

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

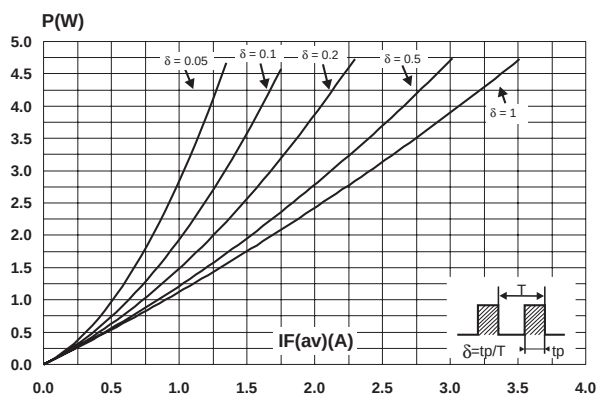
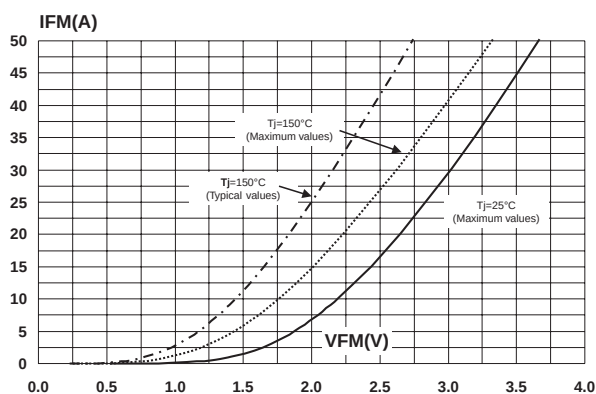
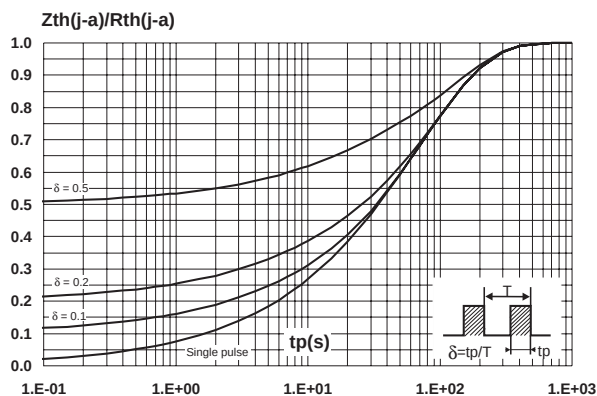
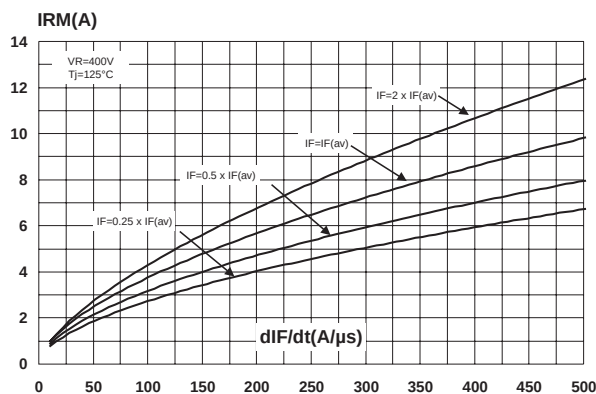
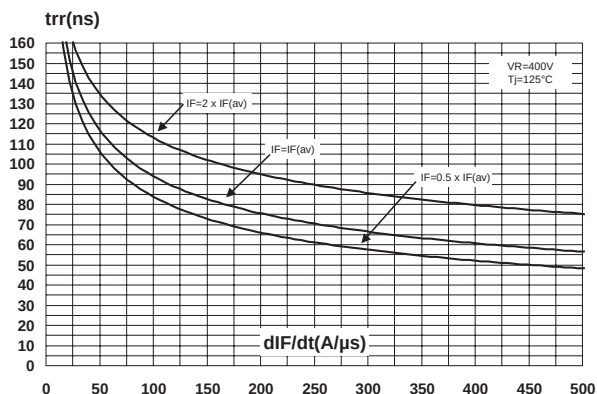
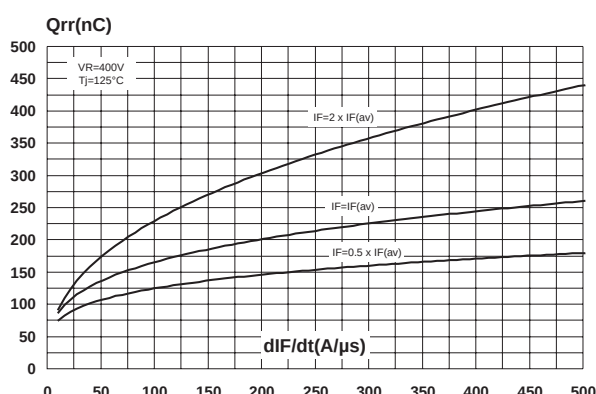
Fig. 1: Conduction losses versus average current.**Fig. 2:** Forward voltage drop versus forward current.**Fig. 3:** Relative variation of thermal impedance junction ambient versus pulse duration (epoxy FR4, Leads = 10mm)**Fig. 4:** Peak reverse recovery current versus di_F/dt (90% confidence).**Fig.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

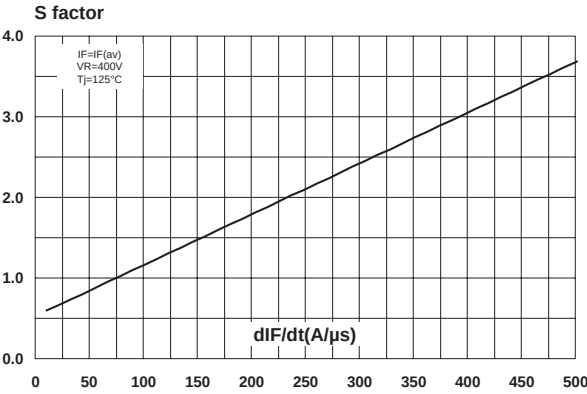


Fig. 8: Relative variation of dynamic parameters versus junction temperature.

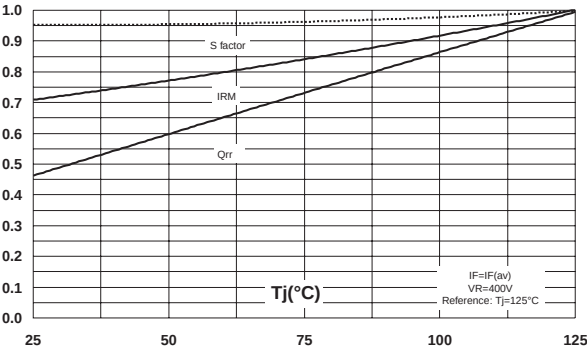


Fig. 9: Transient peak forward voltage versus dI_F/dt (90% confidence).

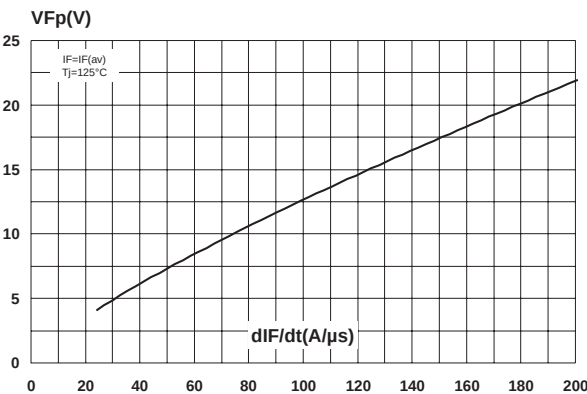


Fig. 10: Forward recovery time versus dI_F/dt (90% confidence).

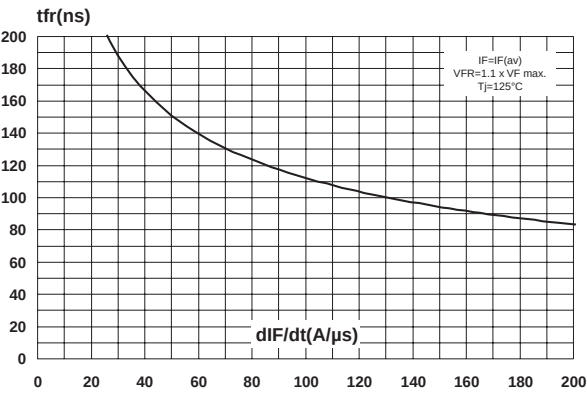
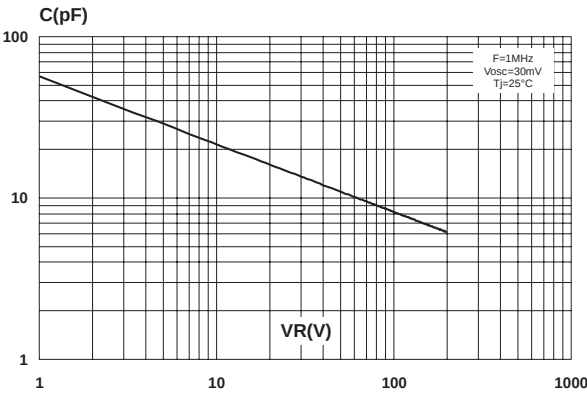


Fig. 11: Junction capacitance versus reverse voltage applied (typical values).



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 drawing illustrates the physical dimensions of the STTH306 DO-201AD package. It includes a top view showing dimensions A (length) and B (width), and a side view showing dimensions B, C, D, and E. The lead diameter is denoted as $\varnothing D$. Note 1 points to the lead diameter $\varnothing D$ in the side view. Note 2 points to the minimum length which must stay straight between the right angles after bending, shown as a dimension line between the two leads in the side view.

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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