



# STPS5H100B/-1

## HIGH VOLTAGE POWER SCHOTTKY RECTIFIER

### MAIN PRODUCT CHARACTERISTICS

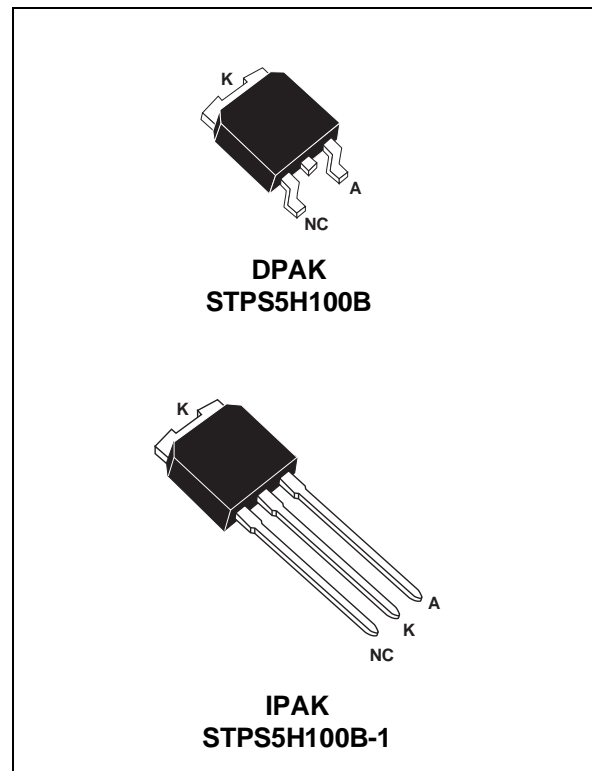
$I_{F(AV)}$	5 A
$V_{RRM}$	100 V
$T_j(max)$	175 °C
$V_F(max)$	0.61 V

### FEATURES AND BENEFITS

- NEGLIGIBLE SWITCHING LOSSES
- HIGH JUNCTION TEMPERATURE CAPABILITY
- LOW LEAKAGE CURRENT
- GOOD TRADE OFF BETWEEN LEAKAGE CURRENT AND FORWARD VOLTAGE DROP
- AVALANCHE RATED

### DESCRIPTION

Schottky barrier rectifier designed for high frequency miniature Switched Mode Power Supplies such as adaptators and on board DC to DC converters.



### ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
$V_{RRM}$	Repetitive peak reverse voltage		100	V
$I_{F(RMS)}$	RMS forward current		10	A
$I_{F(AV)}$	Average forward current	$T_c = 165^\circ\text{C} \quad \delta = 0.5$	5	A
$I_{FSM}$	Surge non repetitive forward current	$t_p = 10 \text{ ms}$ sinusoidal	75	A
$I_{RRM}$	Repetitive peak reverse current	$t_p = 2 \mu\text{s}$ square $F = 1\text{kHz}$	1	A
$I_{RSM}$	Non repetitive peak reverse current	$t_p = 100 \mu\text{s}$ square	2	A
$T_{stg}$	Storage temperature range		- 65 to + 175	°C
$T_j$	Maximum operating junction temperature *		175	°C
$dV/dt$	Critical rate of rise of reverse voltage		10000	V/ $\mu\text{s}$

\* :  $\frac{dP_{tot}}{dT_j} < \frac{1}{R_{th(j-a)}}$  thermal runaway condition for a diode on its own heatsink

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## THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
$R_{th(j-c)}$	Junction to case	2.5	$^{\circ}\text{C}/\text{W}$

## STATIC ELECTRICAL CHARACTERISTICS

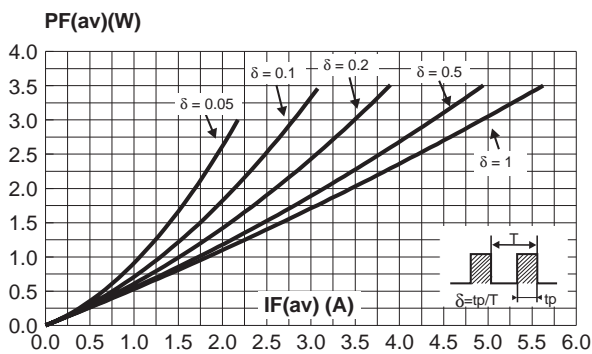
Symbol	Parameter	Tests Conditions		Min.	Typ.	Max.	Unit	
$I_R^*$	Reverse leakage current	$T_j = 25^{\circ}\text{C}$	$V_R = V_{RRM}$			3.5	$\mu\text{A}$	
		$T_j = 125^{\circ}\text{C}$			1.3	4.5	mA	
$V_F^{**}$	Forward voltage drop	$T_j = 25^{\circ}\text{C}$	$I_F = 5\text{ A}$			0.73	V	
		$T_j = 125^{\circ}\text{C}$			0.57	0.61		
		$T_j = 25^{\circ}\text{C}$		$I_F = 10\text{ A}$				0.85
		$T_j = 125^{\circ}\text{C}$				0.66		0.71

Pulse test : \*  $t_p = 5\text{ ms}$ ,  $\delta < 2\%$   
 \*\*  $t_p = 380\text{ }\mu\text{s}$ ,  $\delta < 2\%$

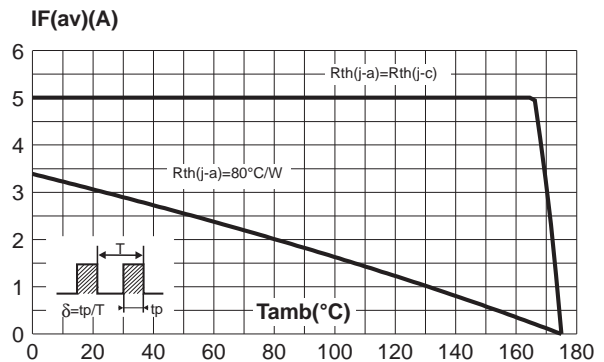
To evaluate the maximum conduction losses use the following equation :

$$P = 0.51 \times I_{F(AV)} + 0.02 \times I_{F(RMS)}^2$$

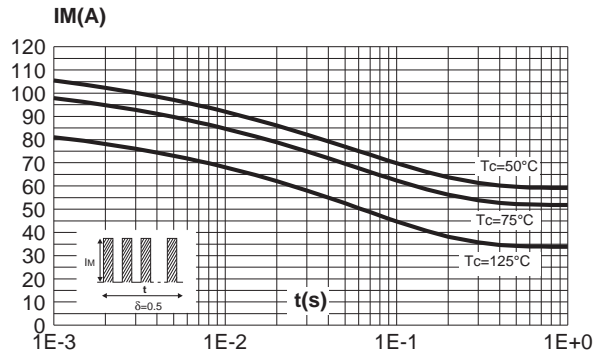
**Fig. 1:** Average forward power dissipation versus average forward current.



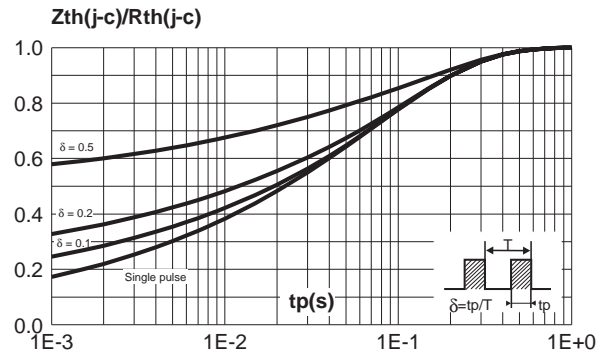
**Fig. 2:** Average forward current versus ambient temperature ( $\delta=0.5$ ).



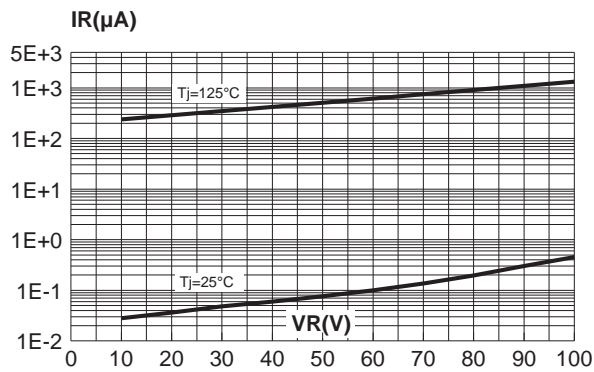
**Fig. 3:** Non repetitive surge peak forward current versus overload duration (maximum values).



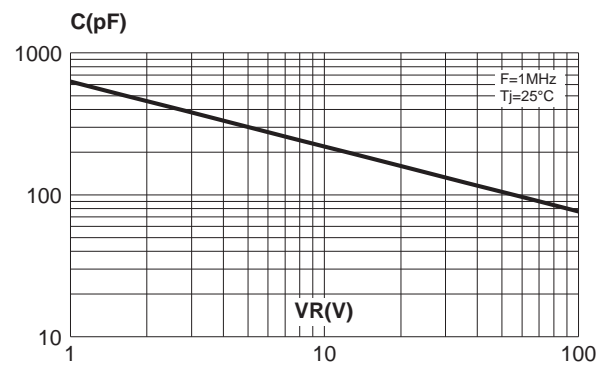
**Fig. 4:** Relative variation of thermal impedance junction to case versus pulse duration.



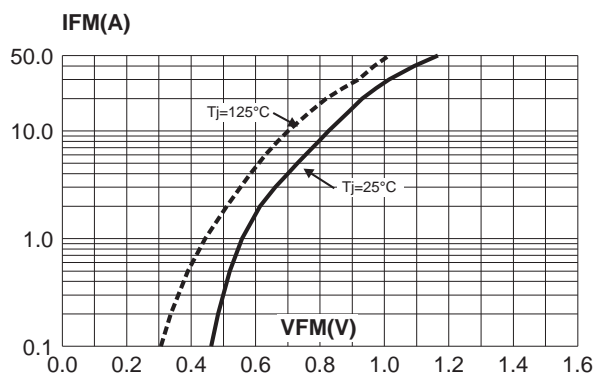
**Fig. 5:** Reverse leakage current versus reverse voltage applied.



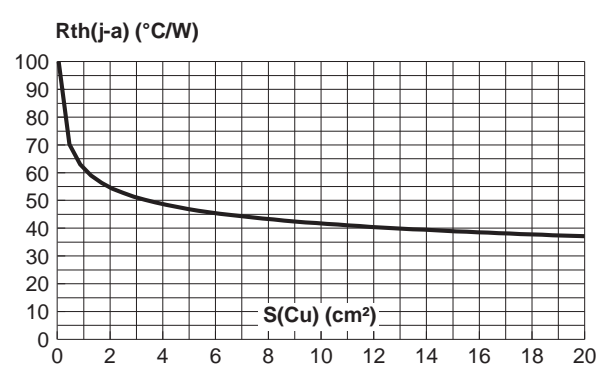
**Fig. 6:** Junction capacitance versus reverse voltage applied (typical values).



**Fig. 7:** Forward voltage drop versus forward current (maximum values).

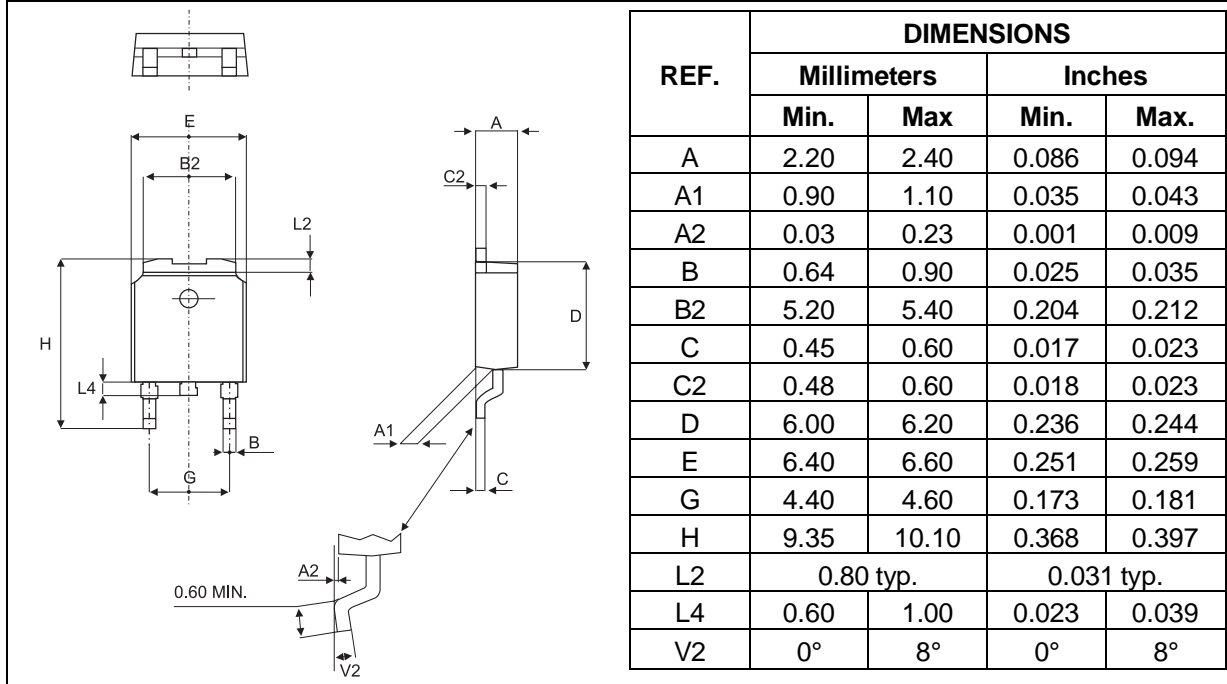


**Fig. 8:** Thermal resistance junction to ambient versus copper surface under tab (Epoxy printed circuit board FR4, copper thickness: 35 $\mu\text{m}$ ) (DPAK).

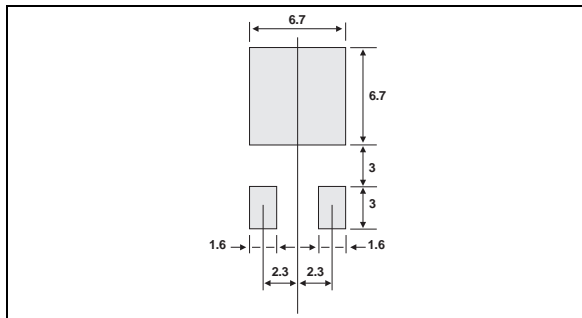


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## PACKAGE MECHANICAL DATA DPAK



### FOOT PRINT (in millimeters)



**PACKAGE MECHANICAL DATA**  
**IPAK**

REF.	DIMENSIONS					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.2		2.4	0.086		0.094
A1	0.9		1.1	0.035		0.043
A3	0.7		1.3	0.027		0.051
B	0.64		0.9	0.025		0.035
B2	5.2		5.4	0.204		0.212
B3			0.85			0.033
B5		0.3			0.035	
B6			0.95			0.037
C	0.45		0.6	0.017		0.023
C2	0.48		0.6	0.019		0.023
D	6		6.2	0.236		0.244
E	6.4		6.6	0.252		0.260
G	4.4		4.6	0.173		0.181
H	15.9		16.3	0.626		0.641
L	9		9.4	0.354		0.370
L1	0.8		1.2	0.031		0.047
L2		0.8	1		0.031	0.039
V1		10°			10°	

Ordering type	Marking	Package	Weight	Base qty	Delivery mode
STPS5H100B	S5H100	DPAK	0.30g	75	Tube
STPS5H100B-TR	S5H100	DPAK	0.30g	2500	Tape & reel
STPS5H100B-1	S5H100	IPAK	0.35g	75	Tube

■ Epoxy meets UL94,V0

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