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AEC-Q100 Current Sensors Eliminate External Isolation Components

NOVOSENSE Microelectronics' NSM211x series of automotive-grade fully integrated high-bandwidth, high-isolation current sensors ensure precise current measurement, while eliminating the need for any external isolation components. The series targets applications including OBCs and dc-dc converters, PTCs, automotive motor control, charging station current detection and fuel cell systems (see the figure).

With a -3-dB bandwidth of up to 1 MHz and a response time of 400 ns, the NSM211x series helps control systems achieve rapid loop control and overcurrent protection. The series also features a creepage distance of up to 8.2 mm and isolation voltage withstand of 5,000 Vrms per UL standards, with a maximum working isolation voltage of 1,618 Vpk.

It is available in three packaging options—SOP8, SOW16 and SOW10. These respectively have a primary-side impedance of 1.2 mΩ, 0.85 mΩ/1 mΩ and an industry leading 0.27 mΩ, according to the vendor, with a continuous current handling capability of up to 100 A. Multiple product models are available for each package.

The current sensors integrate internal temperature compensation algorithms and offline calibration to enable a high measurement accuracy (<±2% sensitivity error and <±10-mV offset error) across the full temperature range, with no need for secondary programming.

The NSM211x series supports 3.3-V and 5-V power supply voltages as well as dc or ac current measurement over a current range of 5 to 200 A with options for reference voltage output, overcurrent protection output, and configurable overcurrent protection thresholds. For more information, see the website.

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Figure. Certified to meet AEC-Q100 Grade 0 reliability standards, the series is designed to operate stably over a wide temperature range (-40°C to 150°C) and addresses the needs of ac or dc current detection in automotive applications with a high isolation voltage, strong current handling capability and high reliability. Target applications include OBCs, dc-dc converters, PTCs, automotive motor controls, fuel cells and charging station current detection.

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