



# STTH15R06D/FP

## TURBO 2 ULTRAFAST HIGH VOLTAGE RECTIFIER

### MAIN PRODUCT CHARACTERISTICS

<b>I<sub>F(AV)</sub></b>	<b>15 A</b>
<b>V<sub>RRM</sub></b>	<b>600 V</b>
<b>I<sub>RM</sub> (typ.)</b>	<b>8 A</b>
<b>T<sub>j</sub> (max)</b>	<b>175 °C</b>
<b>V<sub>F</sub> (max)</b>	<b>1.8 V</b>
<b>trr (max)</b>	<b>50 ns</b>

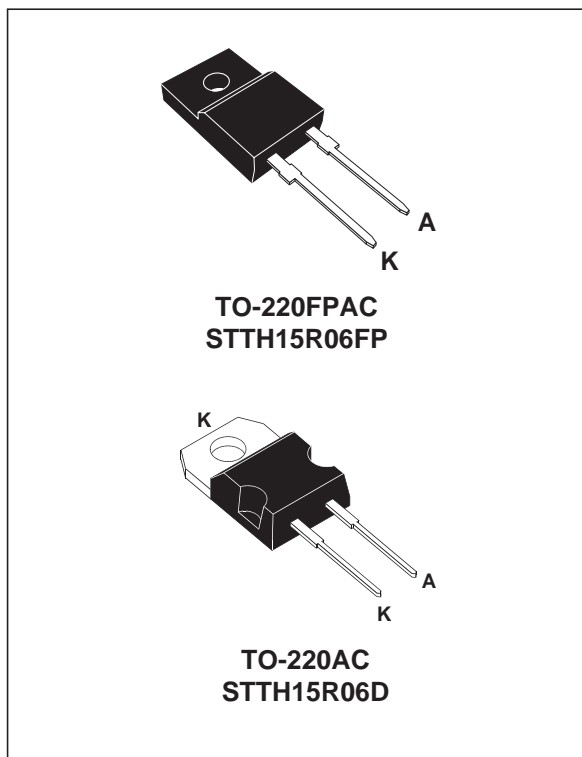
### FEATURES AND BENEFITS

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

### DESCRIPTION

The STTH15R06D/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 <sub>RRM</sub>	Repetitive peak reverse voltage		600	V
I <sub>F(RMS)</sub>	RMS forward current		30	A
I <sub>F(AV)</sub>	Average forward current		15	A
I <sub>FSM</sub>	Surge non repetitive forward current	tp = 10 ms Sinusoidal	120	A
T <sub>stg</sub>	Storage temperature range		- 65 + 175	°C
T <sub>j</sub>	Maximum operating junction temperature		+ 175	°C

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### THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
R <sub>th(j-c)</sub>	Junction to case	TO-220AC	1.5	°C/W
		TO-220FPAC	4.0	

### STATIC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Tests conditions		Min.	Typ.	Max.	Unit
I <sub>R</sub>	Reverse leakage current	V <sub>R</sub> = 600V	T <sub>j</sub> = 25°C			60	μA
			T <sub>j</sub> = 125°C		70	800	
V <sub>F</sub>	Forward voltage drop	I <sub>F</sub> = 15 A	T <sub>j</sub> = 25°C			2.9	V
			T <sub>j</sub> = 125°C		1.4	1.8	

To evaluate the maximum conduction losses use the following equation :  
 $P = 1.16 \times I_{F(AV)} + 0.043 I_{F(RMS)}^2$

### DYNAMIC ELECTRICAL CHARACTERISTICS

Symbol	Tests conditions		Min.	Typ.	Max.	Unit	
trr	I <sub>F</sub> = 0.5 A I <sub>rr</sub> = 0.25 A I <sub>R</sub> = 1A		T <sub>j</sub> = 25°C			30	ns
	I <sub>F</sub> = 1 A dI <sub>F</sub> /dt = - 50 A/μs V <sub>R</sub> = 30V					50	
I <sub>RM</sub>	V <sub>R</sub> = 400 V I <sub>F</sub> = 15A		T <sub>j</sub> = 125°C		7.5	9.0	A
S factor	dI <sub>F</sub> /dt = - 200A/μs				0.15		
Qrr					220		nC
tfr	I <sub>F</sub> = 15 A dI <sub>F</sub> /dt = 120 A/μs		T <sub>j</sub> = 25°C			200	ns
V <sub>FP</sub>	V <sub>FR</sub> = 1.1 x V <sub>Fmax</sub>					6	V

Fig. 1: Conduction losses versus average current.

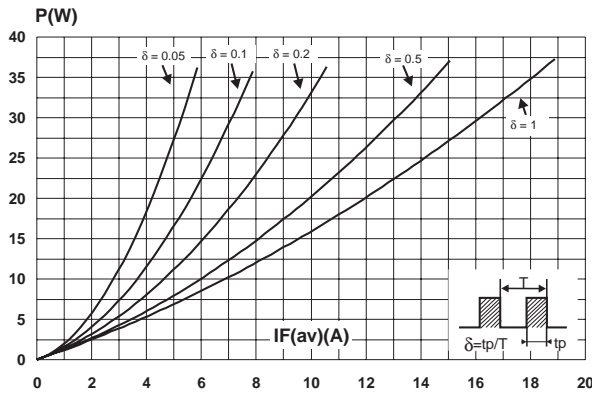


Fig. 2: Forward voltage drop versus forward current.

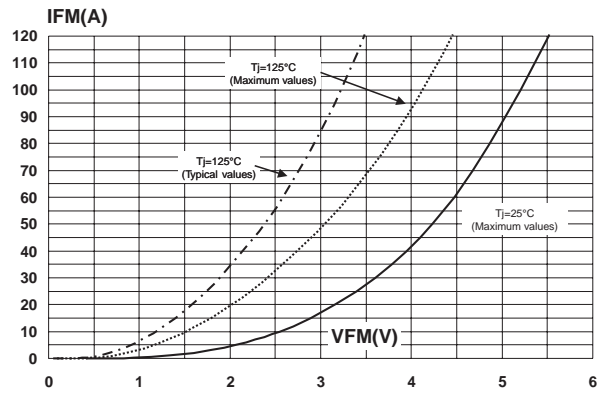


Fig. 3-1: Relative variation of thermal impedance junction to case versus pulse duration (TO-220AC).

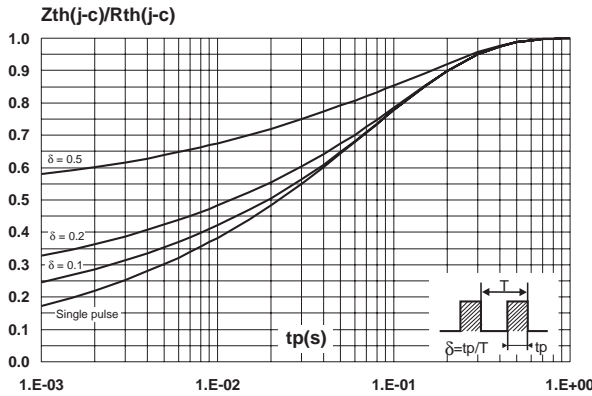


Fig. 3-2: Relative variation of thermal impedance junction to case versus pulse duration (TO-220FPAC).

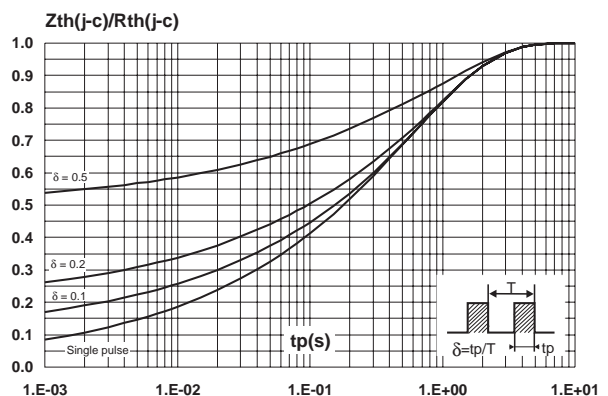


Fig. 4: Peak reverse recovery current versus dIF/dt (90% confidence).

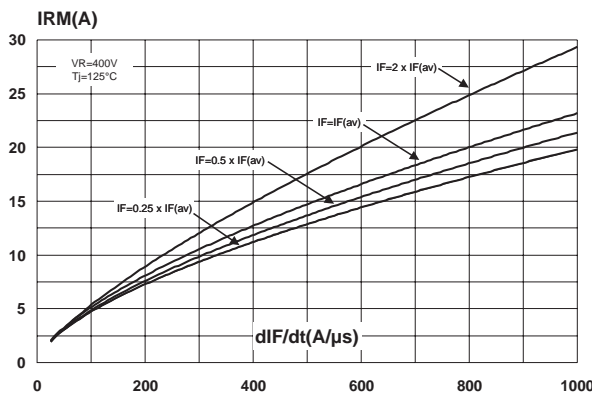
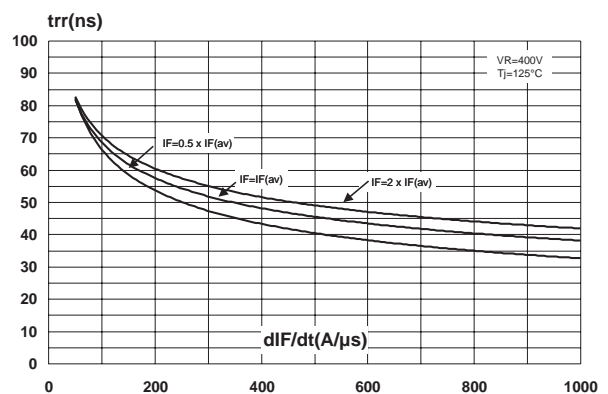
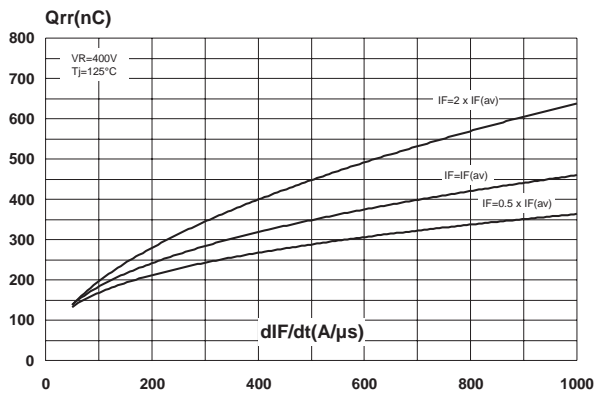


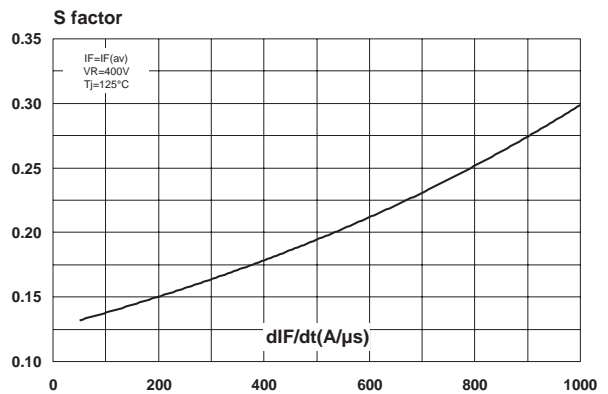
Fig. 5: Reverse recovery time versus dIF/dt (90% confidence).



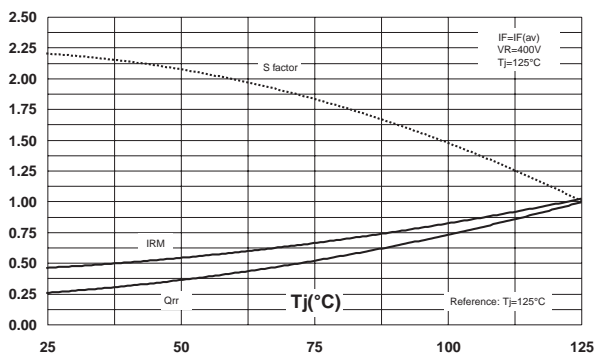
**Fig. 6:** Reverse recovery charges versus  $dI_F/dt$  (90% confidence).



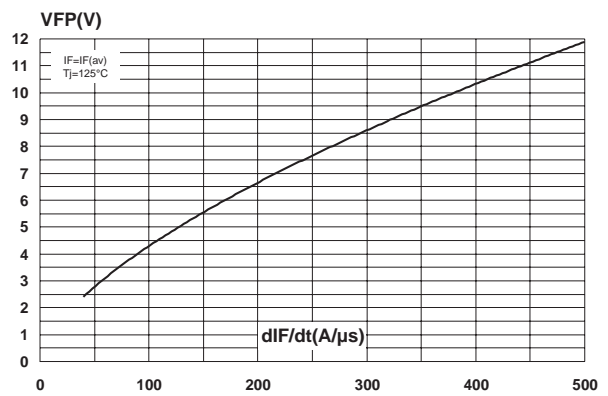
**Fig. 7:** Softness factor versus  $dI_F/dt$  (typical values).



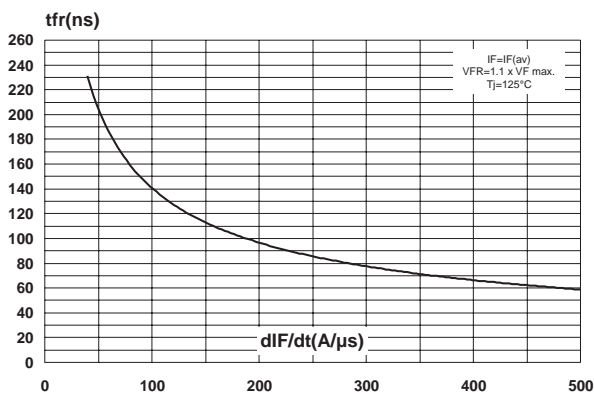
**Fig. 8:** Relative variation of dynamic parameters versus junction temperature.



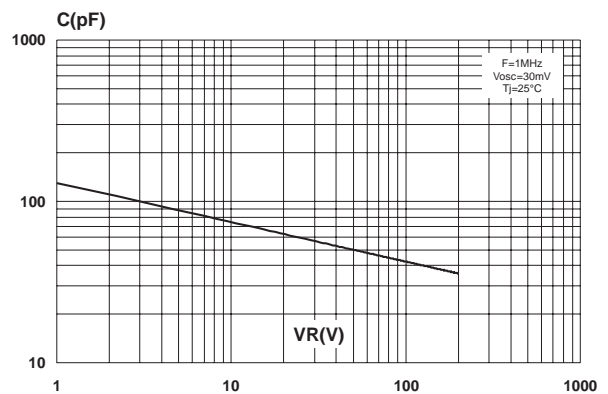
**Fig. 9:** Transient peak forward voltage versus  $dI_F/dt$  (90% confidence).



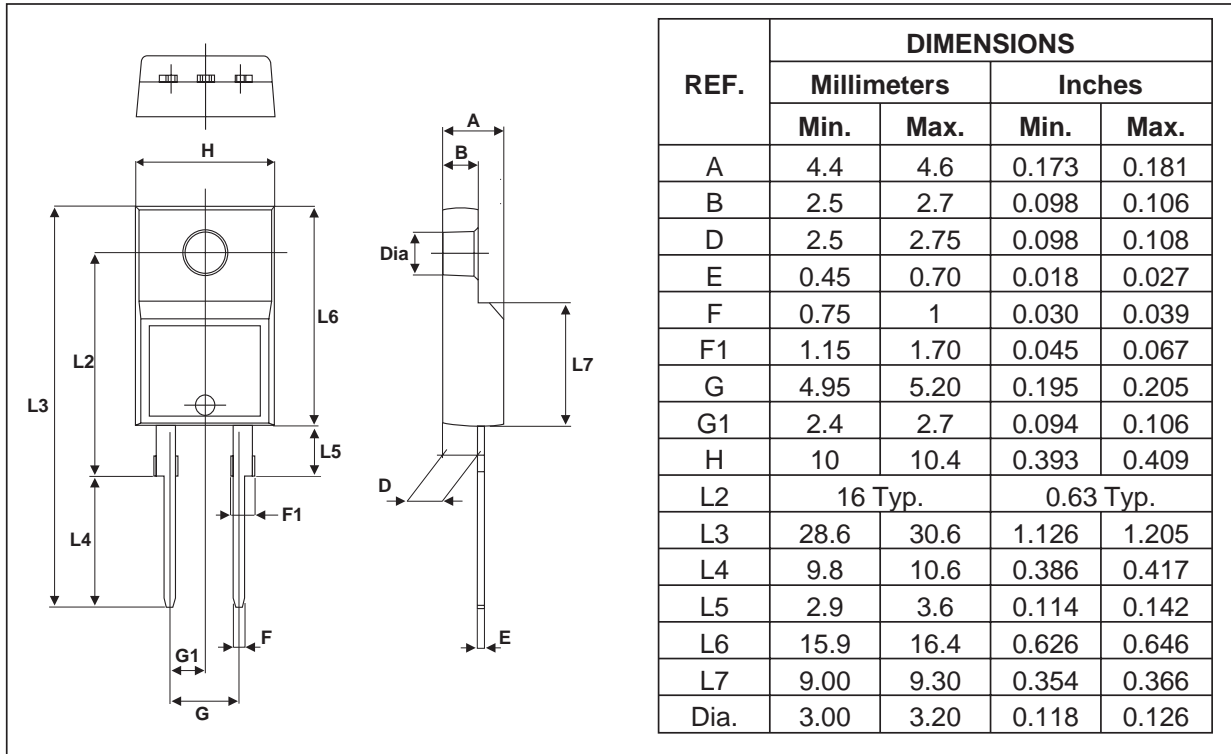
**Fig. 10:** Forward recovery time versus  $dI_F/dt$  (90% confidence).



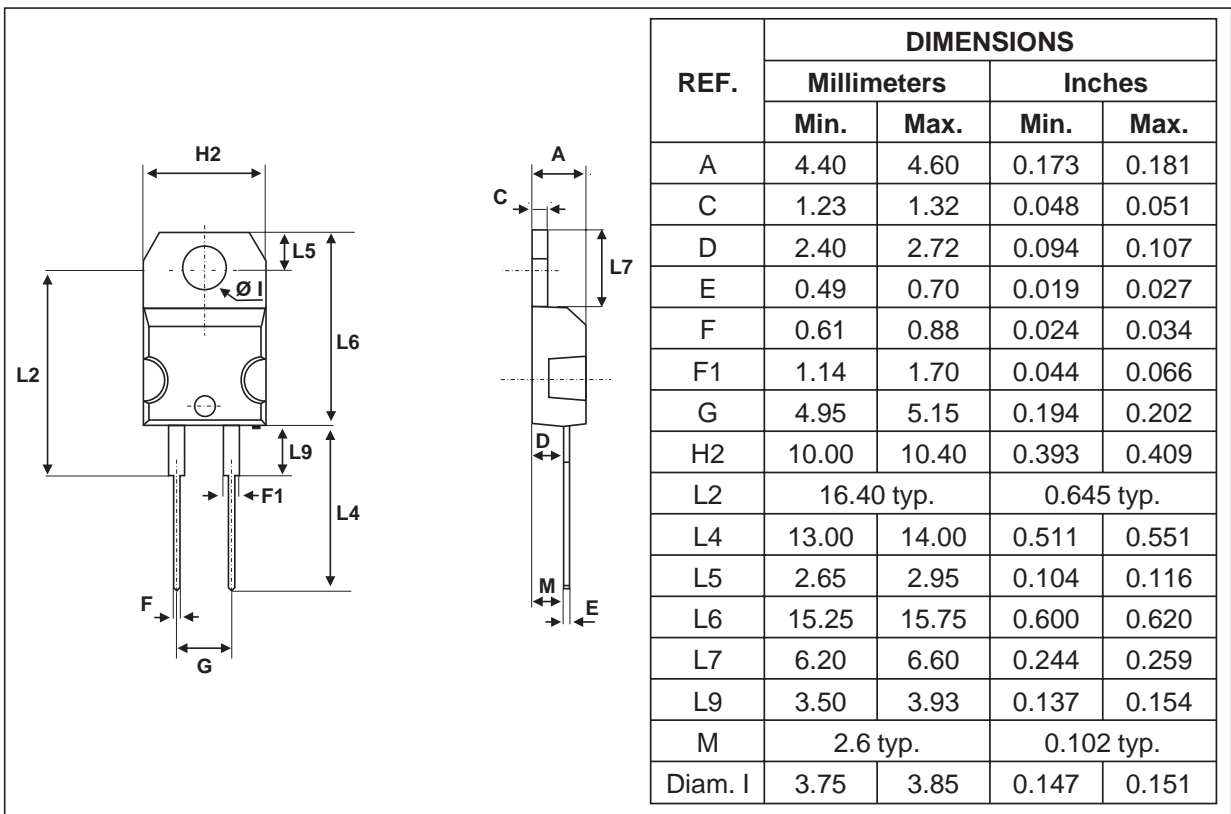
**Fig. 11:** Junction capacitance versus reverse voltage applied (typical values).



**PACKAGE MECHANICAL DATA**  
TO-220FPAC



**PACKAGE MECHANICAL DATA**  
TO-220AC



## STTH15R06D/FP

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Ordering code	Marking	Package	Weight	Base qty	Delivery mode
STTH15R06D	STTH15R06D	TO-220AC	1.9 g	50	Tube
STTH15R06FP	STTH15R06FP	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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