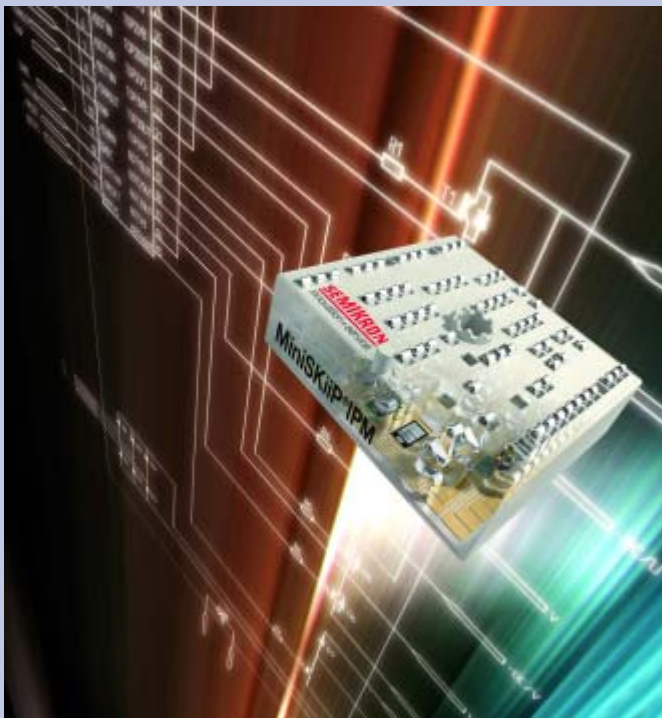


First Intelligent Power Module for Solder-Free Assembly

For Motor Power up to 15 kW

Semikron introduces an intelligent power module for quick and easy solder-free assembly. The MiniSKiiP® IPM is developed for motor power up to 15kW and has a latch-up free SOI driver IC for reliable driving already integrated. Compared to other intelligent power modules this new IPM demonstrates the lowest thermal resistance of 0,95K/W and the highest junction temperature of +175°C.



Power, control and auxiliary contacts are connected directly to the printed circuit board via springs, not solder joints. The elimination of any solder connections results in a higher quality of the assembly. With the simple snap-on mounting with one standard screw a cost-efficient assembly of module, printed circuit board and heat sink is achieved. The user has the advantage of using a module where handling is reduced and the parts count is less compared to discrete designs.

A high voltage driver IC with an advanced level shifter technology is integrated into the 600V Converter-Inverter-Brake IPM and the 1200V inverter (6-pack) MiniSKiiP® IPM providing IGBT driving without an optocoupler. The SOI technology provides complete latch-up immunity since all switches are dielectrically insulated. A down-level shifter for each channel allows the presence of negative secondary offset voltages. The integrated gate driver remains fully operational for any applied offset voltage down to -50V, providing flexibility in the design of a power system. The gate driver IC features an over-current shut-down circuit protection by using an external shunt resistor in the ground plane shutting down the IPM in case of over-current as

Highest junction temperature

	MiniSKiiP IPM	Competitor A	Competitor B
T_j	-40°C ... +175°C	-20°C ... +125°C	-40°C ... +150°C

Lowest thermal resistance

600V	MiniSKiiP IPM	Competitor A	Competitor B
R_{th}	0,95 K/W	1,42 K/W	2,1K/W
P	5,5kW	3,7kW	3kW

well as an under-voltage lockout for all channels and fault signaling. A shut-down can be also forced by the system controller using the shut-down input. Cross-conductions are prevented by the interlock logic.

The MiniSKiiP® IPM achieves the best thermal resistance and an optimized current density, leading to high power cycling capability and a longer lifetime compared to existing IPM technologies. These advantages are the result of the pressure contact technology which evenly distributes the vertical pressure, the spring contacts and the base plate free package.

MiniSKiiP® IPM is suitable for industrial and consumer drives up to 15kW as well as process control and solar applications. Using state-of-the-art Trench-Field-Stop IGBTs, the IPMs are available in 600V and 1200V and designed for nominal current ratings up to 72A. The module is RoHS compliant.

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