

## HIGH VOLTAGE ULTRAFAST RECTIFIER

### MAIN PRODUCT CHARACTERISTICS

$I_{F(AV)}$	2 A
$V_{RRM}$	800 V
$T_j$ (max)	175 °C
$V_F$ (max)	1.25 V

### 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
$V_{RRM}$	Repetitive peak reverse voltage			800	V
$V_{(RMS)}$	RMS voltage			560	V
$I_{F(AV)}$	Average forward current		$T_l = 60^\circ\text{C}$ $\delta = 0.5$	DO-15	2
			$T_l = 100^\circ\text{C}$ $\delta = 0.5$	SMB	2
$I_{FSM}$	Forward surge current $t = 8.3 \text{ ms}$			DO-15	45
				SMB	35
$T_{stg}$	Storage temperature range			- 50 + 175	°C
$T_j$	Maximum operating junction temperature			+ 175	°C

# STTH208/U

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## THERMAL PARAMETERS

Symbol	Parameter			Value	Unit
$R_{th}(j-l)$	Junction to lead		$L = 10 \text{ mm}$	DO-15	40
			SMB	25	$^{\circ}\text{C/W}$
$R_{th}(j-a)$	Junction to ambient		$L = 10 \text{ mm}$	DO-15	110

## STATIC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Tests conditions		Min.	Typ.	Max.	Unit
$I_R$	Reverse leakage current	$V_R = 800\text{V}$	$T_j = 25^{\circ}\text{C}$			5	$\mu\text{A}$
			$T_j = 125^{\circ}\text{C}$			50	
$V_F$	Forward voltage drop	$I_F = 2 \text{ A}$	$T_j = 25^{\circ}\text{C}$			1.65	$\text{V}$
			$T_j = 150^{\circ}\text{C}$		0.89	1.25	

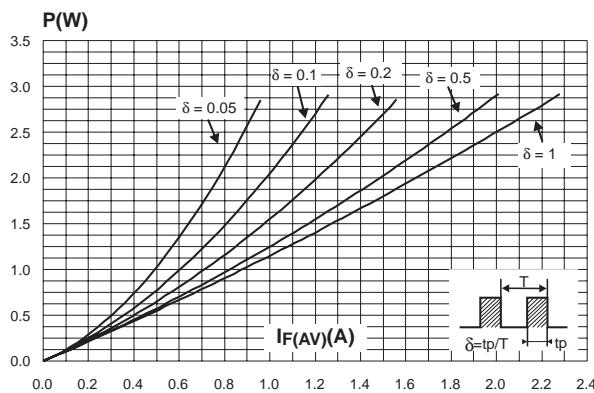
To evaluate the maximum conduction losses use the following equation :

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

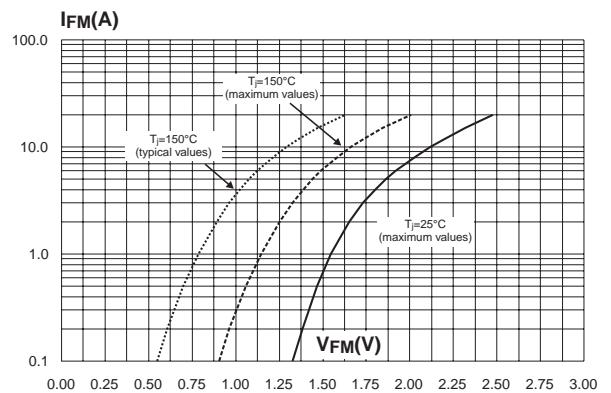
## DYNAMIC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Tests conditions		Min.	Typ.	Max.	Unit
$t_{rr}$	Reverse recovery time	$I_F = 0.5 \text{ A}$ $I_{rr} = 0.25 \text{ A}$	$T_j = 25^{\circ}\text{C}$			75	ns
$t_{fr}$	Forward recovery time	$I_F = 2 \text{ A}$ $dI_F/dt = 50 \text{ A}/\mu\text{s}$	$T_j = 25^{\circ}\text{C}$			200	ns
$V_{FP}$	Forward recovery voltage	$V_{FR} = 1.1 \times V_F \text{ max}$				9	V

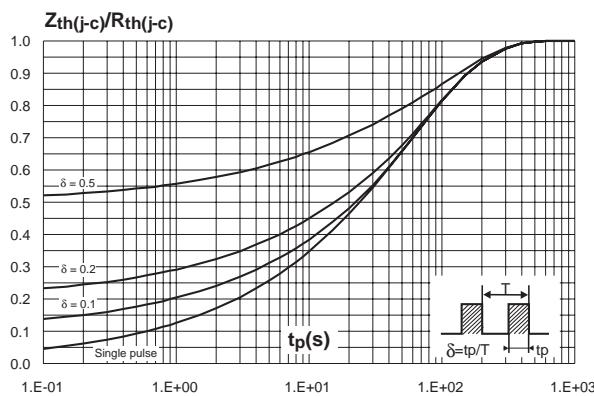
**Fig. 1:** Conduction losses versus average current.



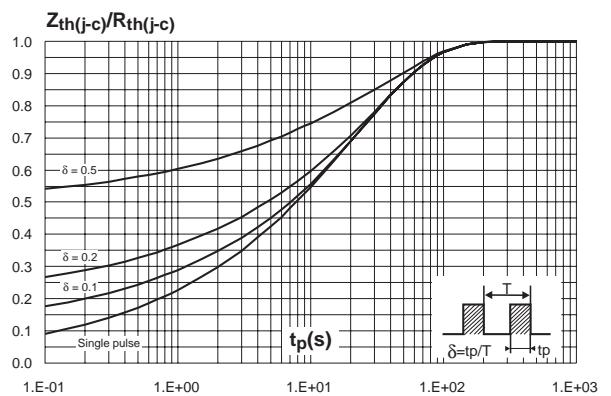
**Fig. 2:** Forward voltage drop versus forward current.



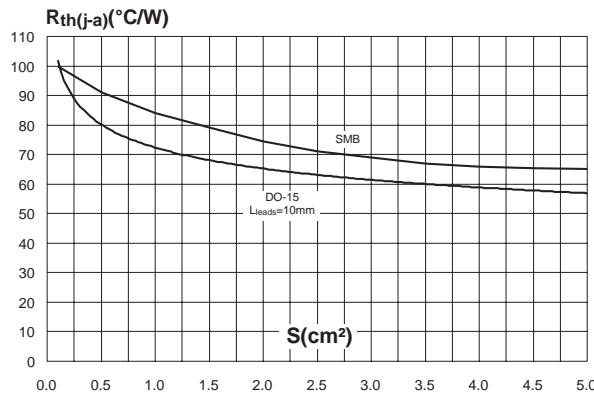
**Fig. 3-1:** Relative variation of thermal impedance junction ambient versus pulse duration (epoxy FR4,  $L_{leads} = 10\text{mm}$ ) (DO-15).



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

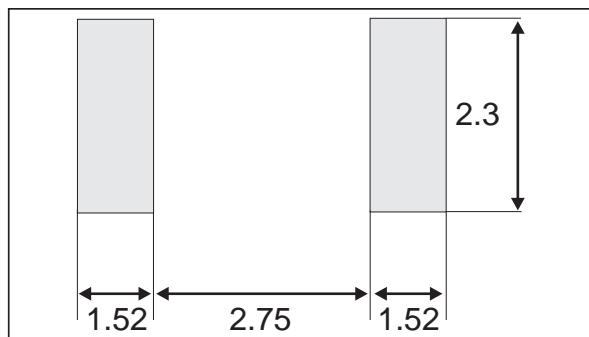


**Fig. 4:** Thermal resistance junction to ambient versus copper surface under each lead (epoxy printed circuit board FR4, copper thickness: 35 $\mu\text{m}$ ).



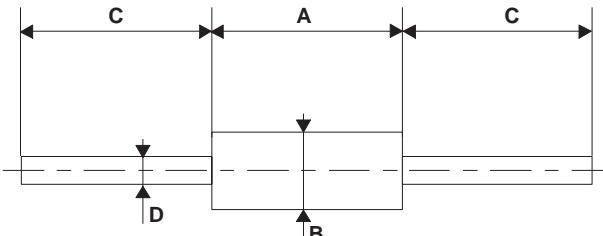
**PACKAGE MECHANICAL DATA**  
**SMB**

REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A1	1.90	2.45	0.075	0.096
A2	0.05	0.20	0.002	0.008
b	1.95	2.20	0.077	0.087
c	0.15	0.41	0.006	0.016
E	5.10	5.60	0.201	0.220
E1	4.05	4.60	0.159	0.181
D	3.30	3.95	0.130	0.156
L	0.75	1.60	0.030	0.063

**FOOTPRINT (in millimeters)**

## PACKAGE MECHANICAL DATA

DO-15



REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	6.05	6.75	0.238	0.266
B	2.95	3.53	0.116	0.139
C	26	31	1.024	1.220
D	0.71	0.88	0.028	0.035

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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