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2000-V SiC Schottky Diodes Raise Efficiency For DC Link Systems

Infineon Technologies' CoolSiC Schottky diode 2000-V G5 family is said to offer the first discrete silicon carbide (SiC) diodes on the market with a breakdown voltage of 2000 V. Offering current ratings from 10 to 80 A (see the table), devices in this family are suitable for applications with dc link voltages up to 1500 V. This makes them beneficial in higher dc link voltage applications such as those in solar and EV charging applications.

The product family comes in a TO-247PLUS-4-HCC package, with 14-mm creepage and 5.4-mm clearance distance (see the figure). This, together with a current rating of up to 80 A, enables a significantly higher power density, according to the vendor. The company adds that it allows developers to achieve higher power levels in their applications with only half the component count of 1200-V solutions. This simplifies the overall design and enables a smooth transition from multi-level topologies to two-level topologies.

In addition, the 2000-V Schottky diodes utilize the .XT interconnection technology, which leads to significantly lower thermal resistance and impedance, enabling better heat management. Furthermore, the devices' robustness against humidity has been demonstrated in HV-H3TRB reliability tests. The diodes exhibit neither reverse recovery current nor forward recovery and feature a low forward voltage, ensuring enhanced system performance.

The 2000-V diode family is well matched to the 2000-V CoolSiC MOSFETs in the TO-247Plus-4 HCC package that Infineon introduced in the spring of 2024. The 2000-V CoolSiC diode portfolio will be extended by offering models in the TO-247-2 package, which will be available in December 2024. A matching gate driver portfolio is also available for the 2000-V CoolSiC MOSFETs.

The CoolSiC Schottky diode 2000-V G5 family in TO-247PLUS-4 HCC is available now. An evaluation board for product family is also available. For more information see the CoolSiC Schottky Diodes page.

Table. The CoolSiC Schottky diode 2000-V G5 family includes five devices in the TO-247Plus-4 HCC package.

Model	I_F max (A)	V_F (V)	Q_C (nC)
IDYH80G200C5	80 A	1.5	716
IDYH50G200C5	50 A		450
IDYH40G200C5	40 A		358
IDYH25G200C5	25 A		224
IDYH10G200C5	10 A		89

Figure. The CoolSiC Schottky diode 2000-V G5 family offers the first discrete SiC diodes on the market with a breakdown voltage of 2000 V, according to the vendor.