

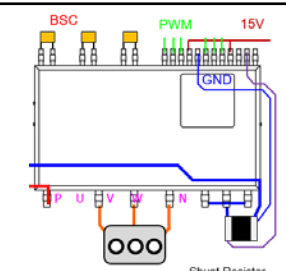
## MISOP™ with Reverse Conducting IGBT

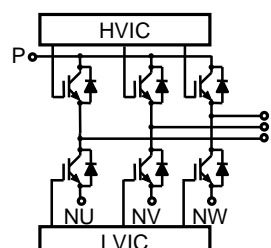
### - Saves your design & development time -

Mitsubishi Electric has added a new transfer molded SMD type Intelligent Power Module to its line-up – the MISOP™ (**M**itsubishi **E**lectric **I**ntelligent **S**mall **O**utline **P**ower Module). Applications with small power inverters like pump, fan or low servos are requesting compactness, easy assembling, reliability and high performance. The new MISOP™ SMD type IPM combines all the attractive features of Mitsubishi Electric DIIPM family with the high efficiency RC-IGBT technology (based on Mitsubishi Electric 7<sup>th</sup> Chip technology). The integration of driver ICs (HVIC and LVIC), bootstrap diodes & capacitors, and protection functions conveniently reduces the inverter design & development time.

#### Product Advantages

- SMD type IPM with RC-IGBT chip technology
- Integrated bootstrap diode (BSD)
- Short circuit protection through external shunt resistor
- Power supply under-voltage protection : Fo output on N-side
- Over Temperature protection
- Analog temperature voltage signal output
- Interlock function

	MISOP™
Power chip	RC-IGBT
Tj max	150 °C
Tc max	115 °C
Package	surface mounting 15.2x27.4x3.3mm
Viso	1500Vrms
Terminal	

Circuit	Circuit Diagram	Package Size	Product Name	Application
6in1		15.2 mm X 27.4 mm X 3.3 mm	SP2SK (2A / 600V)  SP3SK (3A / 600V)	Refrigerators Pumps Fans Small AC Drives



## MISOP™ Package

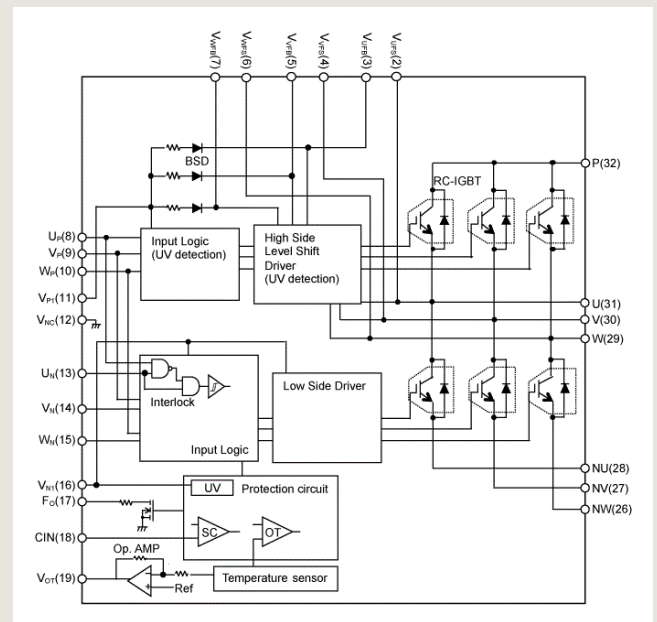
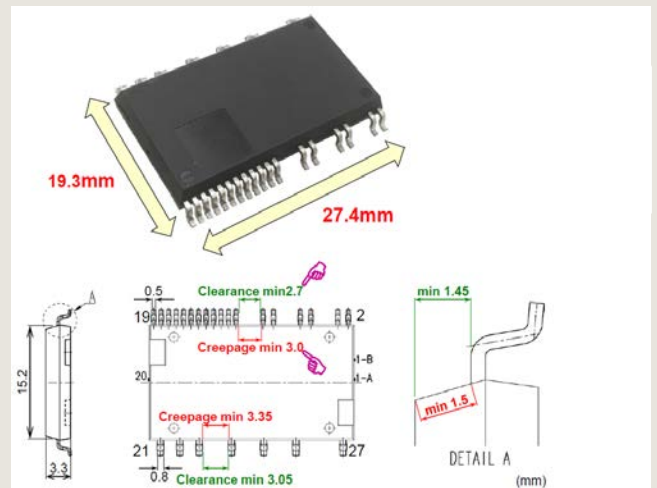
The MISOP™ Reverse Conduction (RC) IGBT is based on the Mitsubishi Electric 7<sup>th</sup> generation chip technology. The 7<sup>th</sup> generation chip technology is a low loss thin wafer IGBT technology which allows an optimization of the balance between performance and IGBT chip size. In addition to the inherent benefits of the 7<sup>th</sup> generation chip technology, the RC technology enables a significant level of optimization of the power module's surface area requirement since the IGBT and the diode are effectively integrated into one single die.

## Protection via Mitsubishi

The device offers the possibility to implement a short circuit protection via external shunt resistances which can be connected to each of the open emitter pins. To avoid the risk of overheating during operation, there is a built-in over-temperature protection (OT), and the functionality to monitor the module temperature with an accurate linear analog voltage output signals (VOT), which helps to define the derating points to use the module with high power density. The availability of the "interlock-protection" is an important implementation, this protection function prevents the simultaneous turn-on of both high side and low side switches (such a turn-on would lead to an arm-shoot through short circuit). In addition, the ability to detect and indicate a failure in the control supply voltage is also included in the MISOP™.

## Simplified PCB Pattern

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



Size 70x80

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