**News Release**

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**Renesas Electronics Accelerates Automotive ECU Integration with World's First 28nm Cross-Domain Flash MCU Featuring Virtualization**

*RH850/U2A MCU with Virtualization Enables the Integration of Multiple Application Software with Different Levels of Functional Safety in a Single Chip*

Düsseldorf, February 25, 2019 – Renesas Electronics Corporation (TSE: 6723), a premier supplier of advanced semiconductor solutions, today announced the world’s first (Note 1) microcontroller (MCU) with embedded flash that integrates a hardware-based virtualization-assisted function while maintaining the fast, real-time performance of the RH850 products. This hardware-based virtualization assist technology can support up to ASIL D (Note 2) level of functional safety, providing greater levels of system integration. The RH850/U2A MCU is the first member of Renesas’ cross-domain MCUs, a new generation of automotive-control devices, designed to address the growing need to integrate multiple applications into a single chip to realize a unified electronic control units (ECUs) for the evolving electrical-electronic architecture (E/E architecture).

Based on 28 nanometer (nm) process technology, the 32-bit RH850/U2A MCU builds on key functions from Renesas’ RH850/Px Series for chassis control and RH850/Fx Series for body control to deliver improved performance and implement a virtualization-assisted function to support operation in chassis/safety, body, domain control and low-end/mid-range gateway applications. To support the ASIL D level required for chassis/safety applications, the hardware-based virtualization assist technology allows customers to implement multiple software with different functional safety levels on the RH850/U2A MCU and run concurrently without interference, while maintaining the real-time performance required to control the vehicles.

"The evolution of new E/E Architecture is driving the trend toward single ECUs that support multiple ECU functions for high-performance devices that can operate across multiple application areas,” said **Naoki Yoshida, Vice President, Renesas' Automotive Technical Customer Engagement Business Division.** “Starting with the RH850/U2A, Renesas' new series of cross-domain MCUs increases development efficiency and reduces development time to accelerate connected and autonomous vehicle development strategies, and we are excited to lead the charge with virtualization and ASIL D support.”

**Key Features of the New RH850/U2A MCU**

Featuring a combination of high performance, on-chip security, and network connectivity, the cross-domain RH850/U2A MCU is designed for the rigorous workloads of multiple automotive control applications including body, chassis/safety, domain control, and low-/mid-range gateways.

* **Fast real-time performance and hardware-based virtualization-assisted function** **to speed ECU integration in complex ASIL D compliant automotive-control systems**The new automotive-control MCU is equipped with up to four 400-megahertz (MHz) CPU cores in a dual core lock-step structure. Each CPU core integrates a hardware-based virtualization-assisted function, while maintaining the same fast real-time performance provided by the RH850. To support ASIL D, the MCU includes self-diagnostic SR-BIST (Standby-Resume BIST) functions with minimized current fluctuation rate. The hardware-based virtualization-assisted function allows multiple software systems with varying ISO26262 functional safety levels to operate independently without interference during high performance. It also reduces the virtualization overhead to maintain real-time execution. This enables users to integrate multiple ECU functions into a single ECU while maintaining safety, security, and real-time operation requirements.
* **Advanced, Secure OTA Updates with Large Flash Memory Capacities**The demand continues to grow for MCUs with built-in large capacity flash memory to support over-the-air (OTA) functionality that automatically and wirelessly updates ECU software to control programs without interrupting vehicle operations. The RH850/U2A MCUis equipped with up to 16 megabytes (MB) of built-in flash ROM and 3.6 MB of SRAM, offering users the flexibility for future function expansion. The MCU includes security functions that support Evita Light up through Evita Full (Note 3) for enhanced protection against cyber-attacks, enabling the device to support safe and rapid Full No-Wait OTA software updates as security requirements evolve.
* **Expanded Network Connectivity for ADAS and Autonomous Driving Systems**The RH850/U2AMCUis also equipped with an extensive set of networking interfaces, including an SGMII-standard 1 Gbps Ethernet communications interface and a CAN-FD interface with up to 16 channels, enabling the MCU to process the large amounts of sensor data being generated by multiple types of sensors in ADAS and autonomous driving functions. This allows customers to support future high-speed network functions and advanced communications throughput requirements.

Renesas will demonstrate the RH850/U2A MCU at [embedded world](https://www.embedded-world.de/en), February 26-28, 2019 in Nuremberg, Germany. Learn more about the MCU in Booth 1-310 (Hall 1).

**Availability**

Samples of the RH850/U2A MCU will be available beginning Q1 2020. (Availability is subject to change without notice.) Renesas also plans to provide both software and a development environment for the RH850/U2A MCU as part of the new cross-domain MCU portfolio.

For more information on the RH850/U2A, please visit: [https://www.renesas.com/products/microcontrollers-microprocessors/rh850/rh850u2x/rh850u2a16.html](http://www.renesas.com/products/microcontrollers-microprocessors/rh850/rh850u2x/rh850u2a16.html)

(Note 1) Renesas source as of February 25, 2019.

(Note 2) ASIL (Automotive Safety Integrity Level): Of the four safety levels, A to D, ASIL D is the most stringent level.

(Note 3) The [EVITA](https://www.evita-project.org/index.html) (E-safety Vehicle Intrusion proTected Applications) project is co-funded by the European Union to develop in-vehicle network safety specifications. Evita Full is the highest level following Medium and Light.

**About Renesas Electronics Corporation**

Renesas Electronics Corporation ([TSE: 6723](http://www.jpx.co.jp/english/)) delivers trusted embedded design innovation with complete semiconductor solutions that enable billions of connected, intelligent devices to enhance the way people work and live. A [global](https://www.renesas.com/en-hq/about/company/profile/global.html) leader in microcontrollers, analog, power, and SoC products, Renesas provides comprehensive solutions for a broad range of automotive, industrial, home electronics, office automation, and information communication technology applications that help shape a limitless future. Learn more at [renesas.com](http://www.renesas.com/).

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**Company contact for reader and customer inquiries:**Simone Kremser-Czoer

Renesas Electronics Europe GmbH, Karl-Hammerschmidt-Str. 42, 85609 Aschheim-Dornach

Tel.: +49 89 38070-216  
Email: simone.kremser-czoer@renesas.com  
Web: [www.renesas.com](http://www.renesas.com)

**Agency contact for further media information, text and graphics or to discuss feature article opportunities:**

Alexandra Janetzko / Martin Stummer

HBI Helga Bailey GmbH (PR agency), Stefan-George-Ring 2, 81929 Munich, Germany

Tel.: +49 89 99 38 87-32 / -34

Fax: +49 89 930 24 45

Email: [alexandra\_janetzko@hbi.de](mailto:alexandra_janetzko@hbi.de) / [martin\_stummer@hbi.de](mailto:martin_stummer@hbi.de)

Web: [www.hbi.de](http://www.hbi.de/)