Registration Open for the 15th Annual MASTERs Conference

Microchip has announced it is accepting registrations for its 15th annual Worldwide MASTERs Conference at the JW Marriott Desert Ridge Resort in Phoenix, Arizona, with the Main Conference taking place from August 24 - 27, and a Pre-Conference on August 22 and 23, 2011.

The MASTERs Conference is a valuable resource for designing with Microchip’s products that provides design engineers with an annual forum for sharing and exchanging technical information on the Company’s 8-, 16- and 32-bit PIC® microcontrollers, high-performance analog and interface solutions, 16-bit dsPIC® digital signal controllers, wireless products, mTouch™ sensing solutions, memory devices and MPLAB® development systems – including the industry’s only singular IDE to support an entire 8-, 16- and 32-bit microcontroller portfolio.

There is a broad range of class offerings for 2011, to meet the growing needs of software and hardware design engineers and engineering managers, with 95 classes being offered – 36 of which are new. In addition to lecture-based classes, there are 44 ‘hands-on’ classes that enable attendees to learn more about specific applications by using development tools and demo boards, and writing code, in the classrooms. Classes are available for engineers with advanced experience or little knowledge in the concepts and basics of the technology being discussed.

Based on its overwhelming success at previous MASTERs, Microchip is again offering a two-day Pre-Conference for those who wish to attend as many classes as possible during the week. These classes are also designed for beginner through advanced attendees. For example, “Introduction to Embedded Programming Using C” is a two-day, 16-hour step-by-step crash course in C, with practical hands-on exercises.

MASTERs classes cover the gamut of electronic engineering topics, including connectivity sessions on TCP/IP USB, CAN and wireless, graphical-display and touch-sensing interface development, intelligent power supplies, firmware development, motor control, selecting op-amps for sensor applications, using an RTOS, creating a bootloader, and streaming audio for embedded designs.

To learn more about the 15th annual MASTERs conference, visit: https://secure.microchip.com/usmasters/Home.aspx
**Does Your Design Call For a 20-Pin, Low Cost, Low Power 8-Bit Microcontroller?**

**PIC16F(LF)720/1 Microcontrollers Feature Low Cost, Low Power Consumption, and Self-Write Flash Program Memory**

Microchip announced an expansion of its existing 28-/40-pin PIC16F72X microcontroller (MCU) family with two new 20-pin devices – the **PIC16F(LF)720** and **PIC16F(LF)721**. The new MCUs feature low power consumption, making them suitable for various low-power and battery-powered applications. These MCUs offer up to 7 KB of self-write Flash program memory, a temperature-indicator module, an 8-bit Analog-to-Digital Converter (ADC), a capture/compare PWM module, and various serial communication peripherals, such as I²C™, SPI and AUSART. The highly-integrated MCUs enable engineers to reduce board size, component count and overall cost for a variety of applications in the appliance (e.g. blenders, refrigerators, dishwashers); consumer/home electronic (e.g. TV remote controls, toys, phones, set-top boxes); industrial (e.g. digital water heaters, security systems, humidity sensors); and automotive (e.g. remote lock systems, power seats, level sensors, lighting control) markets, among others.

The PIC16F(LF)720/1 are general-purpose MCUs that offer integrated control peripherals with newer features, such as self-write memory and a temperature indicator module. The self-write Flash program memory can be used to perform remote firmware updates, while the temperature-indicator module provides a means for measuring the temperature of the surrounding environment. Additionally, the integrated communication peripherals can be used for serial data transfer between other devices on or off the PCB. These MCUs are available in packages as small as a 4 mm x 4 mm QFN, to enable space-constrained applications.

The PIC16F(LF)720/1 family provides customers with a general-purpose platform for developing cost-sensitive applications. The addition of smaller pin-count options, self-write program memory and temperature indicator module further expands this family into even lower cost applications.

The PIC16F(LF)720/1 MCUs are available in a 20-pin, 4 mm x 4 mm QFN package, as well as 20-pin PDIP, SOIC and SSOP packages.

**Development Support**

Microchip’s complete suite of standard development tools can be used with the PIC16F(LF)720/1 MCUs, including the user-friendly and free MPLAB® IDE; HI-TECH C® Compiler for PIC16 MCUs, PICkit™ 3 In-Circuit Debugger/Programmer, MPLAB ICD 3 In-Circuit Debugger, and the MPLAB PM3 Universal Device Programmer.

Drive Your Designs With Microchip's Low-Cost 8-bit PIC®
Microcontrollers With eXtreme Low-Power Technology and
Integrated LCD Control

MCUs Enable Low-Cost LCD Control With Industry-Leading Low-Power

Microchip announced an expansion of its 8-bit segmented LCD microcontroller (MCU) family with five new devices—the PIC16LF1902/3/4/6/7 (PIC16LF190X) MCUs. The PIC16LF190X family supports many general-purpose applications and enables the implementation of LCD into low-power and cost-sensitive designs, such as security tokens, smart cards, medical devices, home appliances, key fobs or any application involving a segmented LCD. Featuring eXtreme Low-Power (XLP) technology for sleep currents down to 20 nA, and a typical active current of 35 microamperes per MHz, the MCUs extend battery life, while maintaining accurate timing with a RTC and driving a segmented LCD.

Utilizing Microchip’s Enhanced Mid-range architecture, the PIC16LF190X family provides fundamental features and performance without burdening customers with the cost of unused peripherals. These MCUs provide an optimized feature set, including up to 14 KB of Flash program memory, up to 512 Bytes of RAM, up to 14 10-bit Analog-to-Digital Converter (ADC) channels, serial communication, temperature indicator and the capability to drive up to 116 LCD segments. With the addition of XLP technology for extended battery life, and capabilities such as utilizing the integrated temperature indicator to provide crystal-accuracy compensation, low-power RTC support and low voltage-detect support utilizing the internal ADC and voltage reference, the MCUs enable low-cost LCD solutions for a multitude of portable devices. With industry-leading low power and an optimized feature set, the PIC16LF190X family is designed for any low-power segmented LCD or general-purpose application.

Development Support

The PIC16LF190X MCUs are supported by the F1 Evaluation Kit (part # DV164132) and Platform (part # DM164130-1), as well as the PICkit™ 3 In-Circuit Debugger (part # PG164130). Designers can also utilize the full suite of MPLAB® development tools, including the MPLAB IDE, MPLAB ICD3, REAL ICE™ In-Circuit Emulator, and HI-TECH C® compiler for PIC10/12/16 MCUs.

MCU Packaging

The PIC16LF1902, PIC16LF1903 and PIC16LF1906 MCUs are all available in 28-pin SPDIP SOIC, SSOP and 4 mm x 4 mm UQFN and die packages. The PIC16LF1904 and PIC16LF1907 MCUs are available in 40-pin PDIP, 5 mm x 5 mm UQFN and die packages, as well as a 44-pin TQFP.

To learn more about our low-cost 8-bit PIC microcontrollers, visit:
Need a Feature-Rich, Low-Power MOSFET Driver?

Low-Side Devices Have Peak Output Currents From 2A - 4.5A, Offer Enable Input Pin for Shutdown and are Available in Popular Packages

Microchip announced the expansion of its MOSFET driver family of products. Building upon the success of Microchip's low-side MCP14E3/4/5 4.5A MOSFET drivers, Microchip is introducing the new low-side MCP14E6/7/8 2A and MCP14E9/10/11 3A drivers. The expanded, low-cost family of devices is rated for peak output currents from 2A - 4.5A, over a wide operating voltage range of 4.5V - 18V. The devices feature enable input pins that provide shutdown capability to conserve power, and are offered in 8-pin SOIC and 8-pin, 6 mm x 5 mm DFN packages. The drivers start at $1.24 each, in 10,000 unit quantities. They are ideal for consumer electronic applications that use power supplies, such as servers, personal computers and notebooks.

Today's engineers require lower power, more features and smaller packages at a low cost, and Microchip's expanded family of MOSFET drivers meets those needs. The new MCP14E6/7/8 dual devices are rated for a peak output current of 2A, while the new MCP14E9/10/11 dual devices are rated for a peak output current of 3A. The drivers' wide operating voltage of 4.5V to 18V allows for a broad range of input voltages. Additionally, the drivers' small packages lower costs by reducing board space.

This expanded Microchip family of MOSFET drivers gives customers more flexibility to choose the right product for their application. With the addition of these new devices, Microchip now offers a full line of high- and low-side drivers, with peak output currents from .5A - 12A at a low cost, in the packages our customers need.

Packaging

The MCP14E3/4/5, MCP14E6/7/8 and MCP14E9/10/11 MOSFET drivers are available in an 8-pin SOIC package. The devices are also available in an 8-pin 6mm x 5mm DFN package.

To see the full range of Microchip's MOSFET family, visit: http://www.microchip.com/ParamChartSearch/chart.aspx?branchID=9010&mid=11&lang=en&pageId=79
Do You Need A Low-Cost, Feature Rich, Stand-Alone Real-Time Clock/Calendar Family For Your Design?

Low-Cost RTCCs Feature Battery Switchover, Digital Trimming and SRAM

Microchip announced the expansion of its stand-alone real-time clock/calendars (RTCCs). Building upon the success of the MCP794XX family of products, Microchip is introducing the MCP7940N, which offers battery switchover and timestamp for accurate timekeeping, digital trimming for time-of-day calibration and 64 bytes of SRAM. It offers a lower-cost alternative to the existing MCP7941X devices, which feature 1Kbit of EEPROM memory and a 64-bit reprogrammable unique ID.

Example applications include those in the smart-energy (e.g. thermostats, power meters and commercial refrigeration); home-appliance (e.g. stoves, dishwashers and microwave ovens); automotive (e.g. dashboard controls and car radios); and consumer-electronic markets (e.g. office equipment, irrigation controls and video systems), among others.

Many applications, such as cameras and notebook PCs, require a real-time clock with back-up power to maintain time and alarm settings when the main power is turned off. Other applications, such as commercial refrigeration, point-of-sale equipment and security systems, need a real-time clock with a power-fail monitor to capture and store the timeframes when main power fails. With its on-chip battery-switchover circuit and power-fail timestamp, the MCP7940N RTCC delivers this functionality, helping to address system health, safety and security concerns in applications involving the storage of perishable goods, or the monitoring of access to secure rooms.

The digital-trimming feature can support software temperature compensation, which lowers costs in comparison to devices where temperature compensation takes place in hardware. The device’s 64 bytes of SRAM can temporarily store information, which further reduces overall system cost.

“We were thrilled by our customers’ enthusiasm over our initial family of RTCC devices, which provide industry-leading integration at a low price,” said David Wilkie, director of Microchip’s Memory Products Division. “This new device lowers costs even further, for designers whose designs have no requirement for non-volatile memory.”

Development Support

Developers can begin designing today with Microchip’s MCP79410 RTCC PICtail™ Plus Daughter Board (part # AC164140), which can also be used with Microchip’s existing MCP794XX family of devices. This daughter board works with Microchip’s Explorer 16 Development Board (part # DM240001), PIC18 Explorer Board (part # DM183032), PICkit™ Serial Analyzer (part # DV164122), and XLP 16-bit Development Board (part # DM240311), all of which are available now.

Packaging

The MCP7940N RTCC is available in SOIC, MSOP, TSSOP and 2mm x 3mm TDFN packages.

For the full range of real-time clocks, visit: http://www.microchip.com/ParamChartSearch/chart.aspx?branchID=11038&mid=11&lang=en&pageId=79
Enable Smart Energy in Your Next Design

With all of the emerging markets evolving to make smart energy and the smart grid a reality, many design engineers are scrambling to find embedded solutions to meet these dynamically changing requirements. Critical applications such as smart meters, home area networks and energy harvesting are key areas to enable smart energy. This article will focus on solutions for these applications.

Smart Meters

In order for the emerging smart grid to provide real-time energy pricing to consumers, smart meters with the ability to accurately measure real-time energy usage will need to be implemented. Highly refined Analog Front Ends (AFEs) specifically designed for smart meters will be necessary in these systems. Microchip has developed the MCP3901 for both single and three-phase electrical meter systems. The MCP3901 AFE features high-accuracy dual 16-/24-bit Delta-Sigma ADCs with up to 91 dB Signal-to-Noise and Distortion (SINAD); an internal Programmable Gain Amplifier (PGA) and voltage reference; phase-delay compensation; and a modulator output block enabling highly precise measurements. With its unique feature set, high-speed sample rates up to 64 ksps and SPI interface, this AFE is ideal for a variety of single and multi-phase metering applications. Integrated PGAs and a low-drift voltage reference enhance the MCP3901 AFE’s ability to measure signals at very small levels, and reduce the amount of external components needed. This enables smaller overall designs at lower costs. The phase-delay compensation block enables the MCP3901 to compensate for differences in phase for three-phase energy-metering applications, while the SPI interface provides a simple connection to a microcontroller and provides engineers more flexibility with their design. Through the SPI interface, engineers can adjust the ADC oversampling ratio to control the resolution and sample rate as dictated by the needs of the application.

Home Area Networks

In order for the new smart grid and smart meters to communicate to the loads within a household, advanced communication networks need to be established from the smart meters to the loads and to in-home energy monitoring displays. Many protocols are being implemented today, including many IEEE 802.15.4 ZigBee® based networks. Rather than creating a new 802.15.4 radio on each application, Microchip provides transceiver-based solutions, which complement PIC® microcontrollers. These products provide a flexible, cost-effective platform for engineers to create the optimum wireless products and solutions for their given application. The microcontroller can be tailored and optimized to meet the requirements for the entire system, rather than being forced into a single microcontroller that may not meet the entire requirements of the system. However, implementing a ZigBee network is more than just hardware; it also requires specialized software to meet the standards set by the ZigBee Alliance (of which Microchip is a member). Microchip also offers many certified 802.15.4 software stacks including ZigBee PRO and Smart Energy Profile.

Energy Harvesting

Engineers’ projects are relying on renewable energy sources to help meet the need for remote operation of electronic devices. As the use of remote electronic devices continues to increase, power for these devices becomes more of a concern. Remote applications are powered mostly by batteries that are either recharged or changed on a regular basis. The solution detailed in Microchip’s application note AN1211: Maximum Power Solar Converter shows how to get the maximum power out of a solar panel to power a remote application. The maximum power point converter is a DC-to-DC converter, where the DC input voltage is the solar panel and the output voltage is a DC voltage that can either run the application or recharge a battery. The max power point converter continually measures and adjusts the power out of the solar panel in order to operate the panel at its maximum power point, independent of the panel's illumination or temperature. As solar panels increase in efficiency, more applications will begin to use them either as a primary power source or as a backup power source. For applications where the ambient light is continually changing, the maximum power solar converter can be a very effective tool in increasing the total power delivered by the solar panel.

See more about Microchips Smart Energy solutions and related videos at: http://www.microchip.com/videos
PLC Concentrator Design Solutions

Power Line Carrier (PLC) concentrators are used in applications such as Automatic Meter Reading (AMR). Concentrators can communicate with lower level meters in homes and buildings connected to a smart grid system while managing data and communication with the utility company. In many concentrator designs, the communication with the meters is performed using a Power Line Modem (PLM) and long distance communication is performed using GPRS/GSM. The **PIC32MX6** has both the performance needed to process AMR data and a rich set of connectivity features including UARTs, SPIs, USB and Ethernet.

### Development Tools:

**PIC32 Starter Kit**

The PIC32 Starter Kit provides the easiest and lowest cost method to experience the PIC32 microcontroller for the first time. From the over 35 source code examples to the getting started project, users quickly learn Microchip’s 32-bit family of microcontrollers and development tools. The kit includes everything needed to write, program, debug, and execute code on a high performance PIC32 microcontroller.

**PIC32 I/O Expansion Board**

The PIC32 I/O Expansion Board provides starter kit and starter board users with full access to MCU signals, additional debug headers and connection of PICtail™ Plus daughter cards. MCU signals are available for attaching prototype circuits or monitoring signals with logic probes. Headers are provided for connecting JTAG tools or Microchip tools using the 2-wire (ICSP™) interface.

**Ethernet PICtail™ Plus**

The Ethernet PICtail Plus daughter board provides a cost-effective method of evaluating and developing Ethernet control applications. The board is designed for flexibility and can be plugged into development boards. The development board is populated with Microchip’s 28-Pin ENC28J60 Ethernet Controller which interfaces to the RJ-45 female connector. When used in conjunction with the Microchip TCP/IP stack, the Ethernet PICtail Plus daughter board allows a developer to connect any Microchip 16-bit product to the Ethernet.

**PIC32 Ethernet Starter Kit**

The PIC32 Ethernet Starter Kit provides the easiest and lowest cost method to experience 10/100 ethernet development with PIC32. Combined with Microchip’s free TCP/IP software, your project will be running in no time. The PIC32 has an available CAN2.0b peripheral and USB host/device/OTG.

For more information on PLC Concentrator design solutions, visit:

Introducing the new mTouch™ CVD Framework

The mTouch™ CVD Framework is a software package enabling designers to easily integrate touch technologies into their application. The goal is to make creating a new capacitive touch application simple and fast, while maintaining a high level of noise robustness and achieving the maximum amount of sensitivity. Since it has been designed with efficiency in mind, the framework is incredibly flexible – able to compile down to an ultra-efficient single sensor application on a PIC12F1822 or a large system with up to 22 sensors on a PIC16F1527.

The framework is designed to work with a minimal amount of effort. You specify how many sensors there are and which pins they will be on, and the system is ready to begin scanning. Once you have the framework loaded on your board, you can then use the new mTouch Framework GUI provided in the installation to view the sensors’ states, readings, and averages in real time. Working example code is also included for each board revision of the mTouch evaluation kit (DM183026-2) to simplify the development process.

Detailed, searchable, code-referenced documentation is available for every aspect of the framework’s algorithms to make finding answers to your questions as easy as possible. Step-by-step quick start guides are available to walk you through your first framework implementation, and details for customizing the framework’s default decoding behavior are also provided.

Supported PIC® Microcontrollers

- PIC16F/LF1516/8 All 17 sensors supported
- PIC16F/LF1517/9 Up to 22 sensors supported
- PIC16F/LF1526/7 Up to 22 sensors supported
- PIC12F/LF1822 All 4 sensors supported
- PIC16F/LF1823 Up to 6 sensors supported
- PIC16F/LF1824/5 All 8 sensors supported
- PIC16F/LF1826/7/8/9 All 12 sensors supported
- PIC16F/LF1933/6/8 All 11 sensors supported
- PIC16F/LF1934/7/9 All 14 sensors supported
- PIC16F/LF1946/7 All 17 sensors supported

Additional part support including non-enhanced core coming soon.

Debunking the ARM myth is a full time job.

Thoughts from Ian Anderson, MIPS Technologies

The motto of the UK Special Air Service (SAS) is ‘Who Dares Wins’. This seems to sum up MIPS Technologies’ strategic objectives of late, especially considering its entry into the mobile and microcontroller markets. As a Brit, I am used to challenges – supporting the English national football team (‘soccer’ for those of you who think that to play sport you need to wear a helmet) is a good example. Putting the mobile story to one side, let’s see how MIPS can dare to win in the microcontroller applications market sector.

“Whoa,” I hear you say, “is this guy one sandwich short of a picnic? Doesn’t ARM have the best technology and leading market share?”

“No,” on the second question; and “I don’t think so,” on the first.

It’s true that ARM enjoys a high level of visibility and a large ecosystem of partners, which is testament to creative marketing—not to superior technology.

Debunking the ARM myth is a full time job. There’s so much to cover. For example, let’s look at the claims that the Cortex-M series is the most performance efficient, optimized processor for microcontroller-based SoC designs. Comparing the MIPS32 M14K core with the Cortex-M3, for instance, shows some interesting points that shatter this myth:

Performance: The M14K core has 20% more performance, and implements a 5-stage pipeline architecture against 3-stage for Cortex-M3. CoreMark (which is becoming a more relevant benchmark of processor capabilities) performance is over 35% higher for the M14K.

A similarly configured M14K core also has lower power consumption across the range of process nodes. This, combined with the performance advantage, results in the M14K having a higher power efficiency.

Download the full mTouch CVD Framework package including source code, examples, GUI, and documentation at http://www.microchip.com/mTouch

Read the full article online at: http://www.mips.com/blog/?p=36
Third-Party News

Microchip makes a lot of great development tools, but there are also plenty of unique and innovative tools created by Third-Party partners. Here is the latest news about Third-Party tools available on microchipDIRECT:

New Products

**Chipino Deluxe Starter Kit** is perfect for beginners, and includes everything needed to get started programming in C and building simple hardware interfaces. Includes Chipino board with PIC16F886 MCU, PICkit 3 programmer/debugger, USB cable, Hi-TECH C compiler (by download), MPLAB IDE, the Simple C Library by Chuck Hellebuyck, a proto-shield, LED, switch, potentiometer, resistors, wires, sample programs and manual. (TCHIP001)

**Flowcode 4** is an advanced graphical programming language for microcontrollers. Previously available for 8-bit MCUs, a new version has been released that supports PIC24 and dsPIC MCUs. Supports rapid development of embedded applications using a simple drag and drop user interface. (SW500083)

**FlyPort Starter Kit** is an inexpensive, easy to use platform for developing WiFi-enabled applications. Imagine using a smart phone web browser to control your next project! Based on PIC24F MCU, WiFi radio, Microchip TCP/IP stack and application layer. (TEIK002)

**Softlog** has expanded their line of production-quality in-circuit programmers to include two new portable units. These units include desirable features such as programmable clock speed, programmable Vdd and Vpp, and programmable delay between Vdd and Vpp. (TPG100009, TPG100010)

Contest Winners Announced

SchmartBoard, makers of the SchmartModule 8-bit PIC MCU Development Board announced the winners of its 2010 MCU Challenge. First Place and winner of an Apple iPad is Matt Bomicino with the “Residential LED RGB Lighting System”. Second Place and winner of a Cue Radio Model r1 is David Wickliff and Nate Wickliff with the “Game Touch”. Third Place and winner of a MPLAB ICD3 In-Circuit Debugger is Paul Pankratz with the “Tele-Operated Alarm Monitoring Interface”

Honorable Mention and winner of a MPLAB Starter Kit for PIC18F MCU is Alan Marconnett with the “Liko Sonar”

Congratulations to the contest winners!

Special Discounts for April

**Bartek Explorer 16 Prototyping Extension Board** is available now with 25% discount (expires 4/30/11)
An excellent tool for prototyping digital and analog circuits with the Explorer 16 Development Board. Provides 830 tie points on a solder-less breadboard area with separate power and ground strips. Four jumper locations bring out the various power distribution points from the Explorer 16 including jumper access to the entire PICtail I/O bus. Includes a negative voltage generator (-5V or -3.3V) and a 70 piece wire kit.

**Use coupon code TPXD4L7**

**Saleae Logic USB Logic Analyzer** is available now with 20% discount (expires 4/30/11)
Saleae Logic is an 8-channel USB Logic Analyzer that records and displays digital waveforms and decodes common protocols, like Async Serial, SPI, I2C, and UNI/O®. It can record up to 200M samples at up to 24MHz, providing extensive debugging insight into a board level design. Logic works with 3.3V and 5V logic levels and comes complete with carrying case, E-Z-Hook probes, wire harness, and USB cable.

**Use coupon code TPZD4K6**
Join Microchip at our regional MASTERs conference in Argentina. The MASTERs Conference is a valuable resource for designing with Microchip’s products that provides design engineers with an annual forum for sharing and exchanging technical information on the Company’s 8-, 16- and 32-bit PIC® microcontrollers, high-performance analog and interface solutions, 16-bit dsPIC® digital signal controllers, wireless products, mTouch™ sensing solutions, memory devices and MPLAB® development systems – including the industry’s only singular IDE to support an entire 8-, 16- and 32-bit microcontroller portfolio.


Join Microchip in Booth 201b at the 12th annual Metering, Billing/MDM America 2011 conference and exhibition. It is the platform where the industry will gather to deliver on the promise of the smart grid. Building on over a decade of experience, the program will allow you to return to your office with a wider understanding of the current state of play in the industry and get to grips with your own utility’s strategy.


Join Microchip at the following worldwide events:

**MSC Conference Argentina**

**MASTERs Conference**

**Argentina**

May 18-20, 2011, Buenos Aires

**June**

**Microchip’s Youbok Lee, Technical Staff Engineer and Yang Zhen, Sr. Design Architecture and Applications Engineer, as he presents “Designing High-Resolution Current Sensors for Measuring High-Speed Transient Currents with Wide Dynamic Range” on June 7 at 11:10 am. This session discusses the latest technologies for tracking high-speed transient currents in motor-control, switching power supply and energy-metering applications. The requirements of signal-conditioning and microcontroller peripherals for measuring bi-directional current flows with a very wide dynamic amplitude range will be presented, along with design examples.**

Register online at: [http://www.sensorsmag.com](http://www.sensorsmag.com)

**EDN Innovation Awards**

mTouch™ metal-over-capacitive touch-sensing technology is a finalist for EDN’s Innovation Awards, in the category of “Human-Machine Interface Technology.”

Take a moment to see the finalists at: [http://innovation.edn.com/finalists](http://innovation.edn.com/finalists)

Online voting is now closed. The “winners” will be announced on May 2 during ESC Silicon Valley.

**EDC Silicon Valley**

Silicon Valley • May 2 - 5, 2011

McEnery Convention Center • San Jose

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Online voting is now closed. The “winners” will be announced on May 2 during ESC Silicon Valley.
Microchip Around Town – Get the latest updates by clicking HERE!


WEPAN’s first annual national conference was held in 1990 in Washington, D.C. Today, both recurring and emerging issues are addressed each year as 200-plus professionals gather to consider the most current research, experience, and best practices. Participants enthusiastically share knowledge and resources with others – and come away inspired and invigorated.

Microchips Academic Program team will be in attendance, drop by, say hi and ask Microchips knowledgeable team members your academic and engineering questions

Register online at: http://www.wepan.org

"Engineering your Career" (Female Engineer Interviews from Microchip)

Right after the WEPAN conference, join us for the annual American Society for Engineering Education (ASEE) conference in Vancouver, BC on June 26th – 29th, 2011. We will be in booth # 647 and hope to see you there to showcase some exciting new academic solutions!

The ASEE Annual Conference and Exposition is the only conference dedicated to all disciplines of engineering education. It is committed to fostering the exchange of ideas, enhancing teaching methods and curriculum, and providing prime networking opportunities for engineering and technology education stakeholders such as deans, faculty members and industry and government representatives.

The ASEE Annual Conference and Exposition hosts over 400 technical sessions, with peer-reviewed papers spanning all disciplines of engineering education. Attendees include deans, faculty and researchers, students, and retirees. Distinguished lectures run throughout the conference, starting with the main plenary. In addition to various award receptions and banquets, ASEE hosts a complimentary "Meet the Board Forum," providing the opportunity for all registrants to meet with members of the ASEE Board of Directors and discuss current issues in engineering and technology.

Register online, today at: http://www.asee.org/conferences-and-events/conferences/annual-conference/2011
Visit Microchip at Booth #1116 to experience 20 exciting demos, attend FREE technical training sessions, win development kits & many other cool prizes! While you’re there, check out our latest product offerings – from our nanoWatt XLP eXtreme Low Power technology to our mTouch™ Sensing Solutions to our analog and interface devices and our serial EEPROMs... we’ve got something for everyone!

**Pre-Register Today** for Microchip’s FREE 40-minute technical training sessions in our booth.

**LIVE VIDEO FEED**
**15 FREE Training Sessions**
**6 Unique Classes**

View Microchip’s in-booth training sessions from anywhere in the world. To view our sessions LIVE online, visit: [www.microchip.com/events/ESCSV2011](http://www.microchip.com/events/ESCSV2011) on May 3rd-5th.

Scheduled training sessions include:
1. Designing for Smart Energy and Low Power Applications
2. Connectivity Solutions featuring USB and Ethernet
3. Touch Sense and Graphics Solutions
4. Wireless Solutions for Embedded Design
5. Development Tools Featuring MPLAB® X IDE
6. Smart Energy Monitoring, Metering and Control

CHECK-IN at Microchip booth #1116 to CONFIRM YOUR ATTENDANCE – Seating is limited! All training session attendees will receive a FREE Enrollment Coupon - good for one Microchip Regional Training Center Course held in North America including LIVE Online Classes. Microchip will have technical staff on hand to answer your design questions and demonstrate our latest technologies.

**20 LIVE In-booth Demos:**

1. 32-bit PIC® Microcontrollers
2. nanoWatt XLP eXtreme Low Power MCUs
3. 16-bit PIC® Microcontrollers
4. 8-bit PIC® Microcontrollers with NEW Enhanced Architecture
5. RF, ZigBee® and MiWi™ Wireless Solutions
6. Internet Solutions using TCP/IP Protocol
7. Bluetooth Communication Solutions
8. Scalable USB Solutions
9. Smart Energy Meters and Monitors (Google PowerMeter)
10. Development Kits for iPod® and iPhone® Accessories
11. Graphics & Segmented Display Solutions
12. mTouch™ Sensing Solutions
13. Signal Conditioning Solutions
14. Memory Solutions
15. dsPIC® DSC Motor Control Solutions
16. dsPIC® DSC Digital Power Solutions
17. MPLAB® X IDE
18. Energizer®
19. Kidde® i9010 10-year Ion Smoke Detector and Alarm
20. AKM Semiconductor Inc. 10-Axis Wireless Sensor Development System
In tough economic times, companies often look for ways to trim expenses as a means to cope with a downturn in sales. One of the areas often targeted for cutbacks is employee training. There is not only the direct cost of the training to contend with, but also travel expenses and time an employee spends away from the job. During this challenging business climate, however, competitive pressures and technology changes don’t stop and it is training that can help a company be better positioned to take advantage of the potential upswing.

Microchip, with its global network of Regional Training Centers (RTCs) and third-party training partners, is here to help companies stay competitive with cost-effective, local training. To help companies deal with issues of travel expense and time, classes are given not only in Microchip’s facilities, but are also taken on the road. Customized customer premise sessions can be scheduled offering the most convenience. Time away can be managed more efficiently with the flexibility of half or full day class sessions.

To be effective in teaching, instruction must take into account the needs and expertise level of the attendee. Microchip’s Regional Training Center classes are developed to provide a coordinated flow, enabling engineers to implement a solution to their product development needs. Instruction is developed and presented in product, technology and implementation classes that are grouped into application based curriculum.

Each curriculum flow enables the individual to engage with the training at a level that meets his or her current knowledge and needs. The intent is to provide training that is relevant to each attendee while eliminating the frustration often associated with attending classes that present too much known information or assume a level of knowledge beyond what the attendee currently possesses.

Product/tool classes provide knowledge on how Microchip’s products and development tools operate. This knowledge provides the foundation upon which all application instruction is based. Attendance at one of these classes can provide significant value through the reduction in time associated with instruction manuals and data sheet review or trial and error attempts to learn individually. Market forces constantly press companies to add functionality and features to their products often outside their areas of core competence. As a result, engineers must continually broaden their knowledge base. Microchip’s technology classes are intended to help engineers gain an understanding of a new field.

Implementation classes combine elements of product and technology instruction to teach engineers how to design a real world application. Classes at this level provide how-to instruction rather than what or why instruction.

Microchip is currently offering classes in the following curriculum: DSP, Ethernet, Human Interface, Motor Control, Power Management, Signal Chain, System Design and USB. Future curriculum is expected to include CAN/LIN, IrDA®, Lighting and RF.

With a worldwide network of Regional Training Centers and certified third-party trainers, Microchip makes it easy to enhance your technical skills, with locations in nearly every metropolitan area across the world!

For those organizations who desire to have a number of employees attend a course at the same time, Microchip can customize any curriculum to meet your specific needs. Our instructors arrive at your location with all presentation materials and equipment, making it easy for your whole team to benefit from a specific course topic in one setting. In addition to the instruction, most Regional Training Center classes offer the opportunity to purchase a set of the development tools used in the class at a discounted price.

If the class you are interested in is not scheduled in your area, you can sign up to receive an alert when a session is scheduled.

For information on scheduling custom in-house training, contact your local RTC directly or visit the Microchip RTC web site: www.microchip.com/RTC
### What's New in Microchip Literature?

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#### Packaging Specification
- Microchip Packaging Specification
- PIC10(L)F320/322 Flash Memory Programming Specification
- PIC24FJXXGA1/GB1 Families Flash Programming Specification

#### Programming Specification
- PIC24F Family Ref. Manual, Sect. 53 Charge Time Measurement Unit (CTMU) with Threshold Detect
- PIC24F Family Ref. Manual, Sect. 51 12-Bit A/D Converter with Threshold Detect
- dsPIC33F/PIC24H Family Reference Manual Section 43. High-Speed PWM

#### FRM Section
- Automotive Headlamp HID Ballast Reference Design Using the dsPIC® DSC Device
- Smart Card Communication Using PIC® MCUs

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Two new categories have been added to www.microchipDIRECT.com making it easier to find third-party development tools that compliment Microchip’s solutions and low-cost, academic-friendly tools for educators and students.

How to access the new categories:

Select the products pull-down menu:

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  Select 3rd Party Tools from the Development Tools Menu:

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  Select Academic Tools from the Development Tools Menu:

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