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Microchip Expands its Radiation-Tolerant Microcontroller Portfolio with the 32-bit SAMD21RT Arm® Cortex®-M0+ Based MCU for the Aerospace and Defense Market

The SAMD21RT MCU is offered in 64-pin ceramic and plastic packages with a 10 mm × 10 mm footprint

CHANDLER, Ariz., May 16, 2024 (GLOBE NEWSWIRE) -- Space exploration is experiencing a resurgence with exciting new missions like the highly anticipated Artemis II mission, the recent successful lunar landing missions such as JAXA SLIM and Chandaaryan-3, and New Space deployments in Low Earth Orbit (LEO). Designers require electronic components that meet stringent radiation and reliability standards to operate in the harsh environments found in space. Microchip Technology **(Nasdaq: MCHP)** today announces the **SAMD21RT**, a radiation-tolerant (RT) Arm® Cortex®-M0+ based 32-bit microcontroller (MCU) in a 64-pin ceramic and plastic package with 128 KB Flash and 16 KB SRAM.

Designed for space-constrained applications where size and weight are of critical importance, the SAMD21RT is available in a small footprint of 10 mm × 10 mm. Running at up to 48 MHz, the SAMD21RT delivers high-performance processing for harsh environments. The device integrates analog functions including an Analog-to-Digital Converter (ADC) with up to 20 channels, a Digital-to-Analog Converter (DAC) and analog comparators.

The SAMD21RT device builds on Microchip's existing family of SAMD21 MCUs, which is widely used in industrial and automotive markets. It is also based on Commercial-Off-The-Shelf (COTS) devices, which significantly simplifies the design process when transitioning to a radiation-tolerant device as the design remains pinout compatible. Microchip offers a comprehensive system solution for space applications with many devices that can be designed around the SAMD21RT MCU including FPGAs, power and discrete devices, memory products, communication interfaces and oscillators providing a broad range of options across qualification levels.

To withstand harsh environments including radiation and extreme temperatures, the SAMD21RT can operate in temperatures ranging from −40°C to 125°C and provides a high level of radiation tolerance with a Total Ionizing Dose (TID) capability up to 50 krad and Single Event Latch-up (SEL) immunity up to 78 MeV.cm²/mg.

"The advantage of working with Microchip is that we have the history, knowledge and capability to do the design and testing in house for our radiation-tolerant and radiation-

hardened devices," said Bob Vampola, vice president of Microchip's aerospace and defense business unit. "We continue to bring newer technologies like Ethernet, AI and ML, which have evolved in the commercial and industrial markets, and improve them with radiation performance to meet the needs of space missions. We also continue to provide higher computing performance and integration of newer technologies into smaller packages, reducing weight and size."

The low-power SAMD21RT features idle and standby sleep modes and sleepwalking peripherals. Other peripherals include a 12-channel Direct Memory Access Controller (DMAC), a 12-channel event system, various Timer/Counters for Control (TCC), a 32-bit Real Time Counter (RTC), a Watchdog Timer (WDT) and a USB 2.0 interface. Communication options include Serial Communication (SERCOM), I^2C, SPI and LIN.

With tens of thousands of parts in orbit, Microchip has been a significant part of space exploration history and is critical to the missions of today and tomorrow. Its products are on the way to the moon as part of the Artemis program and are contributing to the success of the Space Launch System, Orion Spacecraft, Lunar Gateway, Lunar Lander and next-generation spacesuits. To learn more about Microchip's space heritage, visit the **space applications** page on the company's website.

Development Tools
The SAMD21RT 32-bit MCU is supported by the **SAM D21 Curiosity Nano Evaluation Kit**, **MPLAB® X Integrated Development Environment (IDE)** and **MPLAB PICkit™ 5** in-circuit debugger/programmer.

Pricing and Availability

The SAMD21RT 32-bit MCU is available in limited sampling upon request. For additional information, contact a **Microchip sales representative**.

Resources

High-res images available through Flickr or editorial contact (feel free to publish):

- Application image:
  www.flickr.com/photos/microchiptechnology/53641199810/sizes/l

Performance Results:
Check pinout compatibility of the devices that you are migrating between.

About Microchip Technology:
Microchip Technology Inc. is a leading provider of smart, connected and secure embedded control 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 approximately 125,000 customers across the industrial, automotive, consumer, aerospace and defense, communications and computing markets. 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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