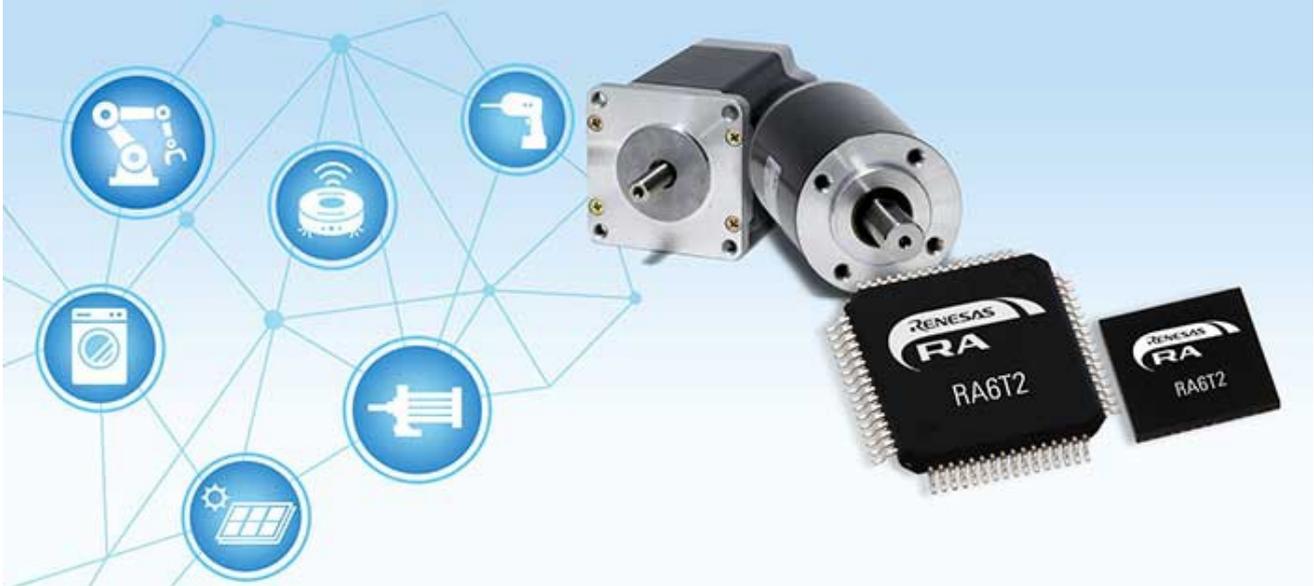


CAN Newsletter Online

MCUS FOR MOTOR CONTROL

Inverter appliances, building automation, and industrial drives

Renesas Electronics introduced the RA6T2 MCUs featuring peripheral functions and hardware accelerator designed specifically for motor control. The MCUs are for motor control designs in home appliances, smart home, industrial and building automation, as well as inverter control.



CAN FD is available as an integrated communication interface (Source: Renesas)

Based on the 240-MHz Arm Cortex-M33 core, the 32-bit MCUs (micro-controller unit) feature peripherals optimized for performance and motor control in order to reduce bill of materials (BOM) cost while boosting performance, explained the company. For example, two independent ADC units offer conversion with a maximum speed of 0,16 μ sec and include a simultaneous sample and hold function for three channels to detect the three-phase current of a motor.

In addition, amplifiers that can set the gain according to the input voltage range are built in. Analog components that were previously external are incorporated, including comparators which detect abnormal voltage input and over current. In addition, the adjustable PWM (pulse-width modulation) timer enables to port existing algorithms. It also provides, in cooperation with other analog functions, a PWM output cutoff safety function in the event of an abnormality. With these features, a single RA6T2 MCU can simultaneously control up to two brushless DC (BLDC) motors. The MCUs come with CAN FD as an integrated communication interface. Operating temperature of the products ranges from -40 °C to +105 °C and operating voltage from 2,7 V to 3,6 V.

The embedded hardware accelerator includes both a trigonometric function unit (TFU) and an infinite impulse response (IIR) filter. The TFU performs calculations without the need for lookup tables, enabling effective use of ROM, said the company. The IIR filter offers coefficient setting methods that enables porting from existing algorithms.

Renesas RA Family MCU Portfolio



As of Dec 8, 2021

Overview of Renesas' MCU portfolio of the RA family (Source: Renesas)

“Our motor control customers are looking to differentiate their products in very competitive markets,” said Roger Wendelken, Senior Vice President in the IoT (Internet of Things) and Infrastructure Business Unit at Renesas. “The RA6T2 Group delivers a unique combination of performance and features that enable cost-effective, powerful designs for a wide variety of applications.” 20 RA6T2 MCUs are available in five package options. The company is also offering design tools, including the RTKOEMA270S00020BJ motor control kit, a CPU (central processing unit) board, an inverter board, and a motor work bench GUI (graphical user interfaces) tool with real-time debugging and digital oscilloscope functionality.

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