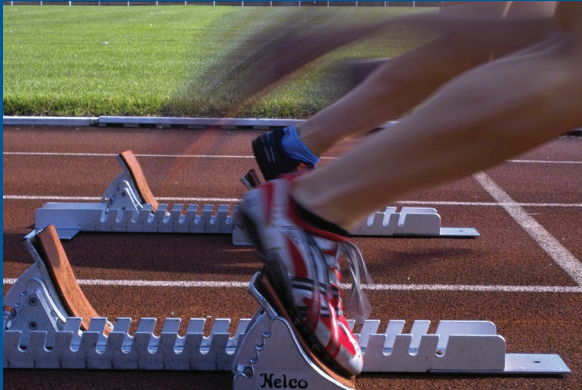


600 V SiC diodes

PFC boost diodes in high-power SMPS and freewheeling diodes in high-frequency inverters



Targeting the industrial and PFC functions in SMPS applications, these SiC structured Schottky diodes exhibit a 4 times better dynamic characteristic and 15% less forward voltage drop than the fastest bipolar silicon diodes available on the market.

This performance breakthrough enables all targeted applications to reach an unbeatable level of efficiency and power density, as well as switching frequencies.

The product range includes 600 V, 4 amp, 6 amp, 8 amp, 10 amp and 12 amp devices, housed in TO-220AC packages. A DPAK version is available on the 4 amp SiC diode, and D²PAK on the 6, 8 and 10 amp diodes.

Key features

- Silicon carbide Schottky diode
- No or negligible reverse recovery characteristics
- Switching behavior independent of the temperature
- Facilitates parallel and series operation thanks to positive thermal coefficient on V_F

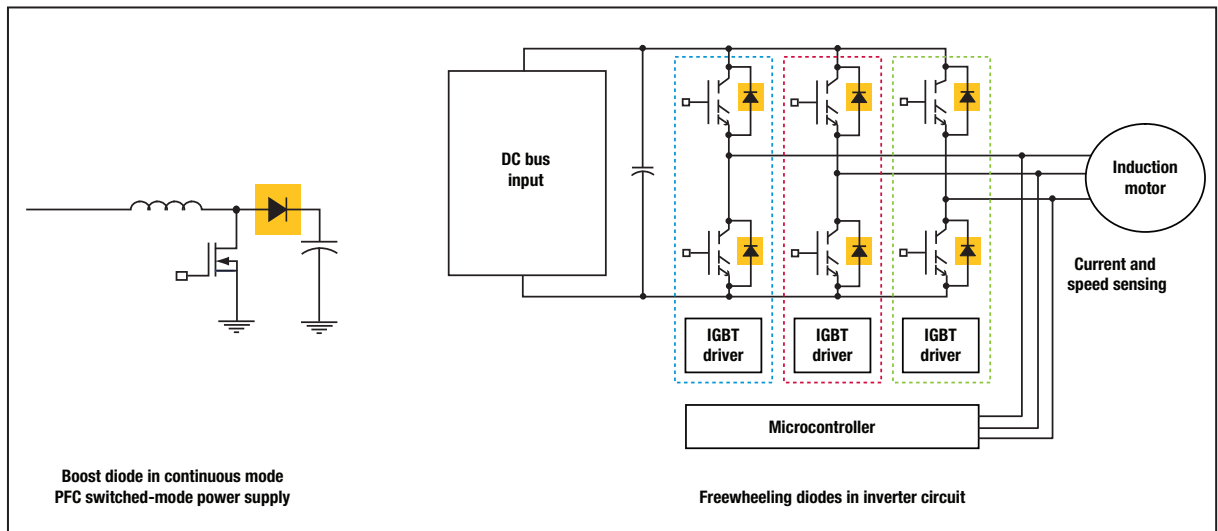
Key benefits

- Efficiency increased by up to 1% versus conventional ultrafast silicon diodes
- Reduced reverse recovery characteristics for less EMI in the application, and associated filter size and cost reduction
- Power density increased through higher switching frequency operations or dI/dt

Targeted application

- Power conversion
 - Continuous mode PFC boost diodes in SMPS
- Industrial
 - High-frequency motor control drives
- Solar
 - Freewheeling diodes in boost and inverter circuits

Typical application diagram



Lower losses, higher power density and reduced EMI with 600 V SiC diodes

Trials have shown efficiency improvements of +0.5%, and up to +1% at high load and high frequency when using a silicon-carbide diode in the application. The second direct improvement is the power density through the reduced mechanical size of the magnetic elements as a result of the potential increase in the switching frequencies when using SiC diodes. Finally, the noise-free characteristic of SiC diodes requires smaller EMI filters, which further increase the power density.

Product table

Part number	$I_{F(AV)}$ (A)	V_f typ / max (V)	Q_c (nC)	I_{FRM} (A)	Package
STPSC406B-TR	4	1.55 / 1.90	3	14	DPAK
STPSC406D	4	1.55 / 1.90	3	14	TO-220AC
STPSC606D	6	1.40 / 1.70	6	27	TO-220AC
STPSC606G-TR	6	1.40 / 1.70	6	27	D ² PAK
STPSC806D	8	1.40 / 1.70	15	30	TO-220AC
STPSC806G-TR	8	1.40 / 1.70	15	30	D ² PAK
STPSC1006D	10	1.40 / 1.70	20	40	TO-220AC
STPSC1006G-TR	10	1.40 / 1.70	20	40	D ² PAK
STPSC1206D	12	1.40 / 1.70	65	60	TO-220AC



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