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Microchip Announces Industry's First Space-Qualified COTS-Based Radiation-Tolerant Ethernet Transceiver and Embedded Microcontroller

Radiation-qualified devices enable expanded Ethernet connectivity for space applications

CHANDLER, Ariz., Jan. 14, 2020 (GLOBE NEWSWIRE) -- Ethernet is becoming more common in spacecraft to enable hardwired communication speed, support higher data rates, and facilitate interoperability between satellites and other spacecraft. As Ethernet in space applications continues to expand, Microchip Technology Inc. **(Nasdaq: MCHP)** today announced the industry's first space-qualified Ethernet transceiver – a radiation-tolerant device based on a Commercial Off-the-Shelf (COTS) solution widely deployed in other industries now offering reliable performance for applications ranging from launch vehicles to satellite constellations and space stations.

In addition to Microchip's new **VSC8541RT radiation-tolerant Ethernet transceiver sampling**, the company received final qualification for the new **SAM3X8ERT radiation-tolerant microcontroller**, its latest Arm® Cortex®-M3 core processor and embedded Ethernet controller. These are designed to support space industry demand for radiation tolerant devices separately or in combination.

Both devices are COTS-based parts with enhanced characterized levels of radiation performance and high reliability quality flow, available in plastic and ceramic packages. They share the same pin-out distribution, allowing designers to begin implementation with COTS devices before moving to space-grade components. This significantly reduces development time and cost.

"As the first to provide both a rad-tolerant transceiver and an enhanced rad-tolerant microcontroller for the rapidly-expanding, high-reliability Ethernet market, Microchip continues to support space industry developments and evolution with qualified and proven solutions," said Bob Vampola, associate vice president of Microchip's aerospace and defense group. "Microchip's COTS-based space-grade processing provides the right performance and the right level of qualification to meet evolving requirements from Low-Earth Orbit constellations to deep space missions."

These latest devices are among Microchip's broad suite of COTS-based radiation tolerant microelectronics supporting Ethernet connectivity to be used aboard satellite platforms, payloads for data and sensor bus control, remote terminal communication, space vehicle networks, and module connectivity in space stations.

The VSC8541RT transceiver is a single-port Gigabit Ethernet copper PHY with GMII, RGMII, MII and RMII interfaces. Radiation performances have been verified and documented in detailed reporting. The VSC8541RT is latch-up immune up to 78 Mev; TID has been tested up to 100 Krad. With the same rad-tolerant die and package, a 100 MB limited bitrate performance VSC8540RT is also available in plastic and ceramic qualified versions, which provides performance and cost scalability for targeted missions.

The SAM3X8ERT radiation-tolerant MCU implements on a System on Chip (SoC) with the widely-deployed Arm® Cortex®-M3 core processor, delivering 100 DMIPS benefits from the same ecosystem as the industrial variant. The SAM3X8ERT contributes to the system integration trend helping to drive the space industry toward more advanced technologies. This microcontroller embeds up to 512 Kbytes Dual Bank Flash, 100 Kbytes SRAM, ADC & DAC and dual CAN controller on top of Ethernet capability.

These latest devices complement Microchip's suite of radiation-tolerant and radiation-hardened hardware processing solutions. With the SAMV71Q21RT Arm® M7 MCU up 600DMIPS and ATmegaS128/64M1 8-bit MCU series, all share the same development tools.

Development Tools
To support the design process and accelerate time to market, developers can use the Arduino Due commercial kit for the SAM3X8ERT along with the VSC8541EV evaluation boards for the VSC8541RT. The SAM3X8ERT device is supported by Atmel Studio Integrated Development Environment for developing, debugging and software libraries.

Availability
The VSC8541RT in plastic or ceramic package is sampling today, and the SAM3X8ERT qualified devices are available today in production quantities. The SAM3X8ERT comes in ceramic prototype to space grade ceramic and high reliability plastic packages. The VSC8541RT comes in ceramic prototype to space grade ceramic and high reliability plastic packages. These range from QFP144 packages for SAM3X8ERT to CQFP68 packages for VSC854xRT. Complete product information is at www.microchip.com.

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

- Application image: **https://www.flickr.com/photos/microchiptechnology/49244005063**

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 more than 120,000 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.

Editorial Contact:
Cathy Gedvilas
480-792-4386
Cathy.Gedvilas@microchip.com

Reader Inquiries:
1-888-624-7435

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