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AEC-Q101 Qualified SiC Schottkys Are Rugged And Reliable

Microchip Technology's newly-qualified 700-V and 1200-V SiC Schottky Barrier Diode (SBD) power devices provide electric vehicle (EV) system designers with solutions that meet stringent automotive quality standards across a wide range of voltage, current and package options. For EV power designers who need to increase system efficiency while maintaining high quality, Microchip's AEC-Q101-qualified devices maximize system reliability and ruggedness and enable stable and lasting application life. The devices' superior avalanche performance allows designers to reduce the need for external protection circuits, reducing system cost and complexity (see the figure).

"As a long-time supplier to the automotive industry, Microchip's continued expansion of automotive-capable power solutions is leading the transformation of power systems in vehicle electrification," said Leon Gross, vice president of Microchip's discrete product business unit. "Our focus is to provide automotive solutions that help our clients easily transition to SiC while minimizing the risk of quality, supply and support challenges."

The company's SiC technology, as well as its multiple IATF 16949:2016-certified fabrication facilities, provide high-quality devices through flexible manufacturing alternatives, helping minimize risk in the supply chain. According to Microchip, through the company's internal and third-party testing, critical reliability metrics have proven Microchip devices' superior performance when compared to other SiC manufactured devices. Unlike other SiC devices that degrade under extreme conditions, Microchip devices have demonstrated no degradation in performance, increasing the application life, says the vendor.

Microchip also asserts that its SiC solutions lead the industry in reliability and ruggedness. The company's SiC SBD ruggedness testing demonstrates 20% higher energy withstand in unclamped inductive switching (UIS), and among the lowest leakage currents at elevated temperatures, increasing system life and enabling more reliable operation.

Microchip's AEC-Q101-qualified SiC SBD devices are supported with SPICE and PLECS simulation models and MPLAB Mindi Analog Simulator. Also available is a PLECS reference design model that uses Microchip's SBDs (1200 V, 50 A) as part of the power stage in a Vienna three-phase power factor correction reference design.

Microchip's AEC-Q101-qualified 700-V and 1200-V SiC SBD devices (also available as die for power modules) for automotive applications are available now for volume production orders. For additional information, contact a Microchip sales representative, authorized worldwide distributor, or visit the company's website.

Figure. Microchip's AEC-Q101-qualified devices are intended to help electric vehicles achieve the highest levels of reliability and ruggedness. The company's SiC SBD ruggedness testing demonstrates 20% higher energy withstand in unclamped inductive switching, and among the lowest leakage currents at elevated temperatures, increasing system life and enabling more reliable operation, according to the vendor.

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