



Low-Cost Development Tools Guide

For use with Analog and Interface Products, 8-bit PIC[®] Microcontrollers (MCUs), 16-bit MCUs and dsPIC[®] Digital Signal Controllers (DSCs), Memory and Keeloq[®] Products.

Microchip offers a wide range of development tools – all designed to help you achieve faster time to market. For a complete listing of Microchip products and their corresponding users guides, data sheets and technical information, visit our web site at: www.microchip.com

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Getting Started Products

Explorer 16 Starter Kit

Part Number: DV164033



A complete set of tools for application development using the PIC24F, PIC24H and dsPIC33F 16-bit families. The kit includes MPLAB[®] ICD 2, Explorer 16 Development Board, 9V universal power supply, serial cable and both a PIC24FJ128GA010 and dsPIC33F256GP710 PIM. Tutorials, user manuals, MPLAB[®] IDE and MPLAB C30 C Compiler (student edition) are included.



PICkit[™] 2 Debug Express

Part Number: DV164121



Allows in-circuit programmer/debugger functions on selected PIC[®] MCUs. This provides the ability to run, examine and modify the program, while the MCU is embedded in the hardware, thereby assisting in debugging the firmware and hardware together. Programs can be run, stopped and single-stepped. Includes 44-pin demo board. Requires MPLAB[®] IDE version 7.40 or later.



PICkit[™] Serial Analyzer

Part Number: DV164122



A low-cost development kit with an easy-to-use interface. Includes a development board containing Microchip's 28-pin PIC16F886 Flash microcontroller. This MCU contains firmware to emulate several functions typically found in serial systems. The PICkit[™] Serial Analyzer can be used to exercise these functions and display the data.



PICDEM[™] System Management Kit

Part Number: DM164123



An inexpensive demonstration and training tool that allows communication between a PC and the serial protocol of the system being tested. Integrates the functions of a dedicated Real-Time Clock (RTC), serial EEPROM, thermal management controller and Analog-to-Digital Converter (ADC) into a single PIC[®] microcontroller. Ideal for designing applications with a variety of integrated peripherals.



PICkit[™] 1 Flash Starter Kit

Part Number: DV164101



A low-cost starter development kit with an easy-to-use interface for programming Microchip's 8-/14-pin Flash PIC[®] MCUs. The kit includes everything needed to program, evaluate and develop applications. Seven tutorials with all source code files are furnished.

PICkit[™] 2 Starter Kit

Part Number: DV164120



PICkit[™] 2 is small, easy-to-use starter kit that enables users to start writing code and programming with PIC[®] MCUs. Features full-speed USB support and firmware upgradeability in a low-cost tool. Includes a low pin-count demo board. Upgrade firmware for debugger function.

PICDEM™ HPC Explorer Board

Part Number: DM183022



This low-cost demo board is used to evaluate the performance of High Pin Count (HPC) 8-bit PIC18F series microcontrollers. The board features a PIC18F8722 MCU, which is the superset of the entire 64- and 80-pin PIC18FXXX general purpose family. A daughter

board (mezzanine) is also part of the kit and allows different processors sharing the same pin out to be mounted and tested on the explorer board.

Signal Analysis PICTail™ Daughter Board

Part Number: AC164120



This board works as an extension to the PICTail™ 1 Flash Starter Kit. When combined with PICTail 1 firmware version 2.0.0 or later and the signal-analysis PC program, the board performs signal-analysis capabilities such as:

Transformation (FFT), histogram and programming. The board comes populated with a PIC16F684 and two 25LC640 SPI-compatible serial EEPROM memory devices.

PIC10F 6L SOT-23 to 8P DIP Adapter Kit

Part Number: AC163021



This is a kit consisting of (5) PIC10F206 SOT-23 devices, (5) pin scramble boards and DIP pins. Once assembled, this makes the SOT-23 look like a standard 8-pin DIP and can be used directly in standard development tool sockets. This kit should be used only for early evaluation.

SEEVAL® 32 Serial EEPROM Evaluation Kit

Part Number: DV243002



An evaluation and programming system supporting all Microchip Serial EEPROMs including future devices. Using a ZIF socket, standard DIP sockets are directly supported. The SEEVAL 32 gives the designer the ability

to read, write or erase any byte, page or entire array, and to display, save or load this data as a file. SEEVAL 32 provides support for Windows® XP, Windows ME, Windows 2000, Windows NT® 4.0 and Windows 95/98.

KEELOQ® Evaluation Kit II

Part Number: DM303006



This kit demonstrates the capabilities of the code-hopping technology used in security systems such as garage door openers, auto keyless entry, etc. for secure access and/or authentication. It includes a main board and

2 transmitters to demonstrate encoders and decoders. The fully functional kit allows a short learning cycle into the technology.

Linear Products

MCP6271 Active Filter Evaluation Kit

Part Number: 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.

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 PICTail™ 1 Flash Starter Kit to demonstrate firmware integration between the PIC® MCU and PGA devices, while allowing modification and development of firmware for specific requirements.

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® MCU 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.

Humidity Sensor PICTail™ Demonstration Board

Part Number: PIC16F690DM-PCTLHS



This board supports the capacitive humidity sensor application note AN1016. It measures the capacitance of a relative humidity sensor plugged into the board. The on-board microcontroller sends the measured and calculated relative humidity (RH) to a PC for display. The board can also measure small capacitors in different ranges of values using a dual slope integration method.

Interface Products

GPIO Expander Keypad and LCD Demonstration Board



Part Number: **GPIODM-KPLCD**

The GPIO Expander Keypad and LCD Demo Board is designed to demonstrate the use of the MCP23S08/17 (SPI interface) and the MCP23008/17 (I²C™ interface) devices in a keypad and LCD example. The MCP23X17 (16-bit) devices interface to a 2x16 LCD module and the MCP23X08 (8-bit) devices interface to a 4x4 keyed matrix.

PICDEM™ CAN-LIN 1 Demonstration Board



Part Number: **DM163007**

Microchip offers three PICDEM CAN-LIN Demo Boards to support different PIC® MCUs. All demonstrate the main features of the devices, especially those features of the integrated

CAN module. The boards also employ a LIN sub-network using the PIC16C43X and PIC18F320 device families. Supports: 68-pin PLCC PIC18C658, 84-pin PLCC PIC18C858 devices and 20-pin PDIP PIC16C432 with integrated LIN Bus transceiver.

PICDEM™ CAN-LIN 2 Demonstration Board



Part Number: **DM163011**

PICDEM CAN-LIN 2 supports: 28-pin SDIP PIC18F258 and PIC18F268X devices, 40-pin PDIP PIC18F458 and PIC18F468X devices and 20-pin PDIP PIC16C432 with integrated LIN Bus transceiver.

PICDEM™ CAN-LIN 3 Demonstration Board



Part Number: **DM163015**

PICDEM CAN-LIN 3 supports: 64-pin TQFP PIC18F6680, 80-pin TQFP PIC18F8680 devices, 20-pin SSOP PIC18F1320 and MCP201 LIN Bus transceiver.

PICDEM™ LCD Demonstration Board



Part Number: **DM163028**

Demonstrates the main features of the LCD Flash 28-, 40-, 64- and 80-pin PIC® MCUs with power-management features. The board is populated with the PIC18F8490 and other devices are supported via a transition socket.

A sample LCD glass display is included for custom prototyping. The PICDEM LCD kit provides tutorial firmware, which is included in the preprogrammed devices.

PICDEM™ LCD Plug-In Modules



Part Number: **MA160011**

A simple and inexpensive method to utilize the PICDEM LCD platform for development with PIC16F913/914/916/917/946. The plug-in modules kit consists of one of each of the following: a PIC16F916 module (superset of the

PIC16F913), PIC16F917 module (superset of the PIC16F917) and a PIC16F946 module.

PICDEM™ FS USB Demonstration/Evaluation Board

Part Number: **DM163025**



Demonstrates and evaluates the PIC18F4550 family of Flash MCUs with full-speed USB 2.0 interface. The board contains a PIC18F4550 MCU in a 44-pin TQFP package, representing the superset of the entire family of devices.

PICDEM™ USB Demonstration Board

Part Number: **DM163010**



Demonstrates the PIC16C745 and PIC16C765 USB MCUs communicating to a PC using the USB port.

PICDEM™ MSC1 Infrared (IR) Driver Daughter Board



Part Number: **AC163002**



This board, in combination with the PICDEM MSC1 Demo Board, serves as a demonstration and evaluation kit for designing a high-power IR remote control transmitter using the

PIC16C782. The daughter board, in combination with the included IR receiver, implements both receive and transmit sections of a Pulse Width Modulation (PWM) IR remote control system.

PICtail™ Daughter Board for SD and MMC Cards



Part Number: **AC164122**



This PICtail daughter board interfaces with newer development boards that offer the PICtail and PICtail Plus connector interface; such as the PICDEM™ FS USB development board. This board also interfaces with the Explorer 16 Development Board via the PICtail Plus connector.

Ethernet PICtail™ Daughter Board



Part Number: **AC164121**



Provides a cost-effective method of evaluating and developing Ethernet-control applications. This board is populated with a 28-pin Ethernet controller, which interfaces to the RJ-45 female connector. Designed for flexibility, this board

can be plugged into the popular PICDEM™ HPC Explorer Board (DM183022).

Ethernet PICtail™ Plus Daughter Board

Part Number: **AC164123**



This board provides a cost-effective method of evaluating and developing Ethernet-control applications. Designed for flexibility, the board can be plugged into Microchip's Explorer 16 Development Board (DM240001). The board

is populated with a 28-pin ENC28J60 Ethernet controller, which interfaces to the RJ-45 female connector. When used in conjunction with the Microchip TCP/IP stack, the daughter board allows a developer to connect any Microchip 16-bit product to an Ethernet device.

ZENA™ Network Analyzer



Part Number: DM183023



A wireless network analyzer that graphically displays wireless network traffic following the IEEE 802.15.4 specification on the 2.4 GHz band. Supports both the ZigBee™ and

MiWi™ protocols. In conjunction with the hardware packet sniffer, the software can analyze complete network traffic and graphically display decoded packets, when developing with either the ZigBee or the MiWi protocols.

rfPIC® Development Kit 1



Part Number: DV164102

Provides design engineers with an easy way to evaluate unidirectional remote sense and control wireless links based on the rfPIC12F675 and rFRXD0420/0920 devices.

The kit is based on the PICkit™ 1 Flash Starter

Kit and consists of modular building blocks for different transmitters and receivers that can be utilized for prototype systems or to evaluate different options.

rfPIC® Development Kit 1 Accessories

rfPIC® Transmitter Module (433.92 MHz)

Part Number: AC164101

rfPIC® Transmitter Module (315 MHz)

Part Number: AC164102

rfPIC® Receiver Module (433.92 MHz)

Part Number: AC164103

rfPIC® Receiver Module (315 MHz)

Part Number: AC164104

rfPIC® Receiver Module 5 pack (433.92 MHz)

Part Number: AC164105

rfPIC® Receiver Module 5 pack (315 MHz)

Part Number: AC164106

MCP2140 IrDA® Wireless Temp Demonstration Board



Part Number: MCP2140DM-TMPSNS

Demonstrates the MCP2140 device in a real-world application. This design is an example of how to integrate an IrDA® standard port into a system.

MCP212X Developer's Daughter Board



Part Number: MCP212XEV-DB

Evaluates and demonstrates the MCP2122 or MCP2120 IrDA® Standard Encoder/Decoder devices. A header allows the MCP212X Daughter Board to be easily jumpered into systems for development purposes. This board also interfaces with these new low-cost PIC®

MCU demo boards: PICDEM™ HPC Explorer, PICDEM FS USB and PICDEM LCD Demo Board.

MCP2120/2150 Infrared Developer's Kit



Part Number: DM163008

Includes everything needed to create a system that communicates using infrared. The kit contains two MCP2120 developer's boards, enabling a complete system (transmitter and receiver) to be implemented, and a MCP2150

developer's board that can be used to set up a system to communicate with other IrDA® standard enabled devices.

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.

MCP215X/40 Developer's Daughter Board



Part Number: MCP215X/40EV-DB

Used to evaluate and demonstrate the MCP2150, MCP2155 or the MCP2140 IrDA® Standard Protocol Handler with Encoder/Decoder devices. Headers allow the MCP215X/40 Developer's Daughter Board to be easily jumpered into systems for development

purposes. This board also interfaces with these new low-cost PIC® MCU demo boards: PICDEM™ HPC Explorer, PICDEM FS USB and PICDEM LCD Demo Board.

MCP23X08 8-bit GPIO Expander Evaluation Board



Part Number: MCP23X08EV

Demonstrates simple input/output functionality of the MCP23008 (I²C™ interface) and the MCP23S08 (SPI interface). The system demonstrates the simplicity of monitoring four inputs and applying the level to associated outputs.

MCP23X17 16-bit GPIO Expander Evaluation Board



Part Number: MCP23X17EV

This board demonstrates the simple input/output functionality of the MCP23017 (I²C™ interface) and the MCP23S17 (SPI interface).

The system demonstrates the simplicity of monitoring four pins configured as inputs and applying a predetermined pattern on LEDs connected to the remaining 12 pins configured as outputs.

MCP250XX CAN I/O Expander Developer's Kit



Part Number: DV250501

Supporting CAN V2.0B active with bus rates up to 1 Mb/s, this kit includes everything needed to demonstrate, design, develop and configure a CAN node using the MCP250XX CAN I/O Expander family of products.

MCP2510/2515 CAN Developer's Kit



Part Number: DV251001

To speed up software development and enable introduction of CAN to those who are unfamiliar with the protocol, Microchip offers a unique combination of a software development tool and a CAN message/communication tool called the MCP2515/2510 CAN Developer's Kit.

MCP2515 CAN Controller PICtail™ Demonstration Board



Part Number: MCP2515DM-PCTL

This demo board implements a simple CAN bus using two nodes. One using the MCP2515 Stand Alone CAN controller and the other using the MCP25020 CAN I/O Expander. Each node utilizes one input (push button) and

one output (LED). The boards demonstrate a simple, inexpensive implementation of a CAN bus.

Mixed Signal Products

MCP3XXX Single/Dual ADC 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 can also be used for firmware development to the MCP3221 device using the PICKit™ 1 Flash Starter Kit.

MCP355X Tiny Application Sensor Demonstration Board



Part Number: MCP355XDM-TAS

This 1" x 1" board is designed to demonstrate the performance of the MCP3550/1/3 devices in a simple low-cost application. The circuit uses a ratiometric sensor configuration and uses the system power supply as the voltage reference.



MCP355X Sensor Applications Developer's Board



Part Number: MCP355XDV-MS1

This board allows for easy design of high resolution systems such as weigh scale, temperature sensing or other small signal systems requiring precise signal conditioning circuits. The reference design includes LCD display firmware that performs all the necessary functions including ADC sampling, USB communication for PC data analysis, LCD display output, zero cancellation, full scale calibration and units display in gram (g), kilogram (kg) or ADC output units.



MCP3551 Delta-Sigma ADC Demonstration Board



Part Number: MCP3551DM-PCTL

Designed to demonstrate the MCP3551 device's 22-bit Delta-Sigma Analog-to-Digital Converter (ADC) 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 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® MCU-based energy meter designs.

MCP3905 Energy Meter Reference Design



Part Number: MCP3905RD-PM1

A stand-alone low-cost energy meter that can act as either a stand alone energy meter, or as the analog front end design for LCD MCU-based meters. This design is specified with an energy measurement error of 0.1% typical across 1:500 dynamic range for high accurate energy meter designs and is compliant with EMC requirements per energy metering standards IEC62053 and legacy IEC61036, IEC1046 and IEC687.

MCP4XXX Digital Potentiometer Daughter Board



Part Number: MCP4XXXDM-DB

This board allows evaluation of the MCP42XXX and MCP402X Digital Potentiometers. The MCP42XXX are dual digital potentiometer devices that have the same characteristics as the single digital potentiometer devices (MCP41XXX).

The MCP402X devices are non-volatile and have similar characteristics to their volatile memory versions (MCP401X). The board supports two MCP42XXX devices to allow the resistor networks to be "stacked" and form a programmable windowed digital potentiometer. The board also has a voltage doubler device (TC1240A), which can be used to show the WiperLock™ Technology feature of the MCP4021.



MCP402X Non-Volatile Digital Potentiometer Evaluation Board



Part Number: MCP402XEV

This low-cost board enables user's to exercise all of the features of the MCP401X and MCP402X devices. Kit includes one populated and one unpopulated PCB. The populated board has an MCP4021-103E/SN digital potentiometer configured as a "windowed" potentiometer using a 2.5 kΩ pull-up and a 2.5 kΩ pull-down resistor. The PCB supports the 8-pin SOIC, SOT-23-6 and SOT-23-5 package variations. The unpopulated PCB allows user's to build the exact combination of components their application requires.

MCP42XXX Digital Potentiometer Evaluation Board

Part Number: DV42XXX



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

PICDEM™ MSC1 Delta-Sigma ADC Daughter Board

Part Number: AC163003



In combination with the PICDEM MSC1 Demo Board, this board serves as a demonstration and evaluation kit for designing high-resolution Delta Sigma Analog-to-Digital Converters using the PIC16C781/782.

PICDEM™ MSC1 Flow Rate Sensor Daughter Board

Part Number: AC163004



This board, in combination with the PICDEM MSC1 Demo Board, is a complete demonstration kit for a high sensitivity hot-wire anemometer-styled flow rate sensor using the PIC16C782.

PICDEM™ MSC1 Mixed Signal Controller Demonstration Board

Part Number: DM163012



The PICDEM MSC1 with its PC-based Graphical User Interface (GUI) software serves as a stand-alone development and evaluation tool for the PIC16C781/782 MCUs, or as a user interface to the peripherals.

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 use 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 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.

MCP1256/7/8/9 Charge Pump Evaluation Board

Part Number: MCP1256/7/8/9EV



An evaluation and demonstration tool for the MCP1256/7/8/9 regulated 3.3V, low-ripple charge pumps with low-operating current Sleep mode or Bypass mode. The board is set-up to evaluate simple, stand-alone, DC-to-DC conversion. The two evaluation circuits provided, demonstrate the versatility of the MCP1256/7/8/9 family.



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 Automotive Input Boost Converter Demonstration Board

Part Number: MCP1630DM-DBBS1



Demonstrates the MCP1630/V high-speed pulse width modulator used for automotive applications. When used with a microcontroller, the MCP1630/V devices control the power system duty cycle to provide regulated output voltage. The programmable PIC12F683 microcontroller is used to provide oscillator pulses at switching frequency of 500 kHz and set maximum duty cycle. The user may also modify or develop their own firmware routines to further evaluate the MCP1630/V devices in this application.



MCP1630 Coupled Inductor Boost Demonstration Board



Part Number: MCP1630DM-DDBS2

This board demonstrates Microchip's high-speed Pulse Width Modulator (PWM) used in a coupled inductor design. When used with a programmable PIC12F683 microcontroller, the MCP1630 device controls the power system duty cycle to provide different regulated output voltages from 15V-40V, generates oscillator pulses, reference voltage, output voltage selection and ON/OFF of converter using push button S1. The user can also modify or develop their own firmware routines to further evaluate the MCP1630 device in this application.

MCP1630 Automotive Input, Triple Output Converter Demonstration Board



Part Number: MCP1630DM-DDBK4

Demonstrates a high-speed Pulse Width Modulator (PWM) used for automotive application. When used in conjunction with a microcontroller, the MCP1630 will control the power system duty cycle to provide three regulated output voltages of 3.3V at 1.2A, 1.2V at 600 mA and 4.7V at 150 mA. The PIC12F683 microcontroller is used to provide reference voltage, ON/OFF of Converter using push button SW1 and oscillator pulses at switching frequency of 250 kHz. The MCP1630 generates duty cycle based on various external inputs. External signals include the input oscillator pulses, reference voltage from PIC12F683 device, and the feedback voltage. The user can also modify or develop their own firmware routines to further evaluate the MCP1630 device in this application.

MCP1630 +12V in Dual-Output Buck Converter Reference Design



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, overcurrent and overtemperature.

MCP1630 1A Bias Supply Demonstration Board



Part Number: MCP1630DM-DDBK1

This demo board is used to evaluate Microchip's MCP1630 used in a SEPIC power converter application. The demo board is capable of providing a regulated output from an input voltage of 9V. The regulated output voltage is selectable at 3.3V or 5V and remains constant

for an output load range of 0A to 1A. An LED indicates the presence of output voltage.

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 Low-Cost Li-Ion Battery Charger Reference Design



Part Number: MCP1630RD-LIC2

This board is used to evaluate the MCP1630 device used in a SEPIC power converter applications. The charger is capable of charging a single-cell, Li-Ion battery pack utilizing an input voltage of 6V to 18V (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 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.

MCP1650 Multiple White LED Demonstration Board



Part Number: MCP1650DM-LED2

The MCP1650 Multiple White LED Demo Board uses the MCP1650 IC to power the nine white LEDs which are connected in series. A PIC10F202 MCU in a SOT-23-6 package is used to provide the PWM signal to the MCP1650. It also accepts a push button input that allows the user to adjust the white LEDs to three different intensities of 100%, 50% and 25%.

MCP1650 Boost Controller Evaluation Board



Part Number: MCP1650EV

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

MCP1650 SEPIC Power Supply Demonstration Board



Part Number: MCP1650DM-DDSC1

Used to evaluate Microchip's MCP1650 boost controller in a low-power application that requires a regulated output voltage from an input source that can be greater than, less than or equal to the output voltage. As

provided, this board generates a 5.0V output from a 3.0V to 7.0V source.

MCP1726 1A LDO Evaluation Board



Part Number: MCP1726EV

This board features 1A, Low Quiescent Current LDO Regulator in two circuits. The circuits feature adjustable versions of the MCP1726 in the 8-lead 3x3 DFN and 8-pin SOIC packages respectively. 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

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 (the battery packs are not included).

MCP73831 Evaluation Kit

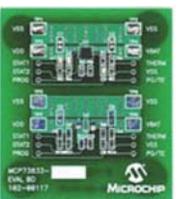


Part Number: MCP73831EV

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

design provides evaluation in two package options: a SOT-23-5 and a 8-lead 2x3 DFN for higher power handling capability.

MCP73833 Li-Ion Battery Charger Evaluation Board



Part Number: MCP73833EV

This evaluation and demonstration tool for MCP73833/4 charge management controllers provides two independent circuits (only one is populated) for charging single cell Li-Ion/Li-Polymer battery packs (the battery packs are not included). Each circuit design provides constant current charging followed by constant

voltage charging algorithm with automatic charge termination and battery temperature monitoring. The board provides for evaluation of two package options: a MSOP-10 (not populated) and a 10-lead 3x3 DFN for higher power handling capability.

NEW

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.

TC115 PFM/PWM Boost Converter Evaluation Board



Part Number: TC115EV

A complete, step-up, switch-mode, DC-DC power converter. This board generates a regulated 3.0V output at load currents up to 110 mA. Different output voltages are obtainable by replacing the fixed 3.0V output TC115 with a fixed 3.3V or 5.0V device.

Requires the use of an external input voltage source (0.9V – V_{OUT}). The board is provided with an aluminum electrolytic output capacitor with additional surface-mount pads to evaluate tantalum or ceramic capacitors.

TC1016/17 LDO Linear Regulator Evaluation Board



Part Number: TC1016/17EV

This evaluation board contains two independent LDO circuits that allow the user to evaluate the TC1016 (80 mA) and TC1017 (50 mA) devices in SC-70-5 and SOT-23-5 packages. The evaluation board is populated with 1.8V and 3.0V TC1017 devices. Any of the

available output voltage values of the devices (1.2V to 5.0V) can be used on this board.

TC1303 DFN Adjustable Output Demonstration Board



Part Number: TC1303DM-DDBK2

This demo board is used to evaluate the TC1303C device over the input voltage range, output voltage and current range for both the synchronous buck regulator output and the low dropout linear regulator output. Test points are provided to monitor the input voltage, output voltage, shut down control and power good signal.

TC1303B Demonstration Board



Part Number: TC1303BDM-DDBK1

The TC1303B Dual-Output Regulator with Power-Good Output Demo Board can be used to evaluate the TC1303B device over the input voltage range and output current range for both the synchronous buck regulator output and the low-dropout linear regulator output. Test points are provided for input power, output loads, shutdown control and power-good monitoring.

PICDEM™ Low-Power Solutions Demonstration Board



Part Number: DM163026

This board explores PIC® microcontroller nanoWatt features within a functional ultrasonic range-finder application. It features the PIC18F4620 power managed device.

PICDEM™ MSC1 Switch Mode Power Supply (SMPS) Daughter Board



Part Number: AC163001

In combination with the PICDEM MSC1 Demo Board, this board is a complete demonstration and evaluation kit for designing switch mode power supplies using the PIC16C781/782.

The daughter board can be configured for the following switch mode power supply topologies: Boost: output voltage greater than the supply voltage, Buck: output voltage less than the supply voltage, Buck-Boost: output voltage less than or greater than the supply voltage and Invert: negative output voltages.

Thermal Management Products

MCP9700 Temperature-to-Voltage Converter PICTail™ Demonstration Board



Part Number: MCP9700DM-PCTL

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

MCP9800 Temperature Sensor PICTail™ Demonstration Board



Part Number: MCP9800DM-PCTL

Demonstrates how to interface the MCP9800 to a PIC® MCU 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.

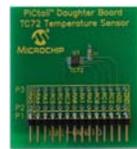
MCP9800 Temperature Data Logger Demonstration Board



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 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.

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 MCU. 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.

PT100 RTD Evaluation Board



Part Number: 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 stripchart display.



PIC® MCU and dsPIC® DSC Demonstration Boards

Explorer 16 Development Board



Part Number: DM240001

The Explorer 16 is a low-cost, efficient development board to evaluate the features and performance of Microchip's new 16-bit PIC24 MCU and dsPIC33 DSC families. Coupled with the MPLAB® ICD 2 In-Circuit Debugger, real-time emulation and debug facilities speed evaluation and prototyping of application circuitry. The board features two interchangeable Plug-In Modules (PIMs), PIC24FJ128GA010 and dsPIC33F128GP710.

PICKit™ 2 Low Pin Count Demonstration Board



Part Number: DM164120-1

A small demo board with a PIC16F690 on board and a small prototype area. Use with the PICKit 2 to program code via a 6-pin ICSP™ header on the board. The kit also includes two bare PCB boards for those interested in customizing their development.

PICKit™ 28-pin Demonstration Board



Part Number: DM164120-3

This small demo board comes populated with Microchip's PIC16F888 28-pin microcontroller and includes a generous prototyping area. The kit also includes two bare boards for those interested in customizing their development.



PICKit™ 44-pin Demonstration Board



Part Number: DM164120-2

A small demo board with a PIC16F917 MCU on board and a small surface mount prototype area. Use with PICKit 2 to program code via a 6-pin ICSP™ header on the board. This kit also includes two bare PCB boards for those interested in customizing their development.



dsPICDEM™ SMPS Buck Development Board



Part Number: DM300023

This development board implements a simple DC/DC Switch Mode Power Supply (SMPS) with a dsPIC30F2020 DSC and is a good starting point for designers new to digital loop control design. Key features: dual independent buck converters, operable in synchronous or asynchronous modes, input voltage range 7-15V (nominal 9V), output voltage programmable: 0 to input voltage minus 1.5V. User can enable a dynamic output load to investigate transient response.



PICDEM™ MC LV Development Board



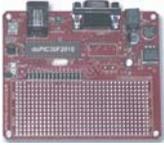
Part Number: DM183021

This board provides a cost-effective method of evaluating and developing sensorless brushless DC (BLDC) motor control applications. The board supports Microchip's 28-pin, PIC18F microcontrollers and dsPIC30F Digital Signal Controllers and is capable of controlling motors rated up to 48V and 2.2 amps. This board is designed to work with the 24V BLDC motor (AC300020) and the 24V motor power supply (AC002013) to create a complete 24V BLDC development kit.



dsPICDEM™ 28-Pin Starter Demonstration Board

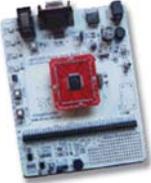
Part Number: DM300017



This low-cost board allows users to easily validate a development tool setup using a 28-pin SDIP or SOIC dsPIC30F device. The board has a socketed dsPIC30F2010 DSC, power supply regulator, crystal oscillator, ICD header, serial port, power on indicator, reset push-button, 28L SOIC layout pad and a prototyping area.

dsPICDEM™ 80-Pin Starter Development Board

Part Number: DM300019



This board offers an economical way to evaluate both the dsPIC30F and dsPIC33F general purpose and motor control family of devices. An ideal prototyping tool to help quickly develop and validate key design requirements. dsPIC30F6014A and dsPIC33F Plug-In Modules are included.

dsPICDEM™ 2 Demonstration Board

Part Number: DM300018



A development and evaluation tool to help create embedded applications using dsPIC30F DSCs. Sockets are provided for 28- and 40-pin devices in the motor control family and 18-, 28- and 40-pin devices in the general purpose and sensor family.

PICDEM™ 2 Plus Demonstration Board

Part Number: DM163022



A simple board that demonstrates the capabilities of the 18-, 28- and 40-pin PIC16XXXX and PIC18XXXX devices. It can be used stand-alone with a programmed part, with MPLAB® ICE or with MPLAB ICD 2.

PICDEM™ 4 Demonstration Board

Part Number: DM163014



A demonstration and evaluation board for the 8-, 14- and 18-pin general purpose products with power-management features. It comes with two pre-programmed Flash-based MCUs, the PIC18F1320 and PIC16F627A, which both feature nanoWatt Technology.

PICDEM™ Mechatronics Demonstration Board

Part Number: DM163029

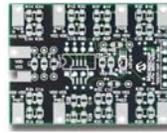


Learn how to use PIC® MCUs to enhance or replace a mechanical design. This demo kit takes a hands-on approach to learning about mechatronics. Jumper wires are provided in the kit and allow the user to experiment by connecting the PIC MCU to various components on the board. These components include sensors, LEDs, human input devices and motor drivers. The board comes with nine example projects and includes firmware, connection diagrams and schematics.

Analog Blank Evaluation PCBs

SOIC 8-Lead Evaluation Board

Part Number: SOIC8EV



A blank PCB to easily evaluate Microchip's 8-pin devices (in SOIC, DIP, MSOP and TSSOP packages). 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 to ease connection to the board. Additional passive component footprints are on the board, to allow simple circuits to be implemented.

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.

14-Pin SOIC/TSSOP/DIP Evaluation Board

Part Number: VSUPEV



This 14-lead SOIC/TSSOP/DIP evaluation board allows system designers to quickly evaluate the operation of Microchip's devices in either SOIC, DIP or TSSOP packages.



Programmiers

MPLAB® ICD 2 Debugger/Programmer

Part Number: DV164005



A low-cost, all-in-one real-time debugger/programmer solution for selected PIC® MCUs. Programs can be downloaded, executed in real time and examined in detail using the proprietary debug functions of MPLAB IDE. Watch variables

and breakpoints can be set from symbolic labels in C or assembly source code, and single stepping can be done through C source line, assembly code level, or from a mixed C source and generated assembly level listing. MPLAB ICD 2 can also be used as a development programmer for supported devices.

PIC10F2XX Universal Programmer Adapter

Part Number: AC163020

Populates DIP-8 and SOT-23 sockets. 2x3 DFN socket unpopulated.



Part Number: AC163020-2

Populates DIP-8 and 2x3 DFN sockets. SOT-23 socket unpopulated.



The PIC10F2XX Universal Programmer Adapter provides PIC10F socket support for the SOT-23, 2x3 DFN and DIP-8 packages. It provides a simple interface to Microchip's low-cost family of programmers including: PICKit™ 1, PICKit™ 2, MPLAB® ICD 2 and PICSTART® products.

Analog Software Tools

FilterLab® Active Filter Design Software



The FilterLab Active Filter Software Design tool simplifies active filter design and provides full schematic diagrams of the filter circuit with component values and displays the frequency response. A free download is available at the Microchip web site at: www.microchip.com

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 an example of Microchip's focus on analog simulation and modeling. For more information, visit the Microchip web site at: www.microchip.com

MCU Software Tools

MPLAB® IDE

Microchip's FREE, integrated toolset for the development of PIC® MCU and dsPIC® DSC embedded applications. MPLAB IDE runs as a 32-bit application on MS Windows, is easy to use and includes a host of free software components for fast application development and debugging. MPLAB IDE also serves as a single, unified graphical user interface for Microchip and third party software/hardware development tools.

MPLAB® C18 C Compiler

A full-featured ANSI compliant C compiler for the PIC18F family of 8-bit PIC® MCUs. MPLAB C18 is a 32-bit Windows console application as well as a fully integrated component of MPLAB IDE, allowing source level debugging with the MPLAB ICE emulator, the MPLAB ICD 2 debugger and the MPLAB SIM simulator. A full-featured 60-day demo of the MPLAB C18 compiler is available at www.microchip.com.

MPLAB® C30 C Compiler

A fully ANSI-compliant C compiler with standard libraries for the PIC24 MCU and dsPIC® DSC architectures. Provides efficient software code generation and extensions that allow for excellent support of the hardware, such as interrupts and peripherals. It is fully integrated with the MPLAB IDE for high level, source debugging. MPLAB C30 comes complete with its own assembler, linker and librarian, allowing users to write and link mixed mode C and assembly programs into a single executable file. A full-featured 60-day demo of the MPLAB C30 compiler is available at www.microchip.com.

Application Maestro™ Software

A stand-alone module tool to configure and incorporate a range of pre-written firmware modules into PIC® MCU applications. Using a graphic interface, select one or more modules, then configure the parameters listed. The Application Maestro software generates code that can be incorporated into the application project, using MPLAB® IDE or any compatible development environment.

MPLAB® Visual Device Initializer

MPLAB VDI graphically configures the microprocessor and peripherals, and when complete, generates code usable in assembly language or C programs. MPLAB VDI does extensive error checking on assignments and settings, and generates an error message if there are conflicts on any resources.

dsPIC® DSC Evaluation Software Tools

Digital Filter Design Lite

Part Number: SW300001-LT

This software package provides a subset of the functionality in the full version of Digital Filter Design. The differences between the two versions is the number of supported FIR and IIR taps and the presence of MATLAB support.

dsPIC30F Acoustic Echo Cancellation Library

Part Number: SW300060-EVAL

This library provides a function to eliminate echo generated in the acoustic path between a speaker and a microphone. Useful for speech and telephony applications in which a speaker and a microphone are located in close proximity to each other, and susceptible to signals propagating from the speaker to the microphone result in a perceptible and distracting echo effect.

dsPIC30F Line Echo Cancellation Library

Part Number: SW300080-EVAL

The dsPIC30F Line Echo Cancellation Library provides a function to eliminate echo generated in telephone or digital network components, such as telephone hybrids. Line echo cancellation is applicable in telephony applications that involve transmitting and receiving signals through a telephone hybrid and is especially suitable for: hands-free cell phone kits, speaker phones, intercoms, teleconferencing systems and voice-over-internet protocol. This library is fully compliant with the ITU-T G.168 standard for Digital Network Echo Cancellers.

dsPIC30F Symmetric Key Embedded Encryption Library

Part Number: SW300050-EVAL

A reliable security solution for embedded applications built on the dsPIC30F platform. The Symmetric Key Embedded Encryption library has the following features: Hash Functions, Symmetric-Key Encryption/Decryption Functions and Random Number Generator Functions.

dsPIC30F Asymmetric Key Embedded Encryption Library

Part Number: SW300055-EVAL

A reliable security solution for embedded applications built on the dsPIC30F platform. The Asymmetric-Key Embedded Encryption library implements these functions: Public Key Encryption/Decryption Functions, Key Agreement Protocol, Signing and Verification, Hash and Message Digest Functions and Random Number Generator (RNG).

dsPIC30F Speech Recognition Library

Part Number: SW300010-EVAL

This library is speaker independent US English and provides voice control of embedded applications that require an alternative user interface. With a vocabulary of up to 100 words, the Speech Recognition Library allows users to control their application vocally. This library is an ideal front end for hands-free products. The library has very modest memory and processing requirements and is targeted for the dsPIC30F5011/5013 and dsPIC30F6012/6014 processors.

dsPIC30F Noise Suppression Library

Part Number: SW300040-EVAL

Provides a function to suppress the effect of noise interfering with a speech signal. This function is useful for microphone-based applications that have a potential for incoming speech corruption from ambient noise. It is especially suitable for systems where an acoustically isolated noise reference is not available.

dsPIC30F V.32 (non-trellis) Soft Modem Library

The Soft Modem libraries are composed of ITU-T compliant algorithms for V.21, V.22, V.22bis, V.23, V.32 and V.32bis modem recommendations. Bell standard 103 is also included in these libraries.

Part Number: SW300003-EVAL

Supports V.21, V.22, V.22bis, V.23, V.32 and V.32bis modem.

Part Number: SW300002 (Free Download)

Supports V.21, V.22 and V.22bis modem.

dsPIC® DSC Speech Encoding/Decoding Library

This library provides toll-quality voice compression and decompression to help generate speech-based embedded applications with three available options.

Part Number: SW300026 (Free Download)

Supports ITU-T G.711 (A-law/u-law) companding algorithm.

Part Number: SW300090-EVAL

Supports ITU-T G.726A (ADPCM) companding algorithm.

Part Number: SW300070-EVAL

Supports dsPIC® DSC SPEEX (CELP) companding algorithm.



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