29-BIT IDENTIFIER

IoT micro-controllers with CAN

Renesas has announced the expansion of its RA6 series of MCUs (micro-controller unit) with nine RA6M4 MCUs. The Arm Cortex-M33-based RA6M4 series comes with advanced security for IoT (Internet of Things) applications.

With the RA6M4, the RA family increases to 42 MCUs (Source: Renesas)

These 32-bit MCUs boost operating performance up to 200 MHz using the Arm Cortex-M33 core based on Armv8-M architecture with Arm Trustzone technology, explained the company. The RA6M4 MCUs deliver security and connectivity supported by the Flexible Software Package (FSP). In addition, the company's partner ecosystem offers software and hardware building blocks that work with RA6M4 MCUs and FSP to address Industrial 4.0, building automation, metering, healthcare, and home appliance applications. The series supports the Classical CAN extended frame format with 29-bit identifier.

The company's Secure Crypto Engine delivers security solutions, incorporating multiple symmetric and asymmetric cryptography accelerators, key management, security lifecycle management, tamper detection, and resistance to side-channel attack, in addition to Arm Trustzone technology, said Renesas. These integrated security features make the MCUs suitable for connected applications.

Built on a 40-Nm process, the MCUs drive power consumption down to 99 uA/MHz while running the Coremark algorithm from flash. The MCUs also support wakeup times of 30 µs from standby using a on-chip oscillator. Their integration up to 1 MiB code flash memory and 256 KiB of SRAM (64 KiB with ECC) also make the MCUs well suited for low power and safety applications, said the company.

The MCUs with FSP allow customers to re-use their legacy code and combine it with software from partners across the vast Arm ecosystem to speed implementation of connectivity and security functions. The FSP includes FreeRTOS and middleware, offering a device-to-cloud option for developers. These out-of-box options can be replaced and expanded with other RTOS or middleware.

The FSP provides tools for developing projects targeting the MCUs. The e2 studio integrated development environment provides a development cockpit from which the key steps of project creation, module selection and configuration, code development, code generation, and debugging are all managed, the company added. FSP uses a general user interface.

"IoT edge and endpoint technologies are opening up new opportunities for developers to build smaller devices, with greater privacy and less dependence on the cloud," said Dipti Vachani, senior vice president and general manager, Automotive and IoT Line of Business at Arm. "The RA6M4 MCUs move intelligence closer to the data, with Arm Trustzone technology built in to ensure privacy and data integrity, helping securely accelerate the growth of IoT."

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