

## Provides 10 CAN FD ports

Renesas announced the sample shipment of the RH850/E2x on-chip flash memory micro-controller (MCU) using a 28-nm process technology.



(Photo: Renesas)

The MCUs of the introduced family comprise up to six 400-MHz CPU cores. According to the Japanese manufacturer this makes them the first automotive MCUs with on-chip flash memory to achieve a performance of 9600 million instructions per second. The products also feature a built-in flash memory of up to 16 MiB as well as security functions and functional safety. Demand for built-in large capacity flash memory is rising to support over-the-air functionality, which automatically and wirelessly updates the ECU (electronic control unit) software. The MCU series comes with improved serial interfaces, including up to ten channels of CAN FD.

The Renesas autonomy is an open platform for assisted and automated driving. With it the company provides end-to-end solutions that, according to them, advance the evolution of vehicles towards next-generation green cars, connected cars, and autonomous-driving vehicles. The 28-nm MCU achieves vehicle control, which, together with the R-Car family of systems-on-chip designed for cloud connectivity and sensing, constitute the two main pillars of the autonomy platform. Carmakers and Tier 1 suppliers, such as Denso, have already started to adopt the series.

To develop environmental-friendly vehicles, fuel-efficient engines require high processing performance to allow the implementation of fuel combustion systems. In addition, both high processing performance and high integration densities are required to achieve miniaturization and higher efficiency in the motors and inverters used in electric vehicles and plug-in hybrid electric vehicles.

Compared to the earlier 40-nm MCUs, the RH850/E2x series also achieves approximately three times the performance at the same power level. The chip realizes increased automotive control system integration by including enhanced sensor interfaces necessary for precise automotive control functions. Multi-core virtual environments and model-based development environments for the MCUs will be available from Renesas partner companies.

Targeting Asil-D, the highest level of the ISO 26262 functional safety standard for automotive E/E systems, the product series adopts the dual core lock step CPU structure. This enables that the calculations performed by two CPU cores are identical. The MCU also provides up to four sets of CPU pairs, and features a variety of hardware functional safety improvements. These features detect faults should a malfunction occur and allow system safety to be maintained. The Japanese chipmaker will provide safety analysis tools that can support a range of use cases to implement safe systems.

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