CAN Newsletter Online

Chips for industrial and automotive applications

Renesas expanded its RA4 series by the 12 RA4M2 MCUs. The company also improved the R-Car V3H automotive SoC performance. All named chips offer CAN connectivity.


RA4M2 MCUs offer operating current of 80 µA/MHz and 100 MHz performance for IoT applications (Source: Renesas)

The RA4M2 micro-controller units (MCUs) for industrial and IoT applications offer an operating current of 80 µA/MHz in active mode, a standby current of 0,7 mA, and operating frequencies up to 100 MHz. The employed Arm Cortex-M33 core features the Arm Trustzone technology and Renesas' Secure Crypto Engine. The latter incorporates multiple symmetric and asymmetric cryptography accelerators, key management, security lifecycle management, power analysis resistance, and tamper detection. This allows customers to realize secure element functionality in their applications. A flash memory of 512 KiB, 384 KiB, or 256 KiB, and a 128 KiB SRAM is integrated. Beside CAN, the MCUs feature a capacitive touch sensing unit, an analog-digital converter, USB 2.0, QuadSPI, SDHI, and further interfaces. The 12 micro-controllers are supported by the Flexible Software Package (FSP), including a HAL (hardware abstraction layer) driver and offering a graphical user interface. The 48-pin to 100-pin LQFP (or 48-pin QFN) packaged units are available. The MCUs can be used in security (fire detection, burglar detection), metering (electricity, automated meter reading), industry (robotics, door openers, vending machines), HVAC (heating, air conditioning), and further applications.

The R-Car V3H SoC (system on chip) was improved with the deep learning performance for smart camera applications (e.g. driver and occupant monitoring), automotive front cameras, surround view, and auto parking for high-volume vehicles. Building on the technology introduced in February 2018, the updated SoC delivers four times the performance for CNN (convolutional neural networks) processing compared to the previous version. It also achieves up to 7,2 Tera operations per second (TOPS) overall processing performance. The chip integrates a set of automotive peripherals including CAN, Ethernet AVB, Flexray, etc.
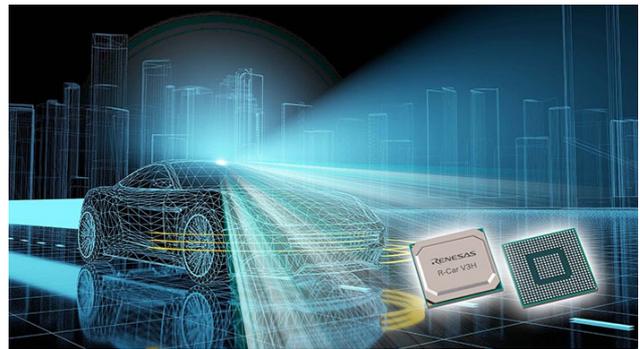
The updated R-Car V3H SoC delivers four times the CNN processing performance compared to the previous version (Source: Renesas)

The SoC supports metric targets for ASIL B (sensor layer, application processors) and ASIL C (real-time domain) safety goals. This reduces the need for an external safety micro-controller to manage sensor fusion and final decision actions. It also supports a perception stack, sensor fusion with radar and/or Lidar, and an ISP (image signal processor). The NCAP (European New Car Assessment Programme) 2020 requirements are implemented. Developments for support of the NCAP 2025 3 Stars roadmap are in progress. Mass production of the updated SoC is planned for the first quarter of 2022.

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