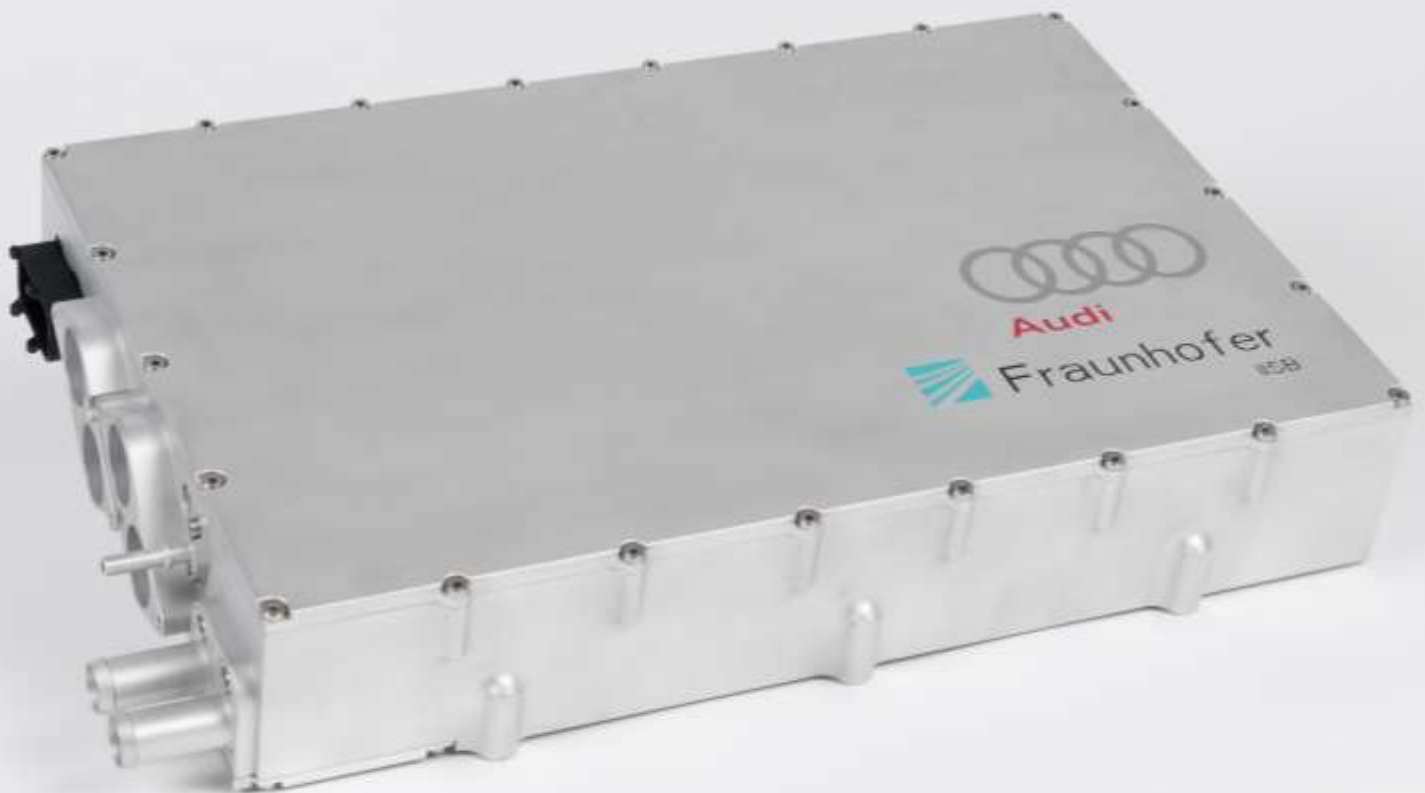


Bidirectional 245 kW Power Train DC-DC Converter





450 V Bidirectional Power Train DC-DC Converter

Description

For high performance electric vehicles, the overall performance can be pushed by using a battery DC/DC converter. Such a bidirectional device stabilizes and boost the HV board net, allowing the motor and inverter to be designed independent of the type and voltage range of the batteries.

The converter is matched to the thermal behavior of traction batteries. It is capable of extreme power overload of +100%. This enables the car to overdrive for up to a minute on one hand and saves a lot of space inside the converter on the other hand. By designing all internal parts to the same thermal time constants, no single part limits the overall power itself. The overall space and costs are optimized to the absolute minimum.

An additional advantage of the overload proof design is the fact, that there is no sharp power limit like inductor saturation. This leads to a extreme robust design and reliable operation, even in extreme situations during development like short-circuit, control loop tests or load dump.

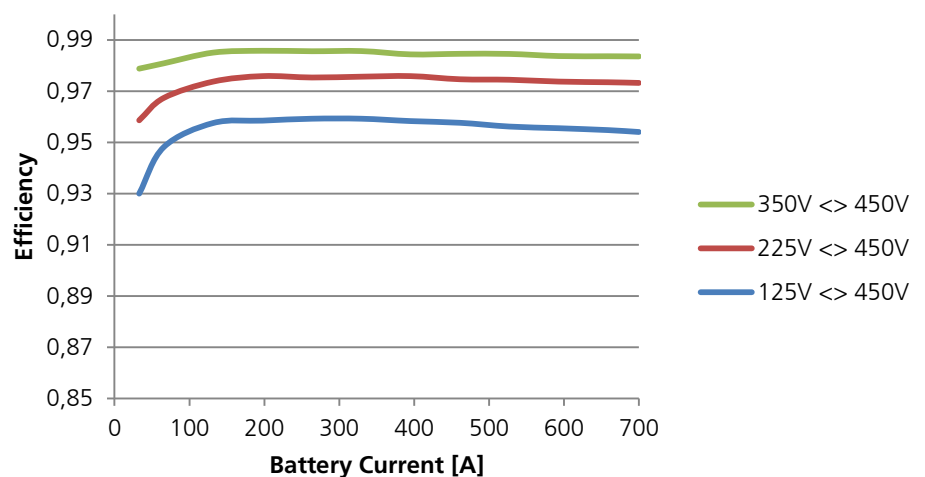
Technical Data

Lowside Voltage Range V_{LV}	50 - 440 V
Highside Voltage Range V_{HV}	$V_{LV} - 450$ V
Maximum Lowside Current	700 A / 350 A cont.
Output Power @ 350 V Input Voltage	245 kW
Coolant Temperature	-40°C to 60 / 85 °C (derating)
Switching Frequency	80 kHz
Dimension	41 x 26 x 7,2 cm ³
Weight	14,5 kg
Power Density	Up to 31,9 kW/dm ³
Efficiency	Average > 97 %

Features

- Extreme high power density
- Exactly defined overload capability perfectly matched to battery cells, connectors and wires thermal constants
- Valuable Si IGBT chips technology and SiC Diodes
- Fully digital controlled via CAN-Bus
- Programmable control loop parameters
- Temperature derating
- Over current protection
- Active discharge of capacitors
- Wide input and output voltage range
- Wide coolant temperature range
- High switching frequency
- Highly reliable AlN power modules with thin wire bonding

Efficiency Data



Test Setup: DC/DC Converter is connected between battery and HV board net. Efficiency is average between both conversation directions. Board net voltage is constant 450 V while lowside voltage is set to 125 V, 225 V and 350 V. For every voltage level, current is variated, resulting in electrical DC conversation power between 87.000 and 245.000 W.

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