

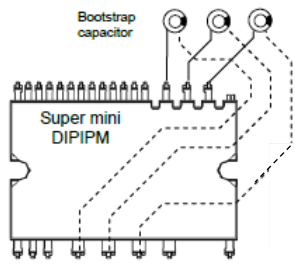
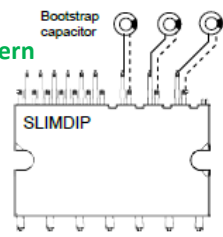
SLIMDIP™ with Reverse Conducting IGBT

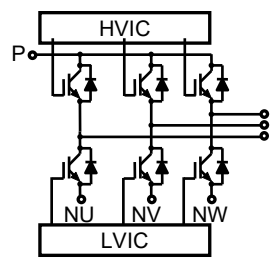
- Slim your cost -

Mitsubishi Electric has developed a new SLIM package Intelligent Power Module (SLIMDIP™) for Consumer Goods Applications. Power chips, drive and protection circuits are all integrated into the module, which makes it a simple choice for AC100-200V class motor inverter control. SLIMDIP™ utilizes reverse conducting RC-IGBT technology, which applies MITSUBISHI's latest 7th generation IGBT chip design, enabling the use of a smaller package by reducing number of internal component when compared to MITSUBISHI's Super Mini DIIPM series. By virtue of these features SLIMDIP™ is especially suitable for low cost inverterized home appliances and can contribute to system cost reduction.

Product Advantages

- ❑ Smaller package (30% smaller than Super Mini DIIPM™)
- ❑ Integrated bootstrap diode eliminates the need for external diode, simplifying design & PCB layout
- ❑ Dedicated protection functions: short circuit, over temperature, under voltage lockout
- ❑ Robust package for high temperature operation, $T_{C,max}$ of 115°C for switching operation
- ❑ UL recognized, isolation voltage $V_{iso} = 2000V$ AC RMS

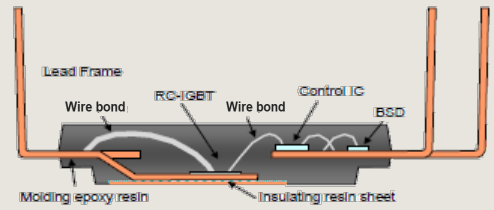
	Super Mini DIIPM™	SLIMDIP™
Power chip	7 th Gen. IGBT	RC-IGBT
Tj max	150deg C	150deg C
Tc max	100deg C	115deg C +15deg C
Package	Super Mini 24x38	SLIM 18.8x32.8 -30%
Viso	1500Vrms	2000Vrms +500V
Terminal		 Easy pattern

Circuit	Circuit Diagram	Package Size	Product Name	Application
6in1		18.8 mm X 32.8 mm	SLIMDIP-S (5A / 600V)	Air Conditioners Washing Machine Refrigerators Pumps Fans Small AC Drives
			SLIMDIP-M (10A / 600V)	
			SLIMDIP-L (15A / 600V)	
			SLIMDIP-W (15A / 600V)	
			SLIMDIP-X (20A / 600V)	
			SLIMDIP-Z (30A / 600V)	



SLIMDIP™ Package

- The SLIMDIP™ package has roughly a 30% smaller footprint area than the conventional Super Mini DIIPM™. The package and power semiconductors are optimized to provide the smallest 3-phase IPM for motor drive applications up to 2.2kW.
- The conventional DIIPM™ package contains 6 IGBTs and 6 FWDs, but the new RC-IGBTs used in the SLIMDIP™ allows a 50% reduction in the number of power chips, thus shrinking the internal space requirement.



Ease of Use

The SLIMDIP™ shows an improvement in the following areas compared to the Super Mini DIIPM™, making it easier to use.

- An increased maximum case temperature specification, $T_c \text{ max } 100 \rightarrow 115 \text{ deg C}$
- Both temperature protection tripping OT and analog temperature information are IC functions.

Simplified PCB Pattern

Bootstrap circuits, which require external capacitors, are generally used to provide the high-side power supply in conventional DIIPM™ circuits. In a conventional DIIPM™ circuit, the pins used for bootstrap capacitor connection are located on opposite sides of the module. In the SLIMDIP™, the ground pins are placed next to the high voltage supply pins, simplifying the PCB wiring design and thus utilizing less space.

