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Microchip Expands 64-bit Portfolio with High-Performance, Post-Quantum Security-Enabled PIC64HX Microprocessors

The RISC-V®-based MPUs support mission-critical intelligent edge applications with TSN Ethernet switching and AI capabilities

CHANDLER, Ariz., Oct. 21, 2024 (GLOBE NEWSWIRE) -- The global edge computing market is expected to grow by more than 30 percent in the next five years, serving mission-critical applications in the aerospace, defense, military, industrial and medical sectors. To meet this increasing demand for reliable, embedded solutions for mixed-criticality systems, Microchip Technology **(Nasdaq: MCHP)** has announced the **PIC64HX** family of microprocessors (MPUs). Unlike traditional MPUs, the PIC64HX is purpose built to address the unique demands of intelligent edge designs.

The latest in Microchip's 64-bit portfolio, the PIC64HX is a high-performance, multicore 64-bit RISC-V® MPU capable of advanced Artificial Intelligence and Machine Learning (AI/ML) processing and designed with integrated Time-Sensitive Networking (TSN) Ethernet connectivity and post-quantum-enabled, defense-grade security. PIC64HX MPUs are specifically designed to deliver comprehensive fault tolerance, resiliency, scalability and power efficiency.

"The PIC64HX MPU is truly groundbreaking in the number of advanced features we are able to provide with a single solution," said Maher Fahmi, corporate vice president of Microchip's communications business unit. "And, integrating TSN Ethernet switching into the MPU helps developers bring standards-based networking connectivity and compute together to simplify system designs, reduce system costs and accelerate time to market."

The integrated Ethernet switch includes a TSN feature set with support for important emerging standards: IEEE P802.1DP TSN for Aerospace Onboard Ethernet Communications, IEEE P802.1DG TSN Profile for Automotive In-Vehicle Ethernet Communications and IEEE/IEC 60802 TSN Profile for Industrial Automation.

Eight 64-bit RISC-V CPU cores—SiFive Intelligence™ X280—with vector extensions help enable high-performance compute for mixed-criticality systems, virtualization and vector processing to accelerate AI workloads. The PIC64HX MPU allows system developers to deploy the cores in multiple ways to enable SMP, AMP or dual-core lockstep operations. WorldGuard hardware architecture support is provided to enable hardware-based isolation and partitioning.

"Next-generation aircraft require a new generation of processors for mission-critical applications such as flight control, cockpit display, cabin networking and engine control. The

OHPERA Consortium views RISC-V technology as an essential component of the future of safe and sustainable aircraft," said Christophe Vlacich, OHPERA technical Leader. The OHPERA Consortium is composed of leading aerospace companies with the mutual goal of evaluating new technologies for next-generation aircraft. "We are pleased to see the upcoming availability of commercial products like Microchip's PIC64HX MPU with the compute performance, partitioning, connectivity and security needed to shape the future of aviation."

The expected arrival of quantum computers poses an existential threat as it will make current security measures ineffective. As a result, government agencies and enterprises worldwide are beginning to call for the inclusion of post-quantum cryptography in any critical infrastructure. Addressing current and future security needs, the PIC64HX is one of the first MPUs on the market to support comprehensive defense-grade security including the recently NIST-standardized FIPS 203 (ML-KEM) and FIPS 204 (ML-DSA) post-quantum cryptographic algorithms.

The PIC64HX MPU is a powerful and versatile solution for intelligent edge applications, addressing key requirements for low latency, security, reliability and compliance with industry standards.

Development Tools
The PIC64HX MPU is supported by a comprehensive package of tools, libraries, drivers and boot firmware. Multiple open-source, commercial and real-time operating systems are supported including Linux® and RTEMS, as well as hypervisors such as Xen. PIC64HX MPUs leverage Microchip's extensive Mi-V ecosystem of tools and design resources to support its RISC-V initiatives. To help reduce development cycles and accelerate time to market, Microchip offers the Curiosity Ultra+ PIC64HX evaluation kit and is partnering with single-board computer partners.

"Aries Embedded has long been a supporter of the RISC-V ecosystem," said Andreas Widder, Aries Embedded CEO. "We are proud to be a lead System-on-Module partner for the PIC64HX and look forward to helping Microchip enable mission critical intelligent edge applications."

Availability
PIC64HX MPU samples will be available to Microchip's early access partners in 2025. For additional information, please contact a Microchip sales representative.

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Editorial Contact:
Amber Liptai
480-792-5047
amber.liptai@microchip.com

Reader Inquiries:
1-888-624-7435

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