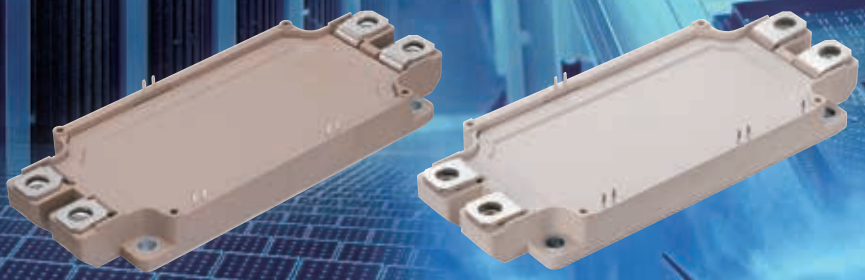
Fuji Electric
Innovating Energy Technology

7th Generation X Series

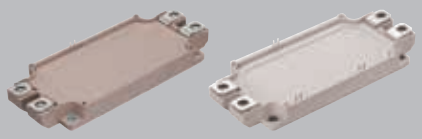
Dual XT Module
(RC-IGBT)



High Power Density Power Module with RC-IGBTs

In recent years, the market demand for smaller, higher performance and reliable power conversion systems has been increasing due to growing environmental conservation awareness. In order to meet these demands, Dual XT modules with RC-IGBT technologies have been commercialized, in addition to the 7th generation X series technologies. RC-IGBT combines IGBT and FWD on a single chip, thus reducing the number of chips and total chip area, which contribute to equipment miniaturization.

- RC-IGBTs optimized for industrial applications
  Upward compatibility with conventional IGBT and FWD chipsets
- Higher current density contributes to equipment miniaturization
  Rated current increased from 1200V/600A → 1000A
- High heat dissipation, high tracking resistance package
  Significant improvement in the heat spreading with high performance ceramic substrate



Application examples: Motor drives, UPSs, solar power generation, and wind power generation

RoHS

X series 7G

MTET0-3480-EN

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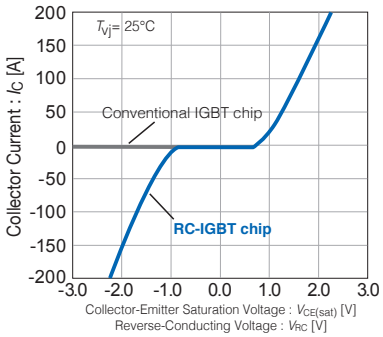
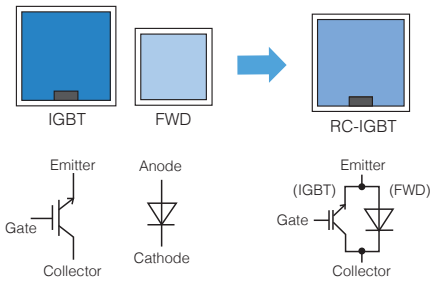
1. RC-IGBTs optimized for industrial applications

RC-IGBTs, which are widely used in automotive application, are now available for industrial application with optimized design and performance. Following advantages are expected with upward compatibility with the conventional IGBT and FWD chipsets.

- Reverse conduction ability of RC-IGBTs can replace and remove FWDs. This contribute to significant increase in chip mountable area for larger, higher current rating chips. The larger chip area also reduce the junction to case thermal resistance significantly.
- Compatible with the same design methods and control circuits as conventional IGBTs. No custom gate drivers are needed.

I-V curve characteristics comparison



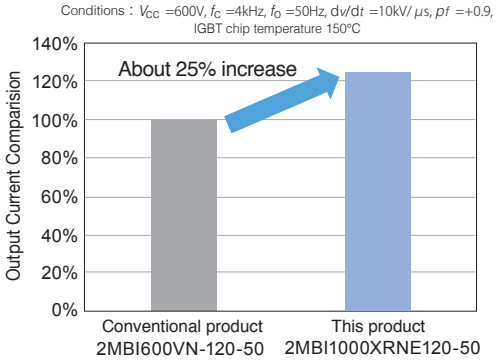


RC-IGBT chip schematic and equivalent circuit

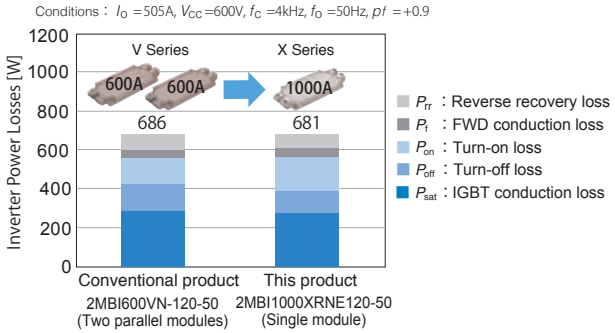
2. Higher current density contributes to equipment miniaturization

By applying RC-IGBT technologies, in comparison with our conventional V series product in the same Dual XT package, the maximum rated current has been increased from 1200V/600A to 1000A. Thus, the output current during steady-state continuous operation can be expanded by about 25%. This increased output make it possible, for example, to replace two 600A modules in parallel with a single 1000A module in a 350kW inverter. This contributes to equipment miniaturization and also reduce the number of gate drivers.

Output current comparison during steady-state continuous operation



350 kW inverter loss comparison



Product series 1200V/1700V

Series Type	Terminal Type	Package	Size [mm]	I_C 225A	300A	450A	600A	800A	1000A
X Series Dual XT	Solder pins	M254	62×150	1200V					
				1700V					
		M285 *1					1200V		RC-IGBT 1200V
							1700V	RC-IGBT 1700V	
	Press fit pins	M282		1200V					
				1700V					
		M286 *1					1200V		RC-IGBT 1200V
							1700V	RC-IGBT 1700V	

*1 High heat dissipation, high tracking resistance package CTI = 600 (Comparative Tracking Index)

⚠ Safety Precautions

＊Before using this product, read the "Instruction Manual" and "Specifications" carefully, and consult with the retailer from which you purchased this product as necessary to use this product correctly.
＊The product must be handled by a technician with the appropriate skills.

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