Silicon-carbide diodes

SiC diodes boost the performance of power converters

SiC diodes are high-performance power Schottky diodes that feature a silicon-carbide substrate. This wide bandgap material enables the design of high-voltage Schottky diodes, and ST offers rectifiers up to 1200 V. They present negligible reverse recovery at turn-off and minimal capacitive turn-off behavior which is independent of temperature.

The 1st generation of 600 V diodes offers the best forward and switching characteristics. The 2nd generation of 650 V diodes offers more surge robustness for optimal use in circuits featuring current spikes. The 1200 V diode range is especially suited for use in 3-phase circuits.

KEY FEATURES

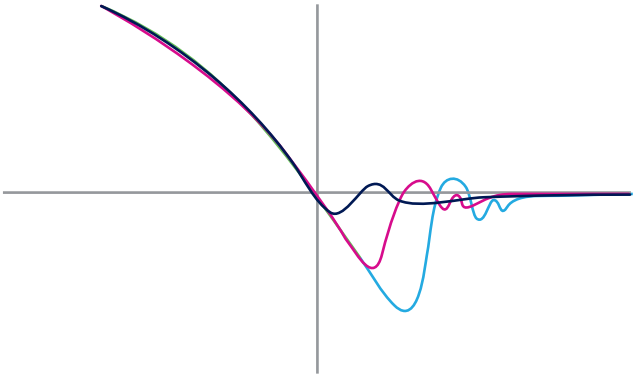
- Low forward conduction losses
- Low switching losses
- Soft switching behavior
- High forward surge capability (generation 2)
- High power integration (dual diodes)

KEY BENEFITS

- High efficiency adding value to the power converter
- Reduced size and cost of the power converter
- Low EMC impact, simplifying certification and speeding time to market
- High robustness ensuring high reliability of the power converter
- Gain on PCB and mounting cost with the dual diodes

SiC DIODES REDUCE THE SWITCHING POWER LOSSES

Reverse recovery comparison



— Bipolar diode — Ultrafast tandem diode STTH806DTI — SiC diode

SiC DIODES BOOST THE PERFORMANCE OF POWER CONVERTERS

- Medium- to high-power switch-mode power supplies
- UPS and solar inverters
- Motor drives

PRODUCT LIST

600 V generation 1				650 V generation 2				1200 V		
Part number	Forward current $I_{F(AV)}$ (A)	Maximum reverse voltage V_{RRM} (V)	Packages	Part number	Forward current $I_{F(AV)}$ (A)	Maximum reverse voltage V_{RRM} (V)	Packages	Part number	Forward current $I_{F(AV)}$ (A)	Packages
STPSC406	4	600	TO-220AC, DPAK	**STPSC4H065**	4	650	TO-220AC, DPAK	**STPSC6H12**	6	DPAK
STPSC606	6	600	TO-220AC, D²PAK	**STPSC6H065**	6	650	TO-220AC, DPAK, D²PAK	Range extension by Q2-2014		
STPSC806	8	600	TO-220AC, D²PAK	**STPSC8H065**	8	650	TO-220AC, D²PAK			
STPSC1006	10	600	TO-220AC, D²PAK	**STPSC8H065C**	2 x 4	650	TO-220AB			
STPSC1206	12	600	TO-220AC	**STPSC10H065**	10	650	TO-220AC, DPAK, D²PAK			
STPSC2006C	2 x 10	600	TO-247	**STPSC12H065** (*)	12	650	TO-220AC			
				STPSC12H065C	2 x 6	650	TO-220AB			
				STPSC16H065C	2 x 8	650	TO-220AB			
				STPSC20H065C	2 x 10	650	TO-220AB, TO-247			
				STPS6TH13TI	6	2 x 650	TO-220 ins			
				STPS8TH13TI	8	2 x 650	TO-220 ins			
				STPS10TH13TI	10	2 x 650	TO-220 ins			

Note: (*) Product in development. Available end of Q1-2014.

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