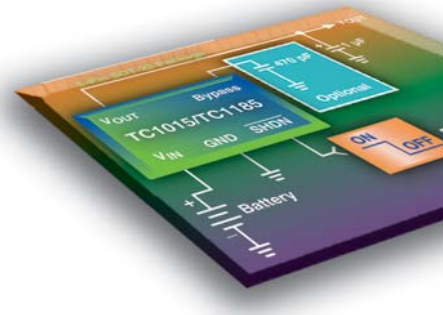
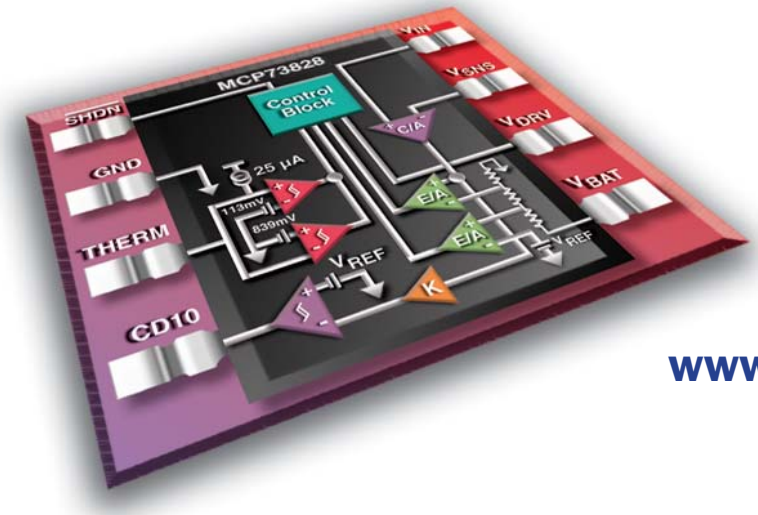
MICROCHIP

Stand-Alone Analog and Interface Solutions

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





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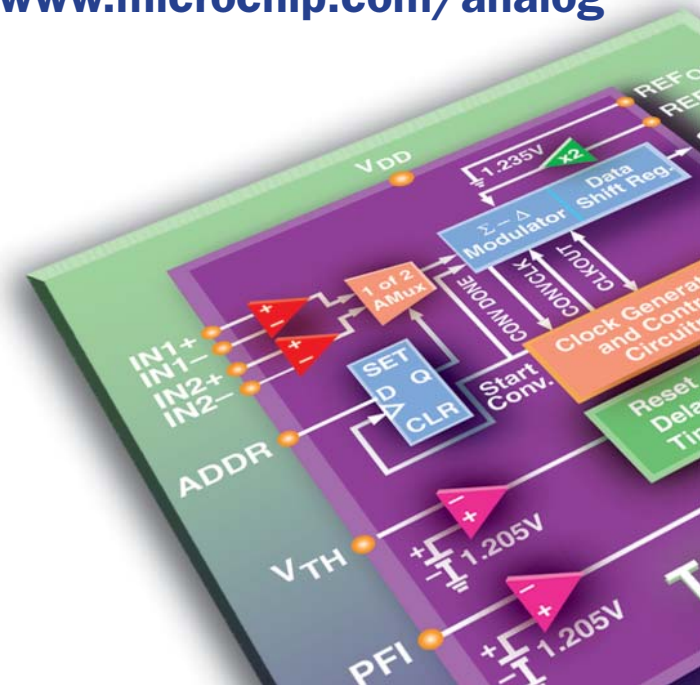

Are you Looking for Complete Analog & Interface Design Solutions?

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 and interface 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.

Our broad portfolio of stand-alone analog and interface devices offers highly integrated solutions that combine various analog functions in space-saving packages and support a variety of bus interfaces. Many of these devices support functionality that enhances the analog features currently available on PIC® microcontrollers.

Microchip Technology's Stand-Alone Analog & Interface Portfolio

Thermal Management
- Temperature Sensors
- Fan Speed Controllers/ Fan Fault Detectors

Power Management
- LDO & Switching Regulators
- Charge Pump DC/DC Converters
- Power MOSFET Drivers
- PWM Controllers
- System Supervisors
- Voltage Detectors
- Voltage References

Battery Management
- Li-Ion/Li-Polymer Battery Chargers
- Smart Battery Managers

Linear
- Op Amps
- Programmable Gain Amplifiers
- Comparators
- Linear Integrated Devices

Mixed-Signal
- A/D Converter Families
- Digital Potentiometers
- D/A Converters
- V/F and F/V Converters
- Energy Measurement ICs

Interface
- CAN Peripherals
- Infrared Peripherals
- LIN Transceiver
- Serial Peripherals
- Ethernet Controller

Want a Business Partner, Not Just a Vendor?

Successful companies recognize the value of a strategic supplier relationship to help them deliver innovative products to their markets in a timely manner. They trust their suppliers to furnish quality components for current design opportunities as well as provide technology road maps and innovative solutions to stay ahead of tomorrow's design trends.

Microchip Technology provides low-risk product development, lower total system cost and faster time to market to more than 45,000 of these successful companies worldwide. Headquartered in Chandler, Arizona, Microchip offers outstanding technical support along with dependable delivery and quality.

Founded in 1989, Microchip's business model is based on a series of guiding values that aim to establish successful customer partnerships by exceeding expectations for products, services and attitude. Continuous improvement, technology innovation and the pursuit of the highest quality possible drive Microchip's company culture.

The result is a worldwide organization dedicated to delivering whole product solutions which include high performance silicon devices, easy-to-use development tools, outstanding technical support and sophisticated technical documentation.

Are Quality and Delivery a Concern?

Microchip's quality systems are certified according to the International Organization for Standards/Technical Specification (ISO/TS)-16949:2002 requirements. This demonstrates that the Company's quality systems meet the most stringent industry quality-management system standards, resulting in high-quality semiconductor products.

Direct control over manufacturing resources allows shortened design and production cycles. By owning the wafer fabrication facilities and the majority of the test and assembly operations, and by employing proprietary statistical process control techniques, Microchip has been able to achieve and maintain high production yields.

Need Additional Support and Resources?

Microchip is committed to supporting its customers by helping design engineers develop products faster and more efficiently. Customers can access four main service areas at www.microchip.com. The Support area provides a fast way to get questions answered. The Sample area offers free evaluation samples of any Microchip device. microchipDIRECT provides 24-hour pricing, ordering, inventory and credit for convenient purchasing of all Microchip devices and development tools. This site also features online programming capabilities. Finally, the Training area educates customers through webinars, sign-ups for local seminar and workshop courses, and information about the annual MASTERs conferences held throughout the world.

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Have you ever encountered a technical dilemma at a critical point in your design development and your supplier was not available to answer your questions? Microchip's first ever 24/7 global technical support line brings technical support resources any time help is needed. Because some technical problems require hands-on assistance in order to be resolved quickly, Microchip has developed a global team of field applications engineers and field sales engineers for local assistance.

Thermal Management Solutions

From temperature measurement to critical over-temperature protection, Microchip's thermal management solutions will help your design operate at an optimal temperature. Ease-of-use, no firmware, high-integration and the ability to work with simple 2-wire fans, are a few of the reasons engineers choose our Fan Speed Controllers and Fan Fault Detectors. Microchip also offers a wide variety of logic, voltage and serial output temperature sensors to thermally protect your system and ensure real-time temperature measurement and compensation.

Fan Speed Controllers and Fan Fault Detectors

Device	Description
TC642	PWM Fan Speed Controller with Fan Fault Detection
TC646	PWM Fan Speed Controller with Fan Fault Detection and Auto-Shutdown
TC647	PWM Fan Speed Controller with Fan Fault Detection
TC648	PWM Fan Speed Controller with Over-Temperature Detection and Auto-Shutdown
TC649	PWM Fan Speed Controller with Fan Fault Detection and Auto-Shutdown
TC642B	PWM Fan Speed Controller with Fan Fault Detection and Fan Restart
TC646B	PWM Fan Speed Controller with Fan Fault Detection, Auto-Shutdown and Fan Restart
TC647B	PWM Fan Speed Controller with Fan Fault Detection and Fan Restart
TC648B	PWM Fan Speed Controller with Over-Temperature Detection, Auto-Shutdown and Fan Restart
TC649B	PWM Fan Speed Controller with Fan Fault Detection, Auto-Shutdown and Fan Restart
TC650/651	Integrated Temperature Sensor and Brushless DC Fan Controller with Over-Temperature Alert
TC652/653	Integrated Temperature Sensor and Brushless DC Fan Controller with Fan Fault Detection & Over-Temp Alert
TC654/655	Dual SMBus Fan Speed Controller with Fan Fault and Over Temperature Detection
TC664/665	Single SMBus Fan Speed Controller with Fan Fault and Over Temperature Detection
TC670	SOT-23 Predictive Fan Fault Detector

Temperature Sensors

Voltage Output	
TC1046	High Precision Temperature-to-Voltage Converter (6.25 mV/°C)
TC1047/47A	High Precision Temperature-to-Voltage Converters (10 mV/°C)
MCP9700/01	Very Low-cost Linear Active Thermistors, Also Available in High-Performance "A" Version
Logic Output	
TC6501/2/3/4	Ultra-Small Temperature Switches with Pin-Selectable Hysteresis
TC620/21	5V Dual Trip-Point Temperature Switch
TC622/24	Low Cost, Single Trip-Point Temperature Switch
TC623	3V Dual Trip-Point Temperature Switch
Serial Output	
TC72	High-Accuracy, 10-bit Digital Thermal Sensor with 4-wire SPI Interface
TC74	SOT-23 SMBus Digital Temperature Sensor
TC77	High-Accuracy, 13-bit Digital Thermal Sensor with 3-wire SPI Interface
TCN75A	Serial Interface Digital Temperature Sensor and Thermal Monitor
MCP9800/1/2/3	High Accuracy, 12-bit Digital Thermal Sensor with 2-wire Interface
MCP9805	10-bit Digital Thermal Sensor with 2-wire Interface and Event Output for PC DIMMs
MCP98242	PC DIMM Thermal Sensor Plus DDR2 SPD EEPROM

Power Management Solutions

Power Management products from Microchip help drive today's most demanding power supply applications.

Linear Regulators

Microchip's portfolio of LDOs features ultra low drop-out voltages, 50 mA to 1.0A output currents and small SOT and SC-70 package options.

Device	Description
50 mA Output Current	
TC1014	CMOS LDO with Shutdown Mode and VREF Bypass Input
TC1054	CMOS LDO with Shutdown Mode and ERROR Output
TC1070	Adjustable CMOS LDO with Shutdown Mode, 85 mV VDROPOUT
TC1072	CMOS LDO with Shutdown Mode, ERROR Output and VREF Bypass Input
TC1223	CMOS LDO with Shutdown Mode, 85 mV VDROPOUT
TC2014	CMOS LDO with Shutdown Mode and VREF Bypass Input, 45 mV VDROPOUT
TC2054	CMOS LDO with Shutdown Mode and ERROR Output, 45 mV VDROPOUT
80 mA Output Current	
TC1016	CMOS SC-70 LDO with Shutdown
100 mA Output Current	
TC1015	CMOS LDO with Shutdown Mode and VREF Bypass Input
TC1055	CMOS LDO with Shutdown Mode and ERROR Output
TC1071	Adjustable CMOS LDO with Shutdown Mode
TC1073	CMOS LDO with Shutdown Mode, ERROR Output and VREF Bypass Input
TC1224	CMOS LDO with Shutdown Mode
TC2015	CMOS LDO with Shutdown and VREF Bypass Input, 90 mV VDROPOUT
TC2055	CMOS LDO with Shutdown and ERROR Output, 90 mV VDROPOUT
120 mA Output Current	
TC1188	MAX8863 Replacement CMOS LDO with Shutdown Mode
TC1189	MAX8864 Replacement CMOS LDO with Shutdown Mode and Auto Discharge
150 mA Output Current	
TC1017	CMOS LDO with Shutdown Mode, 50 µA Active Current, SC-70 package
TC1185	CMOS LDO with Shutdown Mode and VREF Bypass Input, 50 µA Active Current
TC1186	CMOS LDO with Shutdown Mode and ERROR Output, 50 µA Active Current
TC1187	Adjustable VOUT CMOS LDO with Shutdown Mode
TC2185	CMOS LDO with Shutdown Mode and VREF Bypass
TC2186	CMOS LDO with Shutdown Mode and ERROR Output
180 mA Output Current	
TC56	CMOS LDO with Shutdown, 10V VIN Range
250 mA Output Current	
MCP1700	1.5 µA Supply Current CMOS LDO
MCP1701A	2 µA Supply Current CMOS LDO, 10V VIN Range
300 mA Output Current	
TC1107	CMOS LDO with Shutdown Mode and VREF Bypass Input
TC1108	CMOS LDO in 3-pin SOT-223
TC1173	CMOS LDO with Shutdown Mode, ERROR Output and VREF Bypass Input
TC1174	Adjustable CMOS LDO with Shutdown Mode and VREF Bypass Input
TC1269	CMOS LDO with Shutdown Mode and VREF Bypass Input
500 mA Output Current	
TC1262	Fixed Output CMOS LDO
TC1263	CMOS LDO with Shutdown Mode, ERROR Output and VREF Bypass Input
TC1268	Fast Response CMOS LDO with Shutdown Mode, ERROR Output and VREF Bypass Input

Linear Regulators (Continued)

Device	Description
800 mA Output Current	
TC1264	Fixed Output CMOS LDO
TC1265	CMOS LDO with Shutdown Mode, ERROR Output and VREF Bypass Input
TC2117	Fixed Low Dropout CMOS Regulator
1.0A Output Current	
MCP1726	CMOS LDO with Shutdown Mode and Power Good Output with Programmable Delay, Ceramic Output Capacitor Stable
1.5A Output Current	
MCP1727	CMOS LDO with Shutdown Mode and Power Good Output with Programmable Delay, Ceramic Output Capacitor Stable

Specialty LDOs

Specialty LDOs are available for unique design requirements.

TC57	Positive LDO Controller with Shutdown
TC59	-10 VIN Max, 100 µA CMOS LDO
TC1266	200 mA PCI-compliant LDO
TC1267	400 mA PCI-compliant LDO

Power MOSFET Drivers

Microchip's Power MOSFET Drivers feature wide range input supply voltages and output currents and offer outstanding latch-up immunity. The portfolio has recently been expended with the addition of smaller, surface mount power-enhanced packages.

0.5A Peak Output Current, Low Side Driver	
TC1410/N	Single, Inverting/Non-Inverting
1.0A Peak Output Current, Low Side Driver	
TC1411/N	Single, Inverting/Non-Inverting
1.2A Peak Output Current, Low Side Drivers	
TC1426/7/8	Dual, Inverting/Non-Inverting/Combo
TC4467/8/9	Quad, 2-input Logic Gate Inputs
1.5A Peak Output Current, Low Side Drivers	
TC426/7/8	Dual, Inverting/Non-Inverting/Combo
TC4403	Single, Non-Inverting, Floating Load Driver
TC4404/05	Dual, Inverting/Non-Inverting
TC4426/7/8	Dual, Inverting/Non-Inverting/Combo, Also Available in High-Performance "A" Version
2.0A Peak Output Current, Low Side Driver	
TC1412/N	Single, Inverting/Non-Inverting
3.0A Peak Output Current, Low Side Drivers	
TC1413/N	Single, Inverting/Non-Inverting
TC4423/4/5	Dual, Inverting/Non-Inverting/Combo, Also Available in High-Performance "A" Version
6.0A Peak Output Current, Low Side Drivers	
TC429	Single, Inverting
TC4420/29	Single, Inverting/Non-Inverting
9.0A Peak Output Current, Low Side Driver	
TC4421/22	Single, Inverting/Non-Inverting, Also Available in High-Performance "A" Version
12.0A Peak Output Current, Low Side Driver	
TC4451/52	Single, Inverting/Noninverting
1.5A Peak Output Current, High Side/Low Side Drivers	
TC4626/27	Single, Inverting/Non-Inverting
TC4431/32	Single, Inverting/Non-Inverting

Voltage Detectors

Voltage Detectors with low quiescent current.

Device	Description
MCP111	1 µA Voltage Detector with Open-Drain Output
MCP112	1 µA Voltage Detector with Push-Pull Output
TC51	1 µA Voltage Detector with Output Delay
TC52	Dual Channel Voltage Detector
TC53	1 µA Voltage Detector with Output Delay
TC54	1 µA Operating Current CMOS Voltage Detector

PWM Controllers

Our high-speed Pulse Width Modulator circuits were developed for advanced power supply applications particularly when used in conjunction with a PIC® microcontroller.

MCP1630/V	PIC® microcontroller "attach" High-Speed Pulse Width Modulator

Power Management Combo ICs

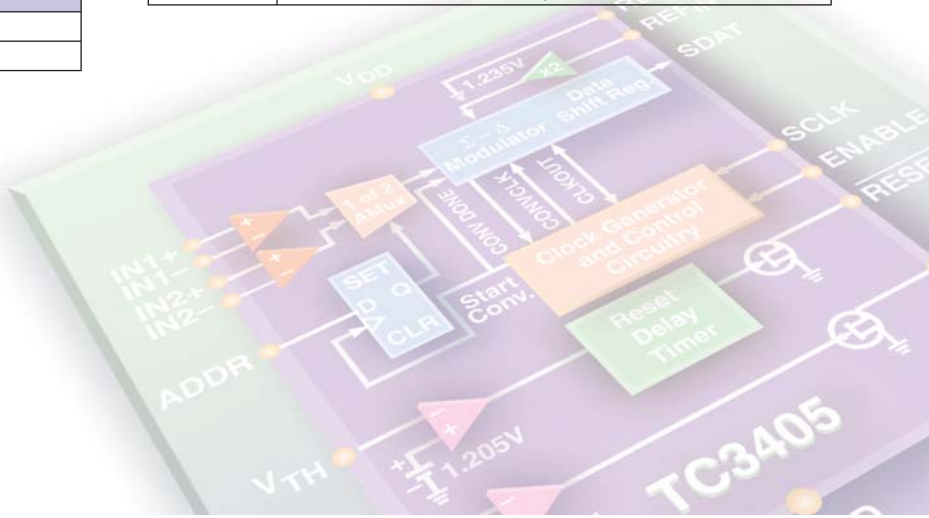
Our space and cost-saving Combo ICs combine supervisor and regulator functions in one IC.

TC1300	CMOS LDO with Shutdown Mode, Bypass and Independent Delay Reset Output
TC1301	Dual CMOS LDO (300 mA, 150 mA), with Shutdown Pin, Bypass and Independent Reset Output
TC1302	Dual CMOS LDO (300 mA, 150 mA), with Shutdown Pin, Bypass
TC1303	500 mA Synchronous Buck Regulator and 300 mA LDO with Power-Good Output
TC1305	Dual, 150 mA CMOS LDO with Select Mode™ Shutdown and Independent Reset Output
TC1306	Dual, 150 mA CMOS LDO with Select Mode Shutdown and Reset Output
TC1307	Quad, 150 mA CMOS LDO with Select Mode Shutdown and Reset Output

Switching Regulators

Choose from a variety of switching frequencies with low supply currents in our Switching Regulator families.

PFM/PWM Buck Regulators/Controllers	
MCP1601	PFM/PWM Step-Down (Buck), 500 mA Synchronous Regulator
TC105	PFM/PWM Step-Down (Buck) DC/DC Controller
TC120	PFM/PWM Step-Down (Buck) Combination DC/DC Regulator/ Controller
TC1303	500 mA Synchronous Buck Regulator and 300 mA LDO with Power-Good Output
PWM Buck Regulators	
MCP1612	Constant Frequency PWM Step-Down (Buck), 1.0A Synchronous Regulator
PFM/PWM Boost Regulators/Controllers	
TC110	PFM/PWM Step-Up (Boost) DC/DC Controller
TC115	PFM/PWM Step-Up (Boost) DC/DC Regulator
TC125/126	PFM Step-Up (Boost) DC/DC Regulator
Boost Controllers	
MCP1650	Step-up (Boost) Controller
MCP1651	Boost Controller with Low Battery Indicator
MCP1652	Boost Controller with Power Good Indicator
MCP1653	Boost Controller with Low Battery and Power Good Indicator



System Supervisors

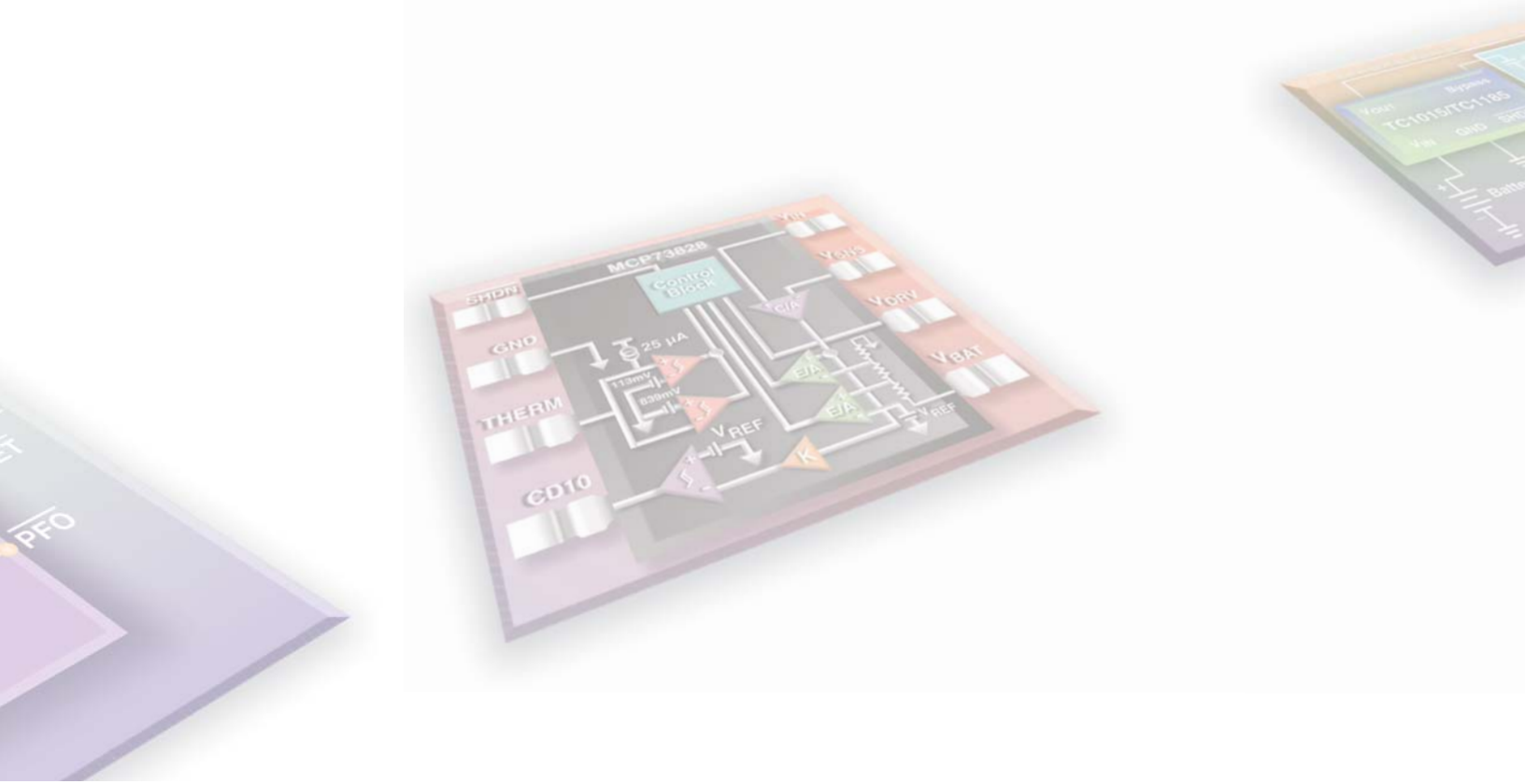
Microchip's System Supervisors offer excellent low supply current and small packages.

Device	Description
Power Supply Monitors with Reset Generator for 3.3V and 5V Systems	
MCP102	1 µA Voltage Supervisor with Push-Pull Output (SOT-23 & SC-70)
MCP103	1 µA Voltage Supervisor with Push-Pull Output (SOT-23 & SC-70)
MCP121	1 µA Voltage Supervisor with Open-Drain Output (SOT-23 & SC-70)
MCP131	1 µA Voltage Supervisor with Open-Drain Output and Internal Pull-up Resistor (SOT-23 & SC-70)
TCM809/10	Precision CPU Supervisor (SOT-23 & SC-70)
MCP809/10	Microcontroller Supervisory Circuit with Push-Pull Output
TCM811/12	4-pin µP Reset Monitors
TC1270/71	4-pin µP Reset Monitors
TC1272/3/4	3-pin Reset Monitors for 5V Systems
MCP100	Microcontroller Supervisory Circuit with Push-Pull Output
MCP101	Microcontroller Supervisory Circuit with Push-Pull Output
MCP120	3-pin Reset with Open Drain Output
MCP130	3-pin Reset with Open Drain Output and Internal Pull-up
Power Supply Monitors with Reset Generator, Watchdog and Manual Reset	
TC32M	3-pin ECONOMONITOR™ Supervisor
TC1232	Microprocessor Monitor
MCP1316	Push-Pull, Active Low Output, WDI and /MR Inputs
MCP1316M	Open-Drain, Active Low Output, Internal Pull-up, WDI and /MR Inputs
MCP1317	Push-Pull, Active High Output, WDI and /MR Inputs
MCP1318	Dual Push-Pull Outputs, One Active High, One Active Low, WDI Input
MCP1318M	Dual Outputs, One Open-Drain, Active Low w/Internal Pull-up, One Push-Pull, Active High, WDI Input
MCP1319	Dual Push-Pull Outputs, One Active High, One Active Low, /MR Input
MCP1319M	Dual Outputs, One Open-Drain, Active Low w/Internal Pull-up, One Push-Pull, Active High, /MR Input
MCP1320	Open-Drain, Active Low Output, External Pull-up, WDI and /MR Inputs
MCP1321	Dual Outputs, One Open-Drain, Active Low w/External Pull-up, One Push-Pull, Active High, WDI Input
MCP1322	Dual Outputs, One Open-Drain, Active Low w/External Pull-up, One Push-Pull, Active High, /MR Input

Charge Pump DC/DC Converters

Our Charge Pump DC/DC Converters feature inverting and non-inverting voltage doublers and SMT packaging.

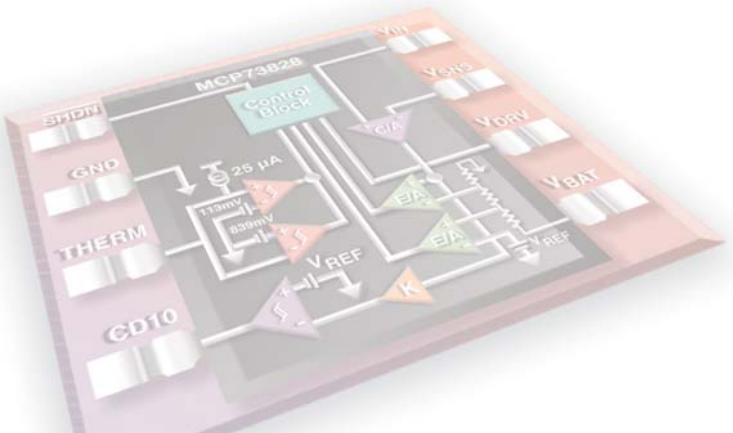
Device	Description
Inverters and Doublers 20-45 mA Output/V_{OUT} = -V_{IN} or +2V_{IN}	
TC1044S	1.5V to 12V Input, Boost Frequency Mode Selection (10 kHz/45 kHz)
TC7660	1.5V to 10V Input, (10 kHz)
TC7660H	1.5V to 10V Input, High Frequency (120 kHz)
TC7662B	1.5V to 15V Input, Boost Frequency Mode Selection (10 kHz/35 kHz)
TC7660S	1.5V to 12V Input, Boost Frequency Mode Selection (10 kHz/45 kHz)
TCM828/29	1.5V to 5.5V Input, (12 kHz/35 kHz)
TC1219/20	1.5V to 5.5V Input with Shutdown (12 kHz/35 kHz)
TC1221/22	1.8V to 5.5V Input with Shutdown (125 kHz/750 kHz)
TC1240	2.5V to 4.0V, Positive Doubling CMOS Charge-Pump Voltage Converter with Shutdown (160 kHz)
TC1240A	2.5V to 5.5V, Positive Doubling CMOS Charge-Pump Voltage Converter with Shutdown (160 kHz)
TC7662A	3V to 18V Input (12 kHz), V_{OUT} = -V_{IN} or +2 V_{IN}
80-100 mA Output Positive Output, V_{OUT} = -V_{IN} or +2V_{IN}	
TC962	3V to 18V Input (12 kHz/24 kHz), 80 mA I_{OUT}
TC1121	2.4V to 5.5V Input with Shutdown and Frequency Control Selection (10 kHz/200 kHz), 100 mA output
Multi Function	
TC682	2.4V to 5.5V Input/up to 10 mA output current (12 kHz) Converter, V_{OUT} = -2 V_{IN}
Regulated Positive Converters	
MCP1252/53	2.0V to 5.5V Input, 120 mA I_{OUT}, Fixed (3.3V or 5.0V), or Adjustable (1.5V to 5.5V) V_{OUT} (650 kHz/1.0 MHz)
MCP1256/57/58/59	1.8V to 3.6V Input, 100 mA I_{OUT} with High Efficiency Fractional Charge Pump Core



Battery Management

Get high accuracy and longer battery operation for your portable designs with Microchip's battery management products offering low reverse leakage current and a wide range of features in small footprint packages.

Battery Chargers	
Device	**Description**
MCP73826	Single Cell Li-Ion/Li-Polymer Charge Management Controller in SOT-23 Package
MCP73827	Single Cell Li-Ion/Li-Polymer Charge Management Controller with Mode Indicator and Charge Current Monitor
MCP73828	Single Cell Li-Ion/Li-Polymer Charge Management Controller with Charge Complete Indicator and Temperature Monitor
MCP73831	Miniature, 500mA, Single Cell Li-Ion/Li-Polymer Fully Integrated Charge Management Controller in 5-lead SOT-23 and 8-lead 2x3 DFN
MCP73832	Miniature, 500mA, Single Cell Li-Ion/Li-Polymer Fully Integrated Charge Management Controller in 5-lead SOT-23 and 8-lead 2x3 DFN
MCP73841	Single Cell Li-Ion/Li-Polymer Charge Management Controller with Charge Status Indicator, Safety Timers and Temperature Monitor
MCP73842	Dual Cell Li-Ion/Li-Polymer Charge Management Controller with Charge Status Indicator, Safety Timers and Temperature Monitor
MCP73843	Single Cell Li-Ion/Li-Polymer Charge Management Controller with Charge Status Indicator and Safety Timers
MCP73844	Dual Cell Li-Ion/Li-Polymer Charge Management Controller with Charge Status Indicator and Safety Timers
MCP73853	Single Cell USB Compatible Li-Ion/Li-Polymer Fully Integrated Charge Management Controller with Safety Timers, Temperature Monitor and Thermal Regulation
MCP73855	Single Cell USB Compatible Li-Ion/Li-Polymer Fully Integrated Charge Management Controller with Safety Timers and Thermal Regulation
MCP73861/3	1A, Single Cell Li-Ion/Li-Polymer Fully Integrated Charge Management Controller with Charge Status, Safety Timers and Temperature Monitor
MCP73862/4	1A, Dual Cell Li-Ion/Li-Polymer Fully Integrated Charge Management Controller with Charge Status, Safety Timers and Temperature Monitor



Linear Solutions

Microchip's Operational Amplifier family offers one of the lowest I_Q for a given GBWP in the industry. All op amps offer rail-to-rail output with many also offering rail-to-rail input. Microchip's family of low power Comparators offers single, dual or quad amplifiers in space-saving packages.

Operational Amplifiers	
Device	**Description**
TC1029	Dual, Low Power Rail-to-Rail Input/Output
TC1030	Quad, Low Power with Shutdown Modes, Rail-to-Rail Input/Output
TC1034/(35)	Single, (Single with Shutdown) Low Power (SOT-23 Package), Rail-to-Rail Input/Output
MCP601/2/(3)/4	Single/Dual/(Single with Chip Select)/Quad, Rail-to-Rail Output
MCP606/7/(8)/9	Single/Dual/(Single with Chip selct)/Quad, Low-Power, Rail-to-Rail Output, V_{OS}<250 µV
MCP616/17/(18)/19	2.3V Single/Dual/(Single with Chip select)/Quad, Rail-to-Rail Output, V_{OS}<150 µV
MCP6001/2/4	Single/Dual/Quad, 1 MHz 1.8V Dual, Rail-to-Rail Input/Output
MCP6021/22/(23)/24	10 MHz Single/Dual/(Single with Chip Select)/Quad, Rail-to-Rail Input/Output
MCP6041/42/(43)/44	600 nA, 1.4V, 10 kHz, Single/Dual/(Single with Chip Select)/Quad, Rail-to-Rail Input/Output
MCP6141/42/(43)/44	600 nA, 1.4V, 120 kHz G>10, Single/Dual/(Single with Chip Select)/Quad, Rail-to-Rail Input/Output
MCP6231/32/34	300 kHz, Single/Dual/Quad, Low Power, Rail-to-Rail Input/Output, Extended Temperature
MCP6241/42/44	650 kHz, Single/Dual/Quad, Low Power, Rail-to-Rail Input/Output, Extended Temperature
MCP6271/72/(73)/74/(75)	2 MHz, Single/Dual/(MCP6273 -Single with Chip Select Shutdown)/Quad/(MCP6275 - Dual Connected with Chip Select), Rail-to-Rail Input/Output, Extended Temperature
MCP6281/82/(83)/84/(85)	5 MHz, Single/Dual/(MCP6283 -Single with Chip Select Shutdown)/Quad/(MCP6285 - Dual Connected with Chip Select), Rail-to-Rail Input/Output, Extended Temperature
MCP6291/92/(93)/94/(95)	10 MHz, Single/Dual/(MCP6293 -Single with Chip Select Shutdown)/Quad/(MCP6295 - Dual Connected with Chip Select), Rail-to-Rail Input/Output, Extended Temperature
Programmable Gain Amplifiers	
SPI Bus programmable amplifiers with built-in Analog Multiplexer.	
MCP6S21/2/6/8	Single/Dual/Hex/Octal, Precision Rail-to-Rail Input/Output, Gain and Channel Control over SPI
MCP6S91/2/3	Single/Dual/Dual, Low-Cost, Rail-to-Rail Input/Output, Gain and Channel Control over SPI

Comparators

Several comparators are offered with low supply voltage (1.8) and low supply current (1 µA). Examples include the **MCP6541, TC1039, TC1038** and the **MCP6546** family of push-pull and open-drain comparators, which are designed for very low power single-supply applications.

The **MCP6541, TC1039** and **TC1038** families of comparators have a push-pull output that interfaces with CMOS/TTL logic. The output limits supply current surges and dynamic power consumption while switching.

The **MCP6546** family of comparators has an open-drain output that can be pulled up to 10V supply.

The linear building blocks such as **TC1027, TC1039** and **TC1041,** have integrated reference voltage and shutdown which makes them ideal for low power portable applications.

Mixed-Signal Solutions

High performance combined with low cost and low power consumption make our Analog-to-Digital Converters (A/D Converters) ideal for portable instrumentation, embedded control and data acquisition applications. Microchip's portfolio includes Delta-Sigma A/D Converters with up to 22-bit resolution and sampling speeds up to 60 samples per second. Successive Approximation Register (SAR) A/D Converters have 10-, 12- and 13-bit resolutions with sampling rates up to 200 ksps. Also included are Dual Slope A/D Converters with high resolution of up to 17 bits with fully differential inputs, plus BCD and Binary A/D Converters which feature over-range and under-range detection.

The MCP3905/6 devices are Energy Measurement ICs that output a frequency proportional to the average active (real) power at the inputs. The MCP3905/6 devices incorporate two 16-bit Delta-Sigma ADCs with a progammable gain up to 16 or 32, which enable small shunt meter designs for measuring a wide range of I_B and I_{MAX} currents.

Select from low-cost serial D/A Converters, Voltage-to-Frequency Converters (V/F), Frequency-to-Voltage Converters (F/V) and low dropout precision Voltage References that feature low power and high precision. Rounding out Microchip's Mixed-Signal Family are the Single- and Dual-Channel Digital Potentiometers.

System Analog-to-Digital Converters	
Device	**Description**
Delta-Sigma A/D Converters	
MCP3550-50	22-bit, 15 sps, SPI Interface, 50 Hz Rejection
MCP3550-60	22-bit, 15 sps, SPI Interface, 60 Hz Rejection
MCP3551	22-bit, 15 sps, SPI Interface, 50/60 Hz Rejection
MCP3553	22-bit, 60 sps, SPI Interface, Single Channel
SAR A/D Converters	
MCP3001/2/4/8	10-bit, SPI Interface, Single/Dual/4/8 Input Channel
MCP3201/2/4/8	12-bit, SPI Interface, Single/Dual/4/8 Input Channel
MCP3021	10-bit, I^2C Interface, Low Power, SOT-23, Single Channel
MCP3221	12-bit, I^2C Interface, Low Power, SOT-23, Single Channel
MCP3301/2/4	13-bit, SPI Interface, Single/Dual/4, Differential Input
Dual Slope A/D Converters	
TC500/A	16-bit/17-bit Front End
TC510	17-bit Front End
TC514	17-bit Front End with 4 Channel Input MUX
TC520A	Serial Interface Adapter for TC500 A/D Converters
TC530	17-bit, Single Input Channel
TC534	17-bit, 4 Input Channel
TC7109/A	12-bit Plus Sign, CMOS Low-Power A/D Converter
BCD and Binary A/D Converters	
TC835	4-1/2 Digit, PC. Data Acquisition A/D Converter
TC850	15-bit, Fast Integrating, CMOS A/D Converter
TC7135	4-1/2 Digit, A/D Converter
TC14433/A	3-1/2 Digit, A/D Converter
Energy Measurement	
MCP3905	16-bit, Integrated 16x PGA and Fixed Function DSP
MCP3906	16-bit, Integrated 32x PGA and Fixed Function DSP

Display Analog-to-Digital Converters	
Device	**Description**
LCD Display – 4-1/2 Digit	
TC7129	Basic 1-Chip DMM with Hold, Low Battery
LCD Display – 3-1/2 Digit	
TC7106/A	Basic 1-Chip DMM with Internal Reference
TC7116/A	Plus Hold Function
TC7126/A	Low Power Basic 1-Chip DMM
LED Display – 3-1/2 Digit	
TC7107/A	Basic 1-Chip DMM with Internal Reference
TC7117/A	Plus Hold Function
LED Display – 3-3/4 Digit	
TC820	DMM plus Frequency Counter and Logic Probe
Digital Potentiometers	
MCP4011	6-bit Volatile Potentiometer with U/D Interface in 8-lead SOIC, MSOP and 2x3 DFN (2, 5, 10, 50 Kohm)
MCP4012	6-bit Volatile Rheostat with U/D Interface in 6-lead SOT-23 (2, 5, 10, 50 Kohm)
MCP4013	6-bit Volatile Potentiometer with U/D Interface in 6-lead SOT-23 (2, 5, 10, 50 Kohm)
MCP4014	6-bit Volatile Rheostat with U/D Interface in 5-lead SOT-23 (2, 5, 10, 50 Kohm)
MCP4021	6-bit Non-volatile Potentiometer with U/D Interface in 8-lead SOIC, MSOP and 2x3 DFN (2, 5, 10, 50 Kohm)
MCP4022	6-bit Non-volatile Rheostat with U/D Interface in 6-lead SOT-23 (2, 5, 10, 50 Kohm)
MCP4023	6-bit Non-volatile Potentiometer in 6-lead SOT-23 (2, 5, 10, 50 Kohm)
MCP4024	6-bit Non-volatile Rheostat in 5-lead SOT-23 (2, 5, 10, 50 Kohm)
MCP41010	10 Kohm, Single with SPI Interface
MCP42010	10 Kohm, Dual with SPI Interface
MCP41050	50 Kohm, Single with SPI Interface
MCP42050	50 Kohm, Dual with SPI Interface
MCP41100	100 Kohm, Single with SPI Interface
MCP42100	100 Kohm, Dual with SPI Interface
Voltage References	
MCP1525	2.5V Precision Voltage Reference
MCP1541	4.096V Precision Voltage Reference
System D/A Converters	
MCP4921	12-bit Digital-to-Analog Converter with SPI Interface
MCP4922	Dual-channel 12-bit Digital-to-Analog Converter with SPI Interface
MCP4821	12-bit Digital-to-Analog Converter with Internal Voltage Reference and SPI Interface
MCP4822	Dual-channel 12-bit Digital-to-Analog Converter with Internal Voltage Reference and SPI Interface
TC1320/1	8/10-bit Digital-to-Analog Converter with Two-Wire Interface
V/F and F/V Converters	
TC9400/1/2	Precision V/F and F/V Converters

Interface Solutions

In addition to microcontrollers with integrated CAN ports, Microchip offers peripherals designed to provide flexible, cost-effective options for implementing complete CAN nodes. Products include stand-alone CAN controllers, CAN input/output expanders and high-speed CAN transceivers.

Microchip offers products to enable customers to add infrared connectivity to their embedded applications. Products include infrared encoder/decoders and IrDA® protocol stack controllers.

Continuing its leadership in LIN (Local Interconnect Network) solutions, the recently introduced MCP201 device, a single-chip LIN bus interface transceiver with an integrated voltage regulator, joins the portfolio of LIN microcontrollers and development tools.

CAN Peripherals	
Device	**Description**
MCP2515	Stand-Alone CAN Controller with SPI Interface
MCP2551	High-Speed CAN Transceiver
MCP25020/25	CAN Input/Output Expander with Digital I/O and 2 PWM Outputs
MCP25050/25	CAN Input/Output Expander with Digital I/O, PWM Outputs and A/D Inputs

Infrared Peripherals	
Device	**Description**
MCP2120	IR Encoder/Decoder, Hardware/Software Baud Rate Selection
MCP2122	8-pin IR Encoder/Decoder, 16x Clock Input
MCP2140	Fixed-speed, Low-power IrDA Protocol Handler Plus Bit Encoder/Decoder
MCP2150/55	IrDA® Protocol Handler plus Bit Encoder/Decoder
LIN Transceiver	
MCP201	Single-Chip LIN Bus Interface Transceiver with an Integrated Voltage Regulator
Serial Peripherals	
MCP2030	Analog Front End for Low Frequency Sense and Response Applications
MCP23008/23S08	8-bit Input/Output Expanders. Support for both I^2C and SPI Protocols
MCP23016	16-bit Input/Output Expander
MCP23017/23S17	16-bit Input/Output Expanders, Support for both I^2C and SPI Protocols
Ethernet Controller	
ENC28J60	10BaseT Stand Alone Ethernet Controller with On-board MAC and PHY

Thermal Management Products

MCP9800 Thermal Sensor PICtail™ Demonstration Board

Part Number MCP9800DM-PCTL

The MCP9800 demonstration board illustrates how to interface the MCP9800 to a PIC® microcontroller. The board can also be used as a stand-alone module to quickly add thermal sensing capability to any existing application. This basic sensor functionality is implemented on a small Printed Circuit Board (PCB) and an interface via a standard 100 mil header.

MCP9800 Temperature Data Logger Demonstration Board

Part Number: MCP9800DM-DL

Allows users to store up to 128000 temperature readings from the MCP9800 sensor to the 24LC1025, Microchip's 1024 Kbit EEPROM. A PIC16F684 microcontroller communicates with the sensor and EEPROM. In addition, the PIC® microcontroller 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.

Power Management Products

MCP1252 Charge Pump Backlight Demonstration Board

Part Number: MCP1252DM-BKLT

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.

MCP1650 Boost Controller Evaluation Board

Part Number MCP1650EV

Demonstrates the MCP165X Boost Controller product family in two high-power, boost-converter applications.

MCP7384X Li-Ion Battery Charger Evaluation Board

Part Number: MCP7384XEV

Three circuits use MCP73841, MCP73842 and MCP73843 devices to demonstrate simple, stand-alone, linear charging of single- or dual-cell, Lithium-Ion/Lithium-Polymer battery packs (battery packs are not included).

Linear Products

MCP6S22 PGA PICtail™ Demonstration Board

Part Number MCP6S22DM-PICTL

This board evaluates/demonstrates Microchip's MCP6S21/2/6/8 Programmable Gain Amplifier (PGA) family. Interface this board with the PICkit™ 1 Flash Starter Kit to demonstrate firmware integration between the PIC® microcontroller and PGA devices, while allowing modification and development of firmware for specific requirements.

MCP6SX2 PGA Photodiode PICtail™ Demonstration Board

Part Number MCP6SX2DM-PCTLPD

Opens possibilities to process other sensor signals. Increases the number of PIC microcontroller I/O pins available for other purposes. Features a PNZ334 photo-diode, MCP6001U op amp and MCP6S22 and MCP6S92 Programmable Gain Amplifiers (PGA).

Mixed-Signal Products

MCP3551 Delta-Sigma ADC Demonstration Board

Part Number: MCP3551DM-PCTL

Designed to demonstrate the MCP3551 device's 22-bit Delta-Sigma Analog-to-Digital (ADC) Converter performance using DataView™ software installed on a PC. This demo board can be used with MPLAB® ICD 2, PICkit™ 1 Flash Starter Kit or PICkit™ 2 Development Programmer for developing demonstration/evaluation firmware.

MCP3905 Energy Meter Evaluation Board

Part Number: MCP3905EV

This evaluation board is designed to test out a variety of energy meter designs. On the input side high voltage line and load AC-plug headers are included, along with mounting holes for shunts, current transformers and screw-type connections for wiring. On the output side a large prototype area is included along with optical isolation and a standard PICtail™ header for experiments with a variety of PIC® microcontroller based energy meter designs.

Interface Products

MCP2140 IrDA® Wireless Temp Demonstration Board

Part Number MCP2140DM-TMPSNS

Demonstrates the MCP2140 device in a real-world application. Shows how to integrate an IrDA® standard port.

Analog Design Development Tools

Microchip strives to offer complete design solutions, including innovative and easy-to-use development tools. FilterLab® 2.0 Active Filter Software (a free download at www.microchip.com), takes the mystery out of analog and eases the difficult job of active filter design. The MXDEV® 1 Analog Evaluation System makes it easier for system designers to configure the output stage and input signal source and scaling.

Engineers can evaluate, demonstrate and develop interface applications using one of Microchip's kits, such as:

The MCP2510 CAN Developer's Kit which can be used to demonstrate basic CAN input/output functionality and monitor bus activity on the user's CAN bus.

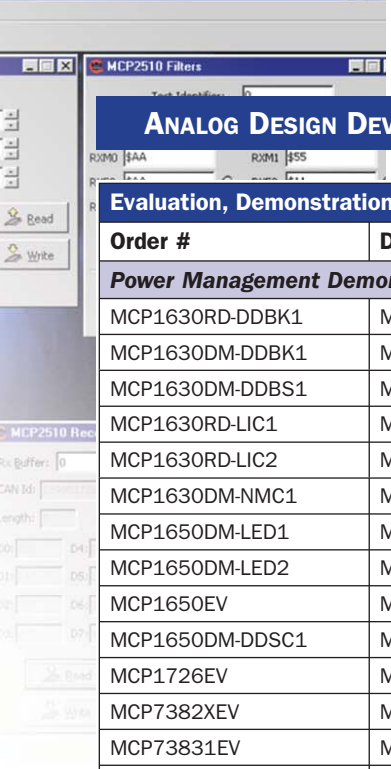
The MCP250XX CAN I/O Expander Developer's Kit includes everything needed to create a CAN-based system using Microchip's CAN I/O expander family.

The MCP2120/2150 Infrared Developer's Kit includes everything needed to create a system that communicates using an infrared wireless connection.

Several evaluation kits are also available to support the development and prototyping of Microchip's Brushless DC Fan Controllers and Temperature Sensors, such as the TC642EV and TC650DEMO. You'll find the most current information on our evaluation kits, demonstration boards and development tools for A/D converters, fan controllers, temperature sensors and digital potentiometers and interface devices, as well as electronic selection tools for power MOSFET drivers and LDOs at the Microchip web site: www.microchip.com

Evaluation, Demonstration and Development Kits

Order #	Description	Devices Supported
Thermal Management Demonstration and Evaluation Tools		
TMPSNS-RTD1	PT100 RTD Evaluation Board	MCP6S26, MCP3301, MCP6024, MCP41010, PIC18F2550, TC1071, MCP6002
MCP9700DM-PCTL	MCP9700 Temperature-to-Voltage Converter PICtail™ Demonstration Board	MCP9800
MCP9800DM-PCTL	MCP9800 Temperature Sensor PICtail™ Demonstration Board	MCP9800
MCP9800DM-DL	MCP9800 Temperature Data Logger Demonstration Board	MCP9800
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
TC642EV	TC64X/64XB Fan Speed Controller Evaluation 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
Mixed Signal Demonstration and Evaluation Tools		
DV3201A	MCP3XXX Single/Dual ADC MXDEV Daughter Board	MCP3001, MCP3002, MCP3201, MCP3202
DV3204A	MCP3204/08 MXDEV Daughter Board	MCP3004, MCP3008, MCP3204, MCP3208
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
MCP3905EV	MCP3905 Energy Meter Evaluation Board	MCP3905
MCP3905RD-PM1	MCP3905 Energy Meter Reference Design	MCP3905
MCP402XEV	MCP402X Non-Volatile Digital Potentiometer Evaluation Board	MCP4021, MCP4022, MCP4023, MCP4024
DV42XXX	MCP42XXX Digital Pot Evaluation Board	MCP42010, MCP42050, MCP42100
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
Power Management Demonstration and Evaluation Tools		
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
MCP1612EV	MCP1612 Synchronous Buck Regulator Evaluation Board	MCP1612



Analog Design Development Tools

Evaluation, Demonstration and Development Kits

Order #	Description	Devices Supported
Power Management Demonstration and Evaluation Tools (Continued)		
MCP1630RD-DDBK1	MCP1630 +12V in Dual Output Buck Converter Reference Design	MCP1630
MCP1630DM-DDBK1	MCP1630 1A Bias Supply Demonstration Board	MCP1630
MCP1630DM-DDBS1	MCP1630 Automotive Input Boost Converter Demonstration Board	MCP1630, PIC12F683
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
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
MCP7382XEV	MCP7382X Li-Ion Battery Charger Evaluation Board	MCP7382X
MCP73831EV	MCP73831 Evaluation Kit	MCP73831
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
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
Interface Products Demonstration and Evaluation Tools		
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
DM163008	MCP2120/2150 Infrared Developer's Kit	MCP2120, MCP2150
MCP215XDM	MCP215X Data Logger Demonstration Board	MCP2150/55
MCP2140DM-TMPSNS	MCP2140 IrDA® Wireless Temp Demonstration Board	MCP2140
MCP212XEV-DB	MCP212X Developer's Daughter Board	MCP212X
MCP215X/40EV-DB	MCP215X/40 Developer's Daughter Board	MCP2140, MCP2150/55
MCP23X08EV	MCP23X08 8-bit GPIO Expander Evaluation Board	MCP23008, MCP23S08
MCP23X17EV	MCP23X17 16-Bit GPIO Expander Evaluation Board	MCP23017, MCP23S17
Linear Demonstration and Evaluation Tools		
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
PIC16F690DM-PCTLHS	Humidity Sensor PICtail™ Demonstration Board	MCP6291, PIC16F690
Analog Blank Evaluation Boards		
SOIC8EV	SOIC 8-Lead Evaluation Board	8-pin Devices
SOIC14EV	SOIC/TSSOP/DIP 14-pin Evaluation Board	14-pin SOIC, TSSOP, DIP
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

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- **Training** link offers webinars, registration for local seminars/workshops and information on annual MASTERs events held throughout the world.

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