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Microchip Technology Announces Expansion of Motor Control Digital Signal Controllers, Tools and Libraries

Up to 128 KB Flash in 6x6 mm Footprint; New Motor Control Hardware Development Environment; New Free Software for Improved Efficiency

CHANDLER, Ariz.--(BUSINESS WIRE)--

Microchip Technology Inc. (NASDAQ: MCHP), a leading provider of microcontroller and analog semiconductors, today announced 10 new 28- and 44-pin 16-bit Digital Signal Controllers (DSCs) for motor control designs requiring increased memory or performance, or enhanced peripherals, while obtaining cost and size savings associated with lower pin-count devices. Microchip also announced today a new motor control development platform based on the popular Explorer 16 development board. Additionally, Microchip announced five motor control software solutions for: Power Factor Correction (PFC), sensorless Field Oriented Control (FOC) of a PMSM motor, sensorless FOC of an ACIM motor, sensorless control of a BLDC motor using Back EMF filtering and sensorless BLDC control with Back-EMF Filtering Using a Majority Function.

The 10 dsPIC33 Motor Control Family devices announced today bring Microchip's total count of DSCs with on-chip, 3-phase motor control PWMs to 36 devices--the largest motor control DSC portfolio in the industry. The newly announced devices are offered in 28- and 44-pin configurations, and come in packages as small as 6x6 mm. They offer up to 128 Kbytes of programmable Flash memory to accommodate large proprietary algorithms, such as observer motor control models, integration of motor control algorithms with system-level control, communication stacks such as CAN, and graphic libraries for displays.

Two of the motor control devices contain Digital-to-Analog Converters (DACs) which may be useful for motor noise reduction strategies or audio messages. A user-selectable 10- or 12-bit Analog-to-Digital Converter (ADC) is available on chip. The 10-bit ADC mode features up to four Sample & Holds that can be triggered simultaneously, which is especially useful for sensorless control strategies to gain improved loop performance from synchronized sampling strategies.

All of the new motor control DSCs feature two quadrature encoder interfaces for applications with rotor position sensors. Additionally, they all have a flexible three-phase PWM controller, plus two additional PWM outputs on a separate time base for PFC, since PFC requires a loop that is typically over 30 times faster than that required for motor control.

"Three trends are creating tremendous demand for advanced motor control solutions," said Sumit Mitra, vice president of Microchip's Digital Signal Controller Division. "First is the requirement for more energy efficient motors; second, the increased competitiveness of markets incorporating electric motors is forcing the consideration of new control strategies;

and third, the cost of DSCs has declined to the point that control strategies impractical a few years ago have become today's reality."

Libraries

PFC is becoming increasingly required for line-connected motors. Microchip has issued a software solution for PFC that can be downloaded from Microchip's Web site (search for application note AN1106 for the description and source code download).

For advanced, cost-sensitive motor control applications, sensorless strategies may be the preferred approach. Microchip offers four new software solutions addressing these needs. Sensorless FOC software for controlling PMSM motors is available and described in application note AN1078. FOC software for controlling ACIM motors is contained in application note AN1162. This software is advantageous for applications that benefit from high efficiency coupled with excellent torque control, such as air conditioning or refrigeration compressors, or washing machines. Also available are two new sensorless BLDC software solutions--application note AN1083 "BLDC Control Using Back-EMF Filtering" and application note 1160 "Sensorless BLDC Control with Back-EMF Filtering Using a Majority Function." These application notes are expected to be popular for cost-sensitive BLDC applications, such as automotive fuel pumps and appliances.

Motor Control Development Environment

The new PICtail(TM) Plus Motor Control daughter card (part # AC164128) provides an interconnect interface between Microchip's ubiquitous Explorer 16 Development board (part # DM240001) and Microchip's well-established High Voltage (part # DM300021) or Low Voltage (part # DM300022) Power Modules. The Explorer 16 Development Board, PICtail Plus Motor Control daughter card, appropriate power module, MPLAB(R) ICD 2 in-circuit programmer/debugger (DV164005) and Microchip's free MPLAB IDE integrated development environment comprise a complete motor control development environment. This motor control development environment supports the dsPIC33 motor control family and has been developed to support sensor and sensorless control methodologies.

"Our development platforms were designed with flexibility in mind," said Richard Fischer, manager of Applications Engineering for Microchip's Digital Signal Controller Division. "It was clear from the beginning that our customers would be dealing with a large variety of motor types, control strategies and operating environments, which drove the flexibility we added to our motor control development tools."

Pricing and Availability

The 10 new motor control DSCs range from $2.85 to $4.18 each in 10,000-unit quantities. These DSCs are sampling now and are expected to be available for volume production in 2CQ08. The motor control software and related application notes are available today as a free download from the Microchip Web site. The PICtail Plus Motor Control daughter card is available now for $125 and includes a dsPIC33FJ256MC710 plug-in module for use in the Explorer 16 development board. For additional information, contact any Microchip sales representative or authorized worldwide distributor, or visit Microchip's Web site at www.microchip.com/DSCMOTOR.

Microchip Customer Support

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About Microchip Technology

Microchip Technology Inc. (NASDAQ: MCHP) is a leading provider of microcontroller and analog semiconductors, providing low-risk product development, lower total system cost and faster time to market for thousands of diverse customer applications worldwide. Headquartered in Chandler, Arizona, Microchip offers outstanding technical support along with dependable delivery and quality. For more information, visit the Microchip website at www.microchip.com.


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