CAN Newsletter Online

32-BIT MICRO-CONTROLLER

For radar-based applications with six CAN FD modules

Renesas has announced the RH850/V1R-M micro-controller. It includes a DSP unit for processing radar signals and local high-speed serial interfaces. Samples will be available in the second half of 2017.

With the expansion of ADAS and autonomous driving, sensors are fast becoming a key technology. Currently vehicles are being equipped with a broad spectrum of sensors such as cameras, lidar and ultrasonic sensors. In particular, radar sensors are required for ADAS applications, including advanced emergency braking and adaptive cruise control, because, unlike other sensors, radar sensors are not negatively affected by external environmental limitations which includes adverse weather conditions, such as rain, fog or whether the sun is shining or not. The introduced RH850/V1R-M micro-controller addresses advanced river assistance systems (ADAS) and autonomous driving vehicles. The on-chip high-speed serial interfaces are suitable for middle- to long-range radars.

The RH850/V1R-M dual-core micro-controller has six CAN FD ports (Photo: Renesas)

The 320-MHz MCU features two G3MH cores with a superscalar reduced instruction set computer (RISC) architecture providing two 7-stage integer pipelines, which allows execution of two different instructions at the same time. The product comes with a 2-MiB flash memory and a 2-MiB RAM. The MCU with an on-chip DSP core (digital signal processor) handles all specific calculations on radar cube data such as range and velocity FFTs, digital beam forming, constant false alarm rate, and peak detection.

The micro-controller is equipped with a number of communication interfaces. Besides six CAN FD channels, the product features one Flexray, one Ethernet, four high-speed serial interfaces (HS-SPI), four clocked serial interfaces (CSIH), one LIN, and three MIPI-CSI2 interfaces. The RS-CANFD modules are based on the Japanese company's implementation, which complies with the ISO 11898-1:2015 standard. Additionally, the MCU comes with two A/D converters, three watchdog timers, and 16 timers. Software and tools including evaluation boards will be provided soon. For the on-chip DSP, a software library for automotive radar sensors will be available. This supports users in their algorithm developments.

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