

600-V IGBT IPMs Reduce Radiated Noise And Power Loss

[ROHM Semiconductor's](#) four new 600-V IGBT intelligent power modules (IPMs), which are members of the BM6437x series, are said to deliver best-in-class low noise characteristics, together with low loss, making them well suited for use in inverters. The devices are meant for use in compact industrial equipment, such as small capacity motors for robots, as well as home appliances, including air conditioners and washing machines.

With the proliferation of IoT and increasing power consumption following the automation of industrial equipment and home appliances, there is a need for lower power consumption. This requires higher efficiency IGBTs and modules. However, sometimes noise performance can suffer.

In response, ROHM has developed this four-model lineup of IGBT IPMs (see the table), which according to Rohm, achieve class-leading characteristics by simultaneously reducing both radiated noise and power loss. Optimizing the built-in IGBT's characteristics and soft recovery characteristics of the internal fast recovery diode allows the BM6437x series to decrease radiated noise by more than 6 dB (at peak comparison) over standard products (see the figure). This allows designers to consider simplifying the noise filter that is typically required.

The latest low-loss IGBTs adopted in these IPMs also reduce power consumption compared with ROHM's conventional IPM products by 6% (fc = 15 kHz). In addition, the new products dramatically improve the built-in temperature monitoring function, resulting in high ±2% accuracy (equivalent to 2°C). This makes it possible for designers to consider eliminating the external thermistor that is typically required, reducing the number of external parts, along with design load.

A new function for identifying the product after mounting has also been added to help prevent mounting errors. Error identification mode has also been included to cover "short current protection," "under voltage protection," and "thermal shutdown protection." For more information, see the "IGBT-IPM" [page](#).

Table. Part numbers and key specs for Rohm's new low-noise 600-V IGBT IPMs.

Part No.	Rated Current (A)	Collector-Emitter Voltage V _{CEs} (V)	Temperature Monitor Function	TSD* Overheat Protection	Package (mm)
New BM64374S-VA	15	600	Included	Included	HSDIP25 (38.0mm×29.4mm×3.5mm)
New BM64375S-VA	20				
New BM64377S-VA	30				
New BM64378S-VA	35				

*TSD: Thermal Shut Down

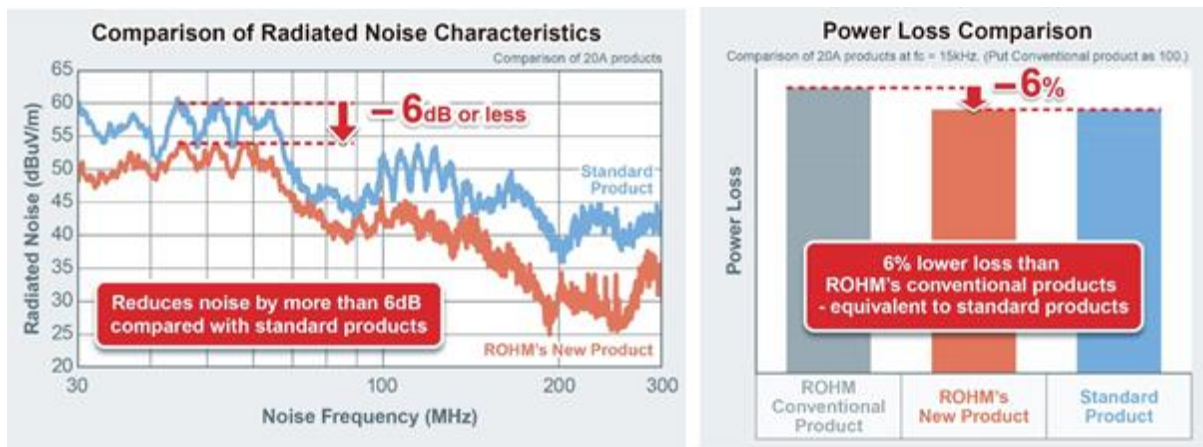


Figure. Optimizing the built-in IGBT's characteristics and the soft recovery characteristics of its internal FRD allows the four new members of the BM6437x series of IPMs to decrease radiated noise by more than 6 dB (at peak comparison) versus standard products, according to Rohm.