June 18, 2025

Microchip Enhances Digital Signal Controller Lineup with Industry-Leading PWM Resolution and ADC Speed

The latest DSC devices with specialized peripherals for efficient power conversion target data center power supplies and other complex real-time systems

CHANDLER, Ariz., June 18, 2025 (GLOBE NEWSWIRE) -- Evolving security and functional safety demands, coupled with the growing complexity of real-time embedded applications, are driving designers to seek innovative solutions that deliver greater accuracy, improved reliability and compliance with industry standards. To address these challenges, Microchip Technology **(Nasdaq: MCHP)** has added the **dsPIC33AK512MPS512** and **dsPIC33AK512MC510** Digital Signal Controller (DSC) families to its dsPIC33A DSC product line. The devices enable the implementation of computation-intensive control algorithms for improved energy efficiency in motor control, AI server power supplies, energy storage systems and complex sensor signal processing with Machine Learning (ML)-based inferencing.

“As AI servers and data centers continue to grow, the need for more efficient power conversion is essential. With specialized peripherals and the high-performance core in the dsPIC33AK512MPS family, developers can now achieve significant energy savings and shrink their power supply footprints,” said Joe Thomsen, corporate vice president of Microchip’s digital signal controller business unit. “The new dsPIC33A DSC families are packed with advanced features that enable efficient and reliable designs for modern power conversion, motor control and sensing applications.”

The dsPIC33AK512MPS family delivers precise, high-speed control through industry-leading 78 ps high-resolution Pulse Width Modulations (PWMs) and low-latency 40 Msps ADCs, enabling fast and accurate control loops essential for optimizing the performance of Silicon Carbide (SiC) and Gallium Nitride (GaN)-based DC-DC converters. Additionally, dsPIC33AK512MPS devices include advanced security features, an integrated touch controller and a high pin count of up to 128 pins. The dsPIC33AK512MC family is designed to offer low-latency, 40 Msps ADCs and 1.25 ns PWM resolution, providing a feature- and cost-optimized solution for multi-motor control and complex embedded applications.

The dsPIC33A DSC families, with up to 512 KB Flash and a rich peripheral set, integrate a double precision floating-point unit to accelerate mathematical computations and leverage a 32-bit architecture for seamless adoption of model-based design code. Their enhanced instruction set and Digital Signal Processing (DSP) capabilities, including single-cycle MAC operations and a 200 MHz core speed, make these devices highly efficient for low-latency, real-time control applications. Supported by MPLAB® Machine Learning Development Suite,

dsPIC33A devices streamline the ML workflow by automating data preparation, feature extraction, training, validation and firmware conversion of optimized models.

“dsPIC33A DSCs from Microchip provide high performance and reliability for complex automotive Electronic Control Units (ECUs),” said Norbert Weiss, managing director at Lauterbach GmbH. “Combined with the support of our latest TRACE32® solutions, we help dsPIC33A DSC customers accelerate their time-to-market using our leading debug and trace tools from the start of the development process.”

With a range of hardware safety features, dsPIC33AK512MPS/MC DSCs are compliant with functional safety standards and are developed in accordance with International Organization for Standardization (ISO) 26262 and International Electrotechnical Commission (IEC) 61508 processes, making them suitable for safety-critical automotive and industrial applications. To further enhance system-level security, the dsPIC33AK512MPS DSC family includes integrated crypto accelerators and a Flash security module, enabling immutable root of trust, secure boot, secure firmware upgrades and secure debug capabilities.

“The combination of dsPIC33A DSCs and our pre-certified safety-critical real-time operating system, SAFE**RTOS**®, simplifies the development of safety-critical applications," said Andrew Longhurst, managing director of WITTENSTEIN high integrity systems (WHIS). “This system level solution empowers our clients to deliver reliable and efficient solutions that meet automotive and industrial safety standards.”

Visit the website to learn more about Microchip’s **dsPIC33A DSC family**.

Development Tools
dsPIC33AK512MPS/MC DSCs are supported by Microchip’s development tool ecosystem including MPLAB XC-DSC Compiler, MPLAB Code Configurator (MCC) and MPLAB ML Development Suite. Separate dual in-line modules are available to support development for motor control, digital power conversion and general-purpose embedded applications. The DSCs are also supported by partner software and tools including SAFE**RTOS**® real-time operating system from WHIS, TRACE32® debugger from Lauterbach and others.

Pricing and Availability
dsPIC33AK512MPS/MC DSCs are available starting at $1.50 each in volume. 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/54567382263/sizes/o/**

About Microchip Technology:
Microchip Technology Inc. is a leading provider of smart, connected and secure embedded control and processing solutions. Its easy-to-use development tools and comprehensive product portfolio enable customers to create optimal designs which reduce risk while lowering total system cost and time to market. The company’s solutions serve over 100,000 customers across the industrial, automotive, consumer, aerospace and defense, communications and computing markets. Headquartered in Chandler, Arizona, Microchip

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Source: Microchip Technology Inc.