VISHAY

The DNA of tech.™

DID YOU KNOW?

THE BENEFITS OF USING A THIN FILM, HIGH POWER, BACK-CONTACT RESISTOR

IGBRA / IGBRB / IGBRC / IGBRD

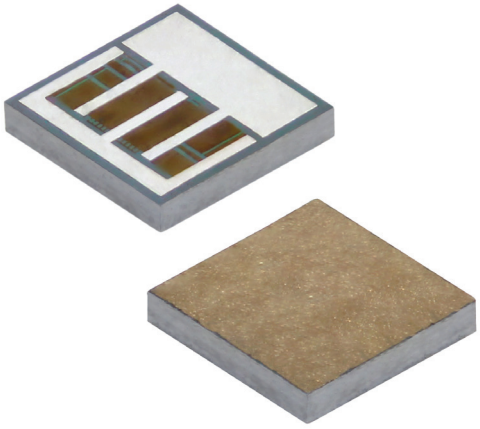
The Vishay Electro Films IGBR is a thin film, high power, back-contact resistor family. With case sizes ranging from 0202 to 0808, the devices offer a miniature option for high power applications. The main features of the IGBR family are low inductance, small size, wire bond capability, and matching power module component attachment methods.

The top termination on the IGBR consists of Al with a 2.5 µm minimum thickness, which is suitable for heavy gage aluminum wire bonding. Because the IGBR is a back-contact resistor, it only requires one wire bond for a chip and wire assembly. The IGBR can bond with a wire that is up to 6 mils in diameter. Due to the single wire bond, the part maintains extremely low inductance. The length of the wire determines the amount of inductance in the module, so the shorter the wire the lower the inductance.

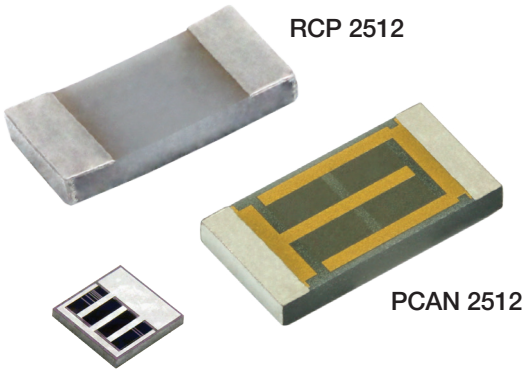
The IGBR is the perfect part for saving space in power modules. For comparison, the IGBRD in the 0808 case size can handle up to 4 W, while a thin film surface-mount chip in the 2512 case size can handle up to 6 W, and a thick film chip resistor on AlN in the 2512 case size can handle 3.5 W.

The wire bond process and attachment methods match SiC assembly processes for gate resistors in power modules.

The IGBR resistors can be used in the following applications: a gate resistor for IGBT modules and SiC MOSFET power modules, current limiting in LED lighting, alternative energy, and high power applications.



RCP 2512

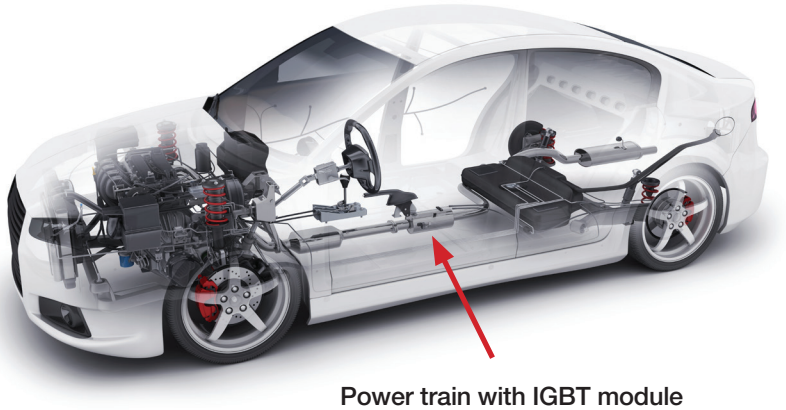


PCAN 2512

IGBR 0808

Why are gate resistors required in a power module? The resistor:

1. Affects switching loss and prevents gate ringing
2. Limits the noise in the gate drive path
3. Limits parasitic inductances and capacitances
4. Limits current that charges and discharges the gate
5. Limits peak gate current to protect the driver output stage
6. Dissipates the power in the gate loop
7. Influences the switching speed by limiting current



Power train with IGBT module

More details on the properties of the IGBR family can be found at www.vishay.com/doc?61107.