

HIGH FREQUENCY SECONDARY RECTIFIERS

MAJOR PRODUCTS CHARACTERISTICS

$I_{F(AV)}$	2x40 A
V_{RRM}	300 V
$V_F(\text{max})$	1 V
$t_{rr}(\text{max})$	60 ns

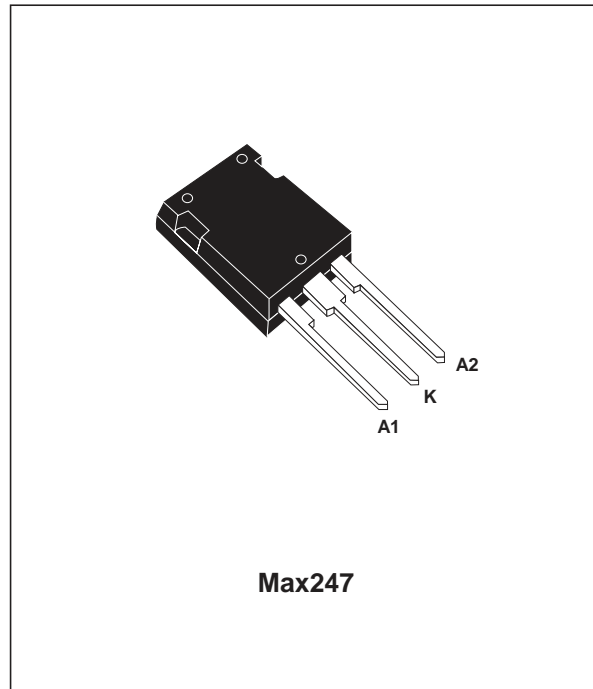
FEATURES AND BENEFITS

- COMBINES HIGHEST RECOVERY AND VOLTAGE PERFORMANCE.
- ULTRA-FAST, SOFT AND NOISE-FREE RECOVERY.
- HIGH OPERATING TEMPERATURE THANKS TO LOW LEAKAGE CURRENT.

DESCRIPTION

Dual rectifiers suited for Switch Mode Power Supply and high frequency DC to DC converters.

Packaged in Max247, this device is intended for use in low voltage, high frequency inverters, free wheeling operation, welding equipment and telecom power supplies.



ABSOLUTE RATINGS (limiting values)

Symbol	Parameter			Value	Unit
V_{RRM}	Repetitive peak reverse voltage			300	V
$I_{F(RMS)}$	RMS forward current			50	A
$I_{F(AV)}$	Average forward current	$T_c = 105^\circ\text{C}$ $\delta = 0.5$	Per diode Per device	40 80	A
I_{FSM}	Surge non repetitive forward current		$t_p = 10\text{ ms}$ sinusoidal	400	A
I_{RSM}	Non repetitive avalanche current		$t_p = 100\ \mu\text{s}$ square	4	A
T_{stg}	Storage temperature range			-55 +175	$^\circ\text{C}$
T_j	Maximum operating junction temperature			+ 175	$^\circ\text{C}$

STTH8003CY

THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
R _{th(j-c)}	Junction to case thermal resistance	Per diode	0.8	°C/W
		Total	0.5	
R _{th(c)}		Coupling	0.2	°C/W

STATIC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Tests Conditions		Min.	Typ.	Max.	Unit
I _R *	Reverse leakage current	V _R = 300 V	T _j = 25°C			80	μA
			T _j = 125°C		80	800	
V _F **	Forward voltage drop	I _F = 40 A	T _j = 25°C			1.25	V
			T _j = 125°C		0.85	1	

Pulse test : * t_p = 5 ms, δ < 2 %

** t_p = 380 μs, δ < 2%

To evaluate the maximum conduction losses use the following equation :

$$P = 0.75 \times I_{F(AV)} + 0.0062 I_{F(RMS)}^2$$

DYNAMIC ELECTRICAL CHARACTERISTICS

Symbol	Tests Conditions			Min.	Typ.	Max.	Unit
trr	I _F = 0.5 A	I _{rr} = 0.25 A	I _R = 1 A	T _j = 25°C		50	ns
	I _F = 1 A	dI _F /dt = - 50 A/μs	V _R = 30 V			60	
I _{RM}	V _{CC} = 200 V	I _F = 40 A	dI _F /dt = -200 A/μs	T _j = 125°C		13	A
S _{factor}					0.3		-
tfr	I _F = 40 A dI _F /dt = 200 A/μs, V _{FR} = 1.1 x V _F max			T _j = 25°C		450	ns
V _{FP}						5	V

Fig. 1: Conduction losses versus average current (per diode)

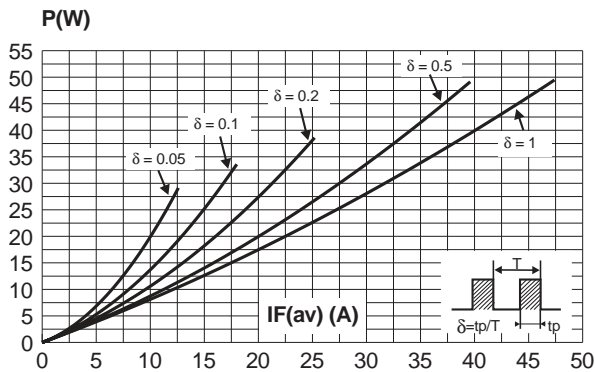


Fig. 2: Forward voltage drop versus forward current (per diode)

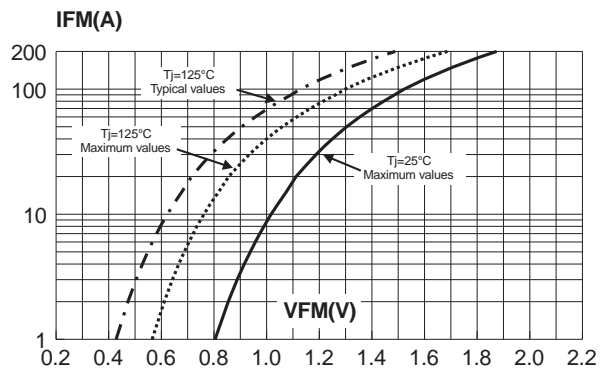


Fig. 3: Relative variation of thermal impedance junction to case versus pulse duration

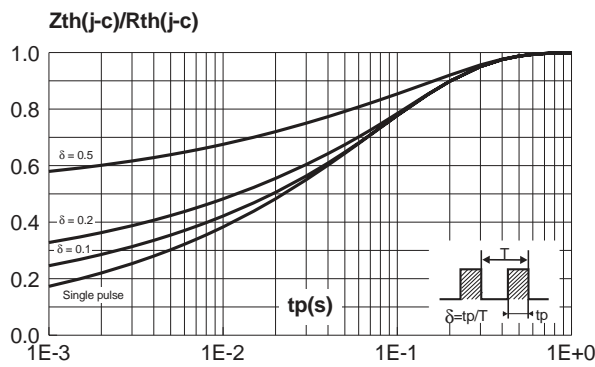


Fig. 4: Peak reverse recovery current versus dIF/dt (90% confidence, per diode)

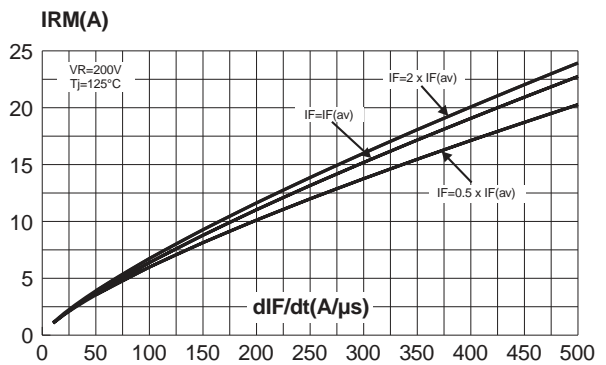


Fig. 5: Reverse recovery time versus dIF/dt (90% confidence, per diode)

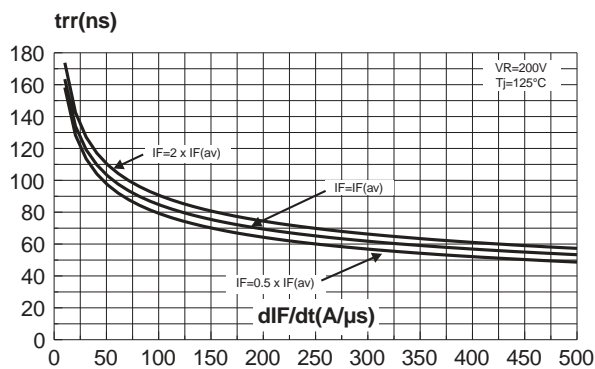


Fig. 6: Softness factor (tb/ta) versus dIF/dt (typical values, per diode)

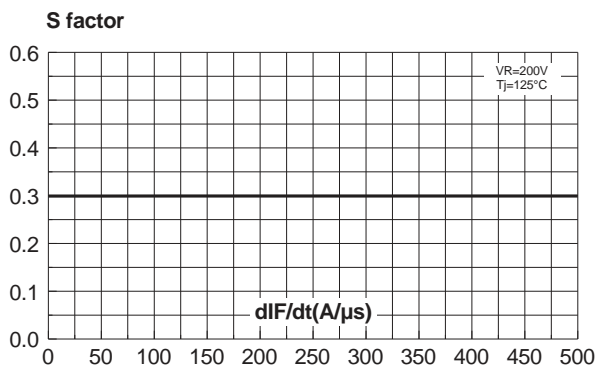


Fig. 7: Relative variation of dynamic parameters versus junction temperature (Reference: $T_j = 125^\circ\text{C}$)

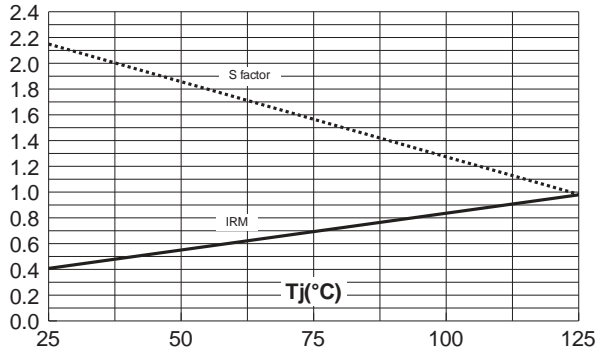


Fig. 8: Transient peak forward voltage versus dI_F/dt (90% confidence, per diode)

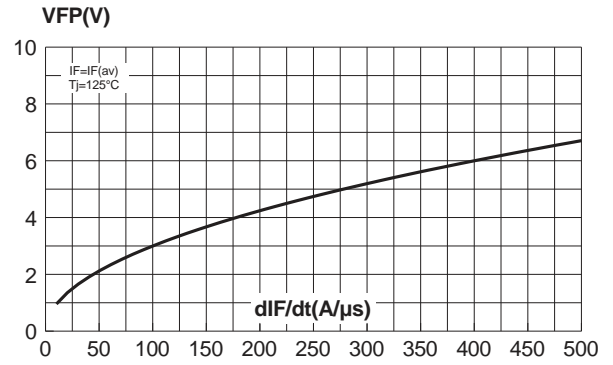
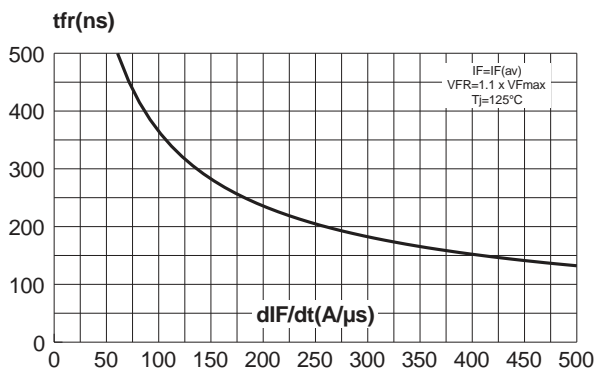
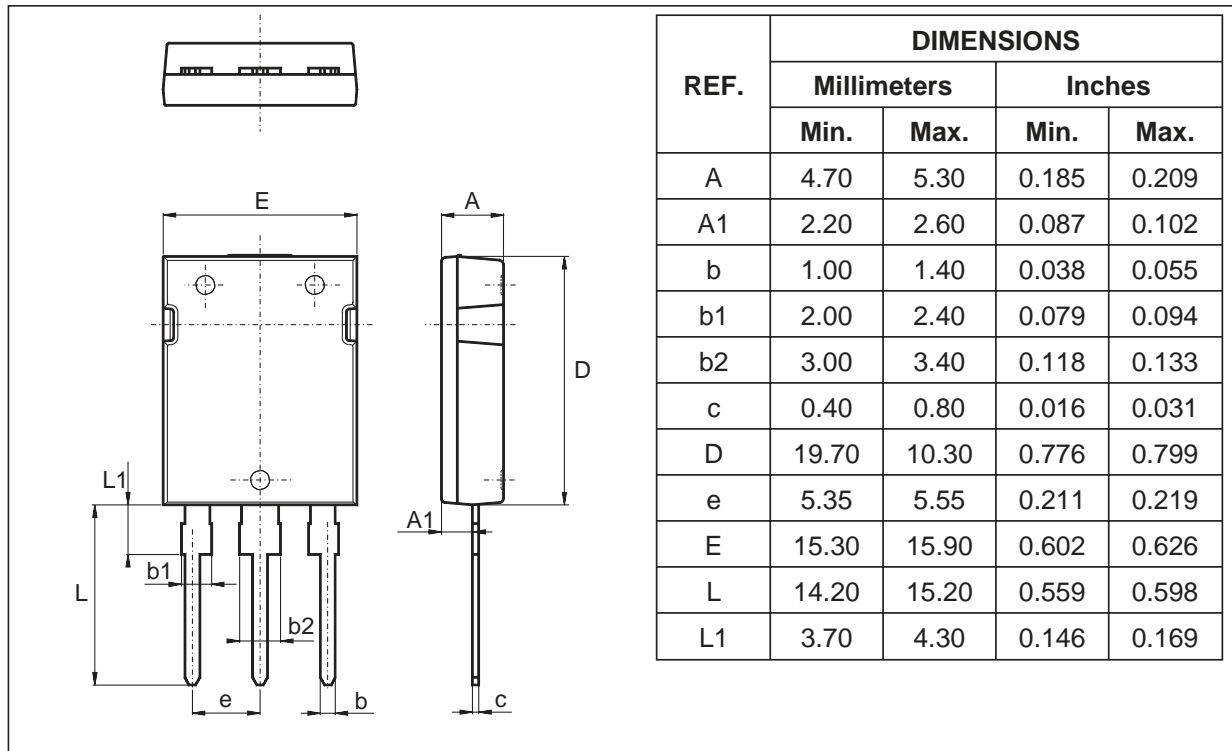


Fig. 9: Forward recovery time versus dI_F/dt (90% confidence, per diode)



PACKAGE MECHANICAL DATA
 Max247


Ordering code	Marking	Package	Weight	Base qty	Delivery mode
STTH8003CY	STTH8003CY	Max247	4.4 g.	30	Tube

- Cooling method: C
- Epoxy meets UL94,V0

Information furnished is believed to be accurate and reliable. However, STMicroelectronics assumes no responsibility for the consequences of use of such information nor for any infringement of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of STMicroelectronics. Specifications mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information previously supplied.

STMicroelectronics products are not authorized for use as critical components in life support devices or systems without express written approval of STMicroelectronics.

The ST logo is a registered trademark of STMicroelectronics

© 2002 STMicroelectronics - Printed in Italy - All rights reserved.

STMicroelectronics GROUP OF COMPANIES

Australia - Brazil - Canada - China - Finland - France - Germany
 Hong Kong - India - Israel - Italy - Japan - Malaysia - Malta - Morocco - Singapore
 Spain - Sweden - Switzerland - United Kingdom - United States.

<http://www.st.com>