ISSUE: April 2026

SiC Power Modules Are Designed For Harsh Environments

Microchip Technology's BZPACK mSiC power modules are designed to meet stringent high-humidity high-voltage high-temperature reverse bias (HV-H3TRB) standards. The BZPACK modules can deliver exceptional reliability, streamline manufacturing and offer versatile system-integration options for the most demanding power-conversion environments. Available in a wide range of topologies, including half-bridge, full-bridge, three-phase and PIM/CIB configurations, the modules provide designers with the flexibility to optimize for performance, cost and system architecture.

Tested to meet HV-H3TRB standards that exceed the 1,000-hour standard, the BZPACK mSiC power modules provide confidence for deployments in industrial and renewable energy applications. With a Comparative Tracking Index (CTI) 600-V case, stable $R_{DS(ON)}$ across temperature ranges and substrate options in aluminum oxide (Al_2O_3) or aluminum nitride (AlN), the modules provide superior insulation, thermal management and long-term durability, says the vendor (see the figure).

To streamline production and reduce system complexity, BZPACK modules feature a compact, baseplate-less design with press-fit, solderless terminals and optional pre-applied thermal interface material (TIM). These versatile options enable faster assembly, improved manufacturing consistency and easier multi-sourcing through industry-standard footprints. Additionally, the modules are designed to be pin compatible for ease of use.

Microchip's MB and MC families of mSiC MOSFETs offer robust solutions for both industrial and automotive applications, with AEC-Q101 qualified options available. These devices support common gate-source voltages ($V_{GS} \geq 15$ V) and are offered in industry-standard packages for ease of integration.

Proven HV-H3TRB capability supports long-term reliability by helping reduce risk of field failures due to moisture-induced leakage or breakdown. The MC family integrates a gate resistor, delivering improved switching control, maintaining low switching energy and improved stability in multi-die module configurations. Current options are available in TO-247-4 notch and die form (waffle pack).

For more information, see the BZPACK mSiC power modules page. The BZPACK mSiC power modules are now available in production quantities. You can purchase them directly from Microchip or contact a Microchip sales representative.

Figure. The BZPACK mSiC power modules leverage Microchip's advanced mSiC technology, incorporating performance of its MB and MC SiC MOSFET families.