



STTH12R06D/FP

TURBO 2 ULTRAFast HIGH VOLTAGE RECTIFIER

MAIN PRODUCT CHARACTERISTICS

$I_{F(AV)}$	12 A
V_{RRM}	600 V
$I_{RM} (typ.)$	7 A
$T_j (max)$	175 °C
$V_F (max)$	1.8 V
$t_{rr} (max)$	45 ns

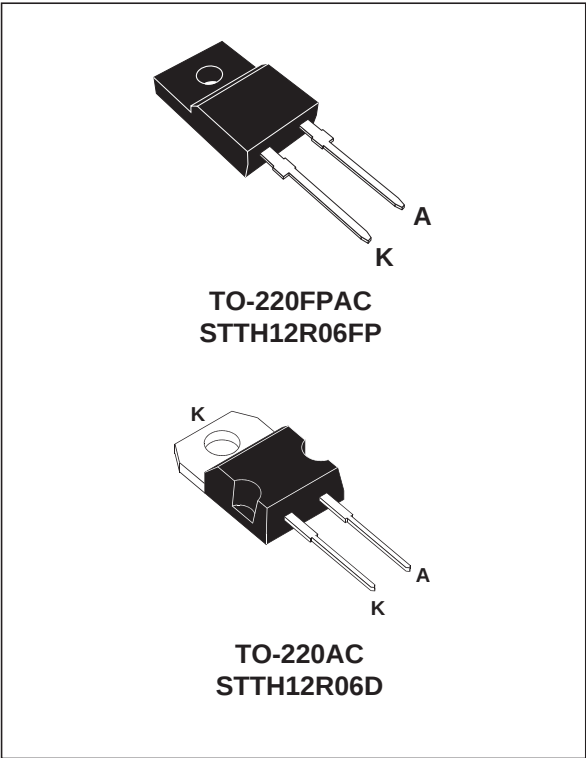
FEATURES AND BENEFITS

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

DESCRIPTION

The STTH12R06D/FP, which is using ST Turbo 2 600V technology, is specially suited as boost diode in continuous mode power factor corrections and hard switching conditions.

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		12	A
I_{FSM}	Surge non repetitive forward current	tp = 10 ms Sinusoidal	100	A
T_{stg}	Storage temperature range		- 65 + 175	°C
T_j	Maximum operating junction temperature		+ 175	°C

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THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
R _{th(j-c)}	Junction to case	TO-220AC	1.7	°C/W
		TO-220FPAC	4.4	

STATIC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Tests conditions		Min.	Typ.	Max.	Unit
I _R	Reverse leakage current	V _R = 600V	T _j = 25°C			45	μA
			T _j = 125°C		50	600	
V _F	Forward voltage drop	I _F = 12 A	T _j = 25°C			2.9	V
			T _j = 125°C		1.4	1.8	

To evaluate the maximum conduction losses use the following equation :
 $P = 1.16 \times I_{F(AV)} + 0.053 I_{F(RMS)}^2$

DYNAMIC ELECTRICAL CHARACTERISTICS

Symbol	Tests conditions		Min.	Typ.	Max.	Unit
trr	I _F = 0.5 A I _{rr} = 0.25 A I _R = 1A	T _j = 25°C			25	ns
	I _F = 1 A dI _F /dt = - 50 A/μs V _R = 30V				45	
I _{RM}	V _R = 400 V I _F = 12A dI _F /dt = - 200A/μs	T _j = 125°C		7.0	8.4	A
S factor				0.2		
Q _{rr}				180		nC
t _{fr}	I _F = 12 A dI _F /dt = 96 A/μs V _{FR} = 1.1 x V _{Fmax}	T _j = 25°C			200	ns
V _{FP}					5.5	V

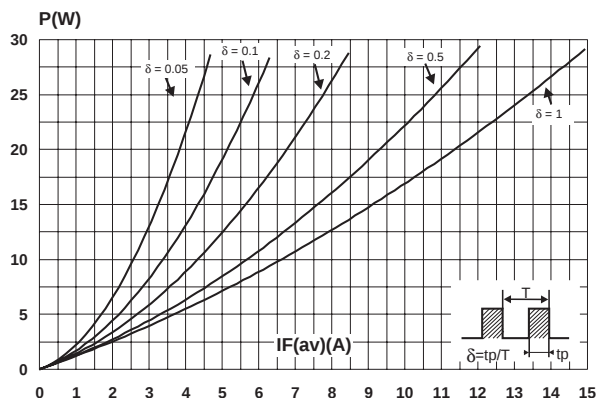
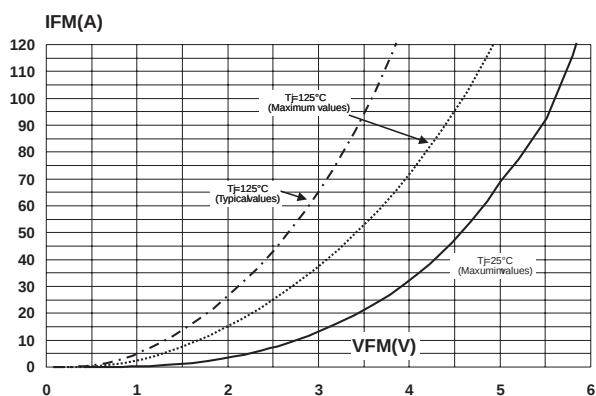
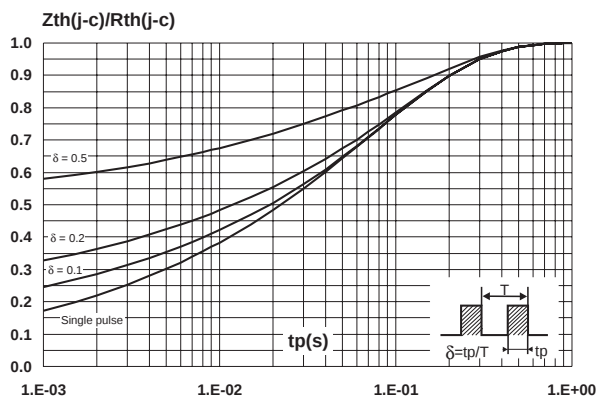
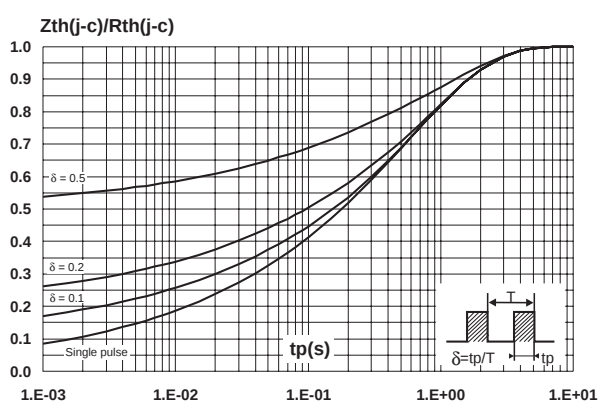
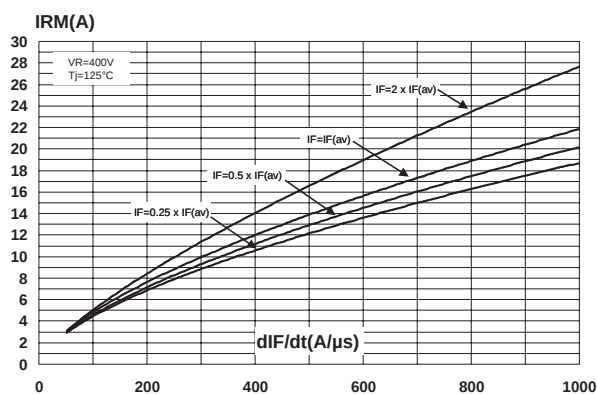
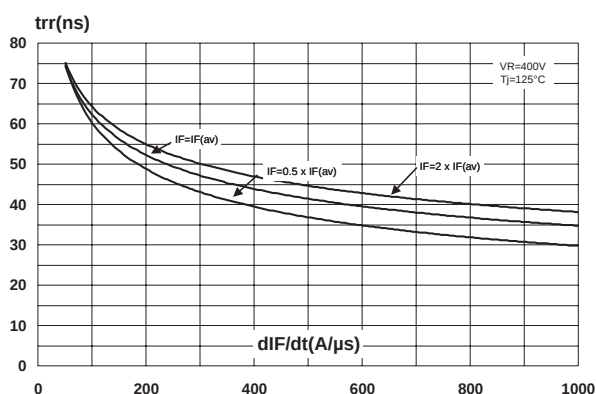
Fig. 1: Conduction losses versus average current.**Fig. 2:** Forward voltage drop versus forward current.**Fig. 3-1:** Relative variation of thermal impedance junction to case versus pulse duration (TO-220AC).**Fig. 3-2:** Relative variation of thermal impedance junction to case versus pulse duration (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).

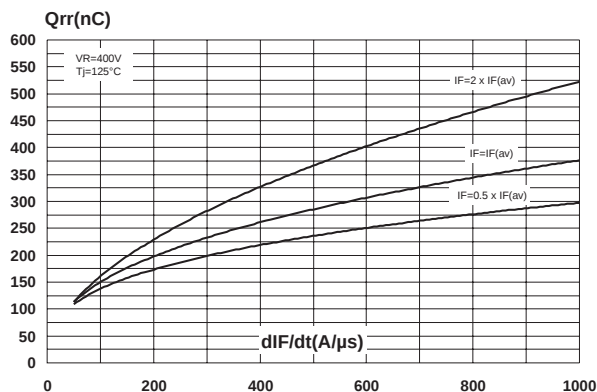


Fig. 7: Softness factor versus dI_F/dt (typical values).

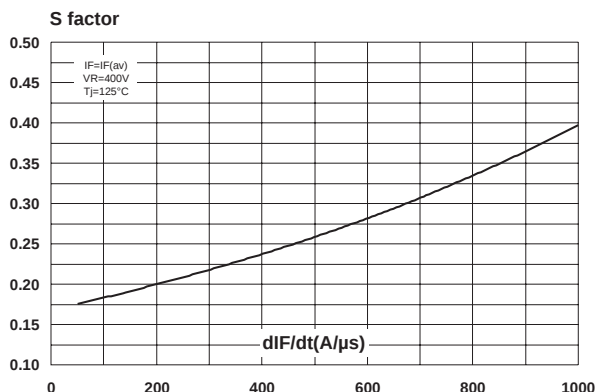


Fig. 8: Relative variation of dynamic parameters versus junction temperature.

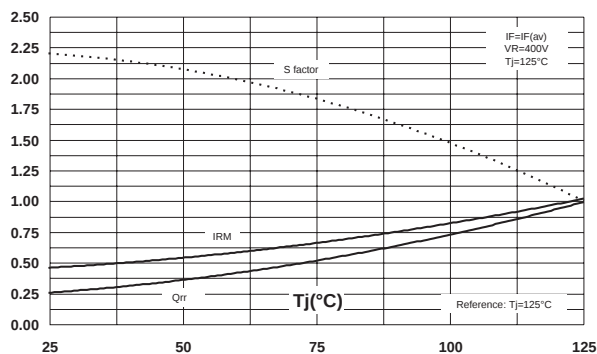


Fig. 9: Transient peak forward voltage versus dI_F/dt (90% confidence).

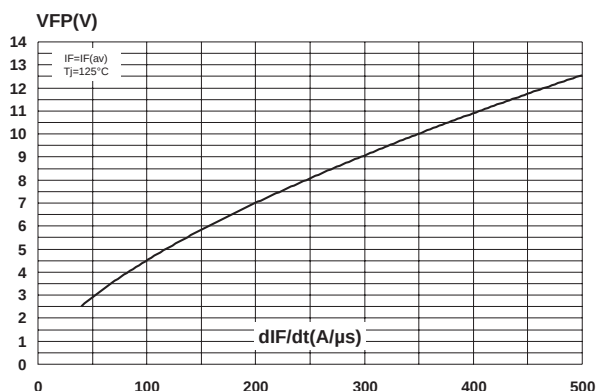


Fig. 10: Forward recovery time versus dI_F/dt (90% confidence).

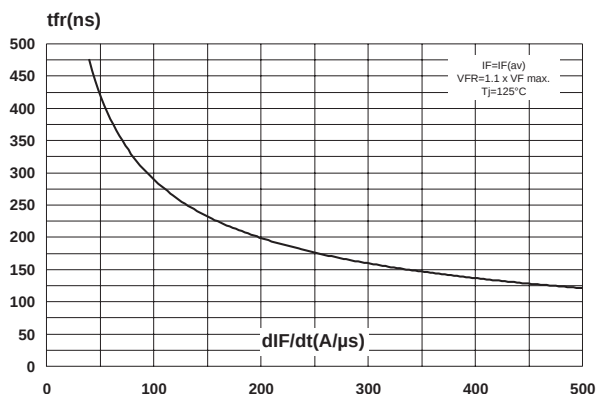
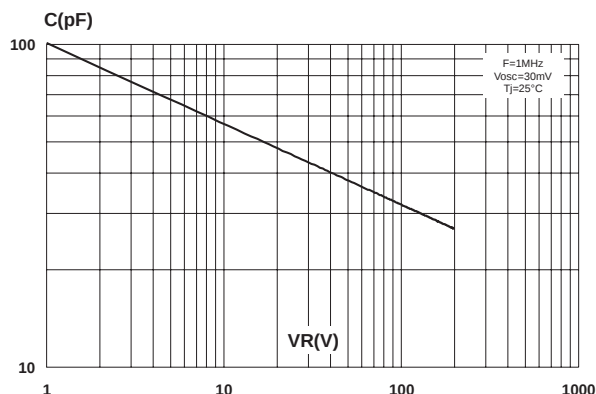
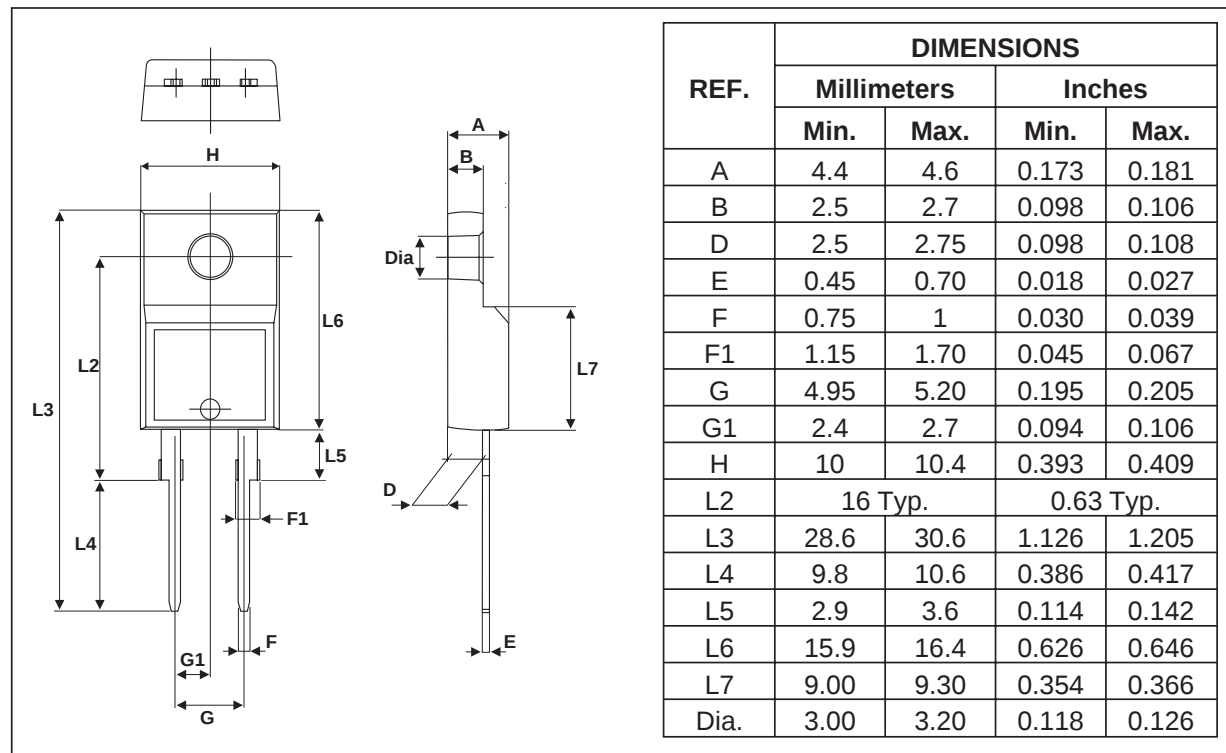
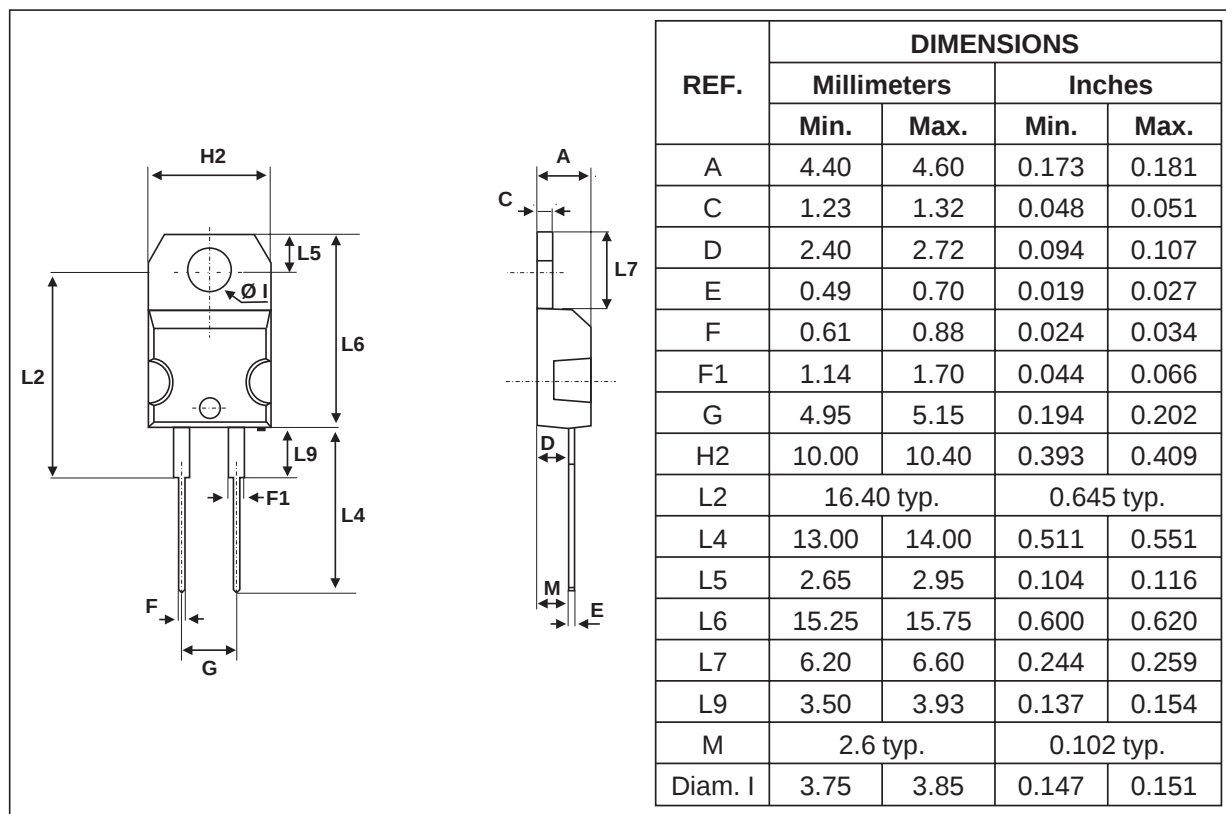


Fig. 11: Junction capacitance versus reverse voltage applied (typical values).



PACKAGE MECHANICAL DATA
 TO-220FPAC

PACKAGE MECHANICAL DATA
 TO-220AC


STTH12R06D/FP

Ordering code	Marking	Package	Weight	Base qty	Delivery mode
STTH12R06D	STTH12R06D	TO-220AC	1.9 g	50	Tube
STTH12R06FP	STTH12R06FP	TO-220FPAC	1.7 g	50	Tube

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

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