SIC MOSFET-BASED Power Modules for Solar, UPS and Battery Management
Two factors are shaping the development of advanced power conversion systems - increasingly stringent standards for energy efficiency, especially in solar and UPS applications, and the need to decrease the overall system’s costs for the customer. The solution is the use of wide band power semiconductors as SiC (silicon carbide). Vincotech, a supplier of module-based solutions for power electronics, has rolled out new SiC MOSFET-BASED products for ultra efficient, high-frequency operation in 3-Phase solar inverter, UPS, and battery management applications.

This new generation SiC MOSFET-BASED power modules come in two versions. One is a flow3xPHASE 0 SiC three-phase inverter module with 3x BUCK/BOOST and split output topology; the other is the flow3xBOOST 0 SiC with three-channel boost circuits. The three circuits are not connected, which allows them to be used flexibly as individual circuits and to attach shunt resistors for current sensing. The flow3xPHASE 0 SiC configuration may be used as a bidirectional DC/AC three-phase inverter or a three-channel bidirectional DC-DC.

Both modules feature the latest generation of SiC MOSFET switches designed for ultra fast switching frequencies >100 kHz. They are able to achieve >99 % peak efficiency at fPWM = 64 kHz. Equipped with integrated DC capacitors, these new flow 0 SiC modules provide ultra low inductance.
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Additional to the new generation flow3xPHASE 0 SiC and flow3xBOOST 0 SiC power modules in our SIC MOSFET-BASED product portfolio you can find the 2nd generation of the flowMNPC 0 SiC and flowBOOST 0 SiC power modules engineered for highly efficient, three-phase solar inverters ranging up to 30 kW with the latest SIC MOSFET generations.

All SIC MOSFET-BASED modules come in low-inductive, 12 mm flow 0 housings with Press-fit pins. Optional a pre-applied phase-change material for thermal conducting between the module and the heat sink can be used for better $R_{th}$.

FEATURES

- Three-phase inverter with split output for better switching behavior (reduced turn on energy and cross-conduction suppression)
- Three-channel booster
- ROHM™, CREE™ Power SiC MOSFET and Power SiC Schottky diode
- Ultra low inductance with integrated DC-capacitors
- $>100$ kHz switching frequency
- Temperature sensor

Target Applications:

- Solar e.g. two power module solution flow3xPHASE 0 SiC + flow3xBOOST 0 SiC or four module solution flowBOOST 0 SiC + 3 x flowMNPC 0 SiC for a three-phase inverter application up to 10 kW, or 30 kW respectively
- UPS
- Battery management
**Product Portfolio:**

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<th>Part-No</th>
<th>Rating</th>
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* under preparation

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