

Eight-bit Microcontrollers Integrate Configurable Logic



Microchip Technology, a leading provider of microcontroller, analog and Flash-IP solutions, announced from the Embedded Systems Conference in Boston several new [8-bit PIC microcontrollers \(MCUs\)](#) [1] that feature configurable logic and a high level of peripheral integration in 6- to 20-pin packages. The [PIC10F\(LF\)32X](#) [2] and [PIC1XF\(LF\)150X](#) [3] MCUs each feature new peripherals, including Configurable Logic Cells (CLCs), Complementary Waveform Generators (CWGs) and Numerically Controlled Oscillators (NCOs), enabling functionality that was not possible before with low pincount MCUs. These general-purpose MCUs enable designers to enhance the functionality, reduce design size, and decrease the cost and power consumption of products in the [appliance](#) [4] (e.g. small kitchen appliances); [automotive](#) [5] (e.g. interior lighting); [consumer](#) (e.g. power tools); and [industrial](#) markets (e.g. utility meters), among others.

To view a brief presentation on these products, visit: <http://www.microchip.com/get/JFEP> [6].

The CLC peripherals on the PIC10F(LF)32X and PIC1XF(LF)150X MCUs enable software control of combinational and sequential logic, which increases the on-chip interconnection of peripherals and I/Os, thereby reducing external components, saving code space and adding functionality. The CWG peripheral works with multiple peripherals to generate complementary waveforms with dead-band control and auto shutdown, which provides improved switching efficiencies. Additionally, the NCO peripheral enables linear frequency control and high resolution, which is required for applications such as lighting ballast, tone generation and other resonant control circuits. The MCUs also feature low power consumption, with

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currents of less than 30 μ A/MHz in active mode, and less than 20 nA in sleep; as well as an on-chip 16 MHz internal oscillator, Analog-to-Digital Converter (ADC), and up to 4 Pulse-Width Modulation peripherals. An integrated temperature-indicator module enables low-cost temperature measurements.

“These new MCUs expand the reach of the PIC10F, PIC12F and PIC16F families, enabling new applications for microcontrollers that didn’t exist before,” said Steve Drehobl, vice president of Microchip’s Security, Microcontroller and Technology Development Division. “They provide an unmatched combination of unique functionality, power consumption, size and cost.”

Development Support

To facilitate application development, the [PICDEM Lab Development Kit \[7\]](#) (part # [DM163045 \[8\]](#), \$134.99) now includes samples of both the PIC10F322 and PIC16F1507 MCUs. Additionally, the [F1 Evaluation Platform \[9\]](#) (part # [DM164130-1 \[9\]](#), \$39.99) is available for development with enhanced mid-range core 8-bit PIC MCUs, including the PIC1XF(LF)150X family. Also available is a free [CLC Configuration Tool \[2\]](#), to streamline the setup process of the CLC module by simulating the functionality of the registers and combinational logic in a graphical user interface (GUI). This tool is available today and can be downloaded from Microchip’s Web site at [http://www.microchip.com/get/NWUN \[2\]](http://www.microchip.com/get/NWUN [2]).

All of these new MCUs are supported by Microchip’s standard development tools, including the [PICkit 3 Debugger/Programmer \[10\]](#) (part # [PG164130 \[10\]](#), \$44.95), as well as the [MPLAB IDE \[11\]](#), [MPLAB REAL ICE \[12\]](#) In-Circuit Emulator and [MPLAB ICD3 \[13\]](#) In-Circuit Debugger, and the [Microchip and HI-TECH C compilers \[14\]](#). All of these tools can be purchased today, at [microchipDIRECT \[15\]](#) ([http://www.microchip.com/get/100U \[15\]](http://www.microchip.com/get/100U [15])).

Packaging, Pricing & Availability

The [PIC10F\(LF\)320 and PIC10F\(LF\)322 MCUs \[2\]](#) are available in a 6-pin SOT-23 package, as well as 8-pin PDIP and 2 mm x 3 mm DFN packages. The [PIC12F\(LF\)1501 \[3\]](#) MCU will be available in 8-pin PDIP, SOIC, MSOP and 2 mm x 3 mm DFN packages, and the [PIC16F\(LF\)1503 \[3\]](#) MCU in 14-pin PDIP, SOIC and TSSOP packages, as well as a 3 mm x 3 mm QFN package. The [PIC16F\(LF\)1507 \[3\]](#) MCU is available in 20-pin SSOP, PDIP, SOIC, and 4 mm x 4 mm QFN packages, as will the [PIC16F\(LF\)1508/9 \[3\]](#) MCUs, when available. Pricing starts at \$0.37 each, in 10,000-unit quantities.

[Samples \[16\]](#) and volume-production quantities of the PIC10F(LF)320, PIC10F(LF)322 and PIC16F(LF)1507 MCUs can be ordered today, at [http://www.microchip.com/get/KMFF \[16\]](http://www.microchip.com/get/KMFF [16]) and [http://www.microchip.com/get/100U \[15\]](http://www.microchip.com/get/100U [15]), respectively. The PIC1XF(LF)1501/3/8/9 MCUs are expected to be available for sampling and purchase over the next two quarters. For further information, contact any Microchip sales representative or authorized worldwide distributor, or visit Microchip’s Web site at [http://www.microchip.com/get/X792 \[1\]](http://www.microchip.com/get/X792 [1]). To purchase products mentioned in this press release, go to [microchipDIRECT \[15\]](#) or contact

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For more information, visit the [Microchip Web site](http://www.microchip.com) [17]
(<http://www.microchip.com/get/TG7Q> [17]).

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Links:

- [1] <http://www.microchip.com/get/X792>
- [2] <http://www.microchip.com/get/NWUN>
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- [4] <http://www.microchip.com/get/1LHA>
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