

Sony Semiconductor announces IMX775 CMOS camera sensor for advanced in-cabin automotive monitoring

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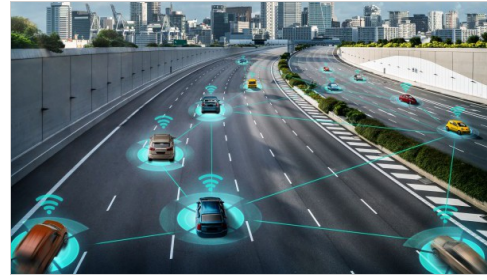
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The IMX775 sensor offers high-resolution RGB-IR imaging with enhanced safety features for vehicle interiors, set for mass production in spring 2026

Sony Semiconductor Solutions announced the upcoming release of the IMX775 CMOS RGB-IR image sensor, featuring the smallest pixel size of 2.1 micron (μm). This sensor combines RGB and infrared (IR) imaging on a single chip, offering a resolution of approximately 5 effective megapixels, designed specifically for in-cabin monitoring cameras. This development comes amid increasing demands for advanced safety performance in automobiles, with laws mandating the monitoring of driver status and passenger safety features.



Source: Getty Images Plus/ Blue Planet Studio

The IMX775 image sensor provides high-resolution, wide-angle images of vehicle interiors, capturing both the driver and passengers with excellent image quality in visible light and near-infrared light. The sensor employs a proprietary pixel structure to achieve the smallest pixel size alongside the highest near-infrared (NIR) light sensitivity at the 940-nanometer (nm) wavelength.

Mass production of the IMX775 sensor is planned for spring 2026. It uses a hybrid rolling and global shutter system to offer a dynamic range of 110 decibels (dB) for RGB imaging. A new signal processing algorithm eliminates NIR elements from RGB pixels, enhancing color reproduction. The sensor boasts a pyramid array structure to increase quantum efficiency, with a high level of 35% quantum efficiency for NIR light imaging. This enables high-definition monitoring even in low-light conditions.

Sony's image sensor implements a hybrid exposure system delivering high-quality RGB imaging within vehicles with varying brightness levels, and the global shutter exposure ensures high-precision recognition of movements such as driver line of sight and blinking. To counter inaccurate color representation typically seen in RGB/NIR sensors, Sony uses a proprietary algorithm for NIR component removal, ensuring superior color reproduction. The sensor also supports context switching to extract pixel areas for output without an external image signal processor (ISP), keeping the system compact.

Sony plans to obtain automotive reliability testing standard AEC-Q100 Grade 2 certification by the time mass production commences, with compliance to ISO 26262 for automobile safety and automotive safety standard ASIL-B. Furthermore, the sensor offers optional cybersecurity features such as communication authentication elements to confirm sensor authenticity, image authentication for tampering detection, and control channel falsification.

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