

Bidirectional full SiC 200 kW DC-DC Converter for Electric, Hybrid and Fuel Cell Vehicles



Winner of the Semikron Innovation Award 2015



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Description

In electric and hybrid vehicles many compromises have to be accepted to avoid different HV-levels and a lot of extra money and effort is spent, to keep input and output voltage ranges as wide as possible to match different applications.

Fraunhofer IISB offers non-isolating HV-DC-DC Converters that match all different occurring voltage levels saving space and costs and offering more degrees of freedom for the vehicle designers.

The Fraunhofer engineers have managed to design an extreme lightweight, small and powerful DC-DC Converter based on SiC-Mosfets, extremely flat and small gate drivers, full ceramic capacitors and custom made low-weight ferrite inductors.

The unique design has been awarded by the Semikron foundation with the innovation award 2015.

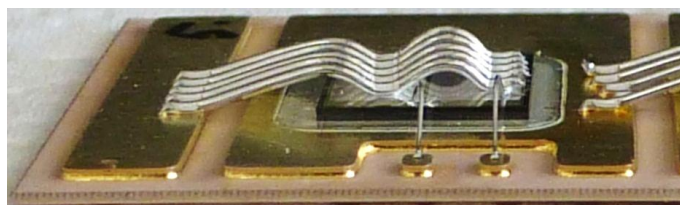
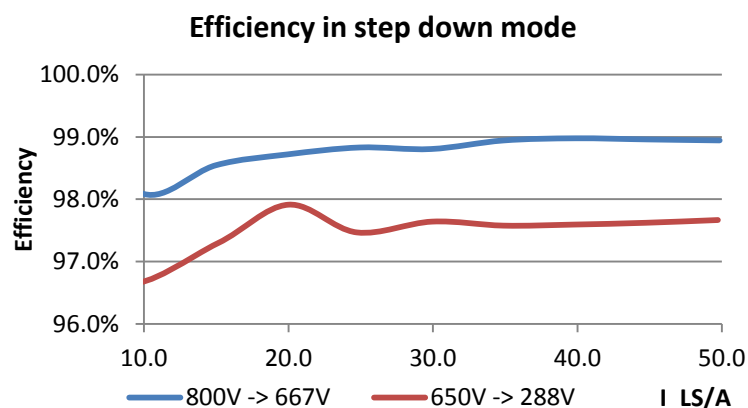
Technical Data

Lowside Voltage Range V_{LV}	50 - 790 V
Highside Voltage Range V_{HV}	$(V_{LV} + 10 V) - 800 V$
Lowside Current	300 A
Maximum Output Power @ 667 V Lowside Voltage	200 kW
Switching Frequency	200 kHz
Dimension	248 x 135 x 42 mm
Weight	3.2 kg
Power density	up to 143 kW / dm ³ up to 62 kW / kg
Efficiency	up to 98.9 %

Features

- Outstanding power density
- High efficiency
- Wide input and output voltage range
- High switching frequency
- Modular setup (can be extended easily)
- Extremely low inductive setup
- Optimized water cooled thermal design
- Low weight
- Sintered power modules for long lifetime
- Small, fast and robust gate drivers
- Full SiC power electronics
- Six interleaved phases
- Hardware over-/ undervoltage lockout
- Over current protection
- **Winner of the Semikron Innovation Award 2015**

Efficiency Data



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