

MICROSOLUTIONS

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Spend a day exploring Microchip's 16-bit Embedded Control Solutions

Are you an embedded systems designer using microcontrollers? Are you on the lookout for new tools and products to make your work easier and more fun?

Start the morning with an overview of Microchip's microcontroller offering. Learn about the flexible development tool suite, including the MPLAB® Integrated Development Environment that's used in programming the entire product line of 8- and 16-bit PIC® microcontrollers (MCU) and 16-bit dsPIC® Digital Signal Controllers (DSCs). Discover from the experts how advanced features and peripherals can help you get to market faster.

Throughout the day, you'll learn how the time-saving migration advantages of designing with 16-bit PIC24 MCUs and dsPIC DSCs help you conserve engineering resources. Easy-to-use development tools and starter kits demonstrate these concepts along the way. Find out what software libraries and application resources are available for 16-bit MCUs and DSCs and how they lower your development risk. Round out the day with a brief look at how Microchip's analog products can complete your system design.

WHAT YOU WILL LEARN:

- Benefits of designing in one software environment across multiple microcontroller platforms
- Features and benefits of new 16-bit PIC24 microcontrollers and dsPIC DSCs
- Where to find ready-to-use software libraries and stacks to speed up your design time and lower your development risk

COST:

\$119 USD: Includes the **Explorer 16 Demonstration Board** (DM240001 retail value of \$129.99) plus a full day of instruction, all course materials and lunch.

\$49 USD: Includes a full day of instruction, all course materials and lunch. In addition, all attendees receive a limited time offer for a discount on Microchip development tools.

USA

Arizona	Phoenix	May 2, 2006
California	Los Angeles	May 23, 2006
	Orange County	May 17, 2006
	San Diego	May 16, 2006
	Sherman Oaks	May 18, 2006
	Silicon Valley	June 15, 2006
Colorado	Denver	June 13, 2006
Florida	Tampa	April 25, 2006
Illinois	Chicago	May 16, 2006
Indiana	Indianapolis	May 23, 2006
Kansas	Kansas City	April 18, 2006
Maryland	Baltimore	April 27, 2006
Massachusetts	Boston	May 18, 2006
Michigan	Farmington Hills	April 27, 2006
	Grand Rapids	April 26, 2006
Minnesota	Minneapolis	May 18, 2006
Missouri	St. Louis	April 20, 2006
New Jersey	Princeton	May 18, 2006
Ohio	Cleveland	May 16, 2006
Oregon	Portland	June 20, 2006
Pennsylvania	Pittsburgh	May 19, 2006
Texas	Dallas	May 9, 2006
	Houston	May 11, 2006
Washington	Seattle	June 22, 2006
Wisconsin	Madison	May 23, 2006
	Milwaukee	May 24, 2006
CANADA		
Alberta	Calgary	June 8, 2006
British Columbia	Vancouver	June 6, 2006
Ontario	Toronto	May 16, 2006
Quebec	Montreal	May 18, 2006
	Ottawa	May 17, 2006



The **Explorer 16** is a low-cost, development board to evaluate the features and performance of Microchip's new PIC24 Microcontroller and dsPIC33 Digital Signal Controller families. Coupled with the MPLAB ICD 2 In-Circuit Debugger, real-time emulation and debug facilities speed evaluation and prototyping of application circuitry. The Explorer 16 features two interchangeable Plug-In Modules (PIMs); one each for the PIC24FJ128GA010 and the dsPIC33FJ256GP710.

For more information visit: <http://www.microchip.com/Seminars>

Does your system require higher load currents and faster speeds with smaller external components?

The **TC4451** and **TC4452** drivers offer peak output currents of 12 amperes, making them the highest-current MOSFET drivers offered by Microchip, and among the highest in the industry.



The high output currents of these devices can improve your power supply efficiency and simplify drive circuits. The devices' latch-up immunity provides superior resistance to the ground bounce and negative input transients that cause false triggering in noisy environments. Additionally, the **TC445X** drivers' high drive speed of 15 nF in 27 nS enables rapid charge and discharge of very large MOSFETs and insulated gate bipolar transistors in demanding, high-efficiency switch mode power supplies and other high-speed, high-current switching applications.

The TC445X drivers are ideal for industrial applications that utilize power supplies, as well as motor control applications. They directly drive small, direct current motors, such as those found in home appliances, automobiles and power tools. The devices contain the power-transistor and level-shift circuitry needed for motor control applications, thereby reducing the number of external system components needed and lowering overall system costs.

The TC445X MOSFET drivers are available in an 8-pin DFN, SOIC and PDIP package or a 5-pin TO-220 package. Sampling and volume production are available today at <http://sample.microchip.com/> and www.microchipdirect.com, respectively.

For more information visit: www.microchip.com/MOSFET

IT'S TIME TO CONSIDER A NEW CAREER AT MICROCHIP TECHNOLOGY INC.

Microchip is hiring! The following positions are currently available:

Applications Engineer • Associate Engineer • CAD Library Manager • Corporate Applications Engineer • Design Engineer • Diffusion Production Supervisor • Embedded Applications Engineer • Embedded Software Engineer • Engineering Technician II • Failure Analysis Engineer • Field Applications Engineer • Field Applications Manager • Field Sales Administrator • Field Sales Engineer • Human Resources Manager • Information Systems Wintel DMZ Infrastructure Architect • Junior Planner • Layout Designer II • Lead Layout Designer • Library Design Engineer • Logistics Coordinator/Planner • Marketing Applications Engineer • microchipDIRECT Customer Service Rep • Principal/Staff Design Engineer • Principal Applications Engineer • Principal Applications Engineer/Project Leader • Principal Architect • Principal Corporate Applications Engineer • Principal Design Engineer • Principal Process Engineer • Principal Product Quality Engineer • Principal Test Engineer • Process Engineer • Process Tech • Product Marketing Engineer • Product Marketing Manager • Production Specialist • Publications Specialist • Regional Distribution Manager • Section Leader/Principal Test Engineer • Senior Applications Engineer • Senior CAD Engineer • Senior Design Engineer • Senior Engineer, Marketing • Senior Engineering Technician • Senior Equipment Tech (Wet Process) • Senior Facilities Technician • Senior Field Sales Engineer • Senior Internet Engineer, E-commerce Focus • Senior Inventory Control Clerk • Senior Layout Designer • Senior Marketing Communications Generalist • Senior Oracle/ SQL Server Manufacturing Database Administrator • Senior Process Engineering Technician • Senior Product Engineer • Senior Software Engineer • Senior Technical Editor • Senior Test Engineer • Senior/Principal Applications Engineer • Senior/Principal Memory Product Engineer • Senior/Principal Memory Test Engineer • Senior/Principal Probe Process Engineer • Senior/Principal Verification Engineer • Senior Software Engineer • Supply Management Analyst I • Tactical Marketing Manager • Technical Copywriter • Technical Training Engineer • Test Engineer • Windows Systems Administrator • Yield Enhancement Engineer

For more information about these and other positions, please visit www.microchip.com/careers or send your resume to resumes@microchip.com today!



www.microchip.com/careers

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Could your current mechanical potentiometer solution use a boost?

Microchip's low-power, 6-bit, volatile digital potentiometers offer low-voltage operation and small packages at an affordable price.

Microchip's new **MCP401X** family of digital potentiometers provides a digitally-controlled solution that is cost and size-competitive with current mechanical potentiometer solutions. The **MCP4011**, **MCP4012**, **MCP4013** and **MCP4014** are available for sampling today at <http://sample.microchip.com/>. Production orders are received today at www.microchipdirect.com.

Do you need to reduce your board space and device height? The MCP4011 is offered in 8-pin 2 mm x 3 mm DFN, MSOP and SOIC packages. The MCP4012 and MCP4013 are available in 6-pin SOT-23 packages and the MCP4014 is available in a 5-pin SOT-23 package, making them ideal for handheld equipment and many portable consumer applications.

The devices' ultra-low power consumption of 0.3 mA (typical), along with their low, 1.8V operation, increases battery life. The low price point of the new devices allows you to use them in applications that were previously cost-prohibitive.

Additional features of the MCP401X digital potentiometers include Integral Non-Linearity (INL) of ½ LSB (maximum), Differential Non-Linearity (DNL) of ½ LSB (maximum), end-to-end temperature coefficient of 100 ppm (typical) and ratiometric temperature coefficient of 10 ppm (typical). The new devices operate in the extended industrial temperature range of -40 to 125°C.



The MCP401X digital potentiometers provide a rich combination of features ideally suited for applications such as sensor calibration and trimming, set-point control, test and measurement, industrial process control, consumer electronics and data acquisition.

To help you get started with the MCP401X family of digital potentiometers, check out the low-cost **MCP402XEV Nonvolatile Digital Potentiometer Evaluation Board** (Part # MCP402XEV), which provides a tested, out-of-the-box example of a MCP401X/2X application. The board utilizes a PIC10F206, a MCP401X and a blank PCB, which can be populated with any desired MCP4011/2/3/4 device in a SOT-23-5, SOT-23-6 or 150 mil SOIC 8-pin package. The populated board (with the MCP4011) can be used to evaluate the other MCP401X devices by appropriately jumpering the PCB pads.

This board has two push buttons to control when the PIC® microcontroller generates MCP402X serial commands. The example firmware demonstrates the following commands:

- Increment
- Decrement
- High-Voltage Increment and Enable WiperLock™ Technology
- High-Voltage Decrement and Enable WiperLock Technology
- High-Voltage Increment and Disable WiperLock Technology
- High-Voltage Decrement and Disable WiperLock Technology



The **SOT-23-5/6 Evaluation Board** (VSUPEV2) can be used to evaluate the characteristics of the MCP4012, MCP4013 and MCP4014 devices.

The **8-pin SOIC/MSOP/TSSOP/DIP Evaluation Board** (SOIC8EV) can be used to evaluate the characteristics of the MCP4011 device in either the SOIC or MSOP package.

In addition, Microchip offers **FilterLab® 2.0**, an analog-filtering design tool that simplifies active-filter design. Available today as a free download from Microchip's web site (www.microchip.com/FilterLab), FilterLab software gives you full schematic diagrams of the filter circuit with component values and then displays the frequency response. You can even download **FilterLab Live** — a video on how to use the FilterLab design tool.

These development tools may be purchased from the microchipDIRECT web site at www.microchipdirect.com.

For more information visit: www.microchip.com/MCP401X

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Looking for a flexible, cost-effective solution for Window Lift with Anti-Pinch?

The APGRD002 Window Lift Reference Design serves as a target board for LIN bus communication.

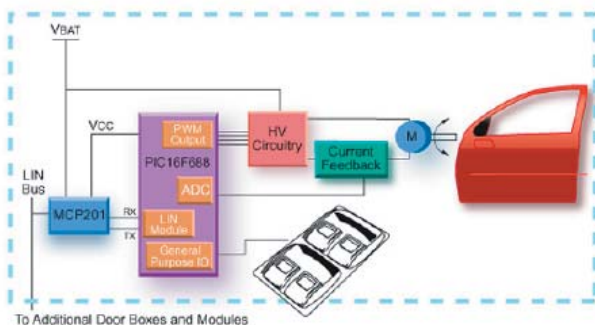
Microchip's new Window Lift Reference Design features the PIC16F688 microcontroller, a 14-pin device, with a full H-bridge controller, 10-bit ADC and an integrated LIN Protocol module. This feature set combines to make an ideal solution for window lift applications. The H-bridge controller and the 10-bit ADC couple to provide bidirectional motor control with active feedback for implementing the anti-pinch functionality. The integrated LIN protocol module allows for inter-system communication within the door module as well as the main body controller.

Switch inputs, as well as LIN commands, can be used to control the two output relays for driving an H-bridge Motor configuration or a simple Servo circuit.

The APGRD002 Reference Design Kit consists of a microcontroller, 5 volt regulator, relays and drivers, input conditioning circuitry, and network physical layer interface. Documentation is available on the CD-ROM for APGRD002; firmware, schematics, Gerber files, assembly diagrams and a bill of materials. The firmware is designed for a Window Lift with Anti-Pinch application.

Available Application Notes

- AN893 - Low-cost Bidirectional Brushed DC Motor Control Using PIC16F684
- AN894 - Motor Control Sensor Feedback Circuits
- AN898 - Determining MOSFET Driver Needs for Motor Drive Applications
- AN905 - Brushed DC Motor Fundamentals



Featured Products

MCP616
 PIC16F684
 PIC16F688
 PIC16F690
 PIC16F716
 PIC16F72
 PIC18F4331
 MCP201

Web Links

Window Lift Reference Design
 PICDEM™ MC Development Board

Does your compact design require high-speed, low-density SPI serial EEPROMs?

Introducing the world's first SPI serial EEPROMs in a miniature SOT-23 package.



The **25XX010A, 25XX020A and 25XX040A serial EEPROMs** extend Microchip's SPI serial EEPROM product line into high-speed, low-density applications. They were developed using Microchip's PMOS Electrically Erasable Cell (PEEC) technology and provide data retention up to 200 years and the best endurance in the industry, with well over one million erase/write cycles in most applications.

Until now, our SPI serial EEPROM product line supported the 4 Kb to 256 Kb memory density range. These new devices extend this product line into 1 and 2 Kb applications, and give you a high-speed version of Microchip's current 4 Kb part in the **25XX040A**. With speeds up to 10 MHz, the new EEPROMs enable you to take maximum advantage of the high-speed capabilities of the SPI bus.

In addition to the 6-pin SOT-23 and 8-pin DFN packages, all of the new EEPROMs are available in 8-pin SOIC, TSSOP, MSOP and PDIP packages. Because they are all offered in such a broad range of package options, these new devices provide an easy upgrade path for your applications requiring minimal amounts of memory with high speeds.

Microchip's **SEEVAL® 32 Serial EEPROM Designer's Kit** (Part # DV243002) supports development using the 25XX010A, 25XX020A and 25XX040A devices. The kit is Windows®-compliant and includes Microchip's Total Endurance™ modeling software, a SEEVAL 32 developer board and user interface software, power supply, RS-232 serial cable, serial EEPROM sample pack and quick start user's guide. It is available today at www.microchipdirect.com for \$99.99.

For more information visit: www.microchip.com/25XX0X0A

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Are you challenged to design smaller products that use fewer components, while providing highly accurate measurements and longer battery life?

With its industry-leading low-current operation, frequency rejection and 22-bit resolution, the **MCP3550 A/D converter** is available in the small, 8-pin MSOP package that is ideal for space-constrained applications like portable and battery-powered electronic devices.



Microchip's 22-bit **MCP3550** A/D converter features integral nonlinearity of ± 2 ppm typical, power consumption of 0.6 mW maximum at 5 volts and output noise as low as 2.5 mV root mean square. The device rejects 50 or 60 Hz noise greater than 120 dB, which makes its measurements impervious to noise from power supplies in these line frequencies, giving you highly accurate measurements and a superior level of effective resolution.

The [MCP3550-50](#) (50 Hz rejection) has a sample rate of 12.5 samples per second (sps), and the [MCP3550-60](#) (60 Hz rejection) has a sample rate of 15 sps. Both versions of the A/D converter offer auto calibration with every conversion, and an extended temperature range of -40 to +125°C.

This A/D converter targets a variety of applications, including: industrial (instrumentation, pressure sensors, weigh scales, handheld meters and multimeters); medical (heart-rate monitors and blood-glucose meters); consumer (weigh scales and handheld meters); and automotive (sensor interfaces).

Microchip offers the **MCP3551 Delta-Sigma A/D Converter PICtail™ Demonstration Board** (Part # [MCP3551DM-PCTL](#)) to support development using the MCP3550 A/D converter. The board is available today at www.microchipdirect.com for \$40.



For more information visit:
www.microchip.com/MCP355X

Did you know?

If you are registered on **sample.MICROCHIP** you already have an account to purchase on **microchipDIRECT**

Once you register for samples, you can use the same password and login to:

- Gain access to the world's largest inventory of Microchip devices and tools
- View prices from 1 to 10,000 plus pieces
- Purchase thousands of Microchip devices in less than full reel or tube quantities
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- View your order history and re-order with just a few clicks
- Drop ship to many regions worldwide
- Apply for a business credit line and place orders using PO's with a Microchip credit line*
- Apply for special pricing and quotes directly from Microchip's local team*

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*microchipDIRECT account required. Not available in all countries.

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Enjoy the benefits of 3V operation at twice the speed and at a cost 30% less than 5V microcontrollers

If your application requires a large memory and high pin count, these microcontrollers give you added I/Os, timers, a feature-rich peripheral set and the flexibility of field self-programmability.

These devices can serve as cost-effective solutions for your applications that are written in C, require an RTOS or use a communications protocol stack such as TCP/IP.



Microchip's new **PIC18F45J10** family offers some of the fastest 8-bit microcontrollers in the world! With 32 Kbytes of Flash program memory in 28-pin packages, this family provides 40 MHz performance at 3V, and analog-to-digital (A/D) converter, dual analog comparators, USART, SPI, I²C™ and PWM peripherals. These devices complete Microchip's migration path of our 3V portfolio from 28 to 80 pins and from 16 Kbytes to 128 Kbytes of Flash program memory.

The PIC18F45J10 family is general-purpose by design, and can be used in an extremely wide range of markets and applications like consumer electronics and instrumentation.

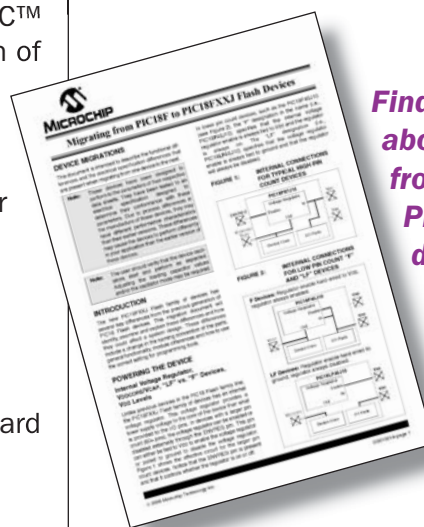
Additional key features of the PIC18F45J10 family include:

- 16 or 32 Kbytes of Flash program memory and 1 Kbyte of RAM
- 10-bit ADC with 10 or 13 channels
- One Enhanced Capture Compare PWM (ECCP) and up to two standard CCPs
- Up to two SPI and two Master I²C serial communication ports
- One enhanced USART and two comparators
- One 8-bit and two 16-bit timers

The four **PIC18F45J10/44J10/25J10/24J10** devices provide a significant reduction in both cost and operating voltage, while maintaining high performance levels – something 5V microcontrollers just can't do!

All four members of the PIC18F45J10 family are available now for general sampling and volume production. The PIC18F24J10 and PIC18F25J10 are offered in 28-pin QFN, SPDIP, SOIC and SSOP packages. The PIC18F44J10 and PIC18F45J10 are available in 40-pin PDIP, 44-pin QFN and TQFP packages.

In addition to maintaining compatibility with Microchip's free **MPLAB® IDE Integrated Development Environment**, which provides low-risk development and shortened design cycles by enabling a seamless migration path to a wide range of code-compatible PIC® microcontrollers, the PIC18F45J10 microcontrollers are supported by the **MPLAB C18 C Compiler**, **MPLAB ICD 2 In-Circuit Debugger** for debugging and emulation and the **PICDEM™ 2 Plus Development Board** (part # DM163022). The **PICDEM HPC Explorer Board** (part # DM183022) was created specifically for evaluation and development with our high-end PIC18F 8-bit microcontroller family.



Find out more about migrating from PIC18F to PIC18FXXJ Flash devices by clicking here!



Download the PIC18F45J10 Family Data Sheet by clicking here!

For more information visit: www.microchip.com/HighPin

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Did you know that USB PIC® microcontrollers can perform as the sole controller in embedded applications?

The new **PIC18F4450/2450** full-speed USB microcontrollers integrate USB as one of the primary serial interfaces, as opposed to the prevalent approach that adds a serial-to-USB patch on top of a legacy design.

New Flash **PIC18F4450/2450** full-speed USB microcontrollers are full-speed USB 2.0 connectivity-certified and operate at 48 MHz for 12 megabits-per-second (Mbps) data transfer rates. These new devices provide a full-speed compatible migration, while maintaining a powerful 12 MIPS RISC core, self-programmable Flash memory and the power-saving features of our nanoWatt Technology — giving you a complete embedded-control solution for industrial, medical and many other embedded applications that utilize USB.



The majority of USB-capable microcontrollers on the market are optimized exclusively for applications in personal computing (PC) peripherals and consumer markets, leaving a real void for embedded designs. Microchip's USB PIC microcontroller family makes the benefits of full-speed USB available to a broader range of embedded applications that operate in harsh environments and only occasionally connect to personal computers.

The PIC18F2450 is available in a 28-pin SOIC, SDIP and QFN package, while the PIC18F4450 is available in a 40-pin DIP; 44-pin TQFP and QFN package. Both USB PIC microcontrollers are available now for general sampling and volume production and feature 16 Kbytes of self-programmable Enhanced Flash memory, which allows field upgrades for end applications via the USB port. Microchip's advanced PMOS Electrically Erasable Cell (PEEC) Flash technology provides high endurance of up to 100,000 erase/write cycles and long data retention of more than 40 years. In addition, their full-speed USB 2.0 interface includes an on-board transceiver for direct data transfers to external peripherals with minimum CPU overhead. Other key features include:

- 768 bytes of RAM; 256 bytes of which can be a dedicated USB buffer
- AUSART for RS232 and RS485 serial interfaces
- 10-bit analog-to-digital converter with high accuracy (+/- 1 LSB) and up to 13 input channels
- Capture/Compare/PWM module with 16-bit capture and resolution

- Three timers (2 x 16-bit, 1 x 8-bit)
- Programmable Brownout Reset and low voltage detect circuits
- Enhanced in-circuit debugging capabilities with up to three hardware breakpoints

If you are new to USB-application designs, you may be concerned about the quantity and quality of available firmware support. Rest assured, Microchip has an extensive set of libraries for the most common application classes, including the Human Interface Device (HID), Communication Device Class (CDC) and custom drivers. Recognizing the need for migration from legacy

applications, Microchip has published application note AN956, "Migrating Applications to USB from RS-232 UART with Minimal Impact on PC Software" at www.microchip.com/usb.

The new devices are supported by Microchip's **MPLAB® Integrated Development Environment (IDE)**, **MPLAB C18 C Compiler**, **MPLAB ICD 2 In-Circuit Debugger** and **MPLAB PM3 Universal Device Programmer**. In addition, the **PICDEM™ Full-Speed USB Demo Board** (part # DM163025), and **MPLAB ICE 2000** and **MPLAB ICE 4000 In-Circuit Emulator** processor modules (part # PCM18XR0) ease development with this family's advanced USB features and are available now.

Example embedded applications that benefit from these full-speed USB PIC® microcontrollers include:

industrial (manufacturing tools, data loggers, scanners, smart displays, micro fuel cells, gambling-machine peripherals, RFID readers, robot-controller interfaces, industrial timers, gas-flow analyzers, cable-test fixtures); medical (voice-activated applications, advanced wheelchairs, research equipment automation); automotive (vehicle-network bus diagnostic tools, vehicle trace recorders [black boxes], ultrasonic sensors); battery-powered (handheld tools, sensors, security applications, remote controls, home automation); consumer (business-card scanners, white-board digitizers, voice recorders, uninterruptable power-supply systems, MP3 players, fire alarms, security-system programmers).

For more information visit: www.microchip.com/USB

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Analog	Do I Filter Before, After or Never?	20 min	Dev Tools	Introduction to the Signal Analysis PICtail™ Daughter Board	30 min	
	Selecting the Ideal Temperature Sensor	30 min		Basic dsPIC® DSC Development Tools	25 min	
	Predict the Repeatability of Your ADC to the BIT	20 min		Introduction to MPLAB® SIM Software Simulator	25 min	
	What Does "Rail-to-Rail" Operation Really Mean?	20 min		Get Started with the 64-/80-pin TQFP Demo Board	20 min	
	Lithium-Ion Battery Charging: Techniques and Trade-offs	20 min		Tips and Tricks Using MPLAB® IDE v6.61	30 min	
	Techniques that Reduce System Noise in ADC Circuits	20 min		Introduction to the MPLAB® Visual Device Initializer (VDI)	30 min	
	Smaller Packages = Bigger Thermal Challenges	20 min		PIC10F Development Tools: Small Tools for Small Parts	30 min	
	Select the Right Operational Amplifier for Your Filtering Circuits	20 min		Introduction to MPLAB® IDE	25 min	
	Amplify Sensor Signals Using the PGA	20 min		Introduction to Microchip's Development Tools	25 min	
Applications	Introduction to Mechatronics and the Mechatronic Design Center	20 min	Products	Serial EEPROM Overview	20 min	
	Designing Intelligent Power Supplies	30 min		dsPIC30F General Purpose Timers	20 min	
	Developing Intelligent Power Systems Using the MCP1630 High Speed PWM	20 min		dsPIC® DSC SPI Communication Module	20 min	
	Emulating RS-232 Over USB Using the PIC18F4550	30 min		dsPIC® DSC UART Module	20 min	
	EMC Part 1: Introduction to Electro Magnetic Compatibility (EMC)	20 min		dsPIC30F 12-bit ADC Module (part 1)	20 min	
	EMC Part 2: What is Electrostatic Discharge (ESD)?	20 min		dsPIC30F 12-bit ADC Module (part 2)	20 min	
	EMC Part 3: What are Electrical Fast Transients (EFT)?	20 min		dsPIC30F Addressing Modes (part 1)	20 min	
	Thermistor Application for the New MCP6S9X PGA	20 min		dsPIC30F Addressing Modes (part 2)	20 min	
	Wireless Communication using the IrDA® Standard Protocol	20 min		Introduction to dsPIC30F DSP Engine and ALU	30 min	
	Driving Lumileds LEDs with Microchip Microcontrollers	60 min		Introduction to dsPIC30F Interrupts	25 min	
	Design Considerations When Adding CANbus to Your System	20 min		dsPIC30F 10-bit ADC Module (part 1)	20 min	
Connectivity	Microchip's ENC28J60, World's Smallest Ethernet Controller	20 min		dsPIC30F 10-bit ADC Module (part 2)	20 min	
	Serial Communications: Using the dsPIC30F I ² C™ Module	30 min		Introduction to dsPIC30F Architecture (Part 1)	20 min	
	Serial Communications: Using the dsPIC30F CAN Module	30 min		Introduction to dsPIC30F Architecture (Part 2)	20 min	
	An Introduction to Controller Area Network (CAN)	30 min		Introduction to dsPIC33F Architecture (Part 1)	20 min	
Motor Control	dsPIC30F Quadrature Encoder Interface Module	20 min		Introduction to dsPIC33F Architecture (Part 2)	20 min	
	dsPIC30F Motor Control PWM Module	20 min		The LCD PIC® Microcontrollers, PIC18F8490/6490, with 16 Kbytes of Flash in 64- and 80-pin Packages	20 min	
	AC Induction Motor (ACIM) Control Using the PIC18FXX31	20 min		Introduction to the dsPIC® DSC	20 min	
	Brushless DC motor (BLDC) Motor Control Using PIC18FXX31	20 min		64 Kbyte Flash Microcontrollers in 28-/40-pin Packages; the PIC18F4620 and PIC18F2620	20 min	
					Introduction to the PIC18 High Pin Count and High Density Family of Devices	20 min
					Control the World with the World's Smallest Microcontroller (PIC10F)	30 min
				Peripheral Rich, Low Pin Count, PIC® MCUs with nanoWatt Technology	30 min	
				Microchip's nanoWatt Technology	45 min	

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WHAT'S *New* IN MICROCHIP LITERATURE?

Click on a **Document Title** to view the document.

Document Type	Title of Document	DS#	Print/Web
Application Note	AN1012, PIC16HV785 Programmable Lithium and Nickel Battery Charger	01012A	web
	AN1015, PIC16HV785 Programmable Lead Acid Battery Charger	01015A	web
	AN1020, Using the MSSP to Interface Microwire Serial EEPROMs to PIC18 Devices	01020B	web
	AN1023, Using the C18 Compiler and the MSSP to Interface Microwire EEPROMs with PIC18 Devices	01023A	web
	AN879, Using the Microchip Ultra Low-Power Wake-Up Module - PIC16F684	00879C	web
CD	Technical Library CD-ROM 2006	00161R	For sale on microchipDIRECT
Conversion Document	dsPIC30F to PIC24H Conversion Guidelines	70173A	web
	dsPIC30F to dsPIC33F Conversion Guidelines	70172A	web
Data Sheet	PIC18F87J10 Family Data Sheet - 64/80-Pin, High Performance, 1-Mbit Flash MCU with nanoWatt Technology	39663C	web
	PIC18F2450/4450 Data Sheet - 28/40/44-Pin, High Performance, 12 MIPS, Enhanced Flash, USB MCU with nanoWatt Technology	39760A	web
	PS810 Data Sheet - Li-Ion Single-Cell Fuel Gauge	21904C	web
	PIC16F785/HV785 20-Pin Flash-Based 8-Bit CMOS MCU	41249C	web
	TC1014/1015/1185 - 50 mA, 100 mA, 150 mA CMOS LDOs with Shutdown & Reference Bypass	21335C	web
	TC1070/1071/1187 - 50 mA, 100 mA, 150 mA Adjustable CMOS LDOs with Shutdown	21353C	web
	TC1072/1073 - 50 mA and 100 mA CMOS LDOs with Shutdown, Error Output and VREF Bypass	21354C	web
	TC125/126 - PFM Step-Up DC/DC Regulators	21372C	web
	TC14433/A - 3 1/2 Digit Analog-to-Digital Converters	21394C	web
	TC32M - Economonitor 3-Pin System Supervisor with Power Supply Monitor and Watchdog	21402C	web
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	93XX76A/B/C 8K Microwire Compatible	21796G	web
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	MCP3550/1/3 - Low-Power Single Channel 22-Bit Delta-Sigma ADCs	21950C	web
	MCP201 - LIN Transceiver with Voltage Regulator	21730E	web
	Voltage Supervisor	21985A	web

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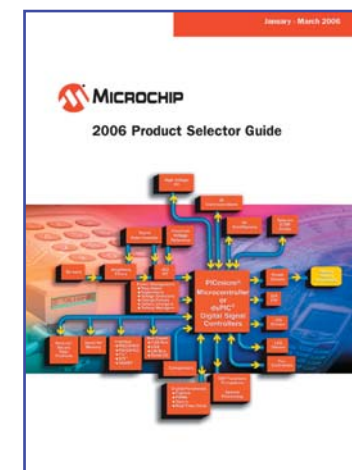
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	dsPIC30F6010 to dsPIC30F6010A Migration Guidelines	70174A	web
	dsPIC30F6011A/12A/13A/14A Migration Guidelines	70176A	web
Product Brief	PIC12F615/HV615/PIC16F616/HV616 Product Brief	41272B	web
Product Guides	Product Selector Guide	00148L1	web/print
Programming Spec.	PIC186XJXX/8XJXX Flash Programming Specification	39644E	web
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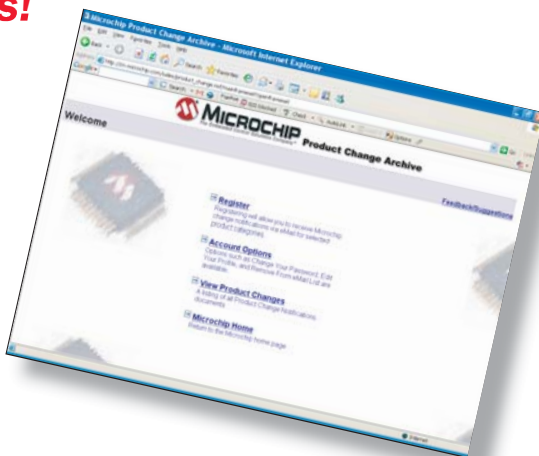
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