

Inverter

14.8in³ (243 cm³)
 96,3% Efficiency @ 2kW
 95.07% Weighted Efficiency
 $T_c=58^\circ\text{C}$ @ 2kW

$\Delta u_{\text{DC}} = 1.1\%$
 $\Delta i_{\text{DC}} = 2.8\%$
 $\text{THD}+N_U = 2.6\%$
 $\text{THD}+N_I = 1.9\%$

88.7mm x 88.4mm x 31mm

- Compliant to All *Original* LBC Specifications (!)
- No Low-Frequ. CM Output Voltage Component
- All Own IP / Patents / No 3rd Party IP Used
- Industr. Design / No Overstressing of Comp.

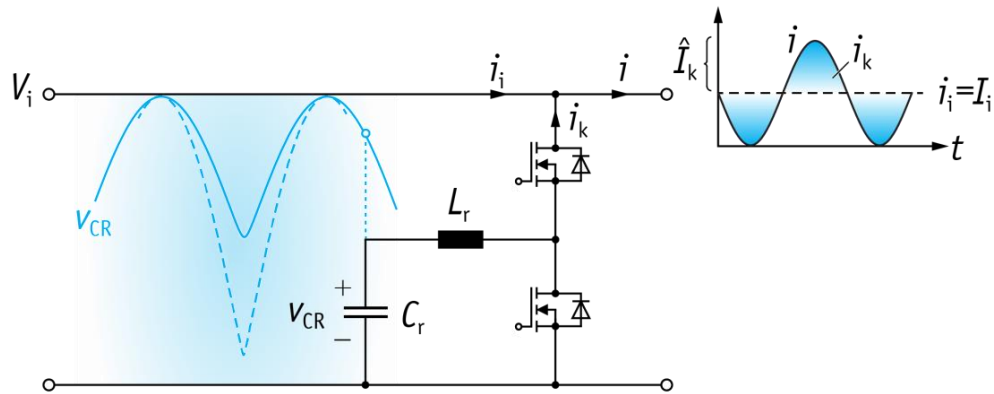


■ New Technologies

- New Cascaded Control for Active Power Pulsation Buffer
- New TCM Modulation → Active ZVS in Whole Operating Range
- New 4D Interleaving of 2 Bridge Legs per Phase
- New 20ns Delay / 500kV/us Gate Drive for 600V IFX Norm.-Off GaN GIT
- New Q=800 / Multi-Micro-Airgap HF Inductor w. Multi-Layer Foil Winding
- New $\text{CSPI}=34\text{W}/(\text{dm}^3\text{K})$ Heatsink also Employed as EMI Shield

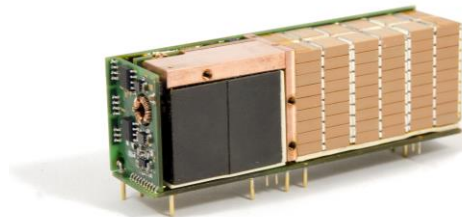
Power Pulsation Buffer

- Employs Large Voltage Fluctuation Capacitor & DC/DC Buck Converter Stage
- High Energy Density Ceramic Capacitors (CeraLink)
- New Multi-Loop Cascaded Control Structure



5 x 493 μ F/450 V
C = 2.46 mF

$V = 48 \text{ cm}^3$



$V = 166 \text{ cm}^3$



■ Significantly Lower Volume Compared to Electrolytic Capacitors

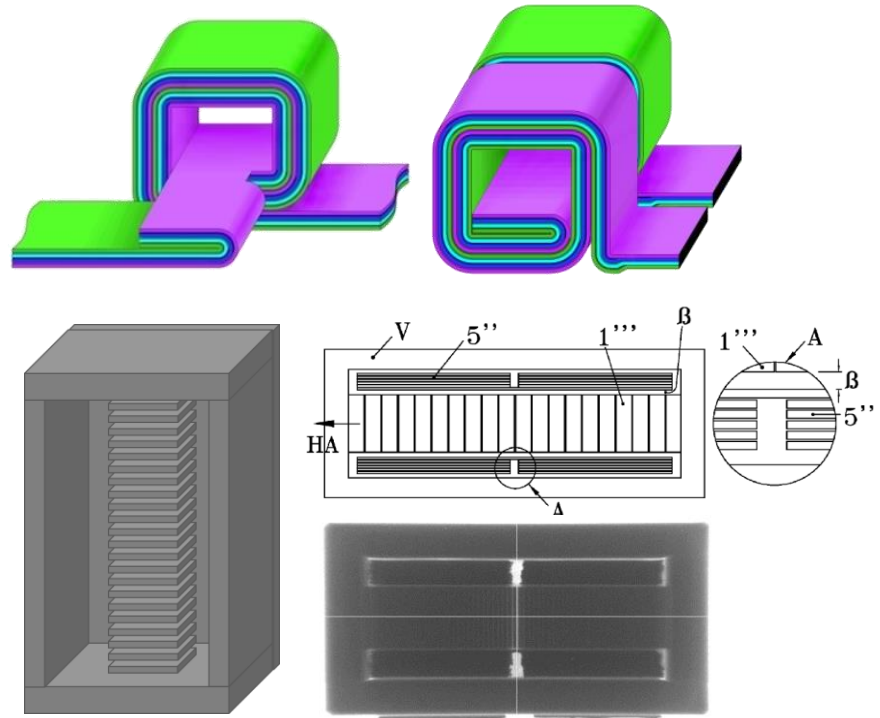
High Frequency Inductors

- Multi-Airgap Inductor with Patented Multi-Layer Foil Winding Arrangement Minim. Prox. Effect
- Very High Filling Factor / Low High Frequency Losses
- Magnetically Shielded Construction Minimizing EMI

- $L = 10.5 \mu\text{H}$
- 2 x 8 Turns
- 24 x $80 \mu\text{m}$ Airgaps
- Core Material DMR 51 / Hengdian
- 0.61mm Thick Stacked Plates
- 20 μm Copper Foil / 4 in Parallel
- 7 μm Kapton Layer Isolation
- 20m Ω Winding Resistance / $Q=800$
- Terminals in No-Leakage Flux Area



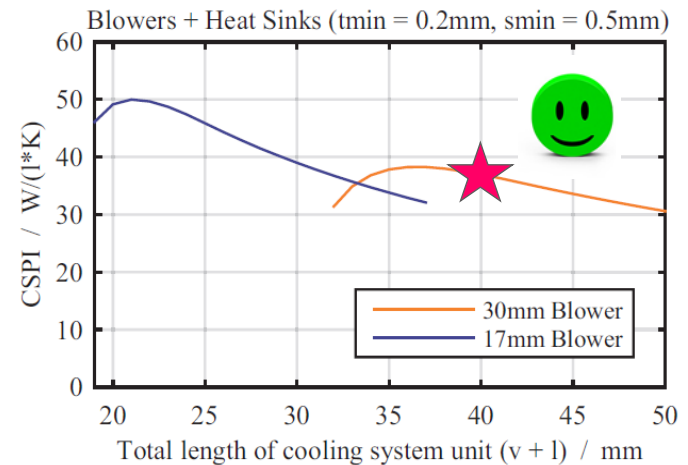
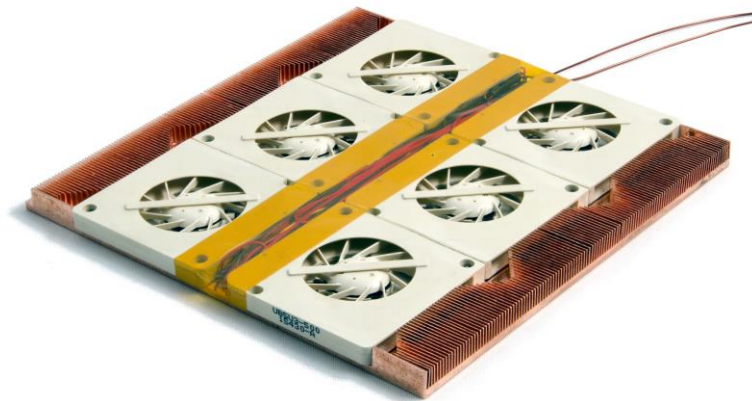
■ Dimensions - 14.5 x 14.5 x 22mm³



Thermal Management

- 30mm Blowers with Axial Air Intake / Radial Outlet
- Full Optimization of the Heatsink Parameters
- Outstanding Cooling Syst. Performance Index

- 200um Fin Thickness
- 500um Fin Spacing
- 3mm Fin Height
- 10mm Fin Length
- CSPI = 37 W/(dm³.K)
- 1.5mm Baseplate

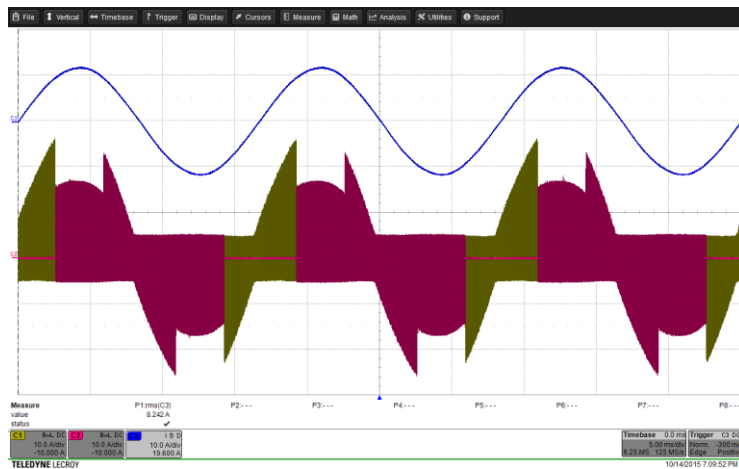


- Two-Side Cooling → Heatsink Temperature = 52°C @ 80W (8W Natural Convection)

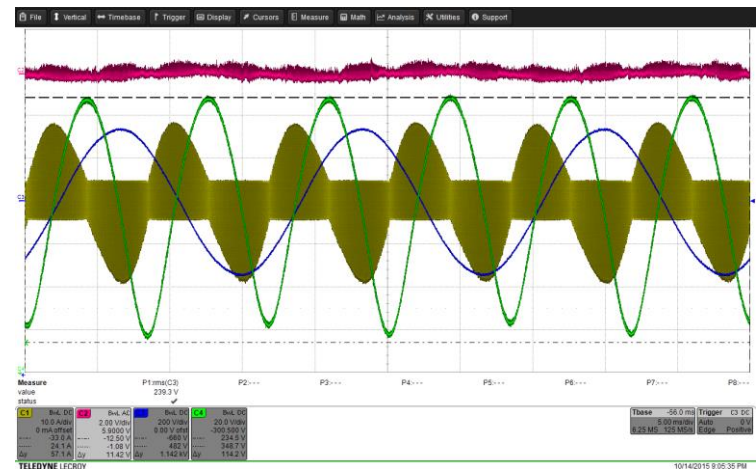
Measurement Results

- System Complies to All Original GLBC Specifications (!)

Output Current
 Inductor Current Bridge Leg 1-1
 Inductor Current Bridge Leg 1-2
 - Ohmic Load / 2kW



DC Link Voltage (AC-Coupl.)
 Buffer Cap. Voltage
 Buffer Cap. Current
 Output Voltage



New 4D Interleaving Combined with Active ZVS TCM Modulation

