

TURBO 2 ULTRAFAST HIGH VOLTAGE RECTIFIER
MAIN PRODUCT CHARACTERISTICS

$I_{F(AV)}$	8 A
V_{RRM}	600 V
I_R (max)	200 μA
T_j (max)	175 °C
V_F (max)	1.05 V
t_{rr} (max)	105 ns

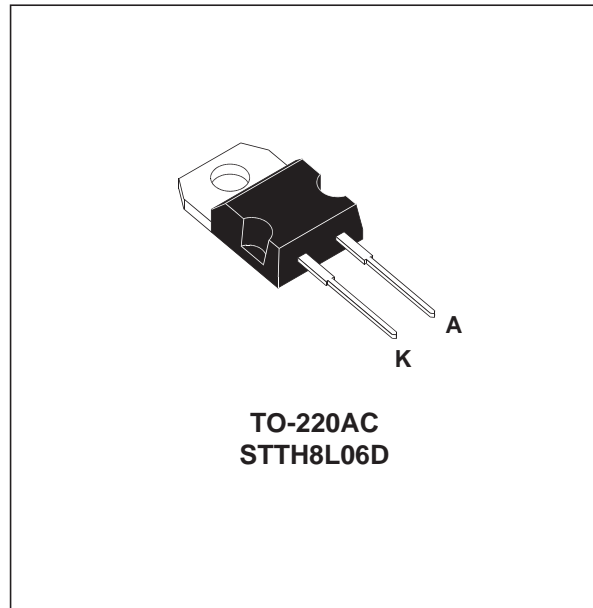
FEATURES AND BENEFITS

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

DESCRIPTION

The STTH8L06D, which is using ST Turbo 2 600V technology, is specially suited as boost diode in discontinuous or critical mode power factor corrections.

The device is also intended for use as a free wheeling diode in power supplies and other power switching applications.


ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
V_{RRM}	Repetitive peak reverse voltage		600	V
$I_{F(RMS)}$	RMS forward current		30	A
$I_{F(AV)}$	Average forward current	$T_c = 150^\circ\text{C}$ $\delta = 0.5$	8	A
I_{FSM}	Surge non repetitive forward current	$t_p = 10$ ms Sinusoidal	120	A
T_{stg}	Storage temperature range		- 65 + 175	°C
T_j	Maximum operating junction temperature		+ 175	°C

STTH8L06D

THERMAL PARAMETERS

Symbol	Parameter	Maximum	Unit
$R_{th(j-c)}$	Junction to case	TO-220AC	2.5 °C/W

STATIC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Tests conditions	Min.	Typ.	Max.	Unit
I_R	Reverse leakage current	$V_R = 600V$	$T_j = 25^\circ C$		8	μA
			$T_j = 150^\circ C$		16	
V_F	Forward voltage drop	$I_F = 8 A$	$T_j = 25^\circ C$		1.3	V
			$T_j = 150^\circ C$		0.85	

To evaluate the maximum conduction losses use the following equation :
 $P = 0.89 \times I_{F(AV)} + 0.022 I_{F(RMS)}^2$

DYNAMIC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Tests conditions	Min.	Typ.	Max.	Unit
t_{rr}	Reverse recovery time	$I_F = 1 A$ $di_F/dt = - 50 A/\mu s$ $V_R = 30V$	$T_j = 25^\circ C$	75	105	ns
t_{fr}	Forward recovery time	$I_F = 8 A$ $di_F/dt = 100 A/\mu s$ $V_{FR} = 1.1 \times V_{Fmax}$	$T_j = 25^\circ C$		150	ns
V_{FP}	Peak forward voltage	$I_F = 8 A$ $di_F/dt = 100 A/\mu s$	$T_j = 25^\circ C$		6	V

Fig. 1: Conduction losses versus average current.

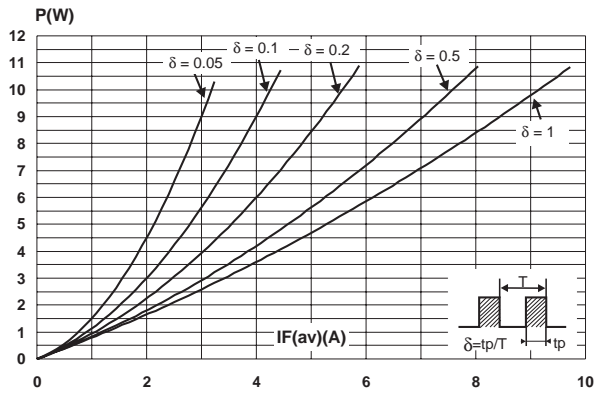


Fig. 2: Forward voltage drop versus forward current.

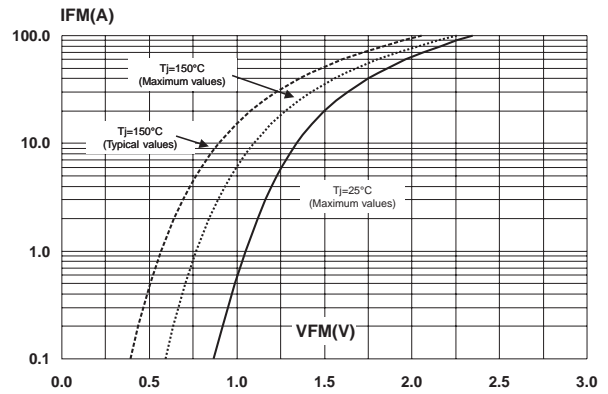


Fig. 3: Relative variation of thermal impedance junction to case versus pulse duration (TO-220AC)

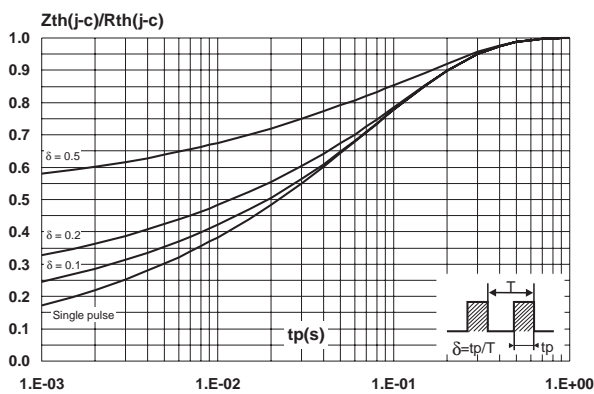


Fig. 4: Peak reverse recovery current versus dI_F/dt (90% confidence).

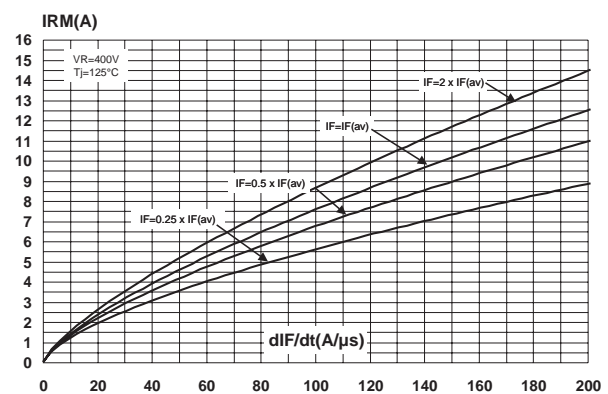


Fig. 5: Reverse recovery time versus dI_F/dt (90% confidence).

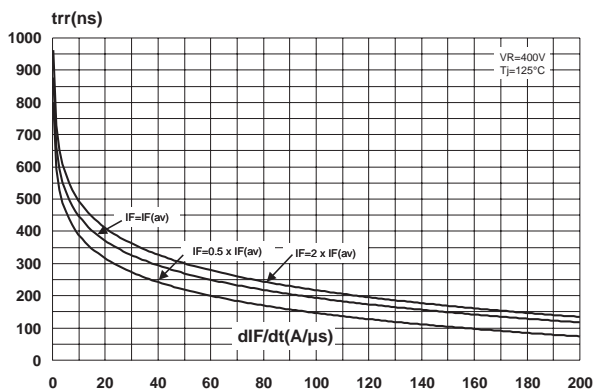


Fig. 6: Reverse recovery charges versus dI_F/dt (90% confidence).

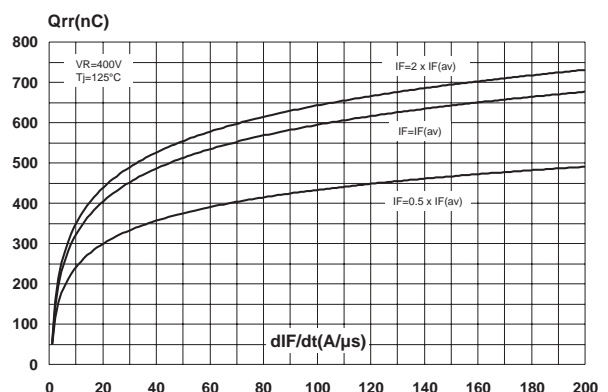


Fig. 7: Softness factor versus di_F/dt (typical values).

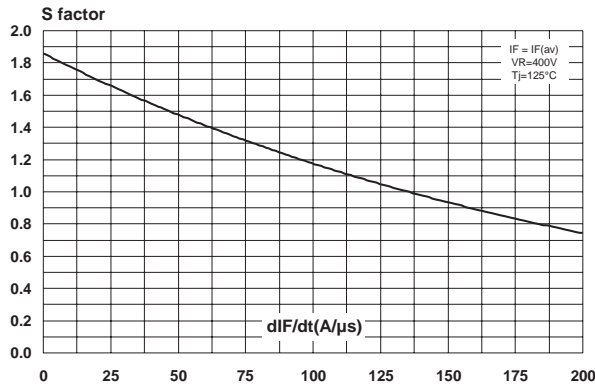


Fig. 8: Relative variations of dynamic parameters versus junction temperature.

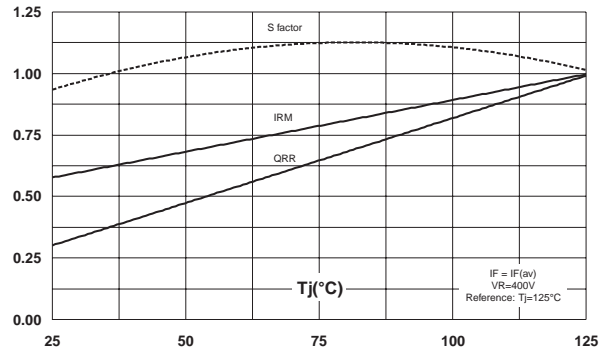


Fig. 9: Transient peak forward voltage versus di_F/dt (90% confidence).

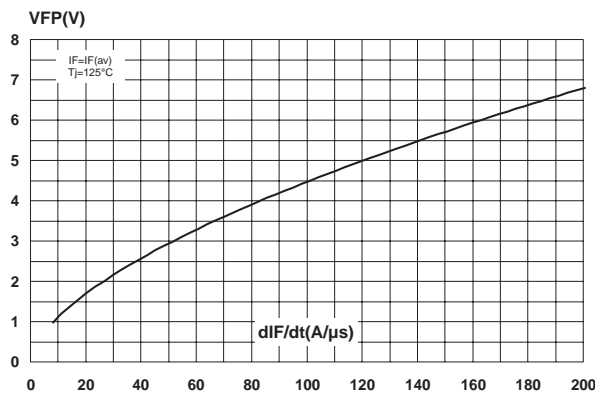


Fig. 10: Forward recovery time versus di_F/dt (90% confidence).

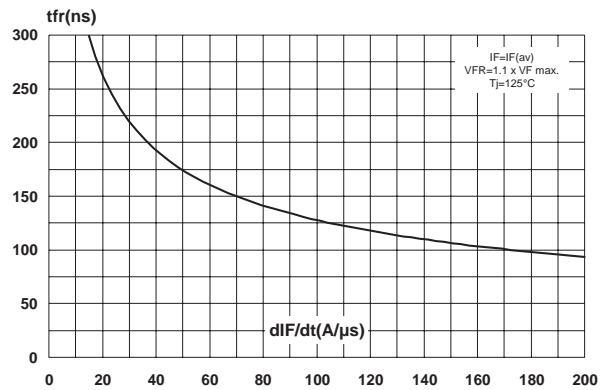
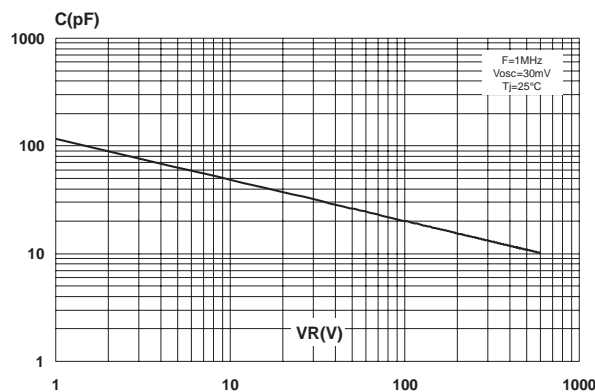


Fig. 11: Junction capacitance versus reverse voltage applied (typical values).



PACKAGE MECHANICAL DATA
 TO-220AC

REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	4.40	4.60	0.173	0.181
C	1.23	1.32	0.048	0.051
D	2.40	2.72	0.094	0.107
E	0.49	0.70	0.019	0.027
F	0.61	0.88	0.024	0.034
F1	1.14	1.70	0.044	0.066
G	4.95	5.15	0.194	0.202
H2	10.00	10.40	0.393	0.409
L2	16.40 typ.		0.645 typ.	
L4	13.00	14.00	0.511	0.551
L5	2.65	2.95	0.104	0.116
L6	15.25	15.75	0.600	0.620
L7	6.20	6.60	0.244	0.259
L9	3.50	3.93	0.137	0.154
M	2.6 typ.		0.102 typ.	
Diam. I	3.75	3.85	0.147	0.151

Ordering code	Marking	Package	Weight	Base qty	Delivery mode
STTH8L06D	STTH8L06D	TO-220AC	1.12 g	600	Ammopack
STTH8L06DRL	STTH8L06D	TO-220AC	1.12 g	1900	Tape & reel

- Epoxy meets UL 94,V0

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