

SiC Power Modules Boost Efficiency In High-Voltage Energy Systems

[Infineon Technologies](#) expands its XHP 2 power module portfolio with variants incorporating 2300-V CoolSiC MOSFETs, designed for high-voltage power systems. Represented by the models FF1000UXTR23T2M1, FF1300UXTR23T2M1, FF2000UXTR23T2M1, and FF1000UXTR23T2M1_B5, these 2300-V half-bridge devices support dc-link voltages of up to 1500 V, addressing the industry trend toward higher system voltages (see the figure).

The modules offer on-resistance ($R_{DS(ON)}$) values ranging from 1 m Ω to 2 m Ω and isolation voltages of 4 kV or 6 kV. By leveraging SiC technology, the devices reduce both switching and conduction losses compared to conventional silicon-based solutions. This enables inverters to achieve higher efficiency and power density, or to operate at higher switching frequencies to reduce harmonics and system size. The XHP 2 CoolSiC MOSFET modules are well suited for renewable energy applications, including wind, photovoltaic and battery storage systems.

Implemented in the XHP 2 package, the half-bridges feature symmetrical switching behavior for easy paralleling in large power converters and offer a standardized platform that enables developers to balance efficiency and performance according to application requirements.

All variants integrate Infineon's .XT interconnection technology, enhancing reliability and extending operational lifetime, according to the vendor. The modules are also available with a pre-applied thermal interface material, simplifying assembly while supporting consistent thermal performance.

These characteristics translate into measurable system-level benefits, says Infineon. In a wind power demonstration system, a power density of 300 kW/L was achieved, while tests in battery storage systems showed semiconductor losses of less than 0.7% of the output power. With this portfolio expansion, Infineon supports scalable solutions for next-generation high-voltage power systems across a wide range of renewable energy applications.

The XHP 2 CoolSiC MOSFET modules with a 2300-V rating are available now from Infineon and its distribution partners. For more information, see the [FF1000UXTR23T2M1](#), [FF1300UXTR23T2M1](#), [FF2000UXTR23T2M1](#), and [FF1000UXTR23T2M1_B5](#) product pages.

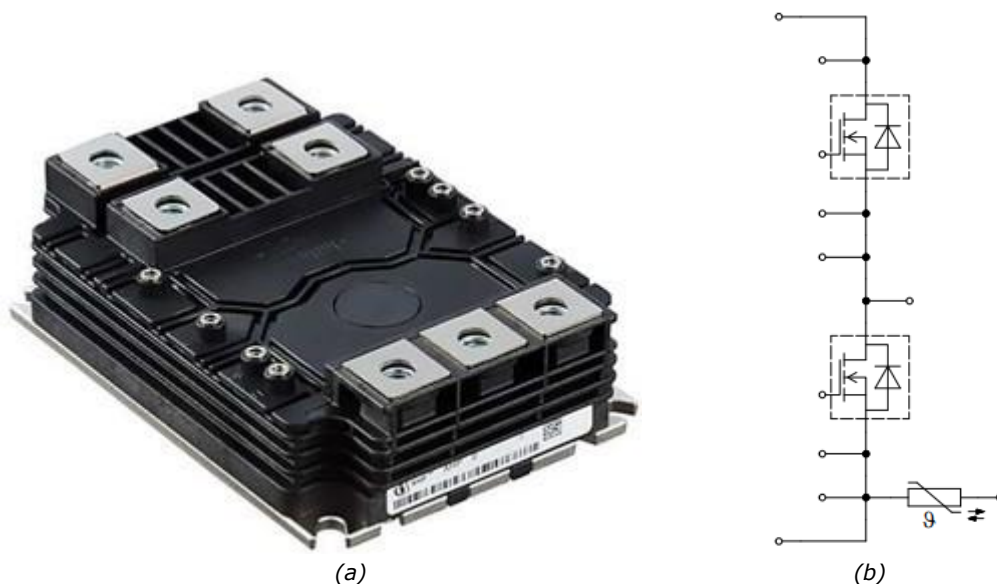


Figure. Additions to Infineon's XHP 2 power module portfolio incorporate the company's 2300-V CoolSiC MOSFETs. These half-bridge modules offer on-resistance ($R_{DS(ON)}$) values ranging from 1 to 2 m Ω and isolation voltages of 4 or 6 kV. By leveraging SiC technology, the devices reduce both switching and conduction losses compared to conventional silicon-based solutions. A package photo (a) and internal schematic (b) for these modules are shown here.