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

currents of less than 30 µA/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]**.

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]**).

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]** and 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]**. To purchase products mentioned in this press release, go to microchipDIRECT **[15]** or contact

one of Microchip's authorized distribution partners.

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

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