

## MCU Families Extend Portfolio via High-Performance Connectivity



Microchip Technology Inc., a leading provider of microcontroller and analog semiconductors, is building on the success of its 80 MHz [32-bit PIC32 microcontroller \(MCU\) portfolio](#) [1] with three new families that provide up to 128 Kbytes of RAM and extensive connectivity options, including 10/100 Mbps [Ethernet](#) [2], two [CAN](#) [3] 2.0b controllers, USB Host, Device and OTG, and 6 UART, 5 I<sup>2</sup>C™ and 4 SPI ports. These new MCU families are complemented by Microchip's free software stacks, available in source-code form, making it easier for embedded designers to add connectivity to their applications.

To watch a video about these new PIC32 families, visit: <http://www.microchip.com/get/40134799444444> [4]

“The level of integration on Microchip's new PIC32 32-bit MCU families will greatly reduce system costs for many embedded designs,” said Tony Massimini, chief of technology at Semico Research Corporation. “Microchip has done a great job of integrating important connectivity peripherals with a large amount of system RAM, making them a serious contender for multi-protocol embedded networking applications.”

The demand for embedded connectivity continues to grow, forcing existing products to run more software stacks simultaneously. The new PIC32MX5/6/7 families are designed specifically for these data-intensive applications. Designers have full access to up to 128 KB of RAM for simultaneous use with the Ethernet, USB and CAN buffers. The integrated Ethernet, CAN and USB modules have a built-in DMA interface to maximize data throughput.

“These families couple the PIC32's leading performance with new connectivity features and all the integrated RAM needed for running multiple software stacks with ease,” said Sumit Mitra vice president of Microchip's High Performance

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Microcontroller Division, “This enables innovative connectivity and human-interface applications at lower price points and with greater design simplicity. Benchmarks continue to show the best-in-class performance of the PIC32, as published in recent EEMBC CoreMark™ scores and established Dhrystone scores.”

The integrated 100 Mbps Ethernet MAC uses an industry-standard RMII/MII interface to low-cost, commodity Physical Interface chips (PHYs). Additionally, each MCU has a unique, factory-preprogrammed Ethernet MAC address, which simplifies the manufacturing process.

Flexible, easy-to-use CAN2.0b controllers have been added to the PIC32, which use system RAM for storing up to 1024 messages in 32 buffers. Advanced filtering capabilities include user selectable filter-to-buffer mapping with 32 filters and 4 filter masks. All of these functions allow designers to easily adapt CAN communication schemes to their applications.

Microchip offers [free TCP/IP and USB software stacks](#) [5], including full source code, to further enable easy software development, quicker time to market and lower overall costs. Available software includes two TCP/IP software stacks, along with libraries for USB Host and Device, Advanced Encryption Standard (AES), multiple file systems, advanced graphics, audio, and many other software products.

Migrating software across Microchip’s 600-plus 8-, 16- and 32-bit PIC microcontroller portfolio is easy, as its development tools, USB stacks and TCP/IP stacks span the entire range of PIC MCUs. Additionally, the new PIC32MX5/6/7 families are pin compatible with the existing PIC32 and 16-bit PIC24F USB MCU families.

Example applications for the new PIC32MX5/6/7 families include: **Communications** (point-of-sale terminals, Web servers, CAN-to-Ethernet-to-USB bridges); **Industrial/Medical** (automation, controllers, medical devices, security monitoring); **Consumer/Appliance** (audio, MP3 decoders, displays, small appliances, fitness equipment); **Automotive** (aftermarket, car alarms, GPS).

### New Development Tools

The new PIC32 Ethernet Starter Kit (part # DM320004, \$72) was designed to enable easy Ethernet-based development, and the PIC32 USB Starter Kit II (part # DM320003-2, \$55) is an upgrade of Microchip’s existing USB starter kit for the new families. Owners of the [Explorer 16 Development Board](#) [6] (part # DM240001) can purchase a \$25 plug-in module for development with the new PIC32MX5/6/7 families (part # MA320003).

### Pricing & Availability

The three new PIC32MX5/6/7 families are available today for sampling and volume production. 10,000 unit pricing ranges from \$4.73 each for the PIC32MX575F256H,

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up to \$6.55 each for the PIC32MX795F512L. Packaging options include 100-pin TQFP and BGA packages, and 64-pin TQFP and QFN packages. For additional information, contact any Microchip sales representative or authorized worldwide distributor, or visit <http://www.microchip.com/get/401347840046296> [1].

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