

TURBO 2 ULTRAFAST HIGH VOLTAGE RECTIFIER
MAIN PRODUCT CHARACTERISTICS

I_{F(AV)}	1 A
V_{RRM}	600 V
T_j (max)	175 °C
V_F (max)	1.25 V
trr (max)	25 ns

FEATURES AND BENEFITS

- Ultrafast switching
- Low reverse recovery current
- Reduces switching & conduction losses
- Low thermal resistance

DESCRIPTION

The STTH106, which is using ST Turbo 2 600V technology, is specially suited for use in switching power supplies, inverters and as a free wheeling diode.


ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
V _{RRM}	Repetitive peak reverse voltage		600	V
I _{F(RMS)}	RMS forward current		6	A
I _{F(AV)}	Average forward current	T _I = 100°C δ = 0.5	1	A
I _{FSM}	Surge non repetitive forward current	t _p = 10 ms Sinusoidal	25	A
T _{stg}	Storage temperature range		- 65 + 175	°C
T _j	Maximum operating junction temperature		+ 175	°C

STTH106

THERMAL PARAMETERS

Symbol	Parameter	Maximum	Unit
$R_{th(j-l)}$	Junction to lead	45	°C/W
$R_{th(j-a)}$	Junction to ambient	110	

STATIC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Tests conditions	Min.	Typ.	Max.	Unit	
I_R	Reverse leakage current	$V_R = 600V$	$T_j = 25^\circ C$			1	μA
			$T_j = 150^\circ C$		10	75	
V_F	Forward voltage drop	$I_F = 1 A$	$T_j = 25^\circ C$			1.7	V
			$T_j = 150^\circ C$		1.0	1.25	

To evaluate the maximum conduction losses use the following equation :

$$P = 1.03 \times I_{F(AV)} + 0.27 I_{F(RMS)}^2$$

DYNAMIC ELECTRICAL CHARACTERISTICS

Symbol	Tests conditions	Min.	Typ.	Max.	Unit
t_{rr}	$I_F = 0.5 A$ $I_{rr} = 0.25 A$ $I_R = 1A$			25	ns
	$I_F = 1 A$ $di_F/dt = - 50 A/\mu s$ $V_R = 30V$			30	
t_{fr}	$I_F = 1 A$ $di_F/dt = 100 A/\mu s$ $V_{FR} = 1.1 \times V_{Fmax}$			100	ns
V_{FP}				10	V

Fig. 1: Conduction losses versus average current.

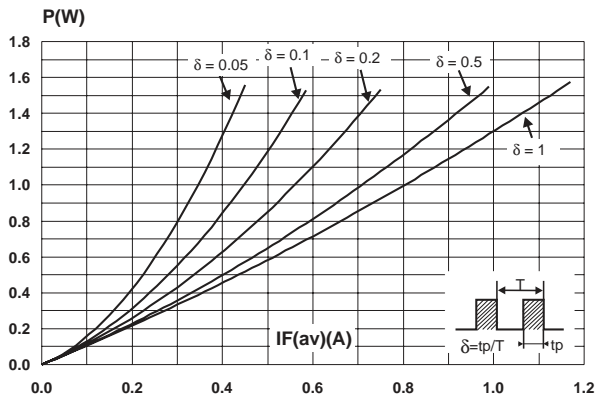


Fig. 2: Forward voltage drop versus forward current.

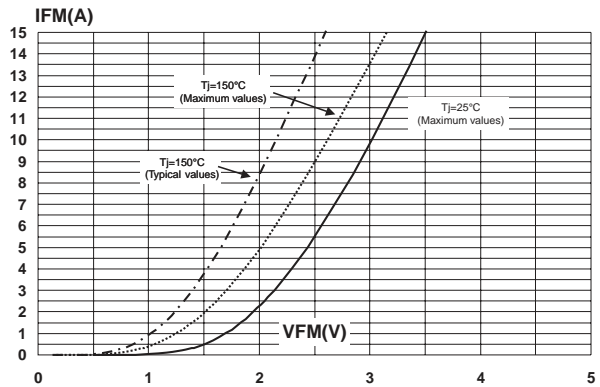


Fig. 3: Relative variation of thermal impedance junction ambient versus pulse duration (epoxy FR4, Leads = 10mm)

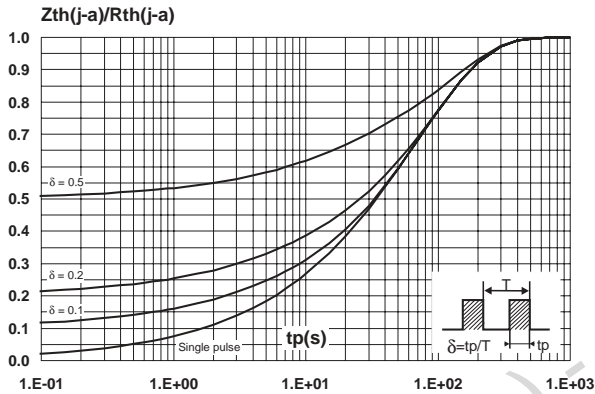


Fig. 4: Peak reverse recovery current versus di_F/dt (90% confidence).

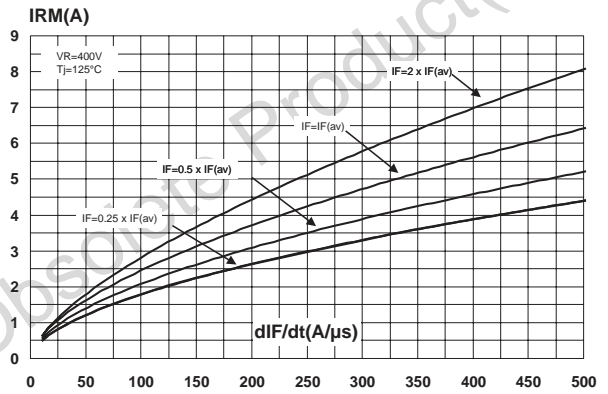


Fig. 5: Reverse recovery time versus di_F/dt (90% confidence).

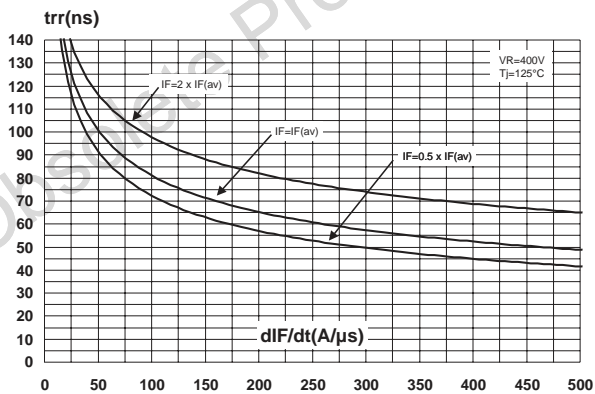


Fig. 6: Reverse recovery charges versus di_F/dt (90% confidence).

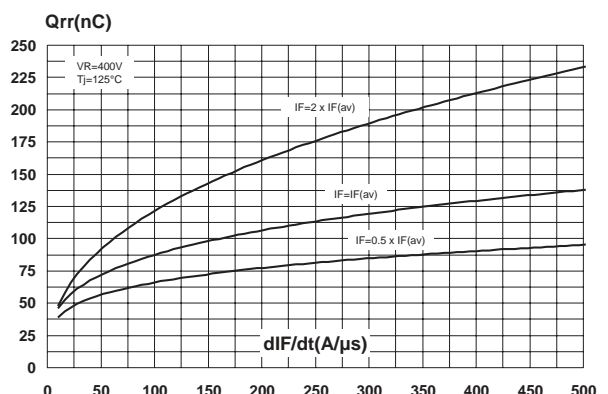


Fig. 7: Softness factor versus dI_F/dt (typical values).

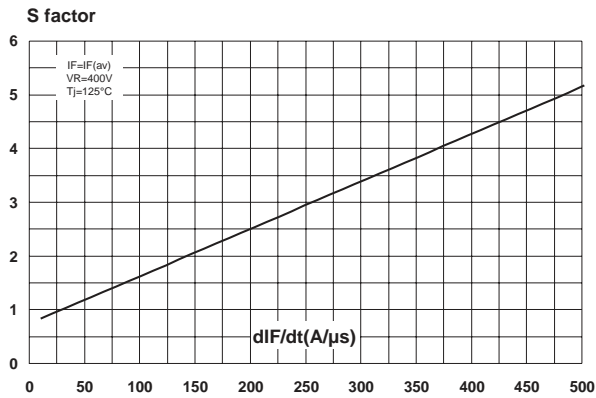


Fig. 8: Relative variation of dynamic parameters versus junction temperature.

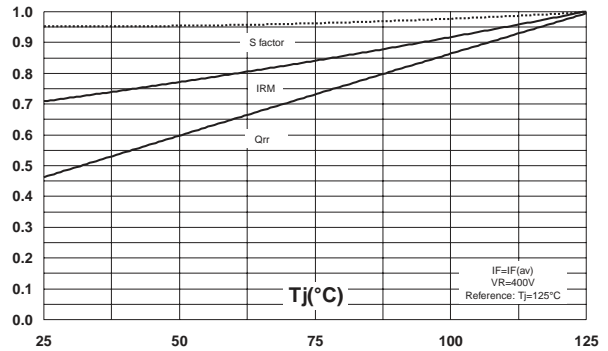


Fig. 9: Transient peak forward voltage versus dI_F/dt (90% confidence).

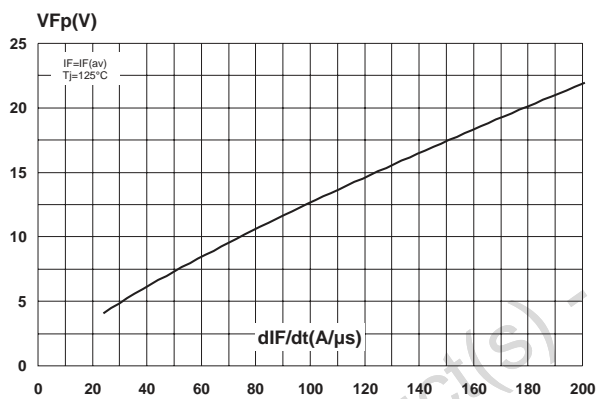


Fig. 10: Forward recovery time versus dI_F/dt (90% confidence).

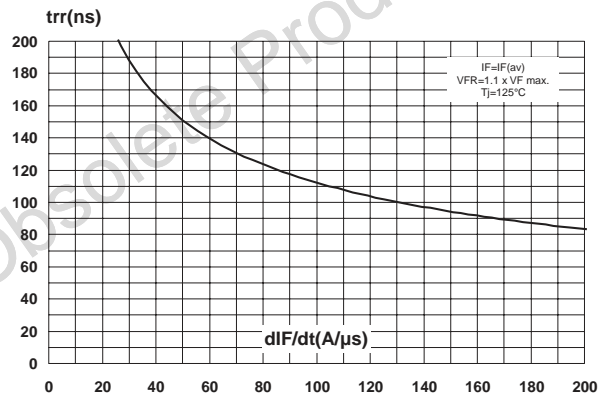
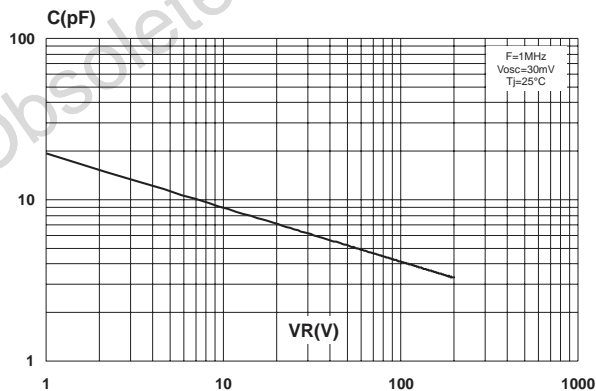


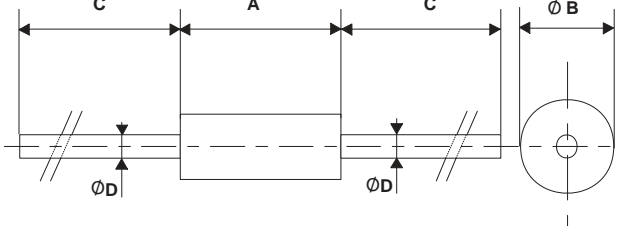
Fig. 11: Junction capacitance versus reverse voltage applied (typical values).



PACKAGE MECHANICAL DATA

DO41

REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	4.07	5.20	0.160	0.205
B	2.04	2.71	0.080	0.107
C	28		1.102	
D	0.712	0.863	0.028	0.034



Ordering code	Marking	Package	Weight	Base qty	Delivery mode
STTH106	STTH106	DO-41	0.34 g	2000	Ammopack
STTH106RL	STTH106	DO-41	0.34 g	5000	Tape & reel

- Epoxy meets UL 94,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

© 2001 STMicroelectronics - Printed in Italy - All rights reserved.

STMicroelectronics GROUP OF COMPANIES

Australia - Brazil - China - Finland - France - Germany - Hong Kong - India - Italy - Japan - Malaysia
Malta - Morocco - Singapore - Spain - Sweden - Switzerland - United Kingdom - U.S.A.

<http://www.st.com>