

Highly-Efficient, Compact MOSFET Modules in Full-Bridge Configurations for Solar Inverter and EV Charging

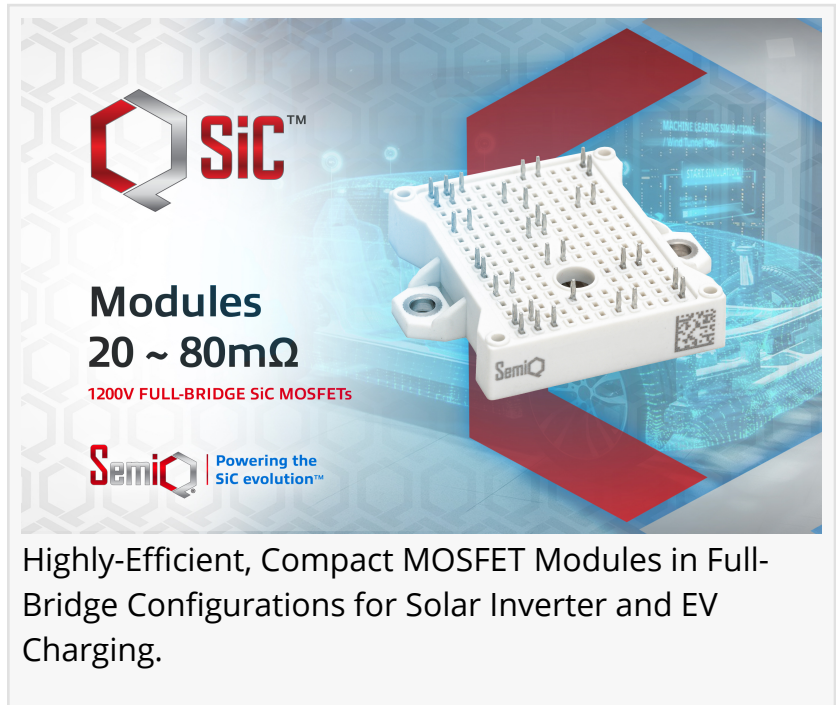
SemiQ's high-performance 1200V SiC modules are tested to above 1400V and are designed to operate reliably in high-frequency and high-power environments.

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/EINPresswire.com/ -- [SemiQ](https://www.semiq.com) Inc, a designer, developer, and global supplier of superior silicon carbide (SiC) solutions for ultra-efficient, high-performance, and high-voltage applications, unveiled the latest addition to the company's QSiC™ family. The QSiC 1200V SiC MOSFET modules in full-bridge configurations deliver near zero switching loss, significantly improving efficiency, reducing heat dissipation, and allowing the use of smaller heatsinks.

With a high breakdown voltage exceeding 1400V, the QSiC modules in full-bridge configurations withstand high-temperature operation at $T_j = 175^{\circ}\text{C}$ with minimal $R_{ds}(On)$ shift across the entire temperature spectrum. Crafted from high-performance ceramics, SemiQ's modules achieve exceptional performance levels, increased power density, and more compact designs—especially in high-frequency and high-power environments. Consequently, they are well-suited for demanding applications that require bidirectional power flow or a broader range of control, such as solar inverters, drives and chargers for Electric Vehicles (EVs) DC-DC converters and power supplies.

In solar inverter applications, SemiQ's technology empowers designers to achieve greater efficiency - reaching as high as 98% - as well as more compact designs. It helps reduce heat loss, improve thermal stability, and enhance reliability, backed by over 54 million hours of HTRB/H3TRB testing. The 1200V MOSFETs also maximize efficiency gains in DC-DC converters



while enhancing reliability and minimizing power dissipation.

To guarantee a stable gate threshold voltage and premium gate oxide quality for each module, SemiQ conducts gate burn-in testing at the wafer level. In addition to the burn-in test, which contributes to mitigating extrinsic failure rates, various stress tests—including gate stress, high-temperature reverse bias (HTRB) drain stress, and high humidity, high voltage, high temperature (H3TRB)—are employed to attain the necessary automotive and industrial grade quality standards. The devices also offer extended short-circuit ratings, and all parts have undergone testing surpassing 1400V.

Part Numbers	Circuit Configuration	Ratings, Packages	RdsOn mΩ
GCMX020A120B2H1P	Full-bridge	1200V/102A, B2	20
GCMX040A120B2H1P	Full-bridge	1200V/56A, B2	40
GCMX080A120B2H1P	Full-bridge	1200V/27A, B2	80
GCMX020A120B3H1P	Full-bridge	1200V/93A, B3	20
GCMX040A120B3H1P	Full-bridge	1200V/53A, B3	40

SemiQ’s new 1200V modules in full-bridge packages are available in 20mΩ, 40mΩ, 80mΩ SiC MOSFETs categories.



At SemiQ, our commitment lies in the meticulous optimization and customization of each module, ensuring they not only meet but exceed the unique demands of high-efficiency, high-power applications.”
Dr. Timothy Han, President at SemiQ

“At SemiQ, our commitment lies in the meticulous optimization and customization of each module, ensuring they not only meet but exceed the unique demands of high-efficiency, high-power applications,” said Dr. Timothy Han, President at SemiQ. “We believe in empowering innovation through tailored solutions, and our SiC modules exemplify the pinnacle of performance, precision, and reliability in every customized design.”

SemiQ is set to debut its QSiC product family in SOT-227, half-bridge, and full-bridge packages at the Applied Power Electronics Conference (APEC) in Long Beach, CA, from February 25 to 29, 2024. Attendees at SemiQ's booth

#2245 will be the first to explore the newest additions to the QSiC lineup. Schedule a meeting with the SemiQ team using our online [calendar here](#) or email us at media@semi-q.com.

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Please visit [SemiQ.com](https://www.semi-q.com) for specifications and to request samples or volume pricing. Download the datasheets for parts GCMX020A120B2H1P, GCMX040A120B2H1P, GCMX080A120B2H1P, GCMX020A120B3H1P and GCMX040A120B3H1P from the QSiC™ family of 1200V MOSFET modules in half-bridge configurations, or start at the product page [here](#).

About SemiQ

SemiQ provides high-quality, efficient standard, and custom silicon carbide (SiC) power semiconductors for high-voltage applications. Our product portfolio – including MOSFETs and diodes, in discrete, module, and bare die formats - combines high performance with industry-

leading reliability.

For over a decade, SemiQ's experienced team has worked with customers from various application areas, including solar energy, EV charging, automotive, medical, and energy storage. From the initial concept stage through prototyping and production, we help design, test, and deploy high-density and optimized solutions, providing exceptional service and engineering support to all our partners within the shortest possible timeframe.

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