

TURBO 2 ULTRAFAST HIGH VOLTAGE RECTIFIER

MAIN PRODUCT CHARACTERISTICS

I_{F(AV)}	3 A
V_{RRM}	600 V
T_j (max)	175 °C
V_F (max)	1.25 V
trr (max)	30 ns

FEATURES AND BENEFITS

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

DESCRIPTION

The STTH306, which is using ST Turbo 2 600V technology, is specially suited for use in switching power supplies, inverters and as a free wheeling diode.



**DO-201AD
STTH306**

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
V _{RRM}	Repetitive peak reverse voltage		600	V
I _{F(RMS)}	RMS forward current		8	A
I _{F(AV)}	Average forward current	T _I = 80°C δ = 0.5	3	A
I _{FSM}	Surge non repetitive forward current	t _p = 10 ms Sinusoidal	55	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	20	°C/W
$R_{th(j-a)}$	Junction to ambient	75	

STATIC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Tests conditions		Min.	Typ.	Max.	Unit
I_R	Reverse leakage current	$V_R = 600V$	$T_j = 25^{\circ}C$			3	μA
			$T_j = 150^{\circ}C$		15	100	
V_F	Forward voltage drop	$I_F = 3 A$	$T_j = 25^{\circ}C$			1.7	V
			$T_j = 150^{\circ}C$		1.0	1.25	

To evaluate the maximum conduction losses use the following equation :

$$P = 1.03 \times I_{F(AV)} + 0.09 I_{F(RMS)}^2$$

DYNAMIC ELECTRICAL CHARACTERISTICS

Symbol	Tests conditions		Min.	Typ.	Max.	Unit
t_{rr}	$I_F = 0.5 A$ $I_{rr} = 0.25 A$ $I_R = 1A$	$T_j = 25^{\circ}C$			30	ns
	$I_F = 1 A$ $dI_F/dt = - 50 A/\mu s$ $V_R = 30V$			35		
t_{fr}	$I_F = 3 A$ $dI_F/dt = 100 A/\mu s$	$T_j = 25^{\circ}C$			100	ns
V_{FP}	$V_{FR} = 1.1 \times V_{Fmax}$				10	V

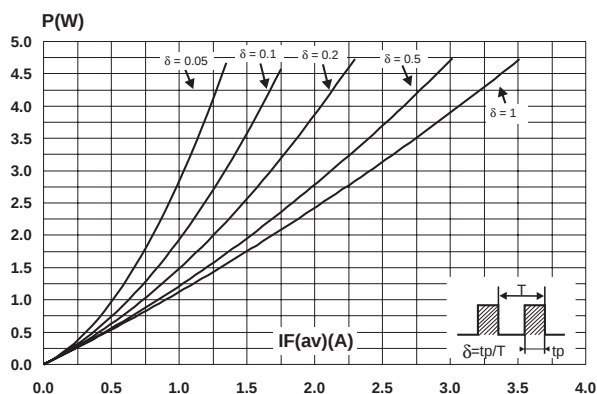
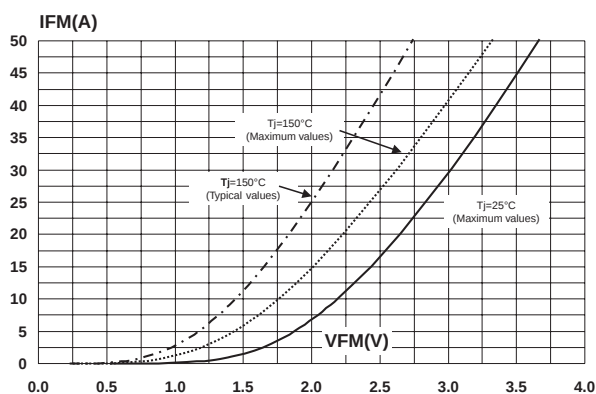
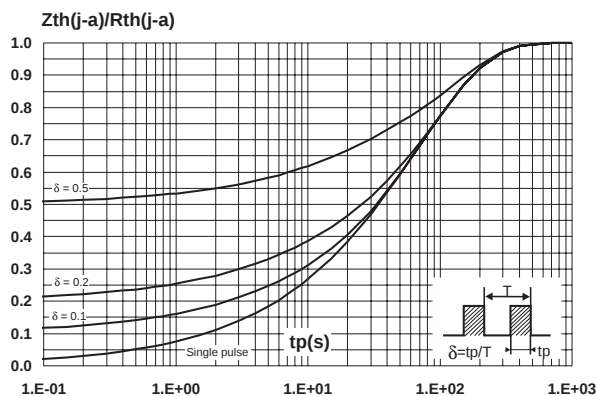
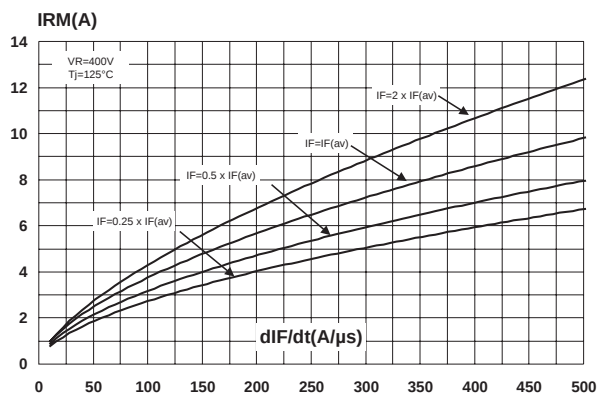
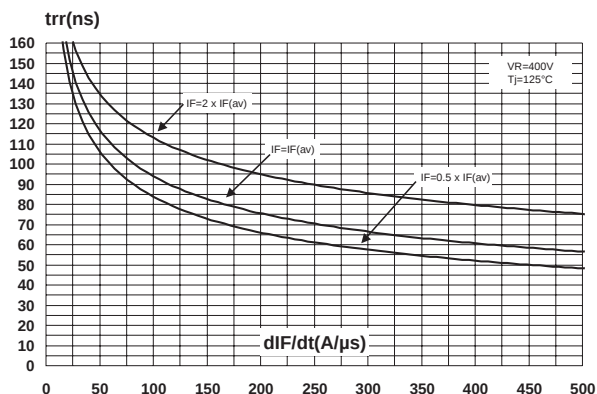
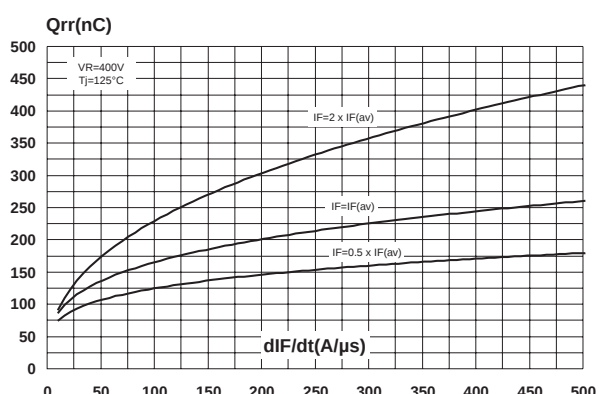
Fig. 1: Conduction losses versus average current.**Fig. 2:** Forward voltage drop versus forward current.**Fig. 3:** Relative variation of thermal impedance junction ambient versus pulse duration (epoxy FR4, Leads = 10mm)**Fig. 4:** Peak reverse recovery current versus di_F/dt (90% confidence).**Fig.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

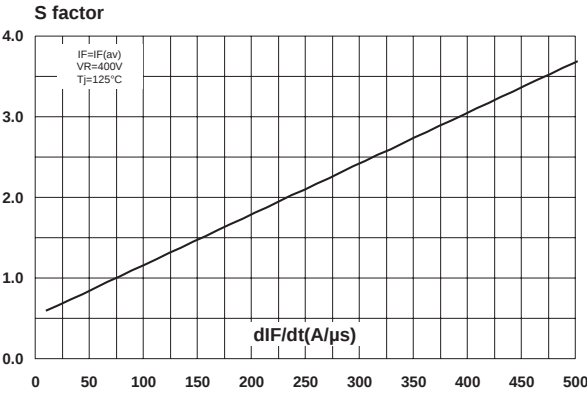


Fig. 8: Relative variation of dynamic parameters versus junction temperature.

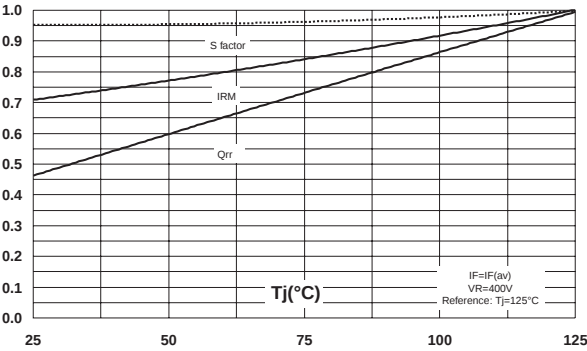


Fig. 9: Transient peak forward voltage versus dI_F/dt (90% confidence).

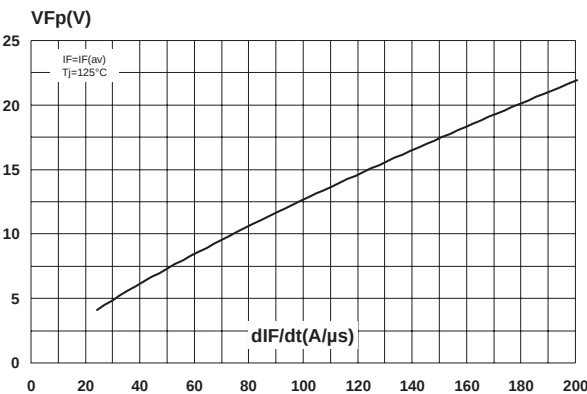


Fig. 10: Forward recovery time versus dI_F/dt (90% confidence).

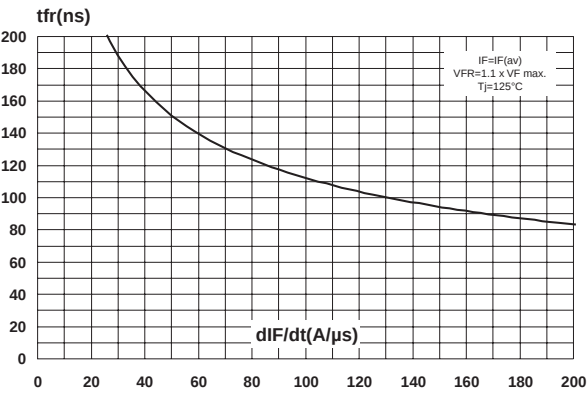
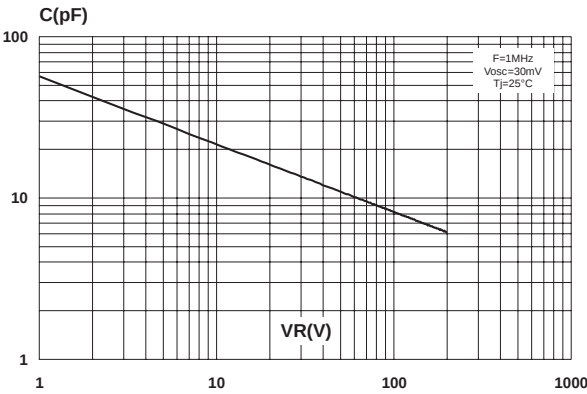


Fig. 11: Junction capacitance versus reverse voltage applied (typical values).



PACKAGE MECHANICAL DATA
 DO-201AD

REF.	DIMENSIONS				NOTES
	Millimeters		Inches		
	Min.	Max.	Min.	Max.	
A		9.50		0.374	1 - The lead diameter $\varnothing D$ is not controlled over zone E 2 - The minimum length which must stay straight between the right angles after bending is 0.59"(15 mm)
B	25.40		1.000		
C		5.30		0.209	
D		1.30		0.051	
E		1.25		0.049	

The diagram illustrates the mechanical specifications for the STTH306 DO-201AD package. It includes a top view and a side view. The top view shows a central rectangular body of width C, flanked by two leads of width B. The total length of the package is A. The side view shows the package with leads of length E and diameter ØD. The drawing includes dimension lines and labels for A, B, C, D, and E, as well as ØD. Notes 1 and 2 are provided to clarify the lead diameter and the minimum straight length between the right angles after bending.

Ordering code	Marking	Package	Weight	Base qty	Delivery mode
STTH306	STTH306	DO-201AD	1.12 g	600	Ammopack
STTH306RL	STTH306	DO-201AD	1.12 g	1900	Tape & reel

- Epoxy meets UL 94,V0

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