Inverter Evaluation kit for Gen2 CoolSiC™ MOSFET -based Double-Sided Cooled Module

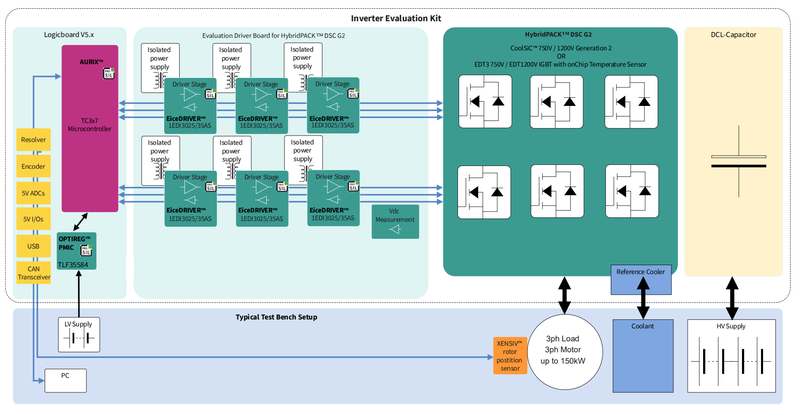
Compact B6 inverter evaluation kit

Compact B6 inverter evaluation kit featuring CoolSiC Gen2 technology for fast laboratory testing and reference designs

- ➢ Complete B6 inverter reference system
  - – Power module, cooler, capacitor, driver…
- ➢ Plug-and-play for laboratory testing
  - – HV AC, DC & cooler connections
  - – Control via CAN and OneEye GUI
- ➢ Performance measurements
  - – Open-Loop, efficiency, temperature



DSC evaluation kit
(370 x 135 x 190 mm)



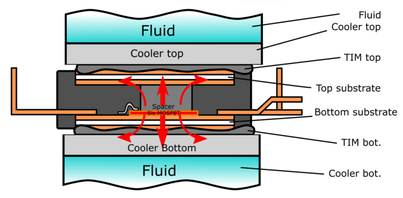
Laboratory Setup

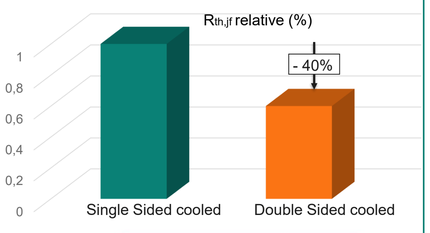
SiC optimized DSC Power Module

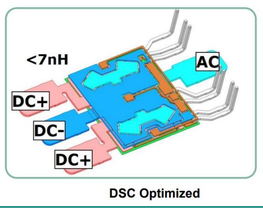
The updated DSC SiC design is optimized for use in high-power applications



- ➢ High efficiency, power density & scalability
  - – Up to 1200 V & 510 A_{RMS}
- ➢ Double-sided cooling structure
  - – Up to 40% lower $R_{th,jf}$ than single-sided cooling path
  - – Heat dissipation split about 30% top and 70% bottom
- ➢ Optimized Electrical Layout
  - – Low stray inductances <7 nH
  - – Low RDSON (typ, 25°C) = 1.9 mOhm







DSC Optimized

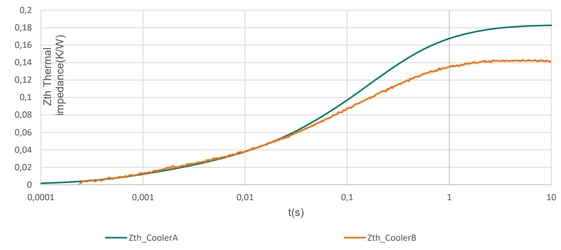
Hybrid Plastic-Aluminum Cooler

The hybrid plastic-aluminium cooler is specifically designed for the DSC and enables efficient heat dissipation

- – 3* DSCs positioned by support frame and clamped with 800 N
- – Serial cooling on top side and parallel cooling on bottom side
- – Nano-fin structure and flow ribs enable homogeneous cooling



Parameters	Units	BOYD (Aluminium cooler)	Quarder (Hybrid cooler)
Dimensions (L x W x H)	[cm³]	21 x 2.83 x 6.81 =0.4L	21.1 x 6.9 x 5.6 =0.81L
Material		Aluminum	Plastic Aluminum
Feature set		Folded fins	Thin fins/ springs
Weight	[g]	560	540
Pressure drop	[mBar]	200	49.7
Rth,jf	[K/W]	0.183	0.141



- ➢ Rth performance has been enhanced by 23% in comparison to conventional aluminium coolers

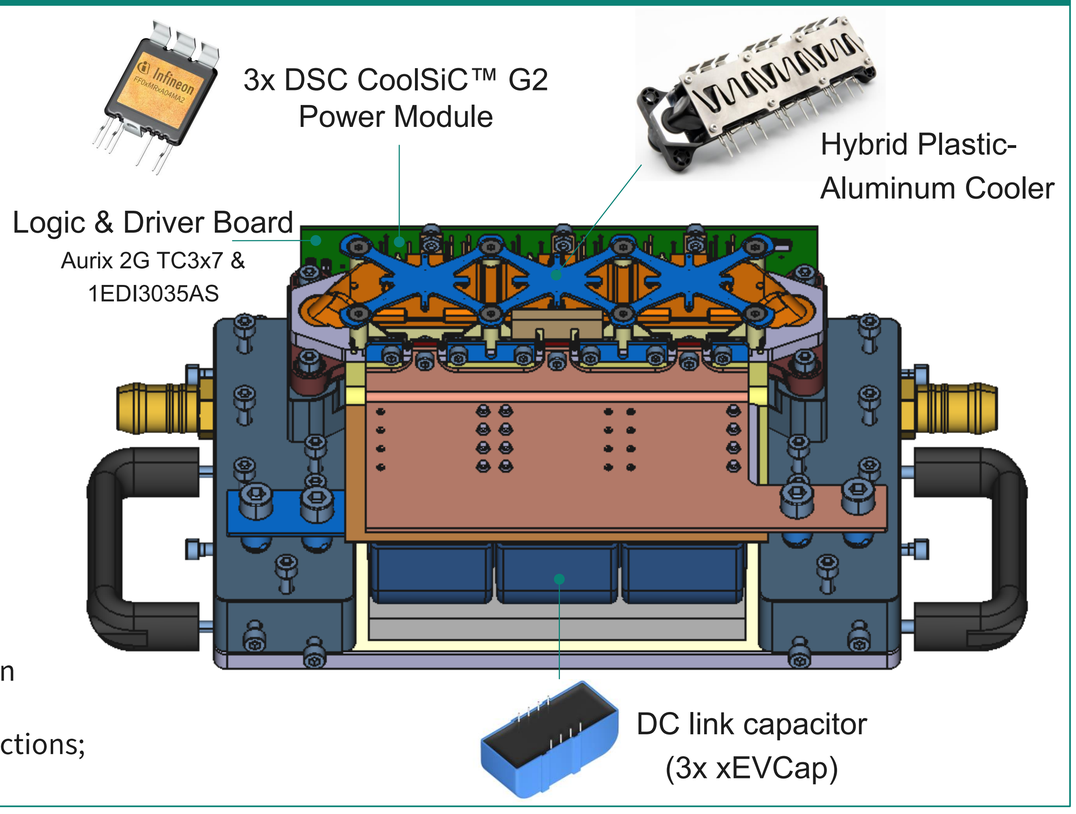
Features & Benefits

- ✓ Supports R&D lab applications
- ✓ Offers an inverter system reference design that uses the DSC module
- ✓ Includes all the necessary hardware elements in one compact box
- ✓ Practical and simple real-time control with GUI software

- ✸ Saved design time
- ✸ Enable fast evaluation
- ✸ Cross-reference test
- ✸ Ease-of-use

Components

DSC SiC power module; FF06MR12A04MA2 (Infineon); EiceDRIVER 1EDI3035AS evaluation board; 2G TC3x7 AURIX™ microcontroller (Infineon); hybrid plastic-aluminium cooler (Quarder); DCL xEVCap: 135uF_850V (TDK); AC and DC power connections; cooler connections; and OneEye software (Infineon)



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