

TURBO 2 ULTRAFAST HIGH VOLTAGE RECTIFIER

MAIN PRODUCT CHARACTERISTICS

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

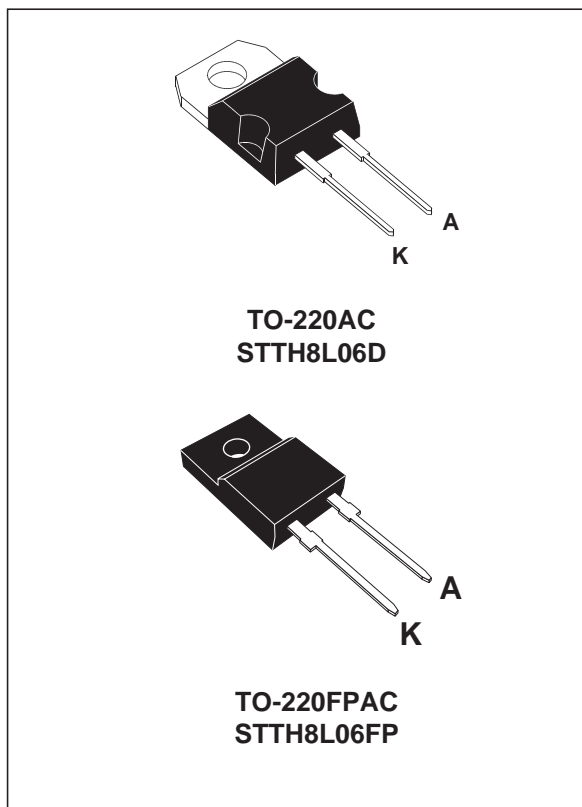
FEATURES AND BENEFITS

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

DESCRIPTION

The STTH8L06FP, which is using ST Turbo2 600V technology, is specially suited as boost diode in discontinuous or critical mode power factor corrections.

The device, available in TO-220AC and TO-220FPAC, 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	TO-220AC	$T_c = 150^\circ\text{C}$ $\delta = 0.5$	8	A
		TO-220FPAC	$T_c = 100^\circ\text{C}$ $\delta = 0.5$		
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/FP

THERMAL PARAMETERS

Symbol	Parameter	Maximum	Unit
$R_{th(j-c)}$	Junction to case	TO-220AC	2.5
		TO-220FPAC	5

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
trr	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
tfr	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.

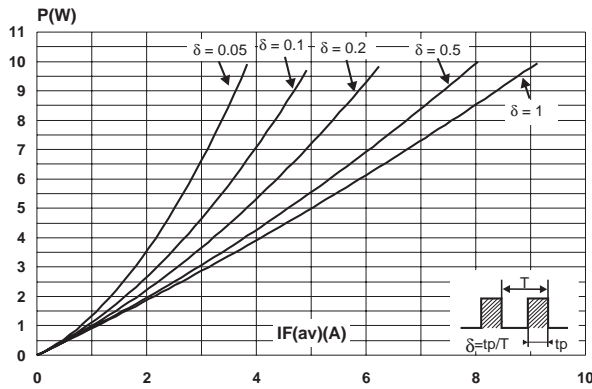


Fig. 2: Forward voltage drop versus forward current.

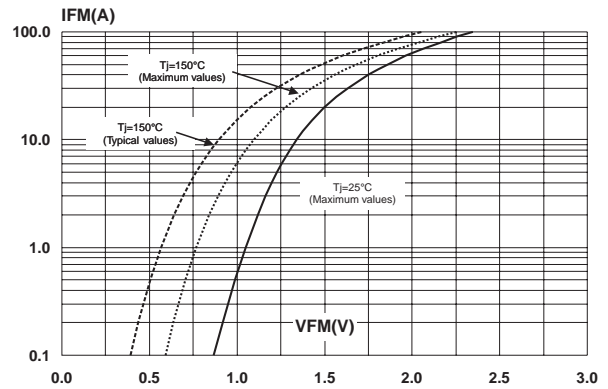


Fig. 3-1: Relative variation of thermal impedance junction to case versus pulse duration (TO-220AC)

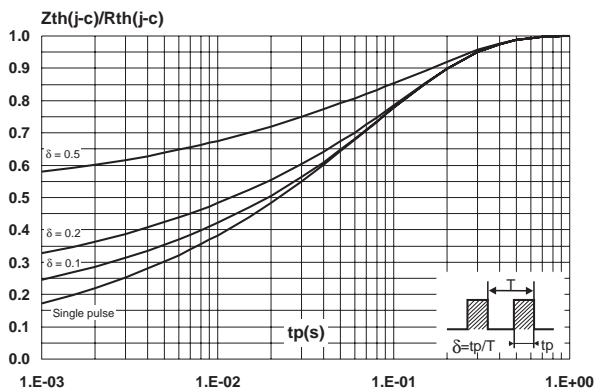


Fig. 3-2: Relative variation of thermal impedance junction to case versus pulse duration (TO-220FPAC)

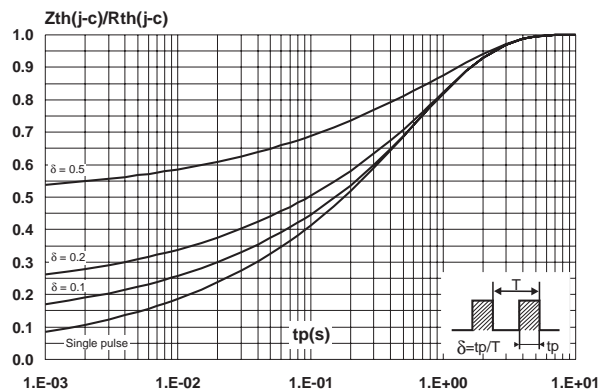


Fig. 4: Peak reverse recovery current versus dI_F/dt (90% confidence).

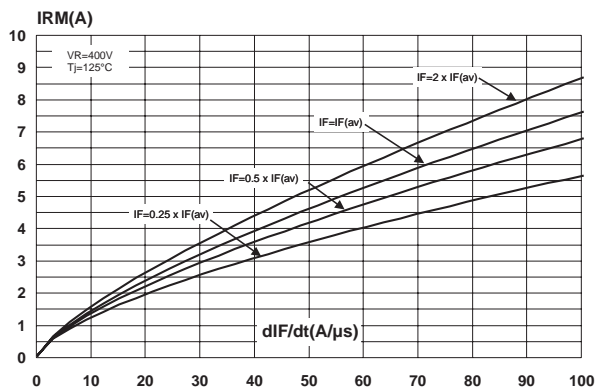


Fig. 5: Reverse recovery time versus dI_F/dt (90% confidence).

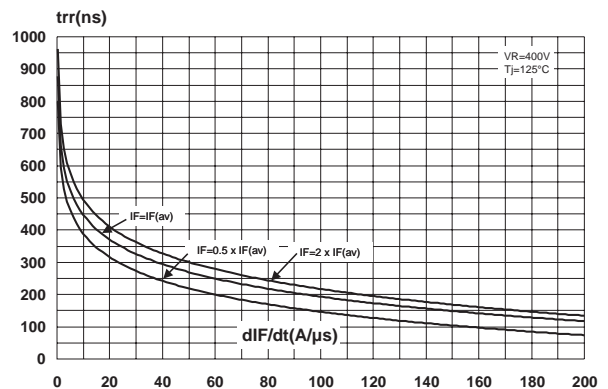


Fig. 6: Reverse recovery charges versus di_F/dt (90% confidence).

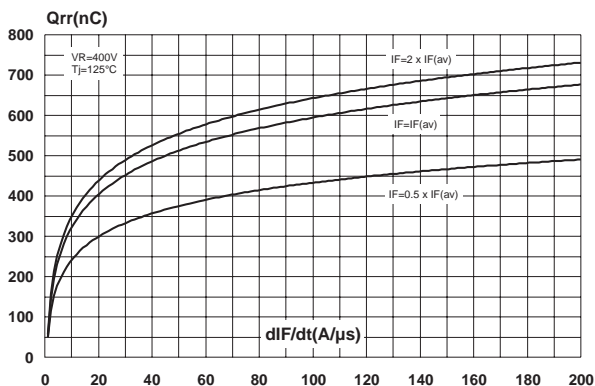


Fig. 7: Softness factor versus di_F/dt (typical values).

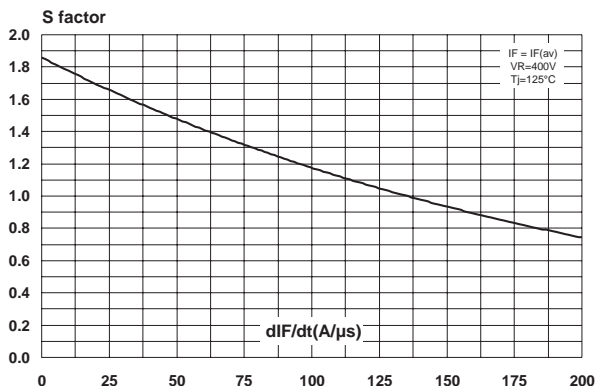


Fig. 8: Relative variations of dynamic parameters versus junction temperature.

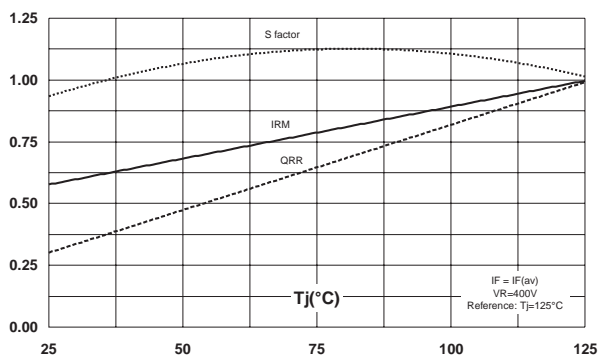


Fig. 9: Transient peak forward voltage versus di_F/dt (90% confidence).

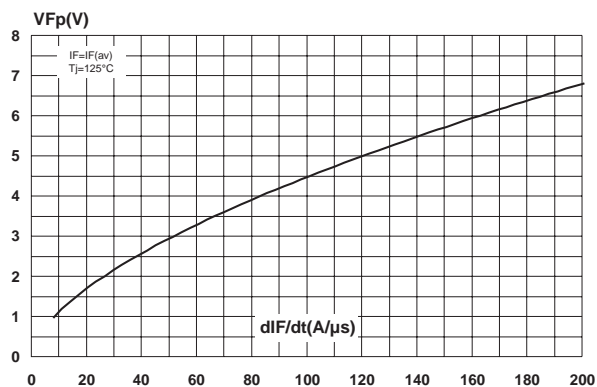


Fig. 10: Forward recovery time versus di_F/dt (90% confidence).

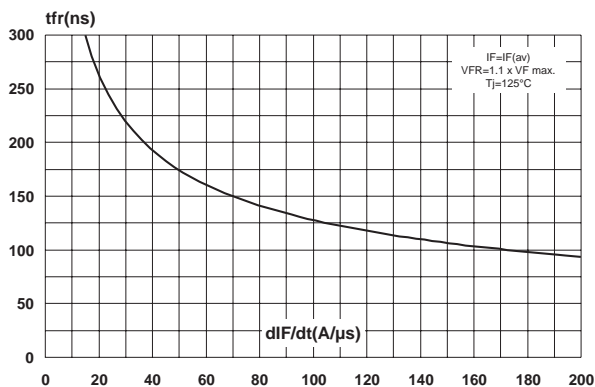
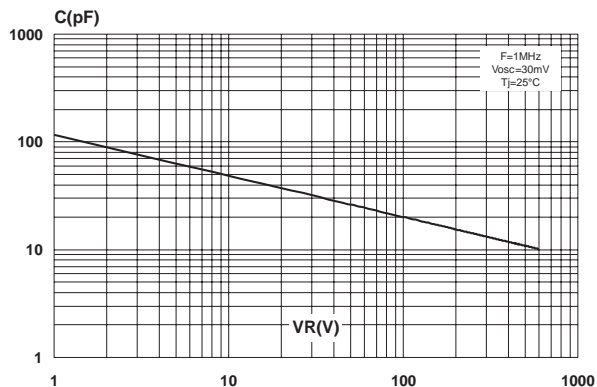
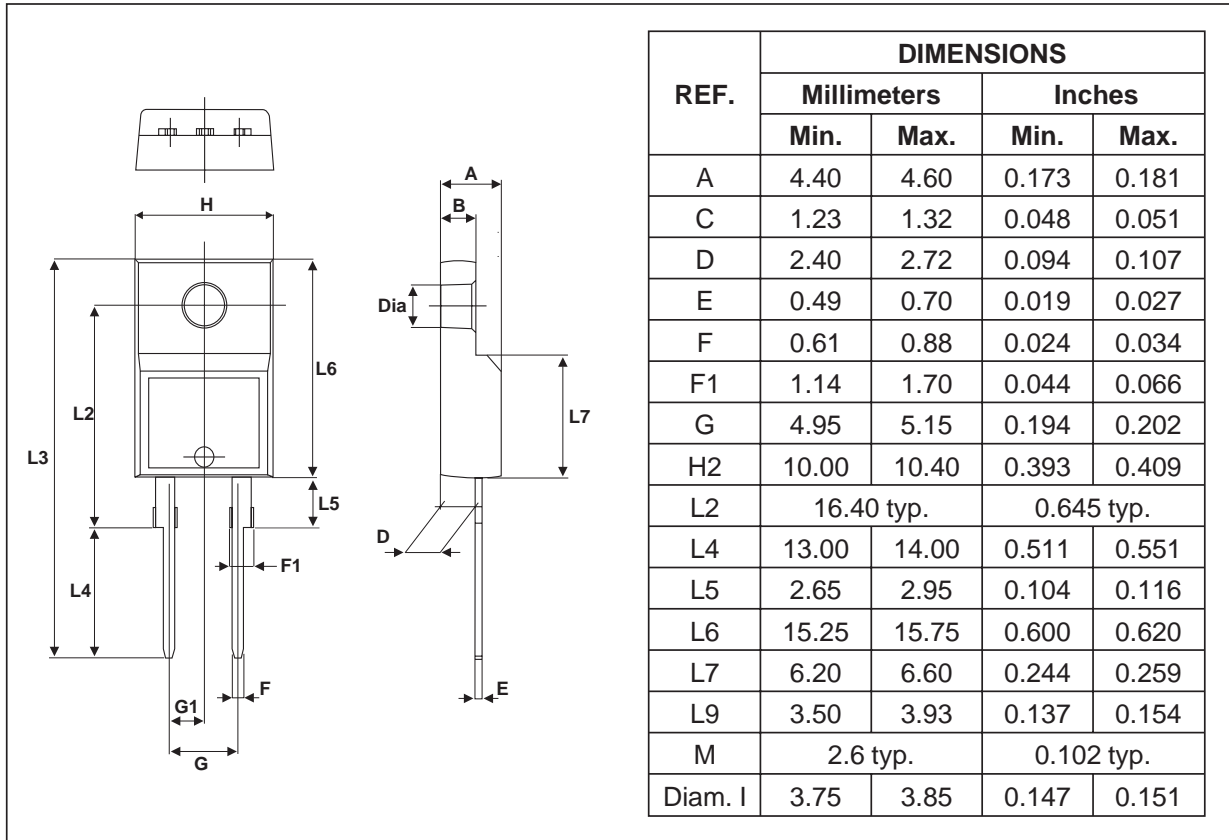


Fig. 11: Junction capacitance versus reverse voltage applied (typical values).

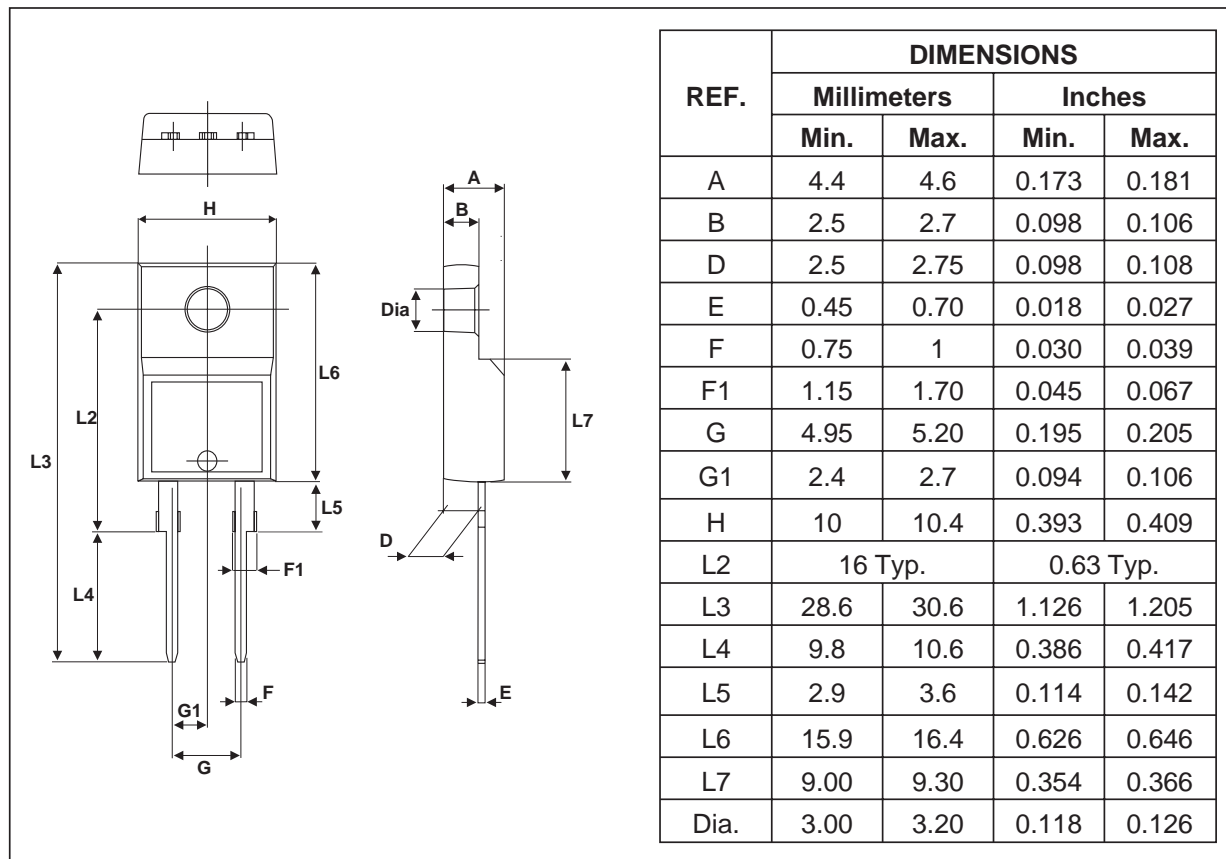


PACKAGE MECHANICAL DATA
TO-220AC



STTH8L06D/FP

PACKAGE MECHANICAL DATA TO-220FPAC



Ordering code	Marking	Package	Weight	Base qty	Delivery mode
STTH8L06D	STTH8L06D	TO-220AC	1.9 g	50	Tube
STTH8L06FP	STTH8L06FP	TO-220FPAC	1.7 g	50	Tube

- Epoxy meets UL 94,V0
- Recommended torque value (TO-220AC): 0.55 Nm
- Maximum torque value (TO-220AC / TO-220FPAC): 0.7 Nm

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