Product Brief

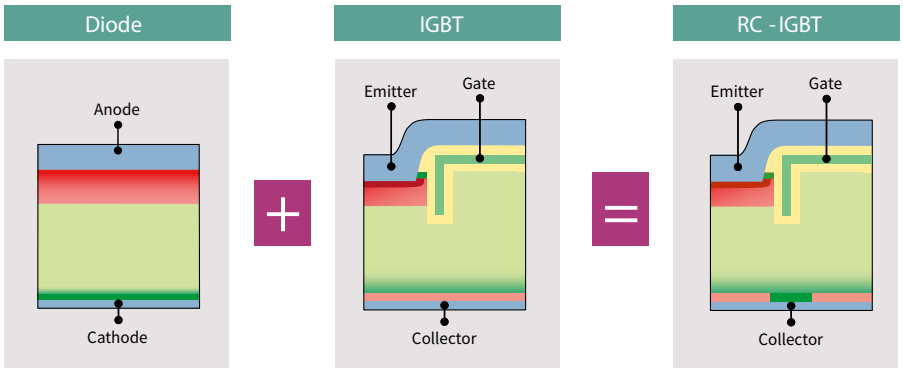
RCDC

Reverse conducting IGBT with diode control

The introduction of RCDC technology follows the key requirement of high power density and efficiency, long lifecycle and reliability, improved temperature behavior and reduced system costs.

RC stands for reverse conducting, a chip combining transistor and freewheeling functionality. DC stands for Diode Control, since the p-emitter efficiency of the diode function is controllable by the gate terminal. An increased current density is obtained by more active silicon in forward and reserve direction.

Scope and key figures
The RCDC technology comes in a high isolated well known package – IHV A. The robust module construction of the RCDC package offers the possibility of use in drives, traction and HVDC applications.



RCDC technology combines IGBT and diode function in one chip.

Key features

- 6.5 kV IGBT Module
- 125°C junction temperature
- 33 % increased current density for same footprint
- Expanded lifetime

Benefits

- Increased current density due to more active silicon in forward and reverse direction
- Improvement of R_{th}/Z_{th} of IGBT and Diode
- I^2t improvement of the Diode
- Reduced recovery losses by diode control
- Reduction of T_{vj}-ripple

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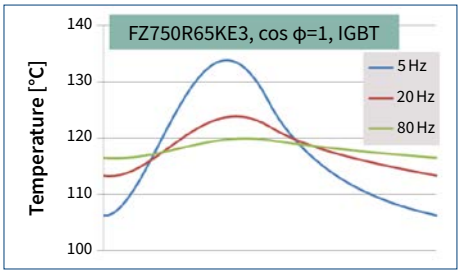
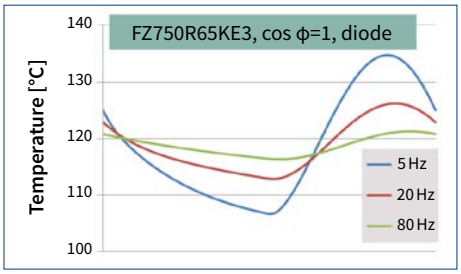
RCDC

Reverse conducting IGBT with Diode Control

The junction temperature is up to 125 °C and the current density of 6.5 kV increased on the same footprint by +33 %.
An important result of the monolithic integration of the IGBT and Diode functionality is a significant improvement of R_{th}/Z_{th} of the IGBT & Diode and the I^2t-value of the diode. By making use of the diode control functionality, an effective reduction of recovery losses can be achieved.

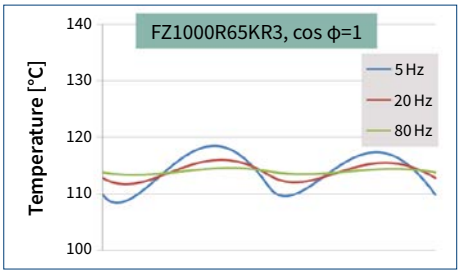
IGBT/Diode-module





Temperature curve of an IGBT and a diode

RCDC-module



Improved temperature curve of a RCDC-Module

The reduction of the T_{vj}-ripple causes an expanded lifetime.

Product summary

FZ1000R65KR3	Voltage class and chip trechnology	Current rating
FZ1000R65KR3	6500 V RCDC Technology	1000 A

Additional support

- Design in support of the new RCDC technology
- Evaluation driver board
- Application engineering support
- RCDC sample
- Documentation package
- Application note for the evaluation board

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