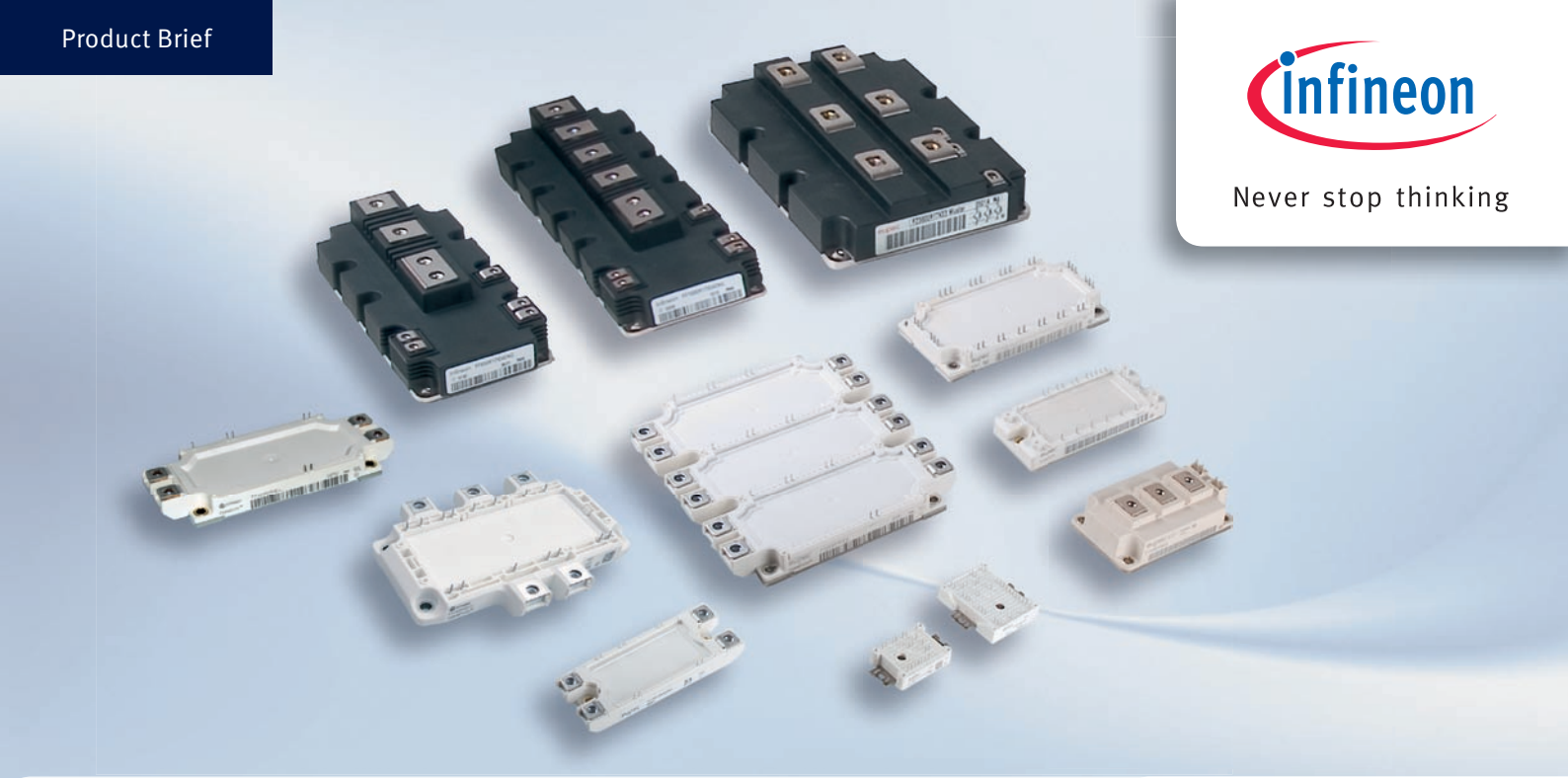
Product Brief



Never stop thinking

1200V IGBT4

THE NEW 1200V IGBT4 generation combined with the improved Emitter Controlled diode from Infineon provides three optimized chip versions for low, medium and high power IGBT modules. These chips are designed to the needs of the next generation of inverter concepts for the different applications.

THESE THREE OPTIMIZED CHIP VERSIONS are the IGBT4-T4 chip with fast switching behavior for low power modules with I_{nom} = 10 - 300 A, the IGBT4-E4 chip with optimized switching and on state characteristics for medium power modules with I_{nom} = 150 - 1000 A and the IGBT4-P4 chip with soft switching behavior for high power modules with I_{nom} > 900 A.

THE IMPROVED SOFTNESS of the high power IGBT4-P4 chip simplifies the use and controllability for high power applications. The low- and the medium power IGBT4 chips offer reduced total losses in comparison to the previous generation at same conditions.

AS A FURTHER BENEFIT the IGBT4 technology allows a 25 K higher maximum junction operation temperature of tvjop = 150 °C.

THIS HIGHER OPERATION TEMPERATURE results in the potential of higher output power by utilizing the full temperature swing under same cooling conditions.

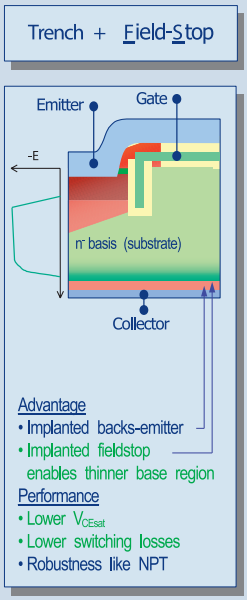
THE OPTIMIZATION of the IGBT4 chip, the assembly and contact technology ensure a noteworthy power cycling (PC) improvement and this offers an increased PC lifetime expectation.

Main Features

- Operating temperature up to 150 °C
- Higher RMS current in the application up to 17 % possible
- Increased power cycling capability
- Optimized switching characteristic
  - softness
  - reduced switching losses
- Short circuit capability t_p=10µs @ T_{vj}=150°C
- Existing packages with higher current capability possible

Applications

- Industrial drives
- UPS/Power Supplies
- Renewable energy systems
- And further more



www.infineon.com/highpower

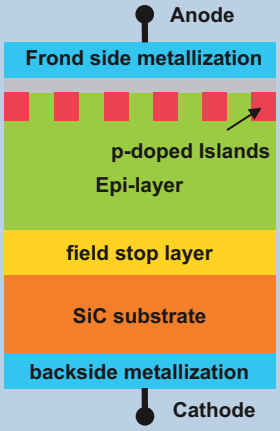
Silicon Carbide Technology

SILICON CARBIDE (SIC) MATERIAL is considered as very promising semiconductor material for next generation power semiconductor devices due to its

- High breakdown field strength
- High thermal conductivity
- Wide Bandgap

INFINEON'S SIC BASED Schottky diode is available in 300V, 600V and 1200V voltage classes. These diodes show no reverse recovery charge during turn off thus makes it the perfect freewheeling diode for IGBTs. Due to implementation of p-islands these diodes also have enhanced surge current capability. Infineon offers first high power module containing SiC Schottky diodes in PrimePACK™ 2 package.

FIRST INFINEON'S SIC BASED switch will be available as junction FET (field effect transistor). These devices have lower specific on-resistance in comparison to Si-based MOSFET with same blocking voltage. Due to the fact of having only electrons for carrying current, these devices show much lower switching losses than IGBTs. These properties make the SiC JFET the perfect switch for high efficiency, high power density and high switching frequency application.



SiC based Schottky diode

Main Features

Advantages of SiC Schottky diode

- Same threshold voltage as Si PN diodes
- No reverse recovery charge
- Only capacitive switching losses
- Ideal free-wheeling diode for high performance IGBTs

Advantages of SiC JFET

- Very low switching losses
- Device capacitances smaller than Si MOSFETs
- Less increase of resistance with temperature than Si MOSFETs
- Very fast integrated body diode

Applications

- Solar inverter
- PFC stage
- UPS system
- High performance premium drive system
- Medical systems

How to reach us:
www.infineon.com

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