1. **News Release**

No.: REN0779(A)

**Renesas Electronics Introduces Integrated Open Image Signal Processor Solution for Automotive Camera System Development with MM Solutions**

*Featuring MM Solutions’ AutoCDK Tool, Open ISP Solution Expands Flexibility and Ease of Use for Front and Surround View Cameras Using R-Car System-on-Chips*

**Düsseldorf**, September 18, 2018 — Renesas Electronics Corporation (TSE: 6723), a premier supplier of advanced semiconductor solutions, today introduced an integrated open image signal processor (ISP) solution to further ease and speed the development of automotive [smart camera](https://www.renesas.com/en/solutions/automotive/adas/smart-camera.html) applications based on the Renesas high-performance [R-Car V3M](https://www.renesas.com/en/solutions/automotive/soc/r-car-v3m.html) and [R-Car V3H](https://www.renesas.com/en/solutions/automotive/soc/r-car-v3h.html) System-on-Chips (SoCs). Integrating the ISP on the R-Car V3x SoCs and leveraging [MM Solutions](https://www.mm-sol.com)’ Automotive Camera Development Kit (AutoCDK), the open ISP solution on R-Car SoCs enables automotive Tier 1s to simplify the sensor calibration and tuning process for camera applications, including front camera and surround view, offering high flexibility and faster time to market in this competitive industry. Renesas will demonstrate the Open ISP Solution using the Renesas R-Car V3M, MM Solutions’ AutoCDK, and [Sony’s IMX390 image sensor](https://www.sony.net/SonyInfo/News/Press/201704/17-034E/index.html) in booth 6 at [AutoSens 2018](https://auto-sens.com/), September 17-20, 2018, Brussels, Belgium.

Part of the [Renesas autonomy™](https://www.renesas.com/en/solutions/automotive/adas.html) Platform, the open ISP solution supports a range of development needs, from low-level-programming ISP capabilities via the open interface for users with deep in-house ISP expertise, to the AutoCDK that allows users to jumpstart their development leveraging the MM Solutions tools and image quality expertise.

Vehicles in the autonomous driving era will be required to sense their environments, and smart cameras – including front cameras and surround view systems – play a key role in detecting traffic signs, lanes, pedestrians, vehicles, and other obstacles in real time to create a safe and secure driving environment. The demand for high-performance computer vision creates several requirements, including highly reliable, highly configurable ISPs that support high dynamic ranges in challenging driving situations as well as low-noise performance and imagery perception close to that of a human eye’s level – or beyond. At the same time, drivers will want to see a realistic [visual representation](https://www.renesas.com/en/about/press-center/news/2017/news20170914.html) of the surrounding of the car, where the ISP plays an important role for image adjustment.

In collaboration with MM Solutions, Renesas has developed an open ISP solution that helps users tune and control their sensors to support both human vision and machine vision. Integrating the ISP vision processing software onto the high-performance R-Car V3x SoCs provides a camera-neutral approach, offering camera manufacturers and Tier 1s the flexibility to work with their ECU and sensor solutions of choice whether they are entering the smart camera market or refining their leading-edge designs.

“The integrated ISP of our R-Car V3x SoCs provides customers flexibility and an excellent imaging quality, and substantially reduces the bill of materials of their camera systems, enabling them to bring their competitive products to market quickly,” said Jean-Francois Chouteau, Vice President of Automotive Solution Business Unit, Renesas Electronics Corporation. **“**Developing the software solution as part of the Renesas autonomy Platform allows customers to take advantage of robust off-the-shelf middleware as well as privileged access to the image quality expertise of our world-renowned partner MM Solutions.”

“Turn-key ISP solutions that support multiple platforms are essential to achieving excellent camera quality while meeting increasingly shorter time-to-market challenges for front camera, surround view, and other automotive camera applications,” said Ivan Poibrenski, Managing Director of MM Solutions. “We are excited to collaborate with Renesas on this integrated open ISP solution, offering customers the strength of our image quality expertise combined with Renesas’ SoC design leadership in an easy-to-deploy solution that supports their camera platform of choice.”

“Achieving high dynamic range and LED flicker mitigation simultaneously is the key challenge for ADAS camera systems,” said Tsutomu Haruta, Deputy Senior General Manager, Sony Semiconductor Solutions Corporation. “The combination of Renesas’ ISP solution and [Sony’s image sensors](https://www.sony-semicon.co.jp/products_en/IS/sensor4/index.html) enables our automotive customers to overcome this challenge and realize a superior image quality.”

**Key Features of the Open ISP Solution with MM Solutions’ AutoCDK**

High flexibility and cost efficiency

* Renesas continues to collaborate with leading sensor suppliers from the definition of ISP integration in the SoC up through proof-of-concept use in a variety of sensors.
* The sensor-neutral solution eliminates the need for sensor-specific ISPs, reducing users’ development time and system costs.

High performance and rich feature set

* The open ISP solution supports industry-leading sensor resolutions with high pixel processing capabilities for use in multiple camera use cases.
* The integrated ISP feature includes shading correction as well as local and global tone mapping to deliver high image quality for both human and computer vision applications.
* In surround view systems, the open ISP solution contributes to color and brightness harmonization between multiple-camera alignment by centralizing control of individual camera parameters.

Support for a wide range of ISP expertise and easy to deploy

* Low-level firmware API offers ISP design experts additional control to manage the ISP programming process.
* Integrating with MM Solutions’ AutoCDK provides out-of-the-box automation for image quality tuning, allowing users to reduce their time to market without an extensive design learning curve.
* AutoCDK is supported on main operating systems and is open to adding advanced imaging algorithms in addition to embedded functions like Auto Exposure Control and Auto White Balance.

**Availability**

Mass production of the Renesas R-Car V3M and R-Car V3H SoCs is scheduled to begin Q2 2019 and Q3 2019, respectively. The AutoCDK from MM Solutions will be available in November 2018.

**About Renesas Electronics Corporation**

Renesas Electronics Corporation ([TSE: 6723](https://urldefense.proofpoint.com/v2/url?u=http-3A__www.jpx.co.jp_english_&d=DwMFAg&c=9wxE0DgWbPxd1HCzjwN8Eaww1--ViDajIU4RXCxgSXE&r=mWLUx0QVt25BWK-MZ29zLPLQHyv8UpUkXzcgXaA3aWQ&m=DYdTH9hu-7LaulV1SVM6YKpZz_t6AqnyxumFHk-LqFg&s=UlMPBZIH1yicvEPu6e6QHB45plYIXPqV-0XV5KGZZl0&e=)) delivers trusted embedded design innovation with complete semiconductor solutions that enable billions of connected, intelligent devices to enhance the way people work and live—securely and safely. A [global](https://urldefense.proofpoint.com/v2/url?u=https-3A__www.renesas.com_en-2Dhq_about_company_profile_global.html&d=DwMFAg&c=9wxE0DgWbPxd1HCzjwN8Eaww1--ViDajIU4RXCxgSXE&r=mWLUx0QVt25BWK-MZ29zLPLQHyv8UpUkXzcgXaA3aWQ&m=DYdTH9hu-7LaulV1SVM6YKpZz_t6AqnyxumFHk-LqFg&s=QqlGBR6MYbo1eiGXo2ZMywSeWE80hPtBOrhrwz73p94&e=) leader in microcontrollers, analog, power, and SoC products and integrated platforms, Renesas provides the expertise, quality, and comprehensive solutions for a broad range of Automotive, Industrial, Home Electronics, Office Automation and Information Communication Technology applications to help shape a limitless future. Learn more at [renesas.com](https://urldefense.proofpoint.com/v2/url?u=http-3A__www.renesas.com_&d=DwMFAg&c=9wxE0DgWbPxd1HCzjwN8Eaww1--ViDajIU4RXCxgSXE&r=mWLUx0QVt25BWK-MZ29zLPLQHyv8UpUkXzcgXaA3aWQ&m=DYdTH9hu-7LaulV1SVM6YKpZz_t6AqnyxumFHk-LqFg&s=K6LsuehJosLLwcPcYTcAHq30edFyKPiV7ZQDlE_PO1A&e=).

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