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Microchip Expands dsPIC33A DSC Family for High-Density AI Data Center Power, Complex Motor Control and Intelligent Sensing

Devices integrate precise real-time control, rich analog capability and post-quantum cryptography to simplify designs and help enable secure, high-performance applications

CHANDLER, Ariz., April 14, 2026 (GLOBE NEWSWIRE) -- As AI servers, data centers, automotive and industrial systems demand higher efficiency designs, deterministic real-time control and quantum-resistant cryptography, Microchip Technology Inc. **(Nasdaq: MCHP)** has added **dsPIC33AK256MPS306** Digital Signal Controllers (DSCs) to its dsPIC33A DSC family. The dsPIC33AK256MPS306 devices combine high-resolution control, high-speed analog and security with support for post-quantum cryptography. The devices are compact and cost-effective, designed to reduce the bill of materials (BOM), simplify board layout and accelerate time to market for power conversion, motor control and intelligent sensing applications.

Built on a 200 MHz 32-bit core with a double-precision floating point unit (FPU), the dsPIC33AK256MPS306 family integrates high-resolution 78 ps Pulse Width Modulators (PWMs), multiple 40 MSPS 12-bit Analog-to-Digital Converters (ADCs), 5 ns high-speed comparators and Digital-to-Analog Converters (DACs) with slope compensation. These features help enable fast, deterministic control loops for high-efficiency DC/DC converters, auxiliary power rails and intelligent sensing designs, including systems based on Silicon Carbide (SiC) and Gallium Nitride (GaN) power semiconductors operating at high switching frequencies.

“We’re seeing customers look beyond individual components and focus on how quickly and confidently they can bring a system to life,” said Joe Thomsen, corporate vice president of Microchip’s digital signal controller business unit. “These DSCs address those needs by combining a broad set of control, analog and security capabilities together in a single device. That integration, combined with a comprehensive development ecosystem, helps teams manage complexity and meet evolving performance and cybersecurity requirements from early design through deployment.”

To address increasing cybersecurity requirements, the dsPIC33AK256MPS306 family includes hardware security features for implementing secure boot, secure firmware updates and secure debug. The devices offer library support for Commercial National Security Algorithm (CNSA) Suite 2.0 recommended post-quantum cryptographic (PQC) algorithms and feature hardware accelerated cryptographic functions needed in Open Compute Project

(OCP) power supplies and other connected real-time control designs. Live update support helps enable uninterrupted full-cycle firmware updates required in modern server designs.

The devices feature I^3C connectivity for scalable, low latency telemetry and sensor networks in modern server and industrial racks, along with additional communication interfaces including CANFD, LIN, SPI, I^2C and SENT.

With fast 20 ns trigonometric sine and cosine function execution, the dsPIC33A core architecture helps designers implement responsive position control and efficient field-oriented control (FOC) algorithms. The dsPIC33AK256MPS306 family includes mechanical motor feedback interfaces supporting Bidirectional Serial Synchronous (BiSS-C), EnDat and Quadrature/Optical Encoders and Resolvers. Combined with a high level of analog integration, the devices help enable high-resolution, accurate real-time control loop closure, helping to improve overall motor control algorithm performance.

An Integrated Touch Controller (ITC) and 40 MSPS ADCs with built-in oversampling for up to 16-bit resolution are designed to simplify complex sensing and human-machine interface applications. The high level of integration can reduce external component needs and allow designers to implement enhanced features without extra hardware. Additionally, compact package options support space-constrained designs.

The devices are developed following automotive (ISO 26262) and industrial (IEC 61508) functional safety processes and include hardware safety features to help streamline certification of safety critical applications. dsPIC33AK256MPS306 DSCs will be automotive qualified for operation up to 150°C.

Development Ecosystem

The family is supported by Microchip's comprehensive development ecosystem, including the MPLAB® X Integrated Development Environment (IDE), MPLAB Code Configurator and the MPLAB Machine Learning Development Suite. dsPIC33AK256MPS306 devices now support the Zephyr® real-time operating system (RTOS), providing designers with access to an open-source ecosystem and a unified platform for building scalable embedded applications.

In addition, the dsPIC33A DSCs are compatible with FreeRTOS™, SafeRTOS® (certified) and wolfCrypt® libraries (including post-quantum cryptography support), MICROSAR IO from Vector and support for TRACE32® debug and trace tools from Lauterbach.

For evaluation and rapid prototyping, Microchip offers a dsPIC33AK256MPS306 motor control Dual In-line Module (DIM), designed for use with the MCS MCLV-48V-300W development board and the MCHV-230VAC-1.5kW motor control high voltage development board, enabling scalable low- and high-voltage motor control development. The dsPIC33AK512MPS506 Digital Power Plug-In Module (PIM), compatible with the Digital Power Development Board, facilitates power conversion use cases. In addition, a dsPIC33AK256MPS306 general purpose DIM is available for use with the dsPIC33 Curiosity platform development board, providing a flexible platform for general purpose control, sensing and system evaluation. Learn more at **Microchip.com**.

Support for model-based design via MATLAB® and Microchip's growing library of power and motor control reference designs further accelerates development and system integration.

Pricing and Availability
The dsPIC33AK128MPS103-I/M7 is available for $1.20 each in high volumes. You can **purchase** directly from Microchip or contact a Microchip **sales representative or authorized worldwide distributor**.

Resources
High-res images available through Flickr or editorial contact (feel free to publish):
- Application image:
https://www.flickr.com/photos/microchiptechnology/55167246632/sizes/o/

About Microchip Technology:

Microchip Technology Inc. is a broadline supplier of semiconductors committed to making innovative design easier through total system solutions that address critical challenges at the intersection of emerging technologies and durable end markets. Its easy-to-use development tools and comprehensive product portfolio supports customers throughout the design process, from concept to completion. Headquartered in Chandler, Arizona, Microchip offers outstanding technical support and delivers solutions across the industrial, automotive, consumer, aerospace and defense, communications and computing markets. For more information, visit the Microchip website at **www.microchip.com**.

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