

15-Mbps Photocouplers Withstand Harsh Industrial Applications

[Renesas'](#) RV1S9x60A family offers three 15-Mbps photocouplers designed to withstand the harsh operating environments of industrial and factory automation equipment such as dc-ac power inverters, ac servo motors, PLCs, robotic arms, solar & wind input power conditioners, and battery management systems for energy storage and charging. With a noticeable trend toward higher-voltage applications, compact systems are driving stricter international safety standards and eco-friendly solutions that require smaller ICs with an optimum balance of low power, high speed, and high noise rejection. The new RV1S9x60A family meets these needs with a combination of low threshold input current ratings, high common-mode rejection, low power consumption and small packages (see the figure).

According to the company, these photocouplers offer best-in-class (lowest) threshold input current ratings. The RV1S9160A (SO5) operates at 2.0 mA while the RV1S9060A (LSO5) operates at 2.2 mA, and the RV1S9960A (LSDIP8) at 3.8 mA. These devices also offer up to 50 kV/μs (min) of common-mode rejection to protect microcontrollers and other I/O logic circuits from high-voltage spikes while transferring high-speed signals.

Another benefit, low power consumption, allows the RV1S9x60A photocouplers to suppress power supply heat generation. With temperature operation of up to 125°C, these photocouplers also save board space with placements near the IGBT or MOSFET power device. A variety of packages are available containing the smallest footprint for each reinforced isolation (up to 690 Vrms) and minimum creepage distances of 4.2 mm to 14.5 mm to ensure safe operation.

Other key specifications include:

- Low voltage power supply operation from 2.7 V to 5.5 V
- A choice of isolation voltages: 3750 Vrms (RV1S9160A), 5000 Vrms (RV1S9060A), and 7500 Vrms (RV1S9960A)
- High-temperature operation from -40°C to +125°C (RV1S9160A and RV1S9060A), and from -40°C to +110°C (RV1S9960A)
- A low pulse width distortion of 20 ns max
- A propagation delay of 60 ns max and a propagation delay skew of 25 ns max.

"Our newest RV1S9x60A 15-Mbps photocouplers provide the ultimate balance of low power, high speed, and high noise rejection today's customers require," said Philip Chesley, vice president, Industrial Analog and Power Business Division, Renesas Electronics. "The devices also comply with and surpass the stringent safety requirements of the UL61800-5-1 and UL61010-2-201 standards, giving manufacturers the best-in-class features and confidence they need to accelerate product development."

The RV1S9x60A 15-Mbps photocouplers are available now. Packages and pricing are listed in the table along with links for more information. Or to learn more about the new photocoupler family, watch the [RV1S9x60A video](#).

Table. The RV1S9x60A 15-Mbps photocouplers are said to offer the smallest footprint for each level of reinforced isolation.

Product	Isolation voltage	Threshold input current	Package (Creepage distance)	Unit pricing (for 1,000 units)
RV1S9160A	3750 Vrms	2.0 mA	SO5 (4.2 mm)	\$0.61
RV1S9060A	5000 Vrms	2.2 mA	LSO5 (8.0 mm)	\$0.67
RV1S9960A	7500 Vrms	3.8 mA	LSDIP8 (14.5 mm)	\$1.80

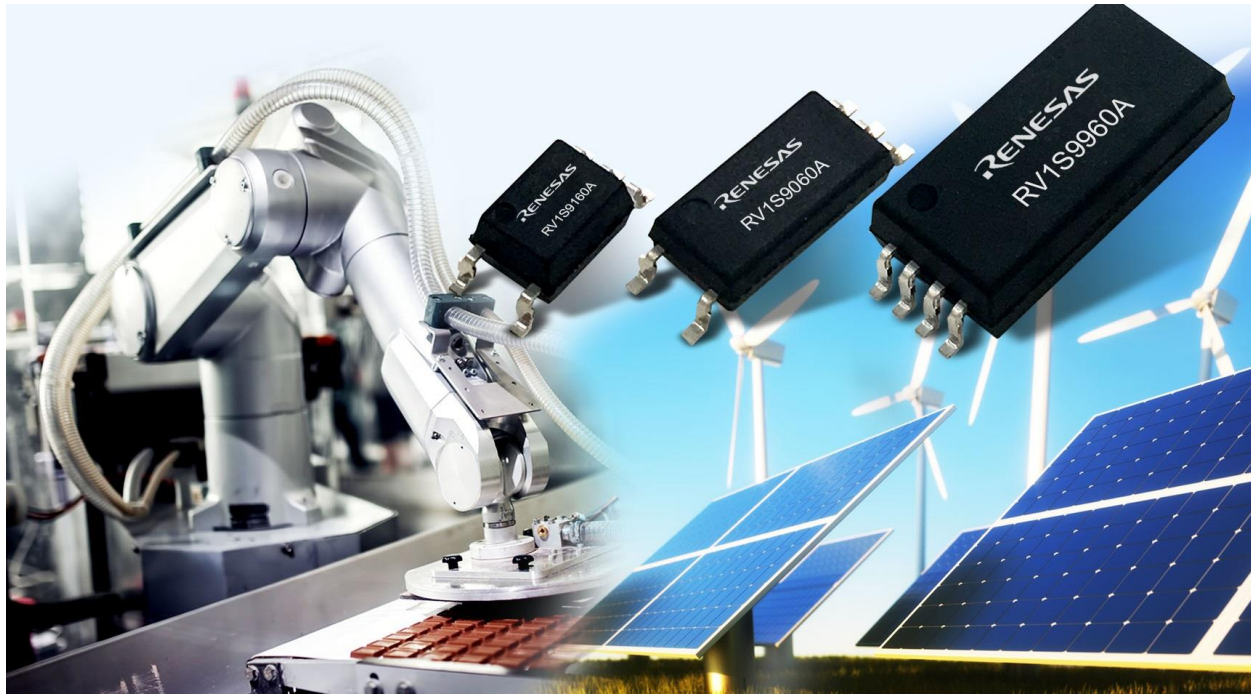


Figure. Offering a choice of 3750, 5000 or 7500 Vrms of isolation, the RV1S9x60A 15-Mbps photocouplers withstand harsh industrial operating environments, while providing a combination of low threshold input current ratings, high common-mode rejection, low power consumption and small packages.