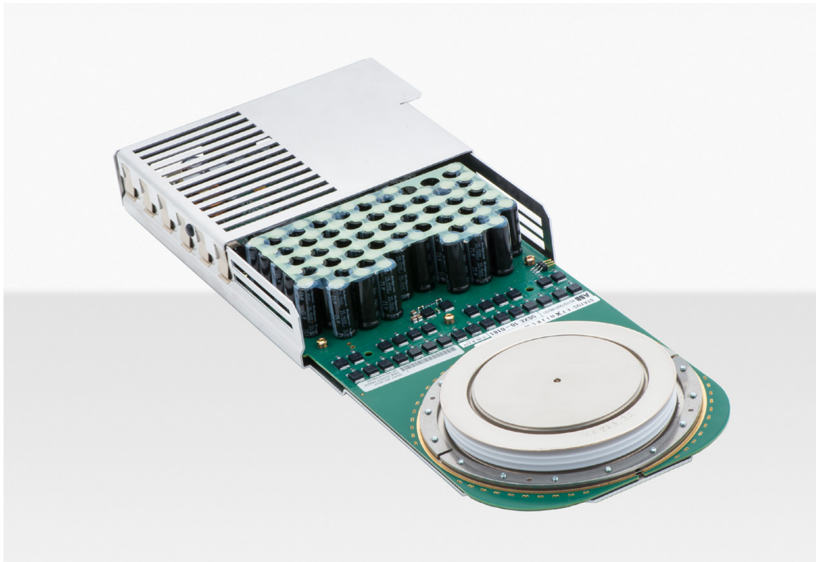
PRODUCT NOTE

The reverse-blocking IGCT 2500 V



The IGCT is a semiconductor switch with low on-state loss, making it ideal for medium to the highest power inverters; an application that must strive to maximize power output and energy efficiency to deliver a competitive product.

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01 Reverse-blocking IGCT

Although application-specific aspects including topology, switching frequency and output filters are principal contributors to inverter efficiency, the semiconductors themselves can make a significant contribution by offering low on-state and switching losses. In this respect, the IGCT is undoubtably the highest-performance silicon device architecture.

2500 V reverse-blocking IGCT
With the introduction of the newly developed 2.5 kV reverse-blocking Integrated Gate Commutated Thyristors (RB-IGCT), ABB enhances its successful and well-established IGCT product line with another powerful device.

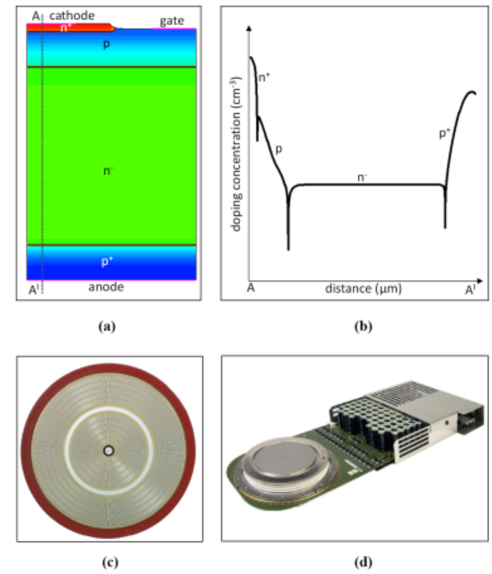
The RB-IGCT is optimized to deliver the lowest conduction losses and highest turn-off current capability. Conduction losses are reduced to less than 1000 W at 1000 A, a record value for this class of power semiconductor devices.

To achieve the high turn-off current capability of up to 7000 A, the device is built on the well-known, proven HPT+ platform. Due to its outstanding performance, efficiency and reliability, the new RB-IGCT is the ideal device for Solid State Circuit Breakers (SSCB) used in renewables, transport electrification and modern edge grids.

Device	Availability	Voltage rating	Turn-off current	Housing
RB-IGCT	Samples now	2500 V	7000 A	L size

RB-IGCT technology features
The semiconductor switch is able to block both forward and reverse currents but conducts only in the forward direction.

The 2.5 kV RB-IGCT shown in figure 2 is optimized to keep the conduction losses as low as possible. The anode engineering, device thickness and resistivity are designed to achieve the required blocking capability of 2.5 kV and to ensure very low conduction losses, even at high currents.



02 The 2.5kV RB-IGCT: (a) Device structure, (b) Doping distribution of the device, (c) The 91 mm, 2.5 kV RB-IGCT wafer, (d) The RB-IGCT wafer in a hermetic package with its integrated gate unit.

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