The market outlook for SiC devices is promising, with a compound annual growth rate (CAGR) of 29% from 2018-2024. Taking advantage of this growing market, SiC-based device penetration is expanding in different applications, raising competitiveness of both die and SiC module solutions.

Launched in 2019 and housed in XM3 optimized packaging, the CAB450M12XM3 represents the newest generation of all-SiC modules from Wolfspeed. For reference, the first generation was launched in 2016 and was analyzed in our report “Wolfspeed CAS325M12HM2 All-SiC 1200V Power Module”.

With half the weight and volume of a standard 62mm module, the XM3 SiC power module enables the highest power density in the SiC modules platform offered by Wolfspeed.

The module implements conduction-optimized third-generation SiC MOSFETs in a 1200V half-bridge configuration, with a current rating of 450A.

This report deeply analyzes the CAB450M12XM3 module. Supported by a full teardown of the module’s components and housing, this report reveals Cree/Wolfspeed’s innovative assets that enable it to assemble its module in its newest generation XM3 SiC packaging.

This report includes an estimated manufacturing cost of all the module’s components and a selling price analysis. It proposes a comparison with the previous generation all-SiC module CAS325M12HM2 from the same manufacturer. Also, we include a comparison between the second generation C2M and third generation C3M SiC MOSFET dies from Cree used in these two modules.

Moreover, the report includes a comparison with Wolfspeed/Cree’s competitors’ 1200V SiC Modules solutions to highlight differences in the electrical parameters, technology, packaging, die characteristics, and production costs.

**Complete teardown with**

- Detailed optical and SEM photos
- Precise measurements
- Material EDX analysis
- Supply chain evaluation
- Manufacturing cost analysis
- Estimated selling price
- Comparisons with Cree’s all-SiC module CAS325M12HM2
- Comparison between second and third generation SiC MOSFET dies from Cree
- Comparison with Wolfspeed’s competitors’ 1200V SiC module solutions

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**Wolfspeed All-SiC Module CAB450M12XM3**

Discover the XM3 conduction-optimized module from Wolfspeed implementing the latest packaging and 1200V SiC die generations.
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AUTHORS

Amine Allouche is part of System Plus Consulting’s Power Electronics and Compound Semiconductors team. Amine holds a Master’s degree focused on Micro and Nano-technologies for integrated Systems.

Nicolas Radufe is in charge of physical analysis at System Plus Consulting. He has a deep knowledge in chemical and physical analyses. He previously worked in microelectronics R&D for CEA/LETI in Grenoble and for STMicroelectronics in Crolles.

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