

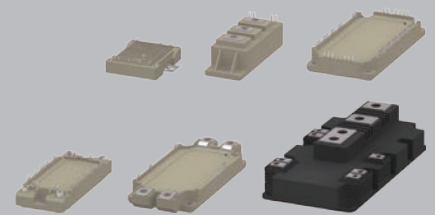


**Next Generation Power Module  
Contributing to Miniaturization and  
Higher Efficiency in Power Converters**

The IGBT module is a key device for achieving energy savings and stable power supply in industrial equipment such as motor drive inverters, uninterruptible power supplies (UPS), and power conditioners for wind and photovoltaic power generation equipment. In recent years, there has been a strong demand for energy savings, miniaturization, space savings, and increased reliability in industrial equipment and devices. To meet this demand, Fuji Electric developed the 7th Generation "X Series" IGBT Module.

- Contributes to energy savings by reducing power loss  
Reduces inverter loss by 10% and lower chip temperature by 11°C  
(Comparison with the 6th Generation V Series (1200V 75A),  
at  $f_c = 8$  kHz)
- Achieves equipment miniaturization  
Footprint size can be reduced by 36% by replacing the previous  
6th Generation (1200V 75A) with the new 7th Generation X Series  
(1200V 75A) (\*1)
- Contributes to improved equipment reliability  
Achieves guaranteed continuous operation at  $T_{vjop} = 175^\circ\text{C}$
- Increased rated current with RC-IGBT technology.

\*1 Mounting area ratio with 1200V PIM models



Packages (typical examples)

Application example: General motor drives  
UPS, PCS, others



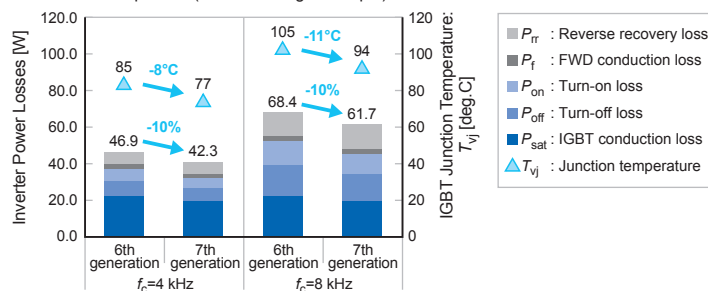
## 1. Low loss

The surface and vertical structures of the IGBT and diode chips are optimized. This reduces power losses during inverter operation compared with previous products (6th generation V series).



Reduces inverter loss by 10% and chip temperature by 11°C (Comparison with the 6th Generation V Series (1200V 75A), at  $f_c = 8$  kHz)

Inverter loss comparison (standard usage example)

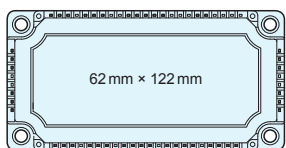


## 2. Miniaturization

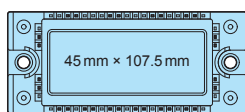
The newly developed insulating substrate is applied to improve the heat dissipation of the module. By suppressing heat generation as well as reducing power loss, some products can be mounted in a package of about 36% smaller.

Application example)

**36% reduction**



1200V 75A (6th Generation V Series)



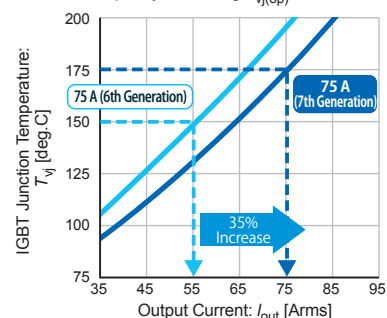
1200V 75A (7th Generation X Series)

## 3. High-temperature operation

Achieves continuous operation at 175°C through chip optimization, improved package reliability and heat resistance.

Up to 35% more output than the previous generation  
 $\Delta T_{vj}$  power cycle lifetime is doubled compared to the conventional products, thus the same level of lifetime is secured even at 175°C continuous operation.

Increased output by increasing  $T_{vj(opp)} = 175^\circ\text{C}$



## Product series

Package	Appearance	Size (mm)	10A	15A	20A 25A	30A 35A	50A	75A	100A	150A	200A 225A	250A 300A	400A 450A	600A 650A	800A 900A	1000A 1200A	1400A 1500A	1800A	2400A	
Small PIM		33.8 x 48.0	1200V		650V		RC-IGBT													
		56.7 x 48.0	1200V		650V		RC-IGBT													
PIM		45.0 x 107.5	1200V		650V		RC-IGBT													
		62.0 x 122.0	1200V		650V		RC-IGBT													
6-Pack		45.0 x 107.5	1200V		650V		RC-IGBT													
		62.0 x 122.0	1200V		650V		RC-IGBT													
Standard 2-Pack		34.0 x 94.0	1700V		1200V		650V													
		45.0 x 92.0	1200V		650V		RC-IGBT													
		62.0 x 108.0	1700V		1200V		650V													
Dual XT		80.0 x 110.0	1700V		1200V		650V													
		62.0 x 150.0	1700V		1200V		RC-IGBT													
HPnC		99.5 x 144.0	3300V *		2300V		1700V													
PrimePACK™		89.0 x 172.0	1700V		1700V		1200V													
		89.0 x 250.0	1700V		1200V		RC-IGBT*													

\*Under development Power Integrated Modules are products that integrate multiple circuits in one module. PrimePACK™ are registered trademarks of Infineon Technologies AG.

## ⚠ 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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