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1200-V SiC MOSFET Six-Pack Modules Enable Compact Systems

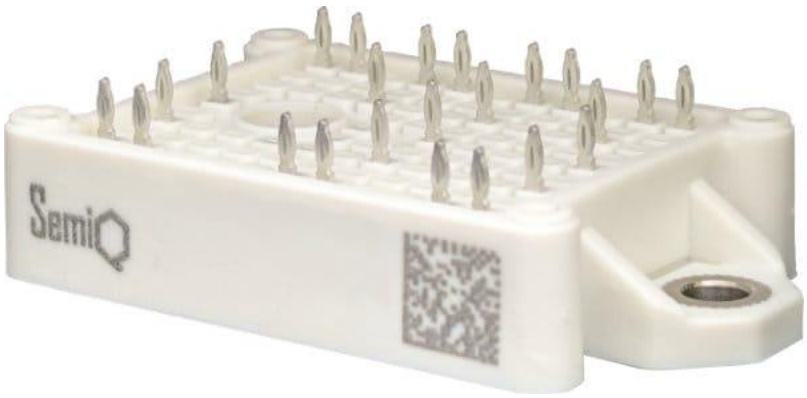
SemiQ has announced a series of highly efficient 1200-V SiC MOSFET six-pack modules, starting with 20-, 40- and 80-mΩ variants (the GCMX020A120B2T1P, GCMX040A120B2T1P and GCMX080A120B2T1P). These have been designed to enable lower cost and more compact system-level designs at large scale (see the figure).

The high-power-density modules benefit from low switching losses, as well as low junction-to-case thermal resistance and all parts have been tested beyond 1350 V, with 100% wafer-level burn in (WLBI). They have been developed for a variety of applications including ac-dc converters, energy storage systems, battery charging, motor drives and PFC boost converters, including EV fast charging, induction heating and welding, renewable energy supplies and UPSs.

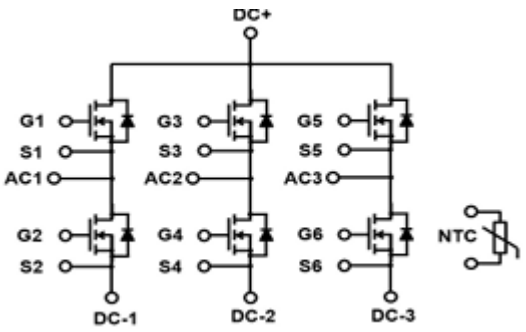
The modules are operational to a 175°C junction temperature, and have been designed for easy mounting, including direct mounting to a heatsink. The 20-, 40- and 80-mΩ models specify power dissipation ratings of 263, 160 and 103 W, respectively.

They conduct a continuous drain current of 29 A to 30 A, and a pulsed drain current of 70 A. Additionally, they have turn-on switching energy of 0.1 to 0.54 mJ and a turn-off switching energy of 0.02 to 0.11 mJ, with a switching time of 56 to 105 ns. These specifications correspond to a T_J of 25°C. Variations represent the range across all three products launched. Switching time combines turn-on delay, rise, turn-off delay and fall time.

The modules are available immediately in a 62.8- x 33.8- x 15-mm package including heatsink mountings. For further datasheets or to request samples, see the GCMX020A120B2T1P, GCMX040A120B2T1P and GCMX080A120B2T1P product pages. See SemiQ.com to request volume pricing.



(a)



(b)

Figure. The rugged, high-speed switching SiC MOSFETs implement a planar technology with rugged gate oxide and feature a reliable body diode. These are arranged in a three-phase bridge topology, with the modules additionally featuring split dc negative terminals, press-fit terminal connections and a Kelvin reference for stable operation. The MOSFETs are tested to over 1350 V with 100% WLBI. Package (a) and internal schematic (b) are shown here.