

SiC Schottky Diodes Are Tailored For On-Board Chargers In Hybrids And EVs

[Infineon Technologies'](#) CoolSiC Schottky diode family is the first product in the company's planned automotive silicon carbide (SiC) portfolio. Ready for current and future on-board charger (OBC) applications in hybrid and electric vehicles (EVS), the diodes are specifically designed to meet the stringent requirements of the automotive industry regarding reliability, quality and performance.

"The SiC technology is now mature [enough] to be deployed [on a] broad scale in automotive systems", says Stephan Zizala, vice president and general manager for Automotive High Power at Infineon. "The launch of the automotive CoolSiC Schottky diode family is a milestone in the deployment of Infineon's SiC product portfolio for on-board charger, dc-dc converters and inverter systems".

This product family is based on Infineon's 5th generation Schottky diode, which has been further improved to meet the reliability requirements demanded by the automotive industry. Thanks to a new passivation layer concept, according to the vendor this is the most robust automotive device available in the market with respect to humidity and corrosion. Moreover, because it is based on a 110- μ m thin wafer technology, it shows one of the best figures of merit ($Q_c \times V_f$) in its category says the company.

Compared to the traditional silicon rapid diode, the CoolSiC automotive Schottky diode can improve the efficiency of an OBC by one percentage point over all load conditions. This leads to a potential reduction of 200 kg of CO₂ emissions over the typical lifetime of an electric car, based on the German energy mix.

The first model, a 650-V device, will be available for the open market in September 2018. Using a standard 3-pin TO-247 package, the products can easily be implemented in an OBC system says the vendor (see the figure). They can optimally be used in combination with Infineon's TRENCHSTOP IGBT and CoolMOS products.



Figure. With the introduction of the CoolSiC Schottky diode family, Infineon has launched its automotive silicon carbide (SiC) portfolio. This diode family was developed for use in on-board charger (OBC) applications in hybrid and electric vehicles, with the diodes designed to meet automotive requirements for reliability, quality and performance. The first model in this family is a 650-C SiC Schottky in a 3-pin TO-247 package as shown here.