



Fuji High Power next Core module (HPnC)



Over 20 years ago High Power Modules were developed for semiconductors which were common during this era. It did not take long time and they became a market standard. In the meantime, requirements towards these modules have grown more and more which required to add a new product to the high power family.

The most important requirements are lower losses, lower stray inductance and improved package design. Fuji Electric's new HPnC module is able to fulfill all those requirements including some very nice additional key features.

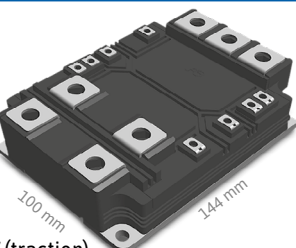
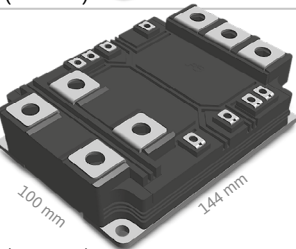
- FEATURES**
- ▶ X series chip technology with low losses
 - ▶ Easy paralleling and good scalability
 - ▶ Low internal stray inductance
 - ▶ Resin with CTI > 600 for higher anti-tracking
 - ▶ Ultrasonic welded terminals for high thermal cycling capability
 - ▶ RoHS compliant module
 - ▶ Thermal sensor installed
 - ▶ Cu baseplate for industrial applications
 - ▶ MgSiC baseplate for traction applications

Highlights of HPnC

Fuji's new HPnC module combines the latest X series chip technology with a newly developed internal layout and a package design, which offers high scalability and easy paralleling. The optimized internal layout results in a 76% lower stray inductance against the conventional HPM package.

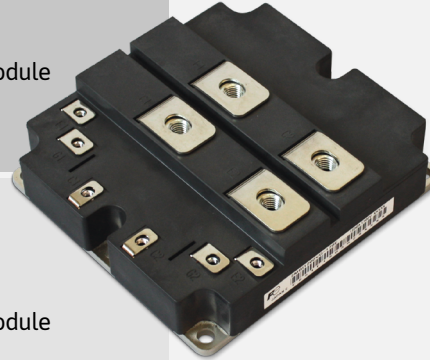
With these features lower losses and low surge voltage at turn-off could be realized. Fuji's new HPnC module is a very good solution for high power applications such as traction, high power drives and renewable energies.

- MAIN FEATURES**
- ▶ Very low internal stray inductance (~10 nH)
 - ▶ X series IGBT & FWD
 - ▶ MgSiC or Cu baseplate

	I _c	Silicon		I _c	SiC	
		1700 V Xseries	3300 V Xseries		1700 V Xseries	3300 V Xseries
 M297 (traction)	450 A		2MBI450XYF330-50	750 A		2CI750DYF330-50
	600 A		2MBI450XYF330-50*	1500 A	2CI1500DYF170-50*	
	1000 A	2MBI1000XYF170-50				
	1200 A	2MBI1200XYF170-50				
	1500 A	2MBI1500XYF170-50				
 M298 (industry)	1200 A	2MBI1200XZF170-50		1000 A	2CI1000DZF170-50*	
	1500 A	2MBI1500XZF170-50		1500 A	2CI1500DZF170-50*	
	1800 A	2MBI1800XZF170-50*		1800 A	2CI1800DZF170-50*	

*Under consideration

Comparison between of HPnC and HPM

Conventional HPM (AlSiC base type) 2in1 1.7 kV 600 A , 800 A , 1200 A			HPnC (MgSiC base type) 2in1 1.7 kV 1000 A, 1200 A, 1500 A	
42 nH per module		inductance reduced by about 76 %	10 nH per module	
915 g per module		weight reduced by about 27 %	670 g per module	