

## Microchip Technology enables new class of motor control and smart sensor applications with new low-cost families of DSCs

*Free algorithm, dsPIC33FJ12MC and dsPIC33FJ12GP families enable advanced motor control and sensor processing at low prices and in small packages*

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Microchip Technology Inc., a leading provider of microcontroller and analog semiconductors, has announced the provision of free source code for the sensorless Field Oriented Control (FOC) of Permanent Magnet Synchronous Motors (PMSMs) and the lowest-priced dsPIC33FJ12MC and dsPIC33FJ12GP families of Digital Signal Controller (DSC) in small packages.

The free source code can operate on any of Microchip's Motor Control dsPIC DSC including the new dsPIC33FJ12MC family. Using this FOC platform, with downloadable code available at [www.microchip.com/motor](http://www.microchip.com/motor), motor-driven applications such as appliances and automobiles can cost-effectively reduce energy consumption by replacing expensive optical or hall-effect encoders with inexpensive shunt resistors.

"FOC of PMSM motor is emerging as a strategy of choice for achieving energy efficiency with excellent torque control, while satisfying consumer demands for quieter operation and longer life," said Sumit Mitra, vice president of Microchip's Digital Signal Controller Division. "Microchip provides a free and extraordinary efficient FOC motor control algorithm, in combination with a cost-effective DSC family, which can help solve the economic conundrum faced by appliance manufacturers as they seek to achieve regulatory compliance while maintaining economic momentum."

Enabling the next level of high performance, low noise and power efficiency to motor control applications, the 40 MIPS dsPIC33FJ12MC family cost-effectively provides the DSP functionality required for sensorless FOC, while maintaining the attributes familiar to microcontroller designers, such as deterministic operation and effective interrupt handling. System costs are further reduced by the fact that FOC only requires two current sensors (the third one is computed).

Additionally, the dsPIC33FJ12MC family serves space-constrained motor control applications via 20- and 28-pin packages as small as 6x6 mm.

Being the world's smallest DSCs and the lowest priced, the 40 MIPS dsPIC33FJ12GP family enables a new class of sensor processing, dubbed Smart Sensors, which can enhance sensor performance and extend product life.

All embedded applications react to inputs from sensors, and often the performance of the overall system (and system reliability) is gated by the quality of sensor inputs. With dsPIC33FJ12GP package sizes as small as 6x6mm, the processor can be moved closer to the sensor - eliminating lead noise and offloading this workload from a central processor - creating a Smart Sensor scenario.

"Microchip is the only company to offer seamless migration between its 16-bit microcontrollers and DSP-enabled DSCs, by providing pin, peripheral, software and tool compatibility," said Mitra. "Being able to easily migrate among the 92 dsPIC DSCs and PIC24 microcontrollers in Microchip's rapidly growing 16-bit portfolio accelerates time to market and provides a path to quickly respond to

requirement changes during the design processes, while providing the scalability to serve many applications."

"With their dsPIC DSCs and PIC24 MCUs, Microchip is the only company on the planet with truly unified DSP and MCU product lines," said Will Strauss, president of Forward Concepts. "The dsPIC33 family gives MCU people an easy migration path to DSP performance."

For additional information, contact any Microchip sales representatives or authorised worldwide distributor, or visit Microchip's Web site at [www.microchip.com/16bit](http://www.microchip.com/16bit).

### **Availability**

The free FOC algorithm is available now for downloading, as part of application note AN1078, at [www.microchip.com/motor](http://www.microchip.com/motor). Both members of the dsPIC33FJ12MC and dsPIC33FJ12GP families are available today for general sampling and volume production.

### **Part number**

#### **Package**

dsPIC33FJ12MC201

20-pin SOIC and SDIP

dsPIC33FJ12MC202

28-pin QFN, SOIC and SDIP

dsPIC33FJ12GP201

18-pin SOIC and SDIP

dsPIC33FJ12GP202

28-pin QFN, SOIC and SDIP

**- END -**

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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 <http://www.microchip.com/>.

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