

# ECPE Joint Research Programme (II)

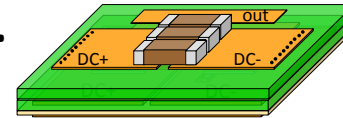
## Ultra-low Inductance Module & Fast Switching Inv. (FhG IZM, 2013+)



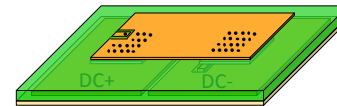
### ECPE Project: Very Fast Switching Inverter w. Embedded Module on DCB

fs: 16 kHz → 48 kHz → 250 kHz

- Overall concept and innovations
- Semiconductor packaging
- Operation scheme
- Inductor design
- Filter design



PCB Layer 2



PCB  
Layer 1



DCB w. SiC  
MOSFETs

### Development of Grid feeding inverters @ IZM

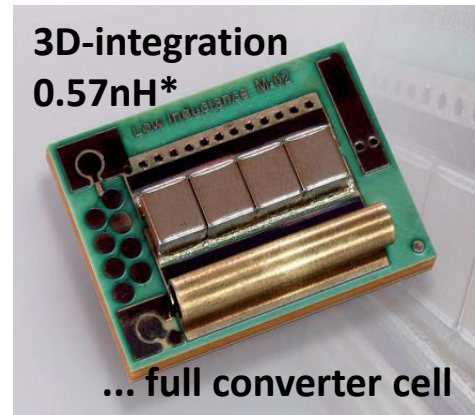


Generation 1 (2012)  
SiC JFETs, 48 kHz pulse frequency  
18l - 18,4 kg (15kW)  
conventional packaging



Generation 2 (2015)  
SiC MOSFETs, 250 kHz pulse frequency  
2,4l - 4 kg (15kW)  
embedded power modules

3D-integration  
0.57nH\*



... full converter cell

E. Hoene, FhG-IZM Berlin, CIPS '14  
\* plus 0.3nH for the current sensor