| MCP4822                       | 12                | 2                | SPI               | Int                 | 4.5                       | 1         | 3.3                          | 415                            | -40 to +125            | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP            |
| MCP4901                       | 8                 | 1                | SPI               | Ext                 | 4.5                       | 0.5       | 3.3                          | 175                            | -40 to +125            | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP, 8-pin DFN |
| MCP4902                       | 8                 | 2                | SPI               | Ext                 | 4.5                       | 0.5       | 0.3                          | 350                            | -40 to +125            | 14-pin PDIP, 14-pin SOIC, 14-pin TSSOP        |
| MCP4911                       | 10                | 1                | SPI               | Ext                 | 4.5                       | 0.5       | 3.3                          | 175                            | -40 to +125            | 8-pin DFN, 8-pin MSOP, 8-pin PDIP, 8-pin SOIC |
| MCP4912                       | 10                | 2                | SPI               | Ext                 | 4.5                       | 0.5       | 0.3                          | 350                            | -40 to +125            | 14-pin PDIP, 14-pin SOIC, 14-pin TSSOP        |
| MCP4921                       | 12                | 1                | SPI               | Ext                 | 4.5                       | 0.75      | 3.3                          | 175                            | -40 to +125            | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP, 8-pin DFN |
| MCP4922                       | 12                | 2                | SPI               | Ext                 | 4.5                       | 0.75      | 0.3                          | 350                            | -40 to +125            | 14-pin PDIP, 14-pin SOIC, 14-pin TSSOP        |

Note: The analog output is voltage.

## INTERFACE

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

Note 1: Not recommended for new designs.

| INTERFACE – Infrared Products |                       |                                  |                           |  |                                       |
|-------------------------------|-----------------------|----------------------------------|---------------------------|--|---------------------------------------|
| Part #                        | Operating Voltage (V) | Operating Temperature Range (°C) | Max. Baud Rate (Kbaud)    | Unique Features  | Packages                              |
| MCP2120                       | 2.5 to 5.5            | -40 to +85                       | 325                       | UART to IR encoder/decoder with both hardware and software baud rate selection                             | 14-pin PDIP, 14-pin SOIC              |
| MCP2122                       | 1.8 to 5.5            | -40 to +85                       | 16x less than clock input | UART to IR encoder/decoder   | 8-pin PDIP, 8-pin SOIC                |
| MCP2140A                      | 2.0 to 5.5            | -40 to +85                       | 9.6                       | IrDA® Standard protocol handler plus bit encoder/decoder, Fixed baud rate, Low-cost                        | 18-pin PDIP, 18-pin SOIC, 20-pin SSOP |
| MCP2150                       | 3.0 to 5.5            | -40 to +85                       | 115.2                     | IrDA® Standard protocol handler plus bit encoder/decoder on one chip for DTE applications, Programmable ID | 18-pin PDIP, 18-pin SOIC, 20-pin SSOP |
| MCP2155                       | 3.0 to 5.5            | -40 to +85                       | 115.2                     | IrDA® Standard protocol handler plus bit encoder/decoder on one chip for DCE applications, Programmable ID | 18-pin PDIP, 18-pin SOIC, 20-pin SSOP |

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| INTERFACE – Ethernet Products |                       |                                  |     |              |           |  |  |  |
|-------------------------------|-----------------------|----------------------------------|-----|--------------|-----------|--|--|--|
| Part #                        | Operating Voltage (V) | Operating Temperature Range (°C) | MAC | PHY          | TX/RX RAM | Interface  | Features   | Packages   |
| ENC28J60                      | 3.1 to 3.6            | -40 to +85                       | Yes | 10Base-T     | 8 KB      | SPI  | - 10Base-T Ethernet controller, IEEE 802.3™ compliant<br>- Loopback test modes, Auto-polarity detection<br>- Clock out pin with programmable frequencies   | 28-pin SOIC, 28-pin SSOP, 28-pin 6x6 QFN, 28-pin SPDIP |
| ENC424J600                    | 3.0 to 3.6            | -40 to +85                       | Yes | 10/100Base-T | 24KB      | - SPI<br>- 8-bit multiplexed parallel interface                            | - 10/100 Ethernet controller, IEEE 802.3(TM) compliant<br>- Cryptographic Security Engines - MD5, SHA-1, AES, RSA<br>- Preprogrammed unique MAC address<br>- Loopback test modes, Auto-polarity detection<br>- Clock out pin with programmable frequencies | 44-pin TQFP, 44-pin QFN                                |
| ENC624J600                    | 3.0 to 3.6            | -40 to +85                       | Yes | 10/100Base-T | 24KB      | - SPI<br>- 8-bit or 16-bit multiplexed or demultiplexed parallel interface | - 10/100 Ethernet controller, IEEE 802.3(TM) compliant<br>- Cryptographic Security Engines - MD5, SHA-1, AES, RSA<br>- Preprogrammed unique MAC address<br>- Loopback test modes, Auto-polarity detection<br>- Clock out pin with programmable frequencies | 64-pin TQFP  |

| INTERFACE – Passive Access Products |                       |                                  |          |                      |             |   |  |
|-------------------------------------|-----------------------|----------------------------------|----------|----------------------|-------------|---|--|
| Part #                              | Operating Voltage (V) | Operating Temperature Range (°C) | Bus Type | RF Carrier Frequency | Data Format | Features  | Packages                               |
| MCP2030                             | 1.8 to 3.6            | -40 to +85                       | SPI      | 125 kHz              | NRZ         | Three axis signal conditioning devices for passive access applications, high-sensitivity, configurable smart wake-up filter | 14-pin PDIP, 14-pin SOIC, 14-pin TSSOP |



| INTERFACE – LIN Transceiver Products |  |                                     |                                  |                                      |                           |               |                                   |  |
|--------------------------------------|--|-------------------------------------|----------------------------------|--------------------------------------|---------------------------|---------------|-----------------------------------|--|
| Part #                               | Description  | V <sub>REG</sub> Output Voltage (V) | Operating Temperature Range (°C) | V <sub>REG</sub> Output Current (mA) | V <sub>CC</sub> Range (V) | Max Baud Rate | LIN Specification Supported       | Packages   |
| MCP201                               | LIN Transceiver with integrated V <sub>REG</sub>             | 5.0 ± 5%                            | -40 to +125                      | 50                                   | 6 to 18 <sup>(1)</sup>    | 20 Kbaud      | Revision 1.2                      | 8-pin PDIP, 8-pin SOIC, 8-pin 6x5 DFN                |
| MCP2003                              | Stand-Alone LIN Transceiver (industry standard pinout)       | None                                | -40 to +125                      | None                                 | 6 to 27 <sup>(1)</sup>    | 20 Kbaud      | Revision 1.3, 2.0, 2.1, SAE J2602 | 8-pin PDIP, 8-pin SOIC, 8-pin 4x4 DFN                |
| MCP2004                              | Stand-Alone LIN Transceiver with TXE/Fault I/O               | None                                | -40 to +125                      | None                                 | 6 to 27 <sup>(1)</sup>    | 20 Kbaud      | Revision 1.3, 2.0, 2.1, SAE J2602 | 8-pin PDIP, 8-pin SOIC, 8-pin 4x4 DFN                |
| MCP2021                              | LIN Transceiver with integrated V <sub>REG</sub>             | 5.0 ± 3%<br>3.3 ± 3%                | -40 to +125                      | 50                                   | 6 to 18 <sup>(1)</sup>    | 20 Kbaud      | Revision 1.3, 2.0, 2.1, SAE J2602 | 8-pin PDIP, 8-pin SOIC, 8-pin 6x5 DFN, 8-pin 6x5 DFN |
| MCP2022                              | LIN Transceiver with integrated V <sub>REG</sub> , RESET pin | 5.0 ± 3%<br>3.3 ± 3%                | -40 to +125                      | 50                                   | 6 to 18 <sup>(1)</sup>    | 20 Kbaud      | Revision 1.3, 2.0, 2.1, SAE J2602 | 14-pin PDIP, 14-pin SOIC, 14-pin TSSOP               |

Note 1: Can withstand 40V load dump.

| INTERFACE – Serial Peripherals |                          |                       |                                  |                   |                          |  |   |
|--------------------------------|--------------------------|-----------------------|----------------------------------|-------------------|--------------------------|--|---|
| Part #                         | Description              | Operating Voltage (V) | Operating Temperature Range (°C) | Bus Type          | Max. Bus Frequency (kHz) | Features   | Packages  |
| MCP23008                       | 8-bit I/O Port Expander  | 1.8 to 5.5            | -40 to +85                       | I <sup>2</sup> C™ | 1700                     | 3 HW address pins, HW interrupt, 25 mA source/sink capability per I/O  | 18-pin PDIP, 18-pin SOIC, 20-pin SSOP, 20-pin 4x4 QFN |
| MCP23S08                       | 8-bit I/O Port Expander  | 1.8 to 5.5            | -40 to +85                       | SPI               | 10000                    | 2 HW address pins, HW interrupt, 25 mA source/sink capability per I/O  | 18-pin PDIP, 18-pin SOIC, 20-pin SSOP, 20-pin 4x4 QFN |
| MCP23009                       | 8-bit I/O Port Expander  | 1.8 to 5.5            | -40 to +125                      | I <sup>2</sup> C™ | 3400                     | 1 HW address pin, HW interrupt, 25 mA source/sink per I/O, 100 kHz, 400 kHz and 3.4 MHz I <sup>2</sup> C™ supported      | 18-pin PDIP, 18-pin SOIC, 20-pin SSOP                 |
| MCP23S09                       | 8-bit I/O Port Expander  | 1.8 to 5.5            | -40 to +125                      | SPI               | 10000                    | HW interrupt, 25 mA source/sink per I/O  | 18-pin PDIP, 18-pin SOIC                              |
| MCP23016                       | 16-bit I/O Port Expander | 2.0 to 5.5            | -40 to +85                       | I <sup>2</sup> C™ | 400                      | 3 HW address inputs, HW interrupt, 25 mA source/sink capability per I/O  | 28-pin PDIP, 28-pin SOIC, 28-pin SSOP, 28-pin 6x6 QFN |
| MCP23017                       | 16-bit I/O Expander      | 1.8 to 5.5            | -40 to +125                      | I <sup>2</sup> C™ | 1700                     | 3 HW address pins, 25 mA sink/source per I/O, 100 kHz, 400 kHz and 3-4 MHz I <sup>2</sup> C™ supported, Interrupt output | 28-pin PDIP, 28-pin SOIC, 28-pin SSOP, 28-pin QFN     |
| MCP23S17                       | 16-bit I/O Expander      | 1.8 to 5.5            | -40 to +125                      | SPI               | 10000                    | 3 HW address pins, 25 mA sink/source per I/O, Interrupt output   | 28-pin PDIP, 28-pin SOIC, 28-pin SSOP, 28-pin QFN     |
| MCP23018                       | 16-bit I/O Port Expander | 1.8 to 5.5            | -40 to +125                      | I <sup>2</sup> C™ | 3400                     | 1 HW address pin, 2 HW interrupts, 25 mA source/sink per I/O, 100 kHz, 400 kHz and 3.4 MHz I <sup>2</sup> C™ supported   | 24-pin SSOP, 28-pin SOIC, 28-pin SDIP                 |
| MCP23S18                       | 16-bit I/O Port Expander | 1.8 to 5.5            | -40 to +125                      | SPI               | 10000                    | 2 HW interrupts, 25 mA source/sink per I/O   | 28-pin SOIC, 28-pin SDIP                              |

| INTERFACE – IEEE 802.15.4 ZigBee® RF Transceiver Products |                       |                   |                    |      |                           |                           |             |       |     |              |            |            |           |              |
|---|-----------------------|-------------------|--------------------|------|---------------------------|---------------------------|-------------|-------|-----|--------------|------------|------------|-----------|--------------|
| Part #  | Frequency Range (GHz) | Sensitivity (dBm) | Power Output (dBm) | RSSI | TX Power Consumption (mA) | RX Power Consumption (mA) | Clock (MHz) | Sleep | MAC | MAC Features | Encryption | Interface  | Pin Count | Packages     |
| MRF24J40  | 2.405-2.48            | -95               | 0                  | Yes  | 18                        | 22                        | 20          | Yes   | Yes | CSMA-CA      | AES128     | 4-wire SPI | 40        | 40-pin QFN   |
| MRF24J40MA  | 2.405-2.48            | -95               | 0                  | Yes  | 23                        | 19                        | 20          | Yes   | Yes | CSMA-CA      | AES128     | 4-wire SPI | 12        | Module       |
| MRF24J40MB  | 2.405-2.48            | -102              | 20                 | Yes  | 120                       | 25                        | 20          | Yes   | Yes | CSMA-CA      | AES128     | 4-wire SPI | 12        | Module       |
| MRF49XA   | 433/868/915           | -110              | 7                  | Yes  | 15                        | 11                        | –           | Yes   | –   | –            | –          | 4-wire SPI | 16        | 16-pin TSSOP |

| INTERFACE – Stand-alone RF Receiver Products |              |                  |                       |                   |                          |                       |      |                     |             |
|--|--------------|------------------|-----------------------|-------------------|--------------------------|-----------------------|------|---------------------|-------------|
| Part #                                       | Modulation   | Data Rate (kbps) | Frequency Range (MHz) | Sensitivity (dBm) | IF Frequency Range (MHz) | Operating Voltage (V) | RSSI | Selectable LNA Gain | Packages    |
| rRXD0420                                     | ASK, FSK, FM | 80               | 300 to 450            | -111              | 0.455 to 21.4            | 2.5 to 5.5            | Yes  | Yes                 | 32-pin LQFP |
| rRXD0920                                     | ASK, FSK, FM | 80               | 800 to 930            | -109              | 0.455 to 21.4            | 2.5 to 5.5            | Yes  | Yes                 | 32-pin LQFP |

| INTERFACE – USB Products |                 |               |     |               |                           |                |                       |                                       |
|--------------------------|-----------------|---------------|-----|---------------|---------------------------|----------------|-----------------------|---------------------------------------|
| Part #                   | USB Speed       | USB Compliant | PHY | MCU Interface | Tx/Rx Buffer Size (bytes) | Number of GPIO | Operating Voltage (V) | Packages                              |
| MCP2200                  | 12Mb/s, 1.5Mb/s | Yes           | Yes | UART          | 128/128                   | 8              | 2.7 to 5.5            | 20-pin SOIC, 20-pin TSSOP, 20-pin QFN |

## SAFETY & SECURITY

| SAFETY & SECURITY – Photoelectric Smoke Detector ICs |                                  |              |                       |              |                    |                   |              |                           |                                  |                          |
|--|----------------------------------|--------------|-----------------------|--------------|--------------------|-------------------|--------------|---------------------------|----------------------------------|--------------------------|
| Part #   | Horn Driver Alarm Pattern        | Alarm Memory | Low Battery Detection | Chamber Test | Alarm Interconnect | Sensitivity Timer | Internal POR | Alternate Diagnostic Mode | Operating Temperature Range (°C) | Packages                 |
| RE46C140   | NFPA Temporal                    | No           | Yes                   | Yes          | Yes                | Yes               | Yes          | –                         | -25 to +75                       | 16-pin PDIP, 16-pin SOIC |
| RE46C141   | NFPA Temporal                    | No           | Yes                   | Yes          | Yes                | –                 | Yes          | –                         | -25 to +75                       | 16-pin PDIP, 16-pin SOIC |
| RE46C143   | Continuous Tone                  | No           | Yes                   | Yes          | Yes                | –                 | Yes          | –                         | -25 to +75                       | 16-pin PDIP, 16-pin SOIC |
| RE46C144   | Continuous Tone                  | No           | Yes                   | Yes          | Yes                | Yes               | Yes          | –                         | -25 to +75                       | 16-pin PDIP, 16-pin SOIC |
| RE46C145   | NFPA Temporal                    | No           | Yes                   | Yes          | Yes                | Yes               | Yes          | Yes                       | -25 to +75                       | 16-pin PDIP, 16-pin SOIC |
| RE46C165   | NFPA Temporal                    | Yes          | Yes                   | Yes          | Yes                | Yes               | Yes          | Yes                       | -25 to +75                       | 16-pin PDIP, 16-pin SOIC |
| RE46C166   | Continuous Tone                  | Yes          | Yes                   | Yes          | Yes                | Yes               | Yes          | Yes                       | -25 to +75                       | 16-pin PDIP, 16-pin SOIC |
| RE46C167   | NFPA Temporal                    | Yes          | Yes                   | Yes          | Yes                | Yes               | Yes          | Yes                       | -25 to +75                       | 16-pin PDIP, 16-pin SOIC |
| RE46C168   | Continuous Tone                  | Yes          | Yes                   | Yes          | Yes                | Yes               | Yes          | Yes                       | -25 to +75                       | 16-pin PDIP, 16-pin SOIC |
| RE46C190   | NFPA Temporal or Continuous Tone | Yes          | Yes                   | Yes          | Yes                | Yes               | Yes          | –                         | -10 to +60                       | 16-pin SOIC              |

| SAFETY & SECURITY – Ionization Smoke Detector ICs |                                  |              |                       |                            |                    |            |                           |                                  |             |  |
|---|----------------------------------|--------------|-----------------------|----------------------------|--------------------|------------|---------------------------|----------------------------------|-------------|--|
| Part #  | Horn Driver Alarm Pattern        | Alarm Memory | Low Battery Detection | Reverse Battery Protection | Alarm Interconnect | Hush Timer | Power-up Low Battery Test | Operating Temperature Range (°C) | Packages    |  |
| RE46C120  | NFPA Temporal or Continuous Tone | No           | Yes                   | Yes                        | –                  | –          | –                         | -10 to +60                       | 16-pin PDIP |  |
| RE46C121  | NFPA Temporal                    | No           | Yes                   | Yes                        | Yes                | –          | –                         | -10 to +60                       | 16-pin PDIP |  |
| RE46C122  | NFPA Temporal                    | No           | Yes                   | Yes                        | Yes                | Yes        | Yes                       | -10 to +60                       | 16-pin PDIP |  |
| RE46C126  | Continuous Tone                  | No           | Yes                   | Yes                        | Yes                | –          | –                         | -10 to +60                       | 16-pin PDIP |  |
| RE46C127  | Continuous Tone                  | No           | Yes                   | Yes                        | Yes                | Yes        | Yes                       | -10 to +60                       | 16-pin PDIP |  |
| RE46C128  | NFPA Temporal                    | No           | Yes                   | Yes                        | Yes                | –          | Yes                       | -10 to +60                       | 16-pin PDIP |  |
| RE46C129  | Continuous Tone                  | No           | Yes                   | Yes                        | Yes                | –          | Yes                       | -10 to +60                       | 16-pin PDIP |  |
| RE46C152  | NFPA Temporal or Continuous Tone | No           | Yes                   | Yes                        | Yes                | Yes        | Yes                       | -10 to +60                       | 16-pin PDIP |  |
| RE46C162  | NFPA Temporal or Continuous Tone | Yes          | Yes                   | Yes                        | Yes                | Yes        | Yes                       | -10 to +60                       | 16-pin PDIP |  |
| RE46C163  | NFPA Temporal or Continuous Tone | Yes          | Yes                   | Yes                        | Yes                | Yes        | Yes                       | -10 to +60                       | 16-pin PDIP |  |

| SAFETY & SECURITY – Ionization Smoke Detector Front Ends |                                  |   |                           |                                  |            |
|--|----------------------------------|---|---------------------------|----------------------------------|------------|
| Part #   | Microprocessor Compatible Output | Output Options  | Typical Application       | Operating Temperature Range (°C) | Packages   |
| RE46C112   | Yes                              | V <sub>OUT</sub> 1/4 of V <sub>DD</sub> or V <sub>OUT</sub> 1/4 of Detect Input | 3V or 3.3V Microprocessor | -10 to +60                       | 8-pin PDIP |
| RE46C114   | Yes                              | V <sub>OUT</sub> 1/2 of V <sub>DD</sub> or V <sub>OUT</sub> 1/2 of Detect Input | 5V Microprocessor         | -10 to +60                       | 8-pin PDIP |

| SAFETY & SECURITY – Piezoelectric Horn Drivers |                       |                           |            |                       |                       |              |            |                                  |                          |
|--|-----------------------|---------------------------|------------|-----------------------|-----------------------|--------------|------------|----------------------------------|--------------------------|
| Part #   | Operating Voltage (V) | Piezoelectric Horn Driver | LED Driver | Voltage Regulator (V) | Low Battery Detection | Interconnect | Power Good | Operating Temperature Range (°C) | Packages                 |
| RE46C100                                       | 6 to 16               | Yes                       | –          | –                     | –                     | –            | –          | -40 to +85                       | 8-pin PDIP, 8-pin SOIC   |
| RE46C101                                       | 6 to 16               | Yes                       | Yes        | –                     | –                     | –            | –          | -40 to +85                       | 8-pin PDIP, 8-pin SOIC   |
| RE46C104                                       | 4 to 8                | Yes                       | –          | –                     | –                     | –            | –          | 0 to +50                         | 14-pin PDIP, 14-pin SOIC |
| RE46C105                                       | 6 to 12               | Yes                       | Yes        | 3.3 or 5              | Yes                   | –            | –          | -40 to +85                       | 14-pin PDIP, 14-pin SOIC |
| RE46C107                                       | 2 to 5                | Yes                       | Yes        | 3 or 3.3              | Yes                   | –            | –          | 0 to +50                         | 16-pin PDIP, 16-pin SOIC |
| RE46C108                                       | 6 to 12               | Yes                       | –          | 3.3 or 5              | –                     | –            | –          | -40 to +85                       | 8-pin PDIP, 8-pin SOIC   |
| RE46C109                                       | 6 to 12               | Yes                       | –          | 3                     | Yes                   | Yes          | Yes        | -40 to +85                       | 16-pin PDIP, 16-pin SOIC |
| RE46C117                                       | 2 to 5                | Yes                       | –          | –                     | –                     | –            | –          | 0 to +50                         | 8-pin PDIP, 8-pin SOIC   |
| RE46C119                                       | 6 to 12               | Yes                       | –          | 3                     | Yes                   | Yes          | Yes        | -40 to +85                       | 16-pin PDIP, 16-pin SOIC |

**Evaluation, Demonstration and Development Kits**

| <b>Order #</b>   | <b>Description</b>  | <b>Devices Supported</b>   |
|--|---|--|
| <b>Thermal Management Demonstration and Evaluation Tools</b> |   |  |
| TMPNS-RTD1   | PT100 RTD Evaluation Board  | MCP6S26, MCP3301, MCP6024, MCP41010, PIC18F2550, TC1071, MCP6002       |
| MCP9700DM-PCTL   | MCP9700 Temperature-to-Voltage Converter PICtail™ Demonstration Board | MCP9800  |
| MCP9700DM-TH1  | MCP9700 Thermistor Demonstration Board                                | MCP9700, MCP6S92   |
| MCP9800DM-PCTL   | MCP9800 Temperature Sensor PICtail™ Demonstration Board               | MCP9800  |
| MCP9800DM-TS1  | MCP9800 Temperature Sensor Demonstration Board                        | MCP9800  |
| MCP9800DM-DL   | MCP9800 Temperature Data Logger Demonstration Board                   | MCP9800  |
| MCP9800DM-DL2  | MCP9800 Temperature Data Logger Demonstration Board 2                 | MCP9800, MCP101, PIC10F202, 24LC16B                                    |
| TC72DM-PICTL   | TC72 Digital Temperature Sensor PICtail™ Demonstration Board          | TC72   |
| TC74DEMO   | TC74 Serial Digital Thermal Sensor Demonstration Board                | TC74   |
| TC77DM-PICTL   | TC77 Thermal Sensor PICtail™ Demonstration Board                      | TC77   |
| TC642DEMO  | TC64X/64XB Fan Speed Controller Demonstration Board                   | TC642, TC646, TC647, TC648, TC649                                      |
| TC650DEMO  | TC650 Fan Controller Demonstration Board                              | TC650  |
| TC652DEMO  | TC652 Fan Controller Demonstration Board                              | TC652  |
| TC1047ADM-PICTL  | TC1047A Temperature-to-Voltage Converter PICtail™ Demonstration Board | TC1047A  |
| TMPNSRD-TCPL1  | Thermocouple Reference Design   | MCP9804, MCP3421   |
| <b>Mixed Signal Demonstration and Evaluation Tools</b>       |   |  |
| ARD00280   | PIC18F87J72 Single Phase Energy Meter Reference Design                | n/a  |
| ARD00330   | PIC18F87J72 Energy Monitoring PICtail Plus Daughter Board             | n/a  |
| DV3201A  | MCP3XXX Single/Dual ADC MXDEV® Daughter Board                         | MCP3001, MCP3002, MCP3201, MCP3202                                     |
| DV3204A  | MCP3204/08 MXDEV® Daughter Board                                      | MCP3004, MCP3008, MCP3204, MCP3208                                     |
| MCP2030DM-TPR  | MCP2030 Bidirectional Communications Demonstration Kit                | MCP2030, MCP3421, PIC16F636, TC4421, PIC18F4680                        |
| MCP3421EV  | MCP3421 SOT-23-6 Evaluation Board                                     | MCP3421  |
| MCP3421DM-BFG  | MCP3421 Battery Fuel Gauge Demo Board                                 | MCP3421, MCP73831, MCP1702, PIC18F4550                                 |
| MCP3422EV  | MCP3422 Evaluation Board  | MCP3422  |
| MCP3423EV  | MCP3423 Evaluation Board  | MCP3423  |
| MCP3424EV  | MCP3424 Evaluation Board  | MCP3424  |
| MCP3425EV  | MCP3425 SOT 23-6 Evaluation Board                                     | MCP3425  |
| MCP3221DM-PCTL   | MCP3221 PICtail™ Demonstration Board                                  | MCP3221  |
| MCP3551DM-PCTL   | MCP3551 Delta-Sigma ADC Demonstration Board                           | MCP3551  |
| MCP355XDV-MS1  | MCP355X Sensor Application Developer's Board                          | MCP3551, MCP3553, MCP3550-50, MCP3550-60                               |
| MCP355XDM-TAS  | MCP355X Tiny Application Sensor Demonstration Board                   | MCP3551, MCP3553, MCP3550-50, MCP3550-60                               |
| MCP3901EV-MCU16  | MCP3901 ADC Evaluation Board for 16-bit MCUs                          | MCP3901, PIC24F, PIC24H, dsPIC33, PIC18F86J55                          |
| MCP3905EV  | MCP3905 Energy Meter Evaluation Board                                 | MCP3905  |
| MCP3905RD-PM1  | MCP3905 Energy Meter Reference Design                                 | MCP3905  |
| MCP3909EV-MCU16  | MCP3909 ADC Evaluation Board for 16-bit MCUs                          | MCP3909  |
| MCP3909RD-3PH1   | MCP3909 3-Phase Energy Meter Reference Design                         | MCP3909, PIC18F2520, PIC18F4550  |
| MCP3909RD-3PH3   | MCP3909 and dsPIC33F 3-Phase Energy Meter Reference Design            | MCP3909, dsPIC33FJ128GP706   |
| MCP3909RD-PM1  | MCP3909 and PIC18F25K20 Low Cost Power Monitor Reference Design       | MCP3909, PIC18F25K20   |
| MCP3909RD-1PH1   | MCP3909 and PIC18F85J90 Single Phase Energy Meter Reference Design    | MCP3909, PIC18F85J90   |
| MCP402XEVB   | MCP402X Non-Volatile Digital Potentiometer Evaluation Board           | MCP4021, MCP4022, MCP4023, MCP4024                                     |
| MCP4XXXDM-DB   | MCP4XXX Digital Potentiometer Daughter Board                          | MCP4011, MCP4021, MCP42XXX   |
| MCP42XXDM-PTPLS  | MCP42XX PICtail™ Plus Daughter Board                                  | MCP4231, MCP4232, MCP4241, MCP4242, MCP4251, MCP4252, MCP4261, MCP4262 |

| <b>Evaluation, Demonstration and Development Kits</b>      |   |   |
|--|---|---|
| <b>Order #</b>   | <b>Description</b>  | <b>Devices Supported</b>  |
| DV42XXX  | MCP42XXX Digital Potentiometer Evaluation Board                             | MCP42010, MCP42050, MCP42100  |
| MCP46XXDM-PTPLS  | MCP46XX PICtail™ Plus Daughter Board  | MCP4631, MCP4641, MCP4651, MCP47652, MCP4661, MCP4662                 |
| MCP4725EV  | MCP4725 SOT 23-6 Evaluation Board   | MCP4725   |
| MCP4725DM-PTPLS  | MCP4725 PICtail™ Plus Daughter Board  | MCP4725   |
| MCP4728EV  | MCP4728 Quad DAC Evaluation Board   | MCP4728   |
| DVMCPA   | MXDEV® Analog Evaluation System   | MCP3001/02, MCP3004/08, MCP3201/08, MCP3204/08                        |
| MXSIGDM  | Mixed Signal PICtail™ Demonstration Board                                   | TC132X, MCP330X, MCP320X, MCP482X, MCP492X, MCP3221, MCP3021, MCP1525 |
| <b>Power Management Demonstration and Evaluation Tools</b> |   |   |
| MCP1252DM-BKLT   | MCP1252 Charge Pump Backlight Demonstration Board                           | MCP1252   |
| MCP1256/7/8/9EV  | MCP1256/7/8/9 Charge Pump Evaluation Board                                  | MCP1256, MCP1257, MCP1258, MCP1259                                    |
| MCP1601EV  | MCP1601 Buck Regulator Evaluation Board                                     | MCP1601   |
| MCP1602EV  | MCP1602 Evaluation Board  | MCP1602   |
| MCP1603EV  | MCP1603 Buck Converter Evaluation Board                                     | MCP1603   |
| MCP1603RD-TNY  | MCP1603 Tiny Reference Design   | MCP1603   |
| MCP1612EV  | MCP1612 Synchronous Buck Regulator Evaluation Board                         | MCP1612   |
| MCP1630RD-DDBK1  | MCP1630 +12V in Dual Output Buck Converter Reference Design                 | MCP1630   |
| MCP1630RD-DDBK3  | MCP1630 Bidirectional 4-Cell Li-Ion Charger Reference Design                | MCP1630V, PIC16F88, MCP6022   |
| MCP1630RD-NMC1   | MCP1630 Low-Cost NiMH Battery Charger Reference Design                      | MCP1630, PIC12F683, MCP6292, MCP1702                                  |
| MCP1630DM-DDBK1  | MCP1630 1A Bias Supply Demonstration Board                                  | MCP1630   |
| MCP1630DM-DDBS1  | MCP1630 Automotive Input Boost Converter Demonstration Board                | MCP1630, PIC12F683  |
| MCP1630DM-LED2   | MCP1630 Boost Mode LED Driver Demonstration Board                           | MCP1630V, PIC12F683, MCP1702  |
| MCP1630RD-LIC1   | MCP1630 Li-Ion Multi Bay Battery Charger Reference Design                   | MCP1630   |
| MCP1630RD-LIC2   | MCP1630 Low Cost Li-Ion Battery Charger Reference Design                    | MCP1630   |
| MCP1630DM-NMC1   | MCP1630 NiMH Battery Charger Demonstration Board                            | MCP1630   |
| MCP1630DM-DDBS2  | MCP1630 Coupled Inductor Boost Demonstration Board                          | MCP1630, PIC12F683  |
| MCP1630DM-DDBK4  | MCP1630 Automotive Input, Triple Output Converter Demonstration Board       | MCP1630, PIC12F683  |
| MCP1631RD-DCPC1  | MCP1631HV Digitally Controlled Programmable Current Source Reference Design | MCP1631HV, PIC16F616  |
| MCP1631RD-MCC1   | MCP1631HV Multi-Chemistry Battery Charger Reference Design                  | MCP1631HV, PIC16F883  |
| MCP1631RD-MCC2   | MCP1631HV Multi-Chemistry Battery Charger Reference Design                  | MCP1631HV, PIC16F883  |
| MCP1640EV-SBC  | MCP1640 Sync Boost Converter Evaluation Board                               | MCP1640   |
| MCP1640RD-4ABC   | MCP1640 Single Quad-A Battery Boost Converter Reference Design              | MCP1640, PIC12F617  |
| MCP1650DM-LED1   | MCP1650 3W White LED Demonstration Board                                    | MCP1650   |
| MCP1650DM-LED2   | MCP1650 Multiple White LED Demonstration Board                              | MCP1650   |
| MCP1650EV  | MCP1650 Boost Controller Evaluation Board                                   | MCP1650   |
| MCP1650DM-DDSC1  | MCP1650 SEPIC Power Supply Demonstration Board                              | MCP1650   |
| MCP1726EV  | MCP1726 1A LDO Evaluation Board   | MCP1726   |
| MCP73113EV-1SOVP   | MCP73113 OVP Single Cell Li-Ion Battery Charger Evaluation Board            | MCP73113, MCP73114  |
| MCP73213EV-2SOVP   | MCP73213 OVP Dual Cell Li-Ion Battery Charger Evaluation Board              | MCP73213  |
| MCP73X23EV-LFP   | MCP73X23 OVP Lithium Iron Phosphate Battery Charger Evaluation Board        | MCP73123, MCP73223  |
| MCP73871DM-VPCC  | MCP73871 Demo Board with Voltage Proportional Current Control               | MCP73871  |
| MCP7381XEV   | MCP7381X Low-Cost Li-Ion Battery Charger Evaluation Board                   | MCP73811, MCP73812  |

**Evaluation, Demonstration and Development Kits**

| <b>Order #</b>   | <b>Description</b>  | <b>Devices Supported</b>                                      |
|--|---|---|
| <b>Power Management Demonstration and Evaluation Tools (Continued)</b> |   |   |
| MCP7382XEV   | MCP7382X Li-Ion Battery Charger Evaluation Board              | MCP7382X  |
| MCP73831EV   | MCP73831 Evaluation Kit                                       | MCP73831  |
| MCP73833EV   | MCP73833 Li-Ion Battery Charger Evaluation Board              | MCP73833, MCP73834  |
| MCP7383XEV-DIBC  | MCP73837/8 AC/USB Dual Input Battery Charger Evaluation Board | MCP73837, MCP73838  |
| MCP7383XRD-PPM   | MCP7383X Li-Ion System Power Path Management Reference Design | MCP73831, MCP73832, MCP73833, MCP73834                        |
| MCP7384XEV   | MCP7384X Li-Ion Battery Charger Evaluation Board              | MCP7384X  |
| MCP73855EV   | MCP73855 Li-Ion Battery Charger Evaluation Board              | MCP73855  |
| MCP7386XEV   | MCP7386X Li-Ion Battery Charger Evaluation Board              | MCP7386X  |
| MCP73871EV   | MCP73871 Evaluation Board                                     | MCP73871  |
| SOT23-3EV-VREG   | SOT23-3 Voltage Regulator Evaluation Board                    | MCP1701A, MCP1702, MCP1703                                    |
| SOT223-3EV-VREG  | SOT223-3 Voltage Regulator Evaluation Board                   | MCP1791, MCP1824, MCP1825, MCP1826                            |
| SOT89-3EV-VREG   | SOT89-3 Voltage Regulator Evaluation Board                    | MCP1700, MCP1701A, MCP1702, MCP1703                           |
| TO263-3EV-VREG   | TO220-3/TO263-3 Voltage Regulator Evaluation Board            | MCP1790, MCP1825S, MCP1826S, MCP1827S                         |
| SOT23-5EV-VREG   | SOT23-5 Voltage Regulator Evaluation Board                    | MCP1801, MCP1802, TC1014/1015/1185, and other SOT23-5 LDOs    |
| SOT223-5EV-VREG  | SOT223-5 Voltage Regulator Evaluation Board                   | MCP1790, MCP1824, MCP1825, MCP1826                            |
| TO263-5EV-VREG   | TO220-5/TO263-5 Voltage Regulator Evaluation Board            | MCP1790, MCP1791, MCP1825, MCP1826, MCP1827                   |
| TC110DM  | TC110 Boost Converter Demonstration Board                     | TC110, MCP73832   |
| TC115EV  | TC115 PFM/PWM Boost Converter Evaluation Board                | TC115   |
| TC1016/17EV  | TC1016/17 LDO Linear Regulator Evaluation Board               | TC1016/17   |
| TC1303BDM-DDBK1  | TC1303B Demonstration Board                                   | TC1303B   |
| TC1303DM-DDBK2   | TC1303 DFN Adjustable Output Demonstration Board              | TC1303C   |
| <b>Interface Products Demonstration and Evaluation Tools</b>           |   |   |
| GPIODM-KPLCD   | GPIO Expander Keypad and LCD Demo Board                       | MCP23008, MCP23S08, MCP23017, MCP23S17, PIC18F4550, MCP1702   |
| DV251001   | MCP2510/2515 CAN Developer's Kit                              | MCP2515, MCP2510  |
| DV250501   | MCP250XX CAN I/O Expanders Developer's Kit                    | MCP25020, MCP25025, MCP25050, MCP25055                        |
| MCP2515DM-PCTL   | MCP2515 CAN Controller PICtail™ Demonstration Board           | MCP2515   |
| MCP215XDM  | MCP215X Data Logger Demonstration Board                       | MCP2150/55  |
| MCP2140DM-TMPSNS   | MCP2140 IrDA® Wireless Temp Demonstration Board               | MCP2140   |
| MCP212XDM  | MCP2120/22 Developer's Board                                  | MCP2120, MCP2122  |
| MCP212XEV-DB   | MCP212X Developer's Daughter Board                            | MCP212X   |
| MCP215X/40EV-DB  | MCP215X/40 Developer's Daughter Board                         | MCP2140, MCP2150/55   |
| MCP2150DM  | MCP2150 Developer's Board                                     | MCP2150, MCP2155  |
| MCP2200EV-VCP  | MCP2200 USB to RS232 Demonstration Board                      | MCP2200   |
| MCP23X08EV   | MCP23X08 8-bit GPIO Expander Evaluation Board                 | MCP23008, MCP23S08  |
| MCP23X17EV   | MCP23X17 16-bit GPIO Expander Evaluation Board                | MCP23017, MCP23S17  |
| MCP2515DM-BM   | MCP2515 CAN Bus Monitor Demonstration Board                   | MCP2515, MCP2551  |
| MCP2515DM-PTPLS  | MCP2515 PICtail™ Plus Daughter Board                          | MCP2515, MCP2551  |
| PKSERIAL-SPI1  | PICKit™ Serial SPI Demonstration Board                        | 25LC020A, TC77, MCP3201, MCP4822, MCP41010, MCP6S92, MCP23S08 |
| PKSERIAL-I2C1  | PICKit™ Serial I <sup>2</sup> C™ Demonstration Board          | 24LC02B, MCP9801, MCP3221, TC1321, MCP23008                   |

| <b>Evaluation, Demonstration and Development Kits</b>          |  |   |
|--|--|---|
| <b>Order #</b>   | <b>Description</b>                                   | <b>Devices Supported</b>                      |
| <b>Linear Demonstration and Evaluation Tools</b>               |  |   |
| MCP6031DM-PTPLS  | MCP6031 Photodiode PICtail™ Plus Demonstration Board | MCP6031                                       |
| MCP651EV-VOS   | MCP651 Input Offset Evaluation Board                 | MCP651  |
| MCP661DM-LD  | MCP661 Line Driver Demo Board                        | MCP661, MCP662, MCP665                        |
| MCP6S22DM-PICTL  | MCP6S22 PGA PICtail™ Demonstration Board             | MCP6S22                                       |
| MCP6S2XEV  | MCP6S2X PGA Evaluation Board                         | MCP6S2X                                       |
| MCP6SX2DM-PCTLPD   | MCP6SX2 PGA Photodiode PICtail™ Demonstration Board  | MCP6S22/92                                    |
| MCP6SX2DM-PCTLTH   | MCP6SX2 PGA Thermistor PICtail™ Demonstration Board  | MCP6S22/92                                    |
| MCP6V01DM-VOS  | MCP6V01 Input Offset Demonstration Board             | MCP6V01, MCP6V03, MCP6V06, MCP6V08            |
| MCP6V01RD-TCPL   | MCP6V01 Thermocouple Auto-Zeroed Reference Design    | MCP6V01                                       |
| PIC16F690DM-PCTLHS   | Humidity Sensor PICtail™ Demonstration Board         | MCP6291, PIC16F690                            |
| MCP6XXEV-AMP1  | MCP6XXX Amplifier Evaluation Board 1                 | MCP6021                                       |
| MCP6XXEV-AMP2  | MCP6XXX Amplifier Evaluation Board 2                 | MCP6021                                       |
| MCP6XXEV-AMP3  | MCP6XXX Amplifier Evaluation Board 3                 | MCP6021                                       |
| MCP6XXEV-AMP4  | MCP6XXX Amplifier Evaluation Board 4                 | MCP6021                                       |
| MCP6XXDM-FLTR  | Active Filter Demonstration Board Kit                | MCP6271                                       |
| <b>Analog Blank Evaluation Boards</b>                          |  |   |
| VSUPEV   | SOT-23-3 Voltage Supervisor Evaluation Board         | SOT-23-3 Devices                              |
| VSUPEV2  | SOT-23-5/6 Voltage Supervisor Evaluation Board       | SOT-23-5, SOT-23-6 Devices                    |
| SC70EV   | SC70-6 and SOT-23-6/8 to DIP-8 Evaluation Board      | SC70-6/5/3, SOT-23-8/6/5/3, and DIP-8 Devices |
| SOIC8EV  | SOIC/MSOP/TSSOP/DIP 8-pin Evaluation Board           | 8-pin SOIC, MSOP, TSSOP, DIP Devices          |
| SOIC14EV   | SOIC/TSSOP/DIP 14-pin Evaluation Board               | 14-pin SOIC, TSSOP, DIP Devices               |
| TSSOP20EV  | 20-pin TSSOP and SSOP Evaluation Board               | TSSOP-20/16/14/8 and SSOP-20                  |
| <b>Miscellaneous Analog Demonstration and Evaluation Tools</b> |  |   |
| EFIELDDEV  | Electrical Field Evaluation Board                    | N/A   |
| HFIELDDEV  | Magnetic Field Evaluation Board                      | N/A   |
| INTRFCEV   | PSRR and Digital Noise Evaluation Board              | N/A   |

## Thermal Management Products

### MCP9700 Thermistor Demo Board (MCP9700DM-TH1)



The MCP9700 Thermistor Demo Board contains the analog circuitry to measure temperature. The board uses BC Components' 232264055103 NTC thermistor to convert temperature to resistance. The thermistor is placed in a voltage divider which converts resistance to voltage. This voltage is filtered and placed at the MCP6S22 Programmable Gain Amplifier's (PGA) CH0 input. The PGA gains and buffers the thermistor.

### PT100 RTD Evaluation Board (TMPSNS-RTD1)



This board demonstrates how to bias a Resistive Temperature Detector (RTD) and accurately measure temperature.

Up to two RTDs can be connected. The RTDs are biased using constant current source and the output voltage is scaled using a differential amplifier. The output is then connected to a 12-bit differential Analog-to-Digital Converter (ADC) MCP3301. The ADC outputs serial data to a PIC18F2550 device using a Serial Peripheral Interface (SPI). The data is transmitted to a PC using a USB interface. A Microsoft Excel® macro is used as a Graphical User Interface (GUI) to acquire the data. The acquired data is stored in an Excel worksheet and graphed as a real-time strip chart display.

### MCP9800 Temperature Data Logger Demo Board (MCP9800DM-DL)



Allows users to store up to 128,000 temperature readings from the MCP9800 sensor to the 24LC1025, Microchip's 1024 Kbit EEPROM. A PIC16F684

MCU communicates with the sensor and EEPROM. In addition, the PIC MCU interfaces to a PC using the PICkit™ 1 Flash Starter Kit and transfers the temperature readings from the EEPROM to the PC. Microsoft Excel® can be used to view the data.

## Mixed Signal Products

### MCP3909 and PIC18F85J90 Single Phase Energy Meter Reference Design (MCP3909RD-1PH1)



The MCP3909/PIC18F85J90 Single Phase Energy Meter Reference Design is a fully function single phase meter. The design is intended to be low cost and is transformerless. The design uses a half-wave rectified power supply circuit and a shunt current sensing element. A single MCP3909 acts as the analog front end measurement circuitry. The PIC18F85J90 directly drives the LCD glass and displays active energy consumption.

### MCP3421 Battery Fuel Gauge Demo Board (MCP3421DM-BFG)



This board is used to demonstrate the MCP3421 18-bit delta-sigma ADC for battery fuel gauging applications.

It includes two MCP3421 devices, MCP73831 (single cell Li-Ion/Li-Polymer Charger) and PIC18F4550 MCU. The board measures: (1) the battery voltage and (2) the current coming out from the battery in the discharging mode and into the battery in the charging mode using the ADC device (if charging mode is enabled (optional)). It calculates the total fuel used and also fuel remaining.

### MCP4725 PICtail Plus Daughter Board (MCP4725DM-PTPLS)



This daughter board demonstrates the MCP4725 (12 bit DAC with non-volatile memory) features using the Explorer 16 Development Board and the PICkit Serial Analyzer.

### MCP42XX PICtail Plus Daughter Board (MCP42XXDM-PTPLS)



The MCP42XX PICtail Plus Daughter Board is used to demonstrate the operation of the MCP42XX Digital Potentiometers. The operation of the

MCP41XX devices is similar to the MCP42XX devices. Therefore, this demo board can be used as a development platform for either device family. This board is designed to be used in conjunction with either the PIC24 Explorer 16 Demo Board or the PICkit Serial Analyzer.

## Power Management Products

### MCP1631HV Multi-Chemistry Battery Charger Reference Design (MCP1631RD-MCC1)



This reference design is a complete stand-alone constant current battery charger for NiMH, NiCd or constant current/constant voltage for Li-Ion battery packs. When charging NiMH or NiCd batteries, the reference design is capable of charging one, two, three or four batteries connected in series and one or two series batteries for Li-Ion. This board utilizes the MCP1631HV (high-speed PIC MCU PWM TSSOP-20) and PIC16F883 (28-pin SSOP).

### MCP73871 Demo Board with Voltage Proportional Current Control (MCP73871DM-VPCC)



The MCP73871 Demo Board with Voltage Proportional Current Control is designed to demonstrate Microchip's stand-alone linear Li-Ion battery charger with system power path and load sharing management control solution. The MCP73871 integrates the required elements to meet design challenges when developing new Li-Ion/Li-Polymer battery powered products.

### MCP73X23 OVP Lithium Iron Phosphate Battery Charger Evaluation Board (MCP73X23EV-LFP)



The MCP73X23 Lithium Iron Phosphate Battery Charger Evaluation board demonstrates the features of Microchip's MCP73123 and MCP73223 Lithium Iron Phosphate (LiFePO<sub>4</sub>) Battery Charge Management Controller with Input Overvoltage Protection.

### MCP7383X Li-Ion System Power Path Management Reference Design (MCP7383XRD-PPM)



This reference design is developed to assist product designers in reducing product design cycle and time by utilizing Microchip's stand-alone Li-Ion battery charge management controllers

with system power path management. Due to the natural characteristics of Li-Ion/Li-Polymer batteries, they are the most popular power sources for mobile devices, however, extra care in design is always important. System Power Path Management allows end-users to charge their batteries without interruption.

### MCP1640 Sync Boost Converter Evaluation Board (MCP1640EV-SBC)



The MCP1640 Synchronous Boost Converter Evaluation board demonstrates the MCP1640 in two boost-converter applications with multiple output voltages. It can be used to evaluate both package options (SOT-23-6 and 2x3-8 DFN). This board was developed to help engineers reduce the product design cycle time.

### MCP1252 Charge Pump Backlight Demo Board (MCP1252DM-BKLT)



The MCP1252 board demonstrates the use of a charge pump device in an LED application and acts as a platform to evaluate the MCP1252 device in general.

Light intensity is controlled uniformly through the use of ballast resistors. A PIC10F206 MCU provides an enable signal to the MCP1252 and accepts a push-button input that allows the white LEDs to be adjusted to five different light intensities.

## Interface Products

### MCP2515 CAN Bus Monitor Demo Board (MCP2515DM-BM)



The MCP2515 CAN Bus Monitor Demo board kit contains two identical boards which can be connected together to create a simple two node Controller Area Network (CAN) bus, which can be controlled and/

or monitored via the included PC interface. The board(s) can also be connected to an existing CAN bus.

### LIN Serial Analyzer (APGDT001)



The LIN Serial Analyzer development system enables a Personal Computer (PC) to communicate with a LIN (Local Interface Network) bus. The PC program uses a graphical user interface to enter and display message frames occurring on the target bus.

### USB to UART Converter Evaluation Board (MCP2200EV-VCP)



The USB to UART Converter Eval board allows users to store up to 128,000 temperature readings from the MCP9800 sensor to the 24LC1025, Microchip's 1024 Kbit EEPROM. A PIC16F684 MCU

communicates with the sensor and EEPROM. In addition, the PIC MCU interfaces to a PC using the PICkit 1 Flash Starter Kit and transfers the temperature readings from the EEPROM to the PC. Microsoft Excel can be used to view the data.

## Linear Products

### MCP6V01 Thermocouple Auto-Zeroed Ref Design Board (MCP6V01RD-TCPL)



The MCP6V01 design board demonstrates how to use a difference amplifier system to measure Electromotive Force (EMF) voltage at the cold junction of thermocouple in order to accurately measure temperature of the thermocouple bead. This can be done by using the MCP6V01 auto-zeroed op amp because of its ultra low offset Voltage (VOS) and high Common Mode Rejection Ratio (CMRR).

### MCP651 Input Offset Evaluation Board (MCP651EV-VOS)



The MCP651 Input Offset Evaluation board is intended to provide a simple means to measure the MCP651 Input Offset Evaluation Board op amp's input offset voltage under a variety of operating conditions. The measured input offset voltage (VOST) includes the input offset voltage specified in the data sheet (VOS) plus changes due to: power supply voltage (PSRR), common mode voltage (CMRR), output voltage (AOL), input offset voltage drift over temperature ( $\Delta VOS/\Delta TA$ ) and  $1/f$  noise.

### MCP6271 Active Filter Eval Kit (MCP6XXXDM-FLTR)



This kit supports active filters designed by FilterLab® V2.0. These filters are all pole and are built by cascading first and second order sections. The kit includes: one PCB designed to provide mid-supply biasing to the other printed circuit boards,

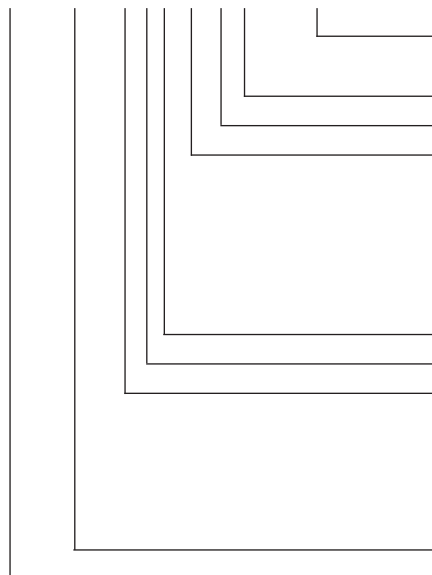
four PCBs that support active filter designs with filter order between  $n = 1$  and 8 (output test point for lab equipment provided) and op amps, zero ohm jumpers, resistors and capacitors that can be used to help build filters.



**Part Number Suffix Designations**

Ordering Information for all Microchip Analog Products beginning with “TC” prefix (formerly TelCom Semiconductor Products)

TC 7106 A-60 1 C P L 713



- Taping Direction:**  
TR or 713: Standard Taping, blank: no tape and reel
- Number of Package Pins (See specific data sheet)**
- Package Type**
- Operating Temperature Range:**  
C: Commercial Range (0°C to +70°C)  
E: Extended Industrial Range (-40°C to +85°C)  
I: Industrial Range (-25°C to +85°C)  
M: Military Range (-55°C to +125°C)  
V: See Data Sheet for Specific Temperature Range
- (Extra Feature Code and/or Tolerance)\*** (See specific data sheet)
- (Output Voltage or Detect Voltage)\*** (If applicable, see specific data sheet)
- Electrical Performance Grade Option (Variation/Option)\***  
(If applicable, see specific data sheet)  
A: Test Selection Criteria (See specific data sheet)  
B:  
R: Reversed Pin Layout
- Product Part Number** (2 to 6 characters, see specific data sheet)
- Product Prefix**
- NOTE:** ( )\* Used for voltage regulators and detectors.

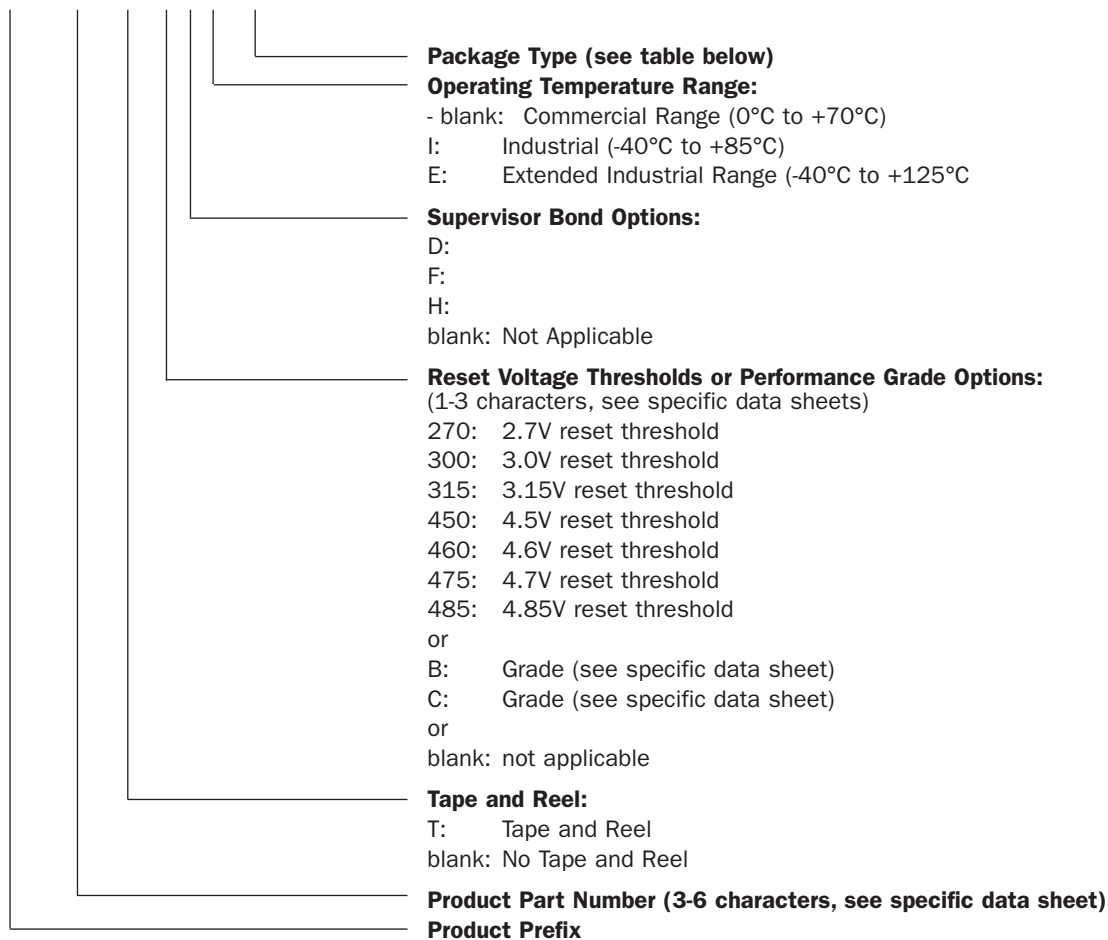
| Package | Description     | # of Pins |
|---------|-----------------|-----------|
| AB      | TO-220          | 3         |
| AK      | TO-220          | 7         |
| AT      | TO-220          | 5         |
| AV      | TO-220 (Formed) | 5         |
| BB      | TO-220B         | 3         |
| CB  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

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

## Part Number Suffix Designations

Ordering Information for all Microchip Analog Products beginning with “MCP” prefix

MCP xxxxx T - yyy z h / qq

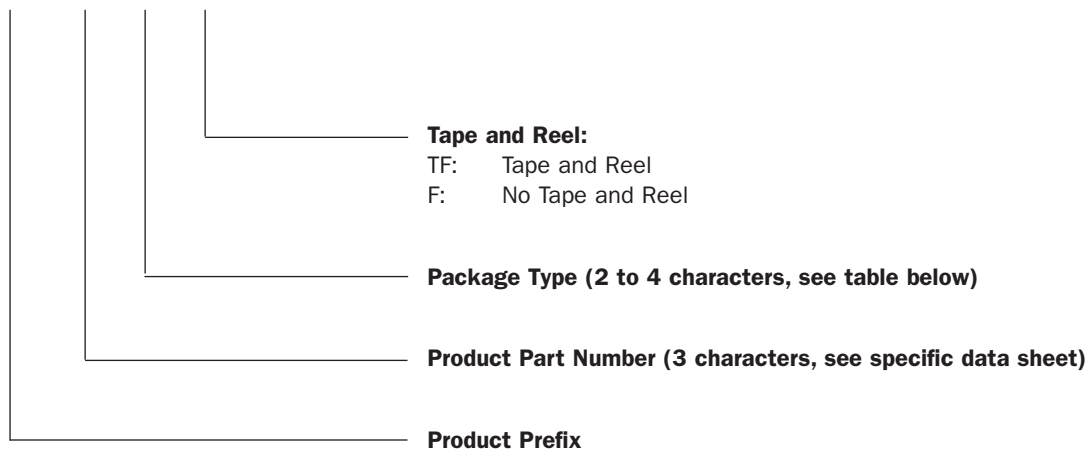


| Package | Description       | # of Pins | Tube/Bag Qty. | Reel Qty. |
|---------|-------------------|-----------|---------------|-----------|
| TO      | TO-92             | 3         | 1000          | n/a       |
| TT      | SOT-23            | 3         | n/a           | 3000      |
| OT      | SOT-23            | 5         | n/a           | 3000      |
| P       | PDIP              | 8         | 60            | n/a       |
| SN      | SOIC              | 8         | 100           | 3300      |
| ST      | TSSOP             | 8         | 100           | 2500      |
| MS      | MSOP              | 8         | 100           | 2500      |
| MF      | DFN (2x3)         | 8         | n/a           | 3300      |
| MF      | DFN (3x3)         | 8         | 50            | 3300      |
| MF      | DFN (3x3, 10-Pin) | 10        | 120           | 3300      |
| ST      | TSSOP             | 14        | 96            | 2500      |
| P       | PDIP              | 14        | 30            | n/a       |
| SL      | SOIC              | 14        | 57            | 2600      |
| P       | PDIP              | 18        | 25            | n/a       |
| SO      | SOIC              | 18        | 42            | 1100      |
| ST      | TSSOP             | 20        | 74            | 2500      |
| SS      | SSOP              | 20        | 67            | 1600      |
| ML      | QFN (6x6)         | 28        | 50            | 1600      |
| ML      | QFN (4x4)         | 16        | 91            | 3300      |

## Part Number Suffix Designations

Ordering Information for all Microchip Analog Products beginning with “RE46C” prefix

RE46C xxx yyyy zz



| Package | Description    | # of Pins | Tube Qty. | Reel Qty. |
|---------|----------------|-----------|-----------|-----------|
| E8      | PDIP           | 8         | 60        | n/a       |
| S8      | SOIC           | 8         | 100       | 3300      |
| E14     | PDIP           | 14        | 30        | n/a       |
| S14     | SOIC           | 14        | 57        | 2600      |
| E16     | PDIP           | 16        | 30        | n/a       |
| S16     | SOIC           | 16        | 50        | 2600      |
| SW16    | SOIC (300 mil) | 16        | 47        | 1000      |

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