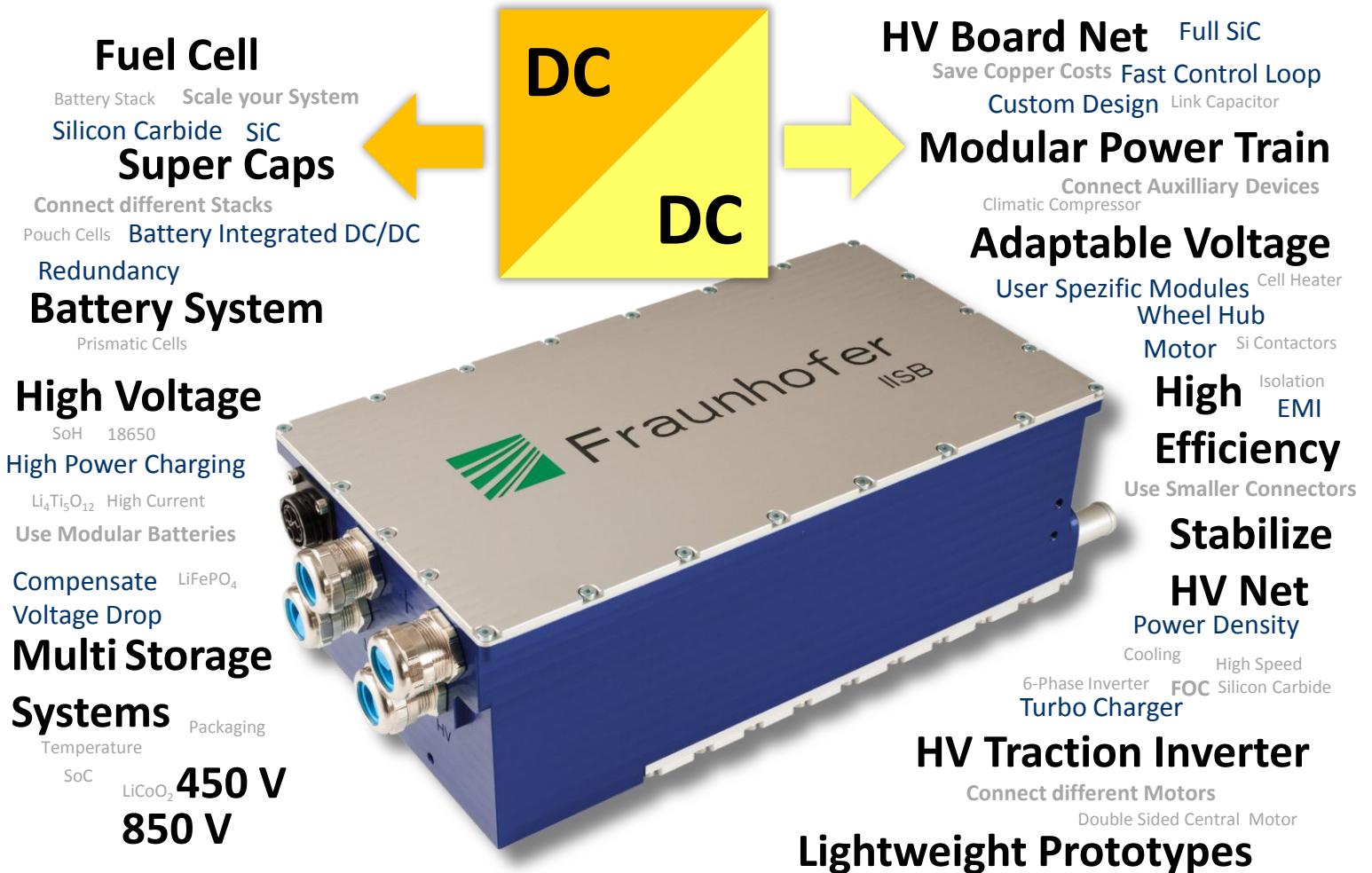
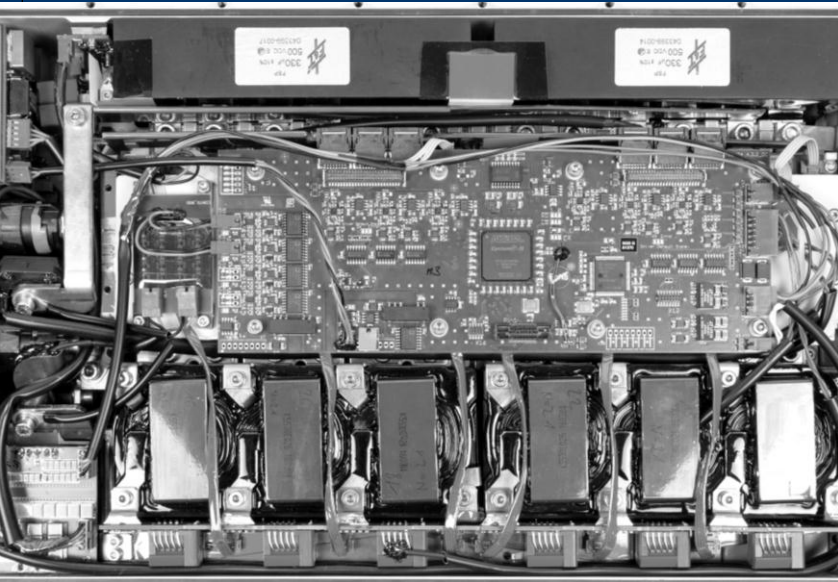


# High Power SiC DC/DC Converters





# Customer specific development

## Automotive DC/DC Powertrain Converters

### Description

The Vehicle Electronics Department of the Fraunhofer IISB in Erlangen develops customer specific Power Electronics solutions. The specialists of the group "Unisolated DC/DC Converters" focus on extreme small and tremendous powerful boost and buck converters for automotive applications. Nearly all processing, from characterizing power chips, developing modules, drivers, control boards and integration into automotive grade packages, can be done in house. This enables a very fast development and short project duration from first idea to a reliable prototype for testing vehicle systems or to refine for mass production.

Typical converters are up to 450 V or 850 V class, capable to handle currents to about 700 A. Including housing, EMI filter, connectors and cooling system, power density is up to about 50 kW / dm<sup>3</sup>. Laboratory prototypes provide a lot higher performance to mark the cutting edge of today's technology.

More Power or less size is always possible by demands of the customer's project.

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### Technical Data

|                              |   |
|------------------------------|---|
| Voltage Range                | 50 – 900 V  |
| Current Range                | 50 - 1000 A   |
| Output Power                 | up to 1 MW  |
| Coolant Temp.                | -40 °C to 85 °C   |
| Switching Freq.              | 60 to 200 kHz   |
| Weight                       | About 2.5 kg / dm <sup>3</sup>  |
| Power Density Automotive     | Si Devices 18 kW / dm <sup>3</sup><br>SiC Devices 50 kW / dm <sup>3</sup> |
| Power Density Lab Prototypes | up to 140 kW / dm <sup>3</sup>  |
| Efficiency                   | typical 98 to 99 %  |
| Communication                | CAN, LIN, Ethernet  |
| Ext. aux supply              | External 6 to 32 V  |

### Typical Features

- 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
- High efficiency
- High power density
- Wide coolant temperature range
- Modular setup (can be extended easily)
- High switching frequency
- Intelligent phase switch-off function for high light load efficiency
- Highly reliable power modules

### Performance Chart – Typical Prototyping and Automotive Projects

