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# STTH208/U

## HIGH VOLTAGE ULTRAFAST RECTIFIER

### MAIN PRODUCT CHARACTERISTICS

<b>I<sub>F(AV)</sub></b>	<b>2 A</b>
<b>V<sub>RRM</sub></b>	<b>800 V</b>
<b>T<sub>j (max)</sub></b>	<b>175 °C</b>
<b>V<sub>F (max)</sub></b>	<b>1.25 V</b>

### FEATURES AND BENEFITS

- Low forward voltage drop
- High reliability
- High surge current capability
- Soft switching for reduced EMI disturbances
- Planar technology

### DESCRIPTION

The STTH208, which is using ST ultrafast high voltage planar technology, is specially suited for free-wheeling, clamping, snubbing, demagnetization in power supplies and other power switching applications.



### ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit	
V <sub>RRM</sub>	Repetitive peak reverse voltage		800	V	
V <sub>(RMS)</sub>	RMS voltage		560	V	
I <sub>F(AV)</sub>	Average forward current	TI = 60°C δ = 0.5	DO-15	2	A
		TI = 100°C δ = 0.5	SMB	2	
I <sub>FSM</sub>	Forward surge current t = 8.3 ms		DO-15	45	A
			SMB	35	
T <sub>stg</sub>	Storage temperature range		- 50 + 175	°C	
T <sub>j</sub>	Maximum operating junction temperature		+ 175	°C	

**STTH208/U**
**THERMAL PARAMETERS**

Symbol	Parameter			Value	Unit
R <sub>th(j-l)</sub>	Junction to lead	L = 10 mm	DO-15	40	°C/W
			SMB	25	
R <sub>th(j-a)</sub>	Junction to ambient	L = 10 mm	DO-15	110	

**STATIC ELECTRICAL CHARACTERISTICS**

Symbol	Parameter	Tests conditions		Min.	Typ.	Max.	Unit
I <sub>R</sub>	Reverse leakage current	V <sub>R</sub> = 800V	T <sub>j</sub> = 25°C			5	μA
			T <sub>j</sub> = 125°C			50	
V <sub>F</sub>	Forward voltage drop	I <sub>F</sub> = 2 A	T <sub>j</sub> = 25°C			1.65	V
			T <sub>j</sub> = 150°C		0.89	1.25	

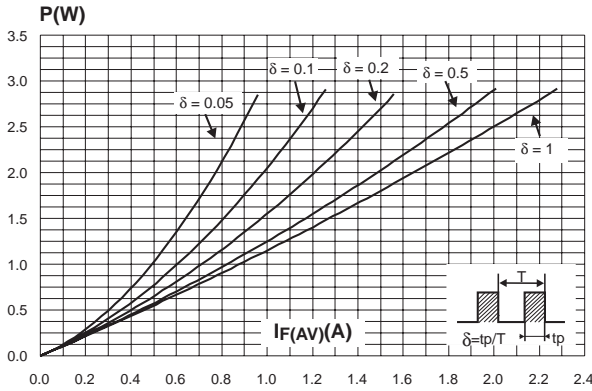
To evaluate the maximum conduction losses use the following equation :

$$P = 1.05 \times I_{F(AV)} + 0.10 \times I_{F(RMS)}^2$$

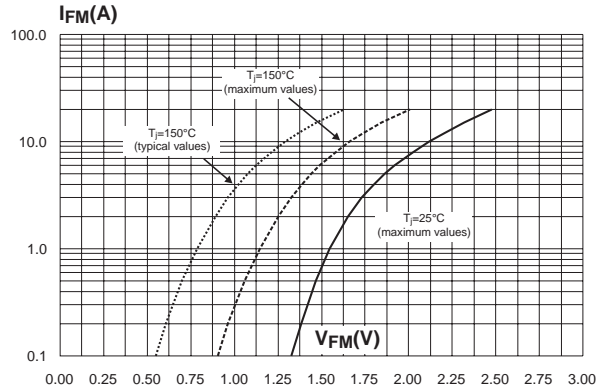
**DYNAMIC ELECTRICAL CHARACTERISTICS**

Symbol	Parameter	Tests conditions		Min.	Typ.	Max.	Unit
t <sub>rr</sub>	Reverse recovery time	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			75	ns
t <sub>fr</sub>	Forward recovery time	I <sub>F</sub> = 2 A dI <sub>F</sub> /dt = 50 A/μs V <sub>FR</sub> = 1.1 x V <sub>F</sub> max	T <sub>j</sub> = 25°C			200	ns
V <sub>FP</sub>	Forward recovery voltage						9

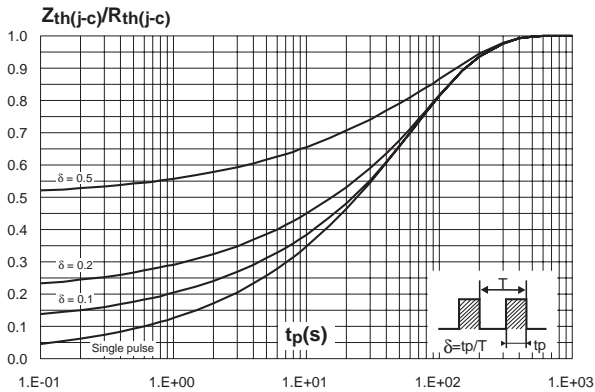
**Fig. 1:** Conduction losses versus average current.



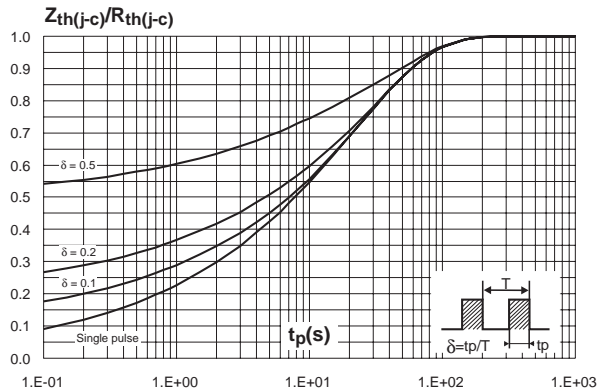
**Fig. 2:** Forward voltage drop versus forward current.



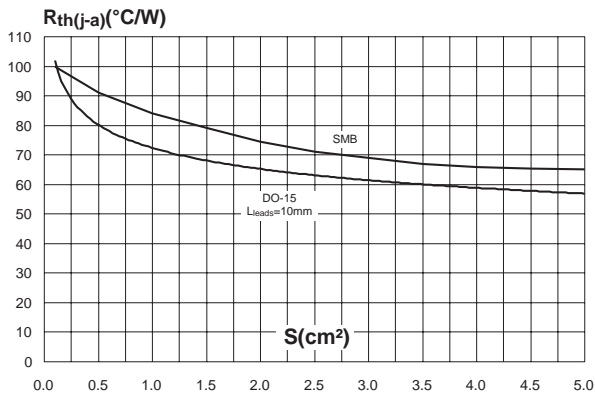
**Fig. 3-1:** Relative variation of thermal impedance junction ambient versus pulse duration (epoxy FR4,  $L_{leads} = 10mm$ ) (DO-15).



**Fig. 3-2:** Relative variation of thermal impedance junction ambient versus pulse duration (epoxy FR4,  $S=1cm^2$ ) (SMB).



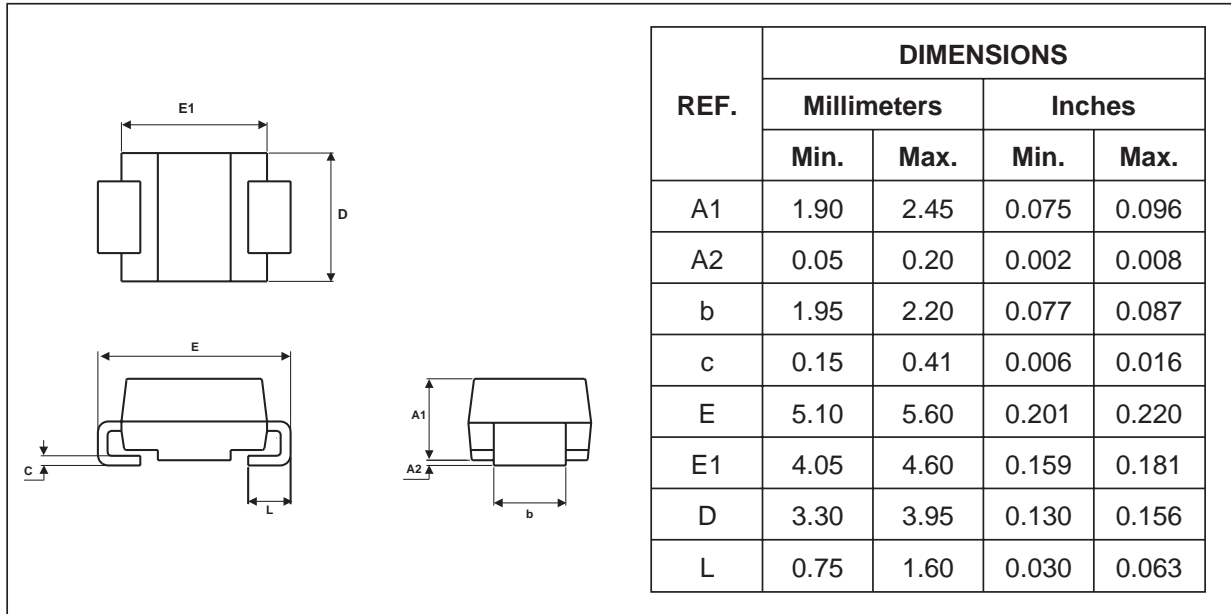
**Fig. 4:** Thermal resistance junction to ambient versus copper surface under each lead (epoxy printed circuit board FR4, copper thickness:  $35\mu m$ ).



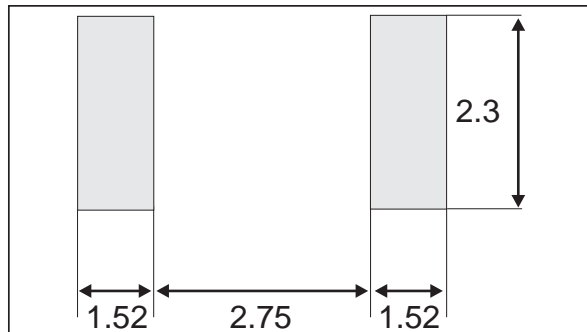
**STTH208/U**

**PACKAGE MECHANICAL DATA**

**SMB**



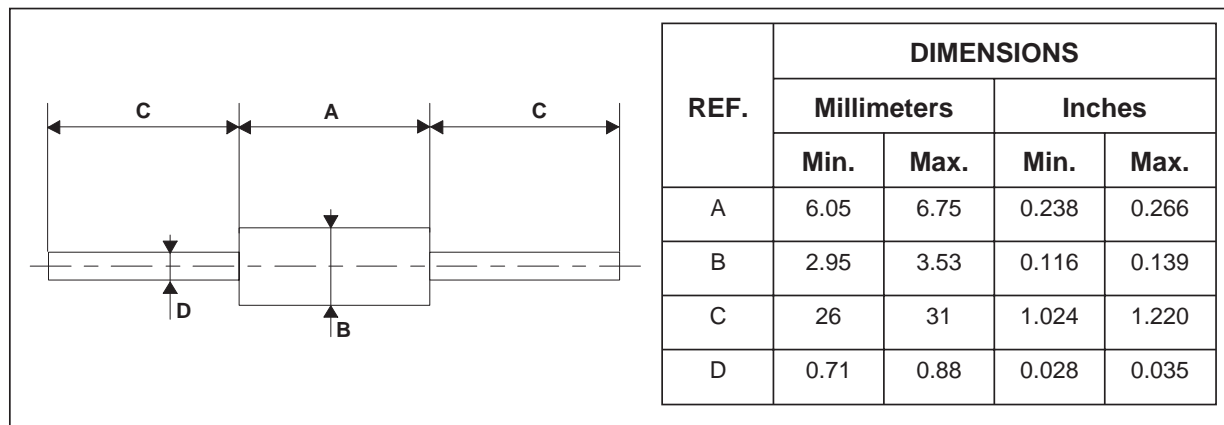
**FOOTPRINT (in millimeters)**



**STTH208/U**

**PACKAGE MECHANICAL DATA**

DO-15



Ordering code	Marking	Package	Weight	Base qty	Delivery mode
STTH208	STTH208	DO-15	0.4 g	1000	Ammopack
STTH208U	U08	SMB	0.11 g	2500	Tape & reel
STTH208RL	STTH208	DO-15	0.4 g	6000	Tape & reel

- Epoxy meets UL 94,V0

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