Analog Development Tools Guide

Microchip Technology has established a reputation for its comprehensive set of low-cost, easy-to-learn application development systems that support our microcontroller product portfolio. Our MPLAB® certified tools help system designers quickly program PIC® microcontrollers for specific applications. To date, Microchip has shipped more than 300,000 development systems.

Now Microchip offers a broad spectrum of analog development tools that focus on power management, thermal management, linear, mixed-signal and interface solutions – all designed to help you achieve faster time to market. For a complete listing of Microchip products and their corresponding users guides and technical information, visit our web site – www.microchip.com/analogtools

Interface Products

MCP2120/2150 Developer's Kit

Part Number: DM163008

Includes everything needed to create a system that uses infrared to communicate. Kit contains two MCP2120 developer's boards and one MCP2150 developer's board.

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.

MCP215X Data Logger Demonstration Board

Part Number: MCP215XDM

Demonstrates the MCP2150 (or MCP2155) IrDA Standard Protocol Stack Controller device in a real-world application. Shows how to integrate an IrDA standard port into an embedded system.

MCP23X08 8-bit GPIO Expander Evaluation Board

Part Number: MCP23X08EV

Demonstrates simple input/output functionality of the MCP23008 (I^2C™ interface) and the MCP23S08 (SPI™ interface). The system demonstrates the simplicity of monitoring four inputs and applying the level to associated outputs.

MCP250XX CAN I/O Expander Developer's Kit

Part Number: DV250501

Supports CAN V2.0B active with bus rates up to 1 Mb/s. Includes a CAN node using the MCP250XX CAN I/O Expander.

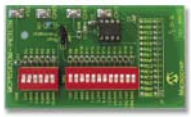
MCP2510/2515 CAN Developer's Kit

Part Number: DV251001

Speeds up software development and introduces CAN to those unfamiliar with the protocol. Combines a software development tool with a CAN message/ communication tool.

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 PIC microcontrollers and PGA devices, while allowing modification and development of firmware for specific requirements. Board can be used in stand-alone mode.

MCP6S2X PGA Evaluation Board

Part Number: MCP6S2XEV

Provides a versatile selection of input channels and gains to evaluate device performance. Board supports multiple input signal sources. Two devices can be cascaded to produce gain to 1024 V/V.

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).

MCP6SX2 PGA Thermistor PICtail™ Demonstration Board

Part Number: MCP6SX2DM-PCTLTH

Features MCP6S22 and MCP6S92 PGAs. Helps overcome non-linear response of the on-board NTC thermistor. Opens possibilities of temperature-correcting another sensor, and increasing the number of PIC MCU I/O pins available for other purposes.

Mixed Signal Products

MCP3201/02 Single/Dual A/D Converter MXDEV® Daughter Board

Part Number: DV3201A

Supports MCP3001, MCP3002, MCP3201 and MCP3202 stand-alone A/D converters. Used with the MXDEV Driver Board (available separately).

MCP3204/08 MXDEV® Daughter Board

Part Number: DV3204A

Supports MCP3004, MCP3008, MCP3204 and MCP3208 stand-alone A/D converters. Used with the MXDEV Driver Board (available separately).

MCP3221 12-bit A/D PICtail™ Demonstration Board

Part Number: MCP3221DM-PCTL

Designed to demonstrate the MCP3221 device using DataView™ Windows® software for a graphical real time data analysis from the board through USB. This demo board also can connect directly to the PICkit 1 Flash Starter Kit, providing a platform for code development and evaluation. Provides a good example of how to interface the MCP3221 to a microcontroller.

MCP402X Digital Potentiometer Evaluation Board

Part Number: MCP402XEV

This low-cost board enables user's to exercise all of the features of the MCP402X. Kit includes one populated and one unpopulated PCB. The populated board has an MCP4021-103E/SN digital pot configured as a "windowed" potentiometer. The unpopulated PCB allows user's to build the exact combination of components their application requires.

MCP42XXX Digital Pot MXDEV® Daughter Board

Part Number: DV42XXX

Includes an evaluation board, prototype board, RS-232 cable, 9V DC power supply, MXLAB® software, digital potentiometers and PIC microcontroller. Used with the MXDEV Driver Board (available separately).

Mixed-Signal PICtail™ Demonstration Board

Part Number: MXSIGDM

Quickly and accurately evaluates performance of Microchip DACs, A/D converters, LDOs, VREFs and Operational Amplifiers. Interfaces to the PICkit 1 Flash Starter Kit. Can be used with a PIC16F767 for stand-alone operation. Supports many Microchip mixed-signal devices (surface mount footprint).

MXDEV® Analog Evaluation System

Part Number: DVMCPA

Versatile, easy-to-use system helps evaluate mixed-signal products. Includes the DVMCPA MCP Driver Board, which provides data acquisition and analysis/display in a Windows environment.

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 serves as a platform to evaluate the MCP1252 device. 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.

MCP1601 Buck Regulator Evaluation Board

Part Number: MCP1601EV

For both battery-powered and distributed-power applications. Operates over a 2.7V to 5.5V input range while delivering 500 mA of output current.

MCP1612 Synchronous Buck Regulator Evaluation Board

Part Number: MCP1612EV

Features a 1A 1.4 MHz synchronous buck regulator in two buck converter applications. The applications use the 8-lead MSOP and 8-lead DFN packages respectively. Selectable output voltages and a shutdown terminal are available on each converter.

MCP1630 Dual Synchronous Buck Regulator Demonstration Board

Part Number: MCP1630RD-DDBK1

This demo board is a dual output programmable power supply capable of 20A per output. Both outputs switch at 500 kHz 180° out of phase while powered from a +12V-input source. Features include programmable output voltage, power good output indication, sequencing, over current and over temperature.

MCP1630 Li-Ion Multi Bay Battery Charger Reference Design

Part Number: MCP1630RD-LIC1

Used to evaluate the MCP1630 used in a SEPIC power converter application. This charger is capable of charging two single-cell, Li-Ion battery packs in parallel utilizing an input voltage of 10V to 30V (battery packs are not included).

MCP1630 NiMH Battery Charger Demonstration Board

Part Number: MCP1630DM-NMC1

High-speed PWM interfaces to PIC16LF818, providing a complete NiMH battery charger with fuel gauge capability. Minimizes external inductor, capacitor cost; performs complex NiMH battery charger timing functions. Protects battery circuit if a fault occurs.

MCP1650 Boost Controller Evaluation Board

Part Number: MCP1650EV

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

MCP165X 3W White LED Demonstration Board

Part Number: MCP1650DM-LED1

Demonstrates the MCP165X Boost Controller product family in a battery-powered white LED application with an input voltage range of 2.0V to 4.5V.

MCP1726 LDO Evaluation Board

Part Number: MCP1726EV

This board features adjustable versions of the MCP1726 1A, Low Quiescent Current LDO Regulator in two circuits. Both circuits have potentiometers to adjust the output voltage of the LDO. Fixed voltage versions of the device can also be evaluated with this board.

MCP7382X Li-Ion Battery Charger Evaluation Board

Part Number: MCP7382XEV

Features three circuits utilizing the MCP73826, MCP73827 and MCP73828 devices to demonstrate simple, stand-alone, linear charging of single cell Lithium-Ion/Lithium-Polymer battery packs (battery packs are not included).

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).

MCP73855 Li-Ion Battery Charger Evaluation Board

Part Number: MCP73855EV

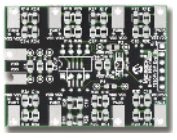
Use to evaluate simple, stand-alone, linear charging of single cell Li-Ion/Li-Polymer battery packs (the battery packs are not included). The board design provides constant current charging followed by constant voltage charging with automatic charge termination.

MCP7386X Li-Ion Battery Charger Evaluation Board

Part Number: MCP7386XEV

Use to evaluate simple, stand-alone, linear charging of single/dual cell Lithium-Ion/ Lithium-Polymer battery packs (the battery packs are not included). The board design provides constant current charging followed by constant voltage charging with automatic charge termination.

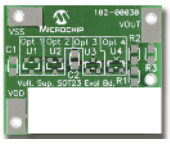
SOIC 8-Lead Evaluation Board



Part Number: SOIC8EV

A blank PCB to easily evaluate Microchip's 8-pin devices. Each device pin is connected to a pull-up resistor, a pull-down resistor, an in-line resistor and a loading capacitor. The PCB pads allow through-hole or surface mount connectors to be installed. Additional passive component footprints on the board, to allow simple circuits to be implemented. This PCB supports many Microchip devices, including the non-volatile Digital Potentiometer and PIC10F2XX devices.

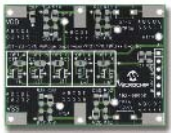
SOT-23-3 Voltage Supervisor Evaluation Board



Part Number: VSUPEV

Quickly evaluates operation of Voltage Supervisors and Voltage Detectors in the Microchip SOT-23-3 package. Generic board evaluates SOT-23-3 devices (such as LDOs and Voltage References). Four blank PCBs are included for testing multiple devices.

SOT-23-5/6 Voltage Supervisor Evaluation Board



Part Number: VSUPEV2

This blank PCB allows quick evaluation of Voltage Supervisors and Voltage Detectors in the SOT-23-5 and SOT-23-6 packages. This PCB supports many Microchip devices, including the non-volatile Digital Potentiometer and PIC10F2XX devices.

Thermal Management Products

MCP9700 Thermal Sensor PICtail™ Demonstration Board

Part Number: MCP9700DM-PCTL

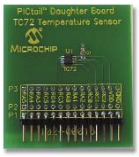
This board demonstrates how to interface the MCP9700 to a microcontroller. This can be used by the system designer as an example of how to integrate an analog temperature sensor in an embedded system.

MCP9800 Thermal Sensor PICtail™ Demonstration Board

Part Number: MCP9800DM-PCTL

Demonstrates how to interface the MCP9800 to a PIC microcontroller using the PICkit 1 Flash Starter Kit as a platform. The demo board can also be used as a stand-alone module to quickly add thermal sensing capability to any existing application.

TC72 Digital Temperature Sensor PICtail™ Demonstration Board



Part Number: TC72DM-PICTL

Connects directly to the PICkit 1 Flash Starter Kit. Highly accurate board features a 10-bit digital sensor with 3-wire SPI interface.

TC74 Serial Digital Thermal Sensor Demonstration Board

Part Number: TC74DEMO

Particularly suited for low-cost, small form factor applications. Connects directly to the PICkit 1 Flash Starter Kit.

TC77 Thermal Sensor PICtail™ Demonstration Board

Part Number: TC77DM-PICTL

System designers can use this design as an example of how to integrate a digital temperature sensor into their systems. Connects directly to the PICkit 1 Flash Starter Kit.

TC64X/64XB Fan Speed Controller Demonstration Board

Part Number: TC642DEMO

Fan control module allows users to quickly prototype fan control circuits based on the TC642 or TC646 PWM Fan Control ICs. It uses through hole components for easy user assembly and evaluation.

TC64X/64XB Fan Speed Controller Evaluation Board

Part Number: TC642EV

This is a complete evaluation board for evaluation and prototyping brushless DC fan control circuits using the TC642, TC646, TC647, TC648 and TC649 BDC fan controllers.

TC650 Fan Controller Demonstration Board

Part Number: TC650DEMO

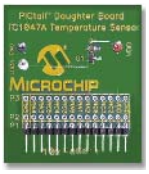
Allows users to quickly prototype fan control circuits based on the TC650 or TC651 PWM Fan Control ICs.

TC652 Fan Controller Demonstration Board

Part Number: TC652DEMO

Allows users to quickly prototype fan control circuits on TC652 or TC653 PWM Fan Control ICs. The board can interface with virtually any brushless DC fan.

TC1047A Temperature-to-Voltage Converter PICtail™ Demonstration Board



Part Number: TC1047ADM-PICTL

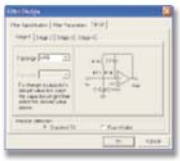
Demonstrates how to interface the TC1047A device to a microcontroller. Connects directly to the PICkit 1 Flash Starter Kit, providing a platform for code development and evaluation. Provides a good example of how to integrate an analog temperature sensor into a system.

Worldwide Sales and Service

Microchip Technology Inc. is a leading provider of microcontroller, analog and memory products that provide risk-free product development, lower total system cost and faster time to market for thousands of diverse customer applications worldwide. Microchip's commitment to quality and innovation coupled with world-class development tools, dependable delivery and outstanding technical support sets us apart.

Analog Software Tools

FilterLab® Active Filter Design Software



The FilterLab® Active Filter Software Design tool simplifies active filter design. Available at no cost, this tool provides full schematic diagrams of the filter circuit with component values and displays the frequency response.

SPICE Software Models

Modeling is the heart of any SPICE simulation system and Microchip provides a variety of model libraries. This library and service is another example of how Microchip leads the way in analog simulation and modeling.

Analog and Interface Attributes

Robustness

- MOSFET Drivers lead the industry in latch-up immunity/stability

Low Power/Low Voltage

- Op Amp family with the lowest power for a given gain bandwidth
- 600nA/1.4V/10 kHz bandwidth Op Amps
- 1.8V charge pumps and comparators
- Lowest power 12-bit ADC in a SOT-23 package

Integration

- One of the first to market with integrated LDO with Reset and Fan Controller with temperature sensor
- PGA integrates MUX, resistive ladder, gain switches, high-performance amplifier, SPI interface

Space Savings

- Resets and LDOs in SC70, A/D converters in a 5-lead SOT-23 package
- CAN and IrDA Standard protocol stack embedded in an 18-pin package

Accuracy

- Offset trimmed after packaging using non-volatile memory

Innovation

- Low pincount embedded IrDA Standard stack, FanSense™ technology
- SelectMode™ operation

For more information, visit the Microchip web site at:
www.microchip.com/analogtools

MICROCHIP

www.microchip.com

Microchip Technology Inc. • 2355 W. Chandler Blvd. • Chandler, AZ 85224-6199

MICROCONTROLLERS • DIGITAL SIGNAL CONTROLLERS • ANALOG • SERIAL EEPROMS

DS21971B