

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
$t_{rr}(max)$	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	$T_I = 100^\circ\text{C} \quad \delta = 0.5$	1	A
I_{FSM}	Surge non repetitive forward current	$t_p = 10 \text{ ms} \quad \text{Sinusoidal}$	25	A
T_{stg}	Storage temperature range		- 65 + 175	°C
T_j	Maximum operating junction temperature		+ 175	°C

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}	$I_F = 0.5 A$ $I_{rr} = 0.25 A$ $I_R = 1A$	$T_j = 25^\circ C$			25	ns
	$I_F = 1 A$ $dI_F/dt = - 50 A/\mu s$ $V_R = 30V$			30	45	
t_{fr}	$I_F = 1 A$ $dI_F/dt = 100 A/\mu s$ $V_{FR} = 1.1 \times V_{Fmax}$	$T_j = 25^\circ C$			100	ns
V_{FP}					10	V

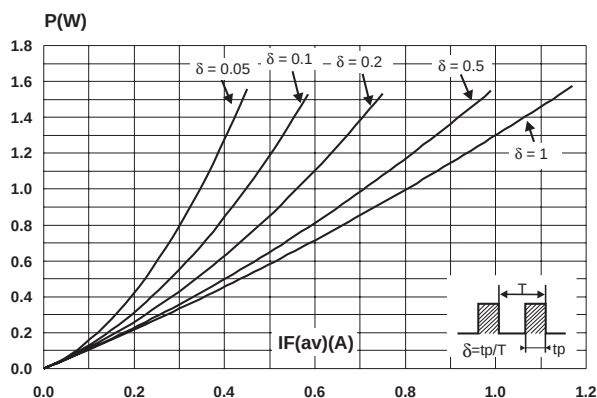
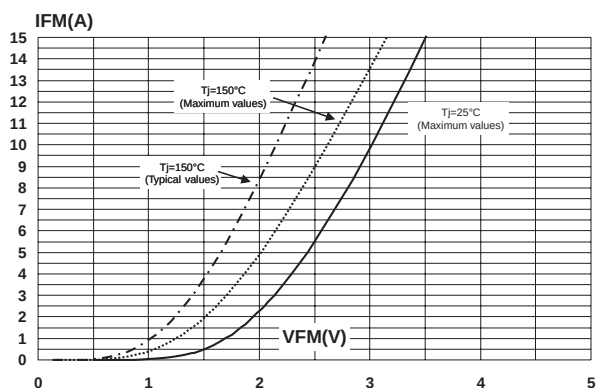
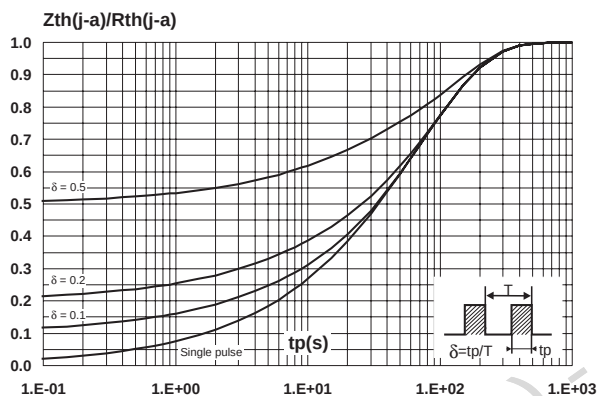
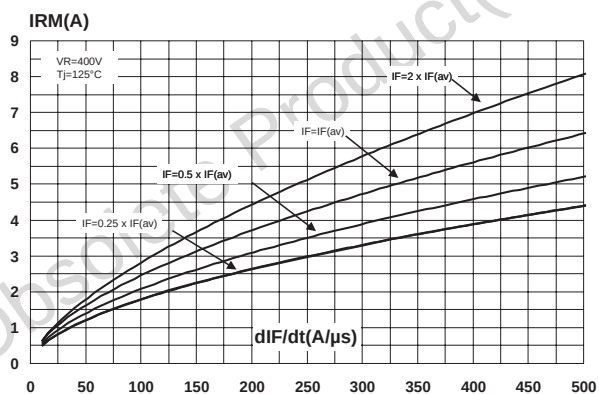
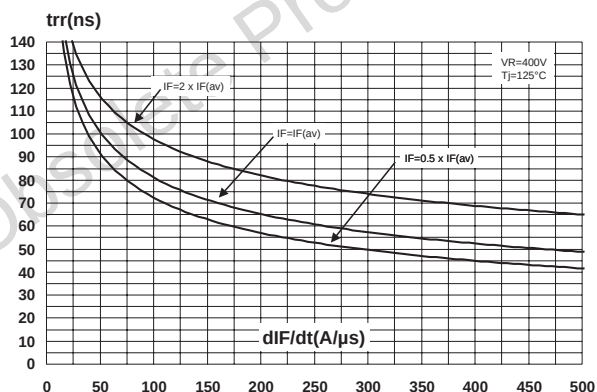
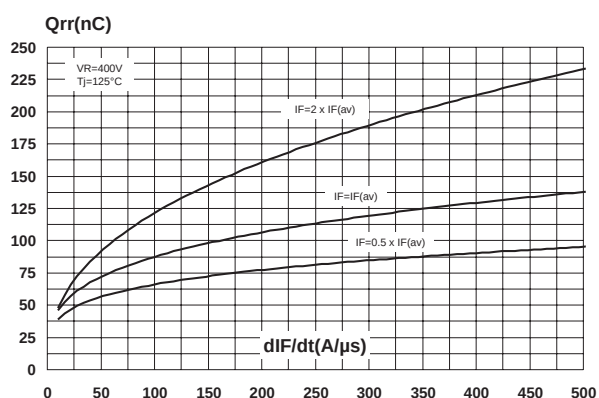
Fig. 1: Conduction losses versus average current.**Fig. 2:** Forward voltage drop versus forward current.**Fig. 3:** Relative variation of thermal impedance junction ambient versus pulse duration (epoxy FR4, Leads = 10mm)**Fig. 4:** Peak reverse recovery current versus dI_F/dt (90% confidence).**Fig. 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).

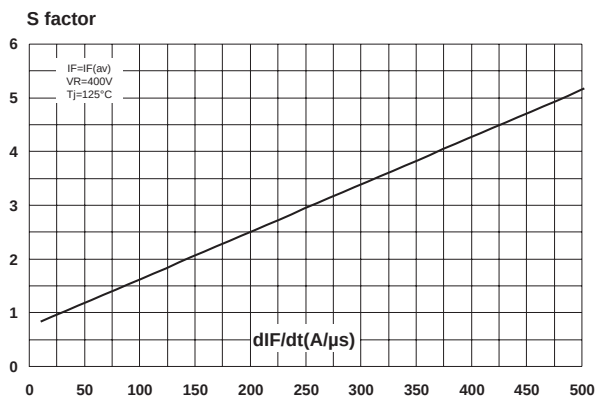


Fig. 8: Relative variation of dynamic parameters versus junction temperature.

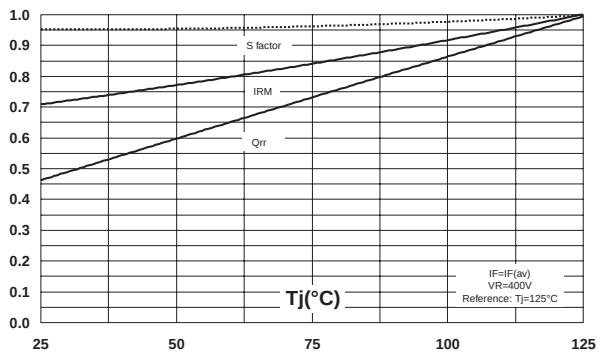


Fig. 9: Transient peak forward voltage versus dI_F/dt (90% confidence).

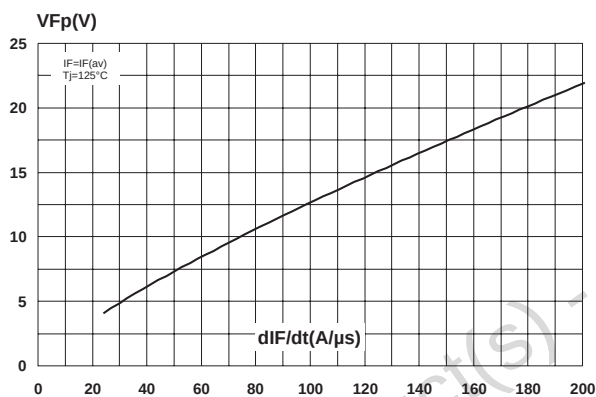


Fig. 10: Forward recovery time versus dI_F/dt (90% confidence).

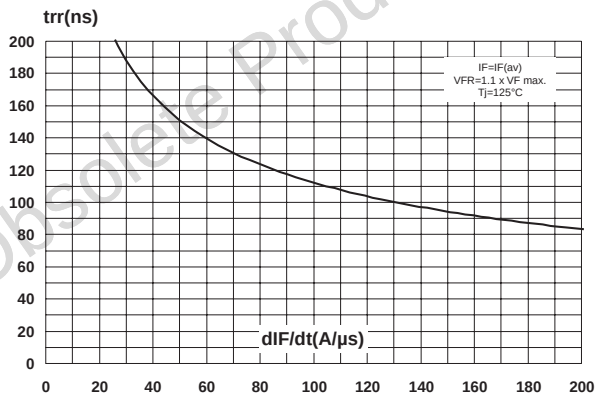
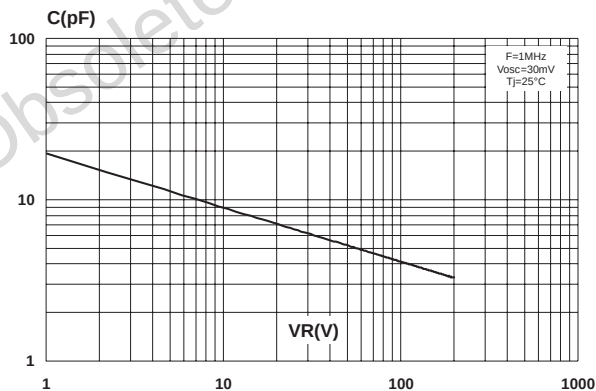


Fig. 11: Junction capacitance versus reverse voltage applied (typical values).



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

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