

Automotive-grade 650 V SiC diodes



Automotive-grade SiC diodes boost the performance of power converters

SiC diodes are high-performance power Schottky rectifiers that feature a silicon-carbide substrate. This wide bandgap material enables the design of high-voltage Schottky diodes, and ST offers 650 V Rectifiers for the automotive world. They present negligible reverse recovery at turn-off and minimal capacitive turn-off behavior which is independent of temperature.

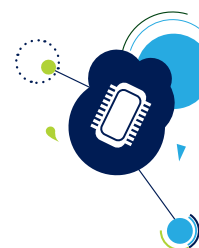
The very low V_F series of 650 V Rectifiers offers the lowest forward voltage drop for optimal efficiency.

KEY FEATURES

- Automotive-grade AEC-Q101
- PPAP capable
- Very low forward conduction losses
- Low switching losses
- Soft switching behavior
- High forward surge capability
- Contributes to save energy
- Allows high switching frequency
- Reduced EMI
- High T_J capability $T_{J(MAX)} = 175\text{ }^\circ\text{C}$
- 650 V guaranteed from $-40\text{ }^\circ\text{C}$ to $+175\text{ }^\circ\text{C}$

KEY BENEFITS

- High efficiency adds value to the power converter
- Reduces size and cost of the power converter
- Low EMI impact simplifies certification and speeding time to market
- Natural high robustness ensures very high reliability



IMPROVED EFFICIENCY

ST is the first supplier worldwide to offer 100% qualified (AEC-Q101 and PPAP capable) automotive-grade silicon-carbide diodes.

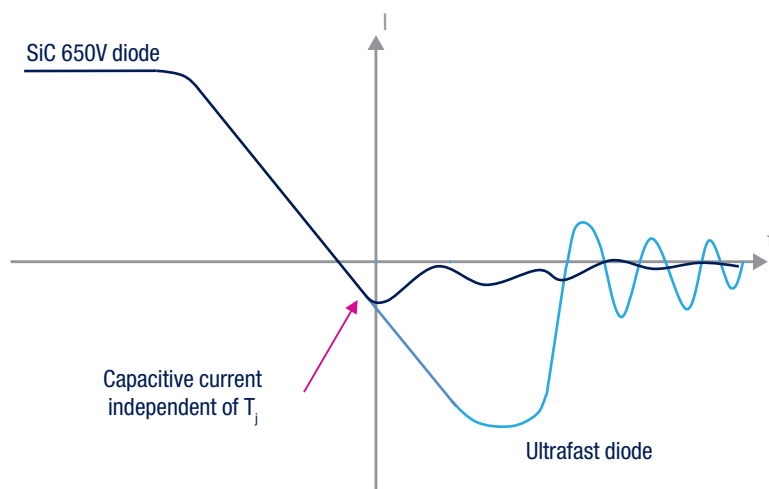
The very high efficiency behavior of SiC diodes coupled with ST's high level of quality ensures the best results for your designs and applications.

ST's SiC diodes take advantage of silicon carbide's superior physical characteristics over silicon only, with 4 times better dynamic characteristics and 15% less forward voltage (V_F) versus the fastest 600V silicon diode. In hard-switching applications, SiC Schottky diodes show a significant power-loss reduction.

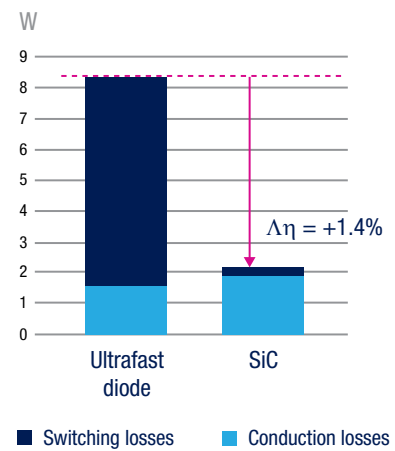
Today, they are also widely used in the automotive industry for AC/DC and DC/DC converters in electrical vehicle (EV) applications.

SiC DIODES REDUCE SWITCHING POWER LOSSES

Reverse characteristics



Power losses



DEVICE SUMMARY

Part number	Current rating (A)	Voltage rating (V)	Packages
STPSC8065DY	8	650	TO-220AC
STPSC10065DY	10	650	TO-220AC
STPS10065GY	10	650	D ² PAK
STPSC12065DY	12	650	TO-220AC
STPSC12065GY	12	650	D ² PAK
STPSC20065DY	20	650	TO-220AC
STPSC20065GY	20	650	D ² PAK
STPSC20065WY	20	650	DO-247
STPSC40065CWY	40 (2 x 20)	650	TO-247

