



IGBT Modules – NX-Type

The Mitsubishi Electric NX-Type IGBTs greatly simplify the design of medium power inverters for various applications like industrial drives, wind power, solar power and UPS. The significantly improved thermal impedance and very low loss, 7th and 8th Generation CSTBT™ technology facilitate a very efficient, economical and robust inverter design.

The NX-Type line-up has been expanded from 35 A up to 1000 A / 1200 V and all new 1700 V and 650 V line-up of dual modules to suit a wider power range of applications. The applied SLC-Technology of the NX-Type IGBT modules enables the design of inverters with higher output current, higher power density and improved reliability. An expanded line-up based on coming 8th Gen. IGBT is under development.

SiC 2-in-1 modules in compatibles NX housing are available to substitute the line-up for high efficiency or high frequency applications.

Product Advantages

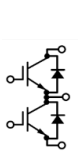

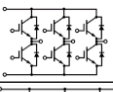

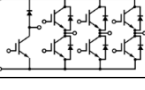

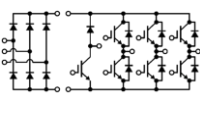

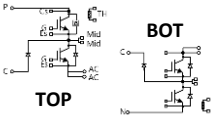

- ❑ Low-loss 7th and 8th generation CSTBT™ technology
- ❑ SLC package technology with Superior thermal cycling capability
- ❑ $T_{j,max}$ of 175°C for overload switching operation
- ❑ Integrated Thermistor

User benefits

- Extended lifetime
- Reduction of assembly costs
- Compactness and extended power range
- Scalability of power classes

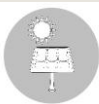
Achieved by

- Highest thermal cycling capability by Insulated Metal Baseplate (IMB)
- Optional Press Fit terminals
- Production lot-independent paralleling capability
- Low loss 7th gen. and 8th gen. Chipset
- Low thermal resistance $R_{th(j-c)}$
- Reduced package inductance by single pattern layout
- Full power rating line-up of 650V, 1200V and 1700V IGBT modules
- SiC 2-in-1 MOSFET in compatible housing available

Circuit	Topology	Package image	Package size	650V	1200V	1200V 8th Gen	1700V	
2-in-1			62 x 152 mm ²		225A		225A	
					300A	300A	300A	300A
					450A	450A	450A	450A
					600A	600A (Si + SiC¹)	600A	600A (Si + SiC¹)
						800A	800A	1000A
		114 x 110 mm ²		1000A				
6-in-1			62 x 122 mm ²	100A	100A		100A	
				150A	150A		150A	
				200A	200A			
7-in-1			62 x 137 mm ²		100A			
				150A	150A			
				200A				
CIB			45 x 107.5 mm ²		35A			
					50A	50A		
					75A	75A		
			62 x 122 mm ²	100A				
					75A			
			100A	100A				
			150A	150A				
3-Level (NPC-Split)			62 x 152 mm ²			800A		
						1000A		



Industrial



Solar



Wind



Power
Transmission

SLC (Solid Cover)-Technology

SLC-Technology is a newly developed package technology combining a resin-insulated metal baseplate and hard direct potting resin.

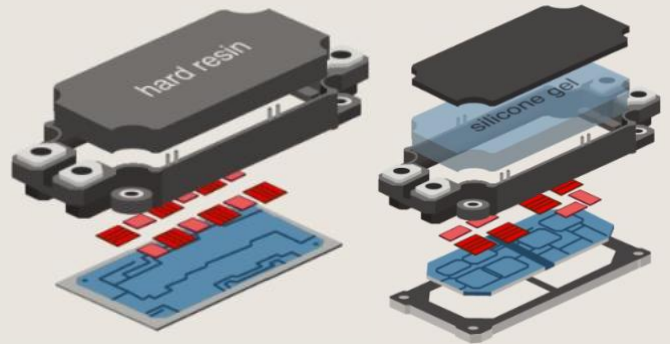
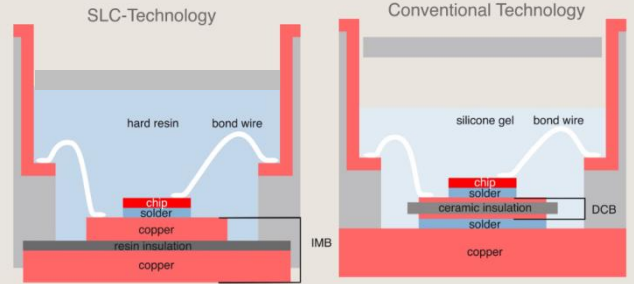
The IMB (Insulated Metal Baseplate) combines an electrically insulating resin layer with a top and bottom side copper layer by direct bonding, thus eliminating the substrate solder layer and the baseplate.

Less layers and matched thermal expansion coefficients lead to high thermal cycling capability, exceeding several times the conventional capability. At the same time, the thermal resistance at same chip size is reduced by 30% compared to conventional modules having Aluminum-Oxide Insulation.

The SLC concept utilizes one common substrate instead of multiple ceramic substrates. This approach expands the effective area available for mounting chips and eliminates wire bond interconnections.

The top side circuit pattern thickness could be significantly enlarged. This reduces the electrical resistance and allows for shrinking the pattern size. Hence, the IMB is a key element of the SLC-Technology for high power density and low stray inductance.

new

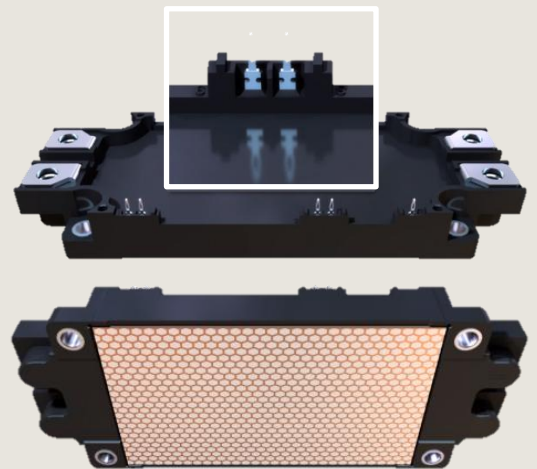


User-friendly design features

The NX-Type of 7th and 8th Generation IGBT modules line-up contains press-fit as well as solder pin types. The optimized “needle eye”-pin type has a self adjusting shape for easy assembly.

The package is also available as an option with applied PC-TIM. This removes the need to apply grease and achieves lower thermal contact resistance.

Both features enable a highly reliable mounting process even in harsh environments and easy maintenance in the field.



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SiC Modules:



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