

LV100 and HV100 X-Series : High-Voltage Power Modules Flexibility through Standardized Package

For traction and heavy industry, the newly developed next-generation dual power modules in LV100 and HV100 package enable robust and high power density inverters. The line-up covers all relevant voltage classes from 1700 V up to 4500 V. Parallel connection of modules is simplified by according terminal positions and the internal package structure. This and providing at least two different current ratings for each voltage class give converter designers higher flexibility for their individual projects. For highest efficiency requirements and cutting-edge converter systems, cutting-edge Full-SiC and Hybrid-SiC technology will be available in the same package.



Product Advantages

- ❑ Availability of future-proof SiC technology
- ❑ Power loss reduced by incorporating 7th-generation IGBT and RFC diode
- ❑ Contributing to high energy efficiency and high power density by improving package technology for low parasitic inductance and thermal resistance
- ❑ LV100 and HV100 modules have a common package footprint
- ❑ Simple, standard connections allow for optimal system design and a range of current ratings

Circuit	Package Type	Circuit Diagram	1700 V	3300 V	4500 V
2-in-1	LV100 $V_{iso} = 6 \text{ kV}$	 e.g. FMF375DC-66A	 CM1200DA-34X ^Δ 1200 A 	FMF800DC-66BEW Unifull™ 800 A FMF400DC-66BEW Unifull™ 400 A FMF200DC-66BE Unifull™ 200 A FMF750DC-66A / FMF750DC-66A-1 ^{**} 750 A FMF375DC-66A 375 A FMF185DC-66A 185 A CMH600DC-66X 600 A 	
	HV100 $V_{iso} = 10.2 \text{ kV}$				CM600DA-66X ^Δ 600 A CM450DA-66X ^Δ 450 A CM600DE-66X [*] 600 A CM450DE-66X [*] 450 A

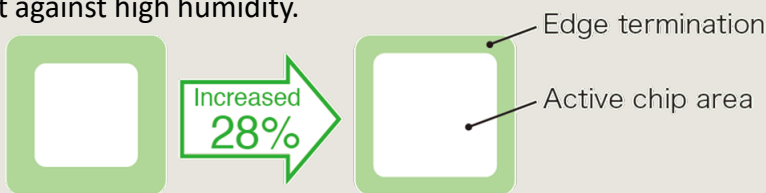
* MCB baseplate Δ Thermistor mounted type



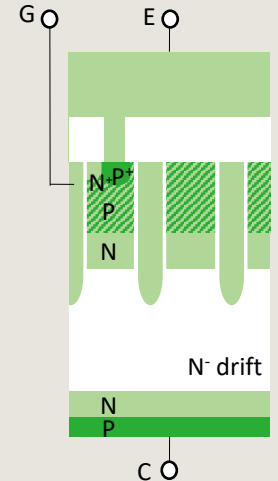
Chip Technology

LV100 and HV100 HVIGBT modules use the newly developed X-Series 7th-generation IGBTs with carrier-store layer and Relaxed Field of Cathode (RFC) diodes. These technologies enhance efficiency and robustness.

The optimized N buffer achieves operation at higher temperatures of 150 °C as 6.5 kV module. Moreover, the optimized edge termination structure LNFLR (Linearly-Narrowed Field Limiting Ring) allows an increased active chip area of up to 28 % compared to previous products. Surface Charge Control (SCC) makes the device more robust against high humidity.



Compared to previous product*, active chip area is increased 28 % by optimizing edge termination. (* CM750HG-130R)



Chip structure improving maximal temperature range

Package Technology

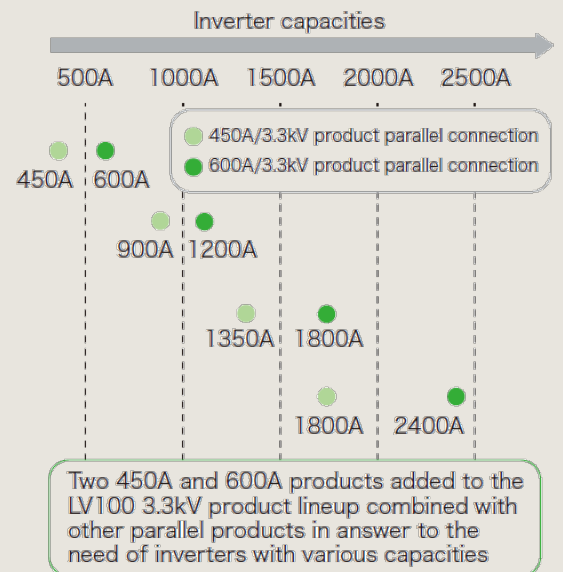
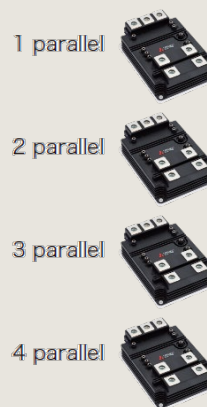
LV100 and HV100 modules have a standardized package design with a footprint of 100 mm x 140 mm. For converter manufacturers, these new standardized packages allow simplified design, improved scalability and multiple sources for power modules.

Terminal layout enables easier parallel connection while optimizing current sharing between the modules. The user-friendly placing of auxiliary terminals provides large space for custom gate-driver designs.

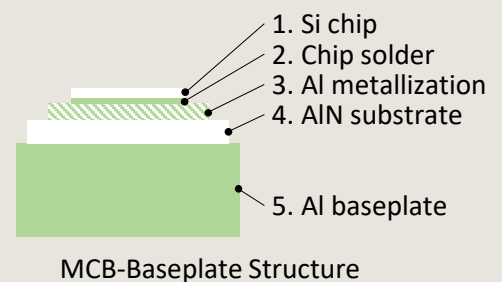
The LV100** and HV100 packages use MCB (Metal Casting Direct Bonding) technology. Compared to classical materials, these aluminum-based baseplates offer higher thermal conductivity and less weight. They allow converter designs with increased output power and higher power density.

LV100 and HV100 are future-proof and SiC-ready. Several Full-SiC and Hybrid-SiC modules are available or under development.

**Only DA type



Two 450A and 600A products added to the LV100 3.3kV product lineup combined with other parallel products in answer to the need of inverters with various capacities



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