

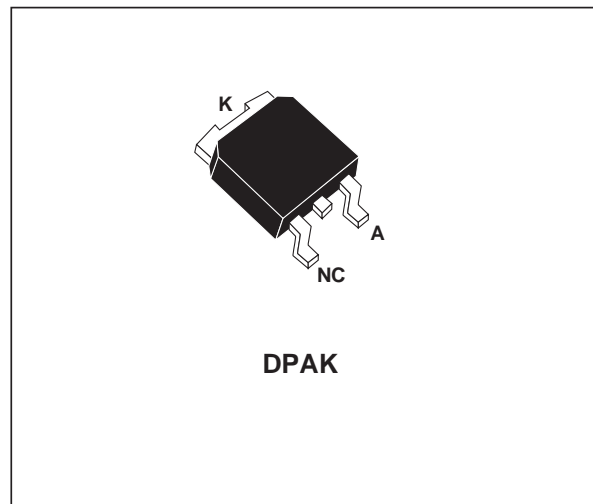
## HIGH VOLTAGE POWER SCHOTTKY RECTIFIER

### MAIN PRODUCT CHARACTERISTICS

$I_{F(AV)}$	<b>5 A</b>
$V_{RRM}$	<b>100 V</b>
$T_j(\text{max})$	<b>175 °C</b>
$V_F(\text{max})$	<b>0.61 V</b>

### FEATURES AND BENEFITS

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



### 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
$P_{ARM}$	Repetitive peak avalanche power	$t_p = 1 \mu\text{s} \quad T_j = 25^\circ\text{C}$	7200	W
$T_{stg}$	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

# STPS5H100B

## THERMAL RESISTANCES

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

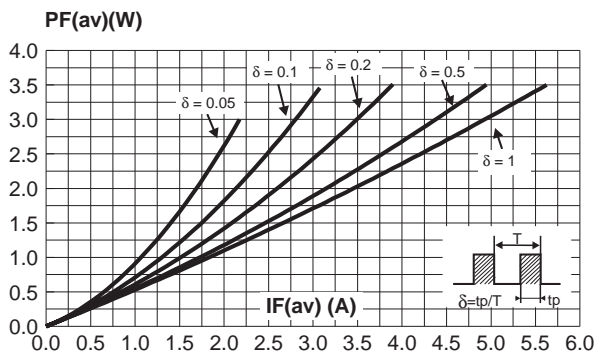
## STATIC ELECTRICAL CHARACTERISTICS

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

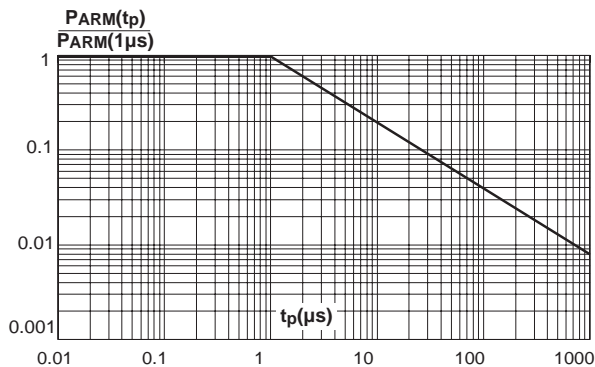
Pulse test : \*  $t_p = 5 ms, \delta < 2\%$   
 \*\*  $t_p = 380 \mu s, \delta < 2\%$

To evaluate the maximum conduction losses use the following equation :  
 $P = 0.51 \times I_{F(AV)} + 0.02 \times I_{F(RMS)}^2$

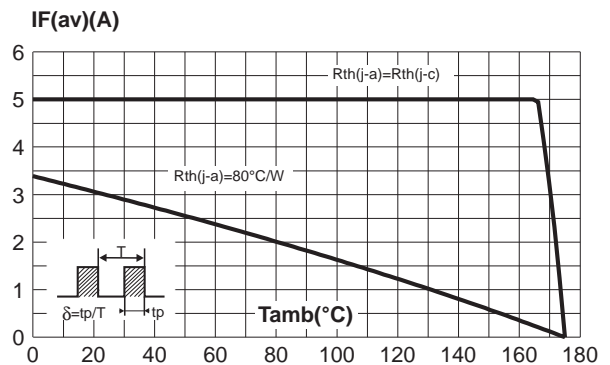
**Fig. 1:** Average forward power dissipation versus average forward current.



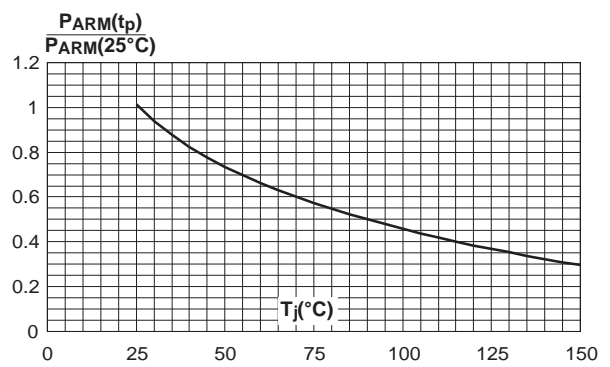
**Fig. 3:** Normalized avalanche power derating versus pulse duration.



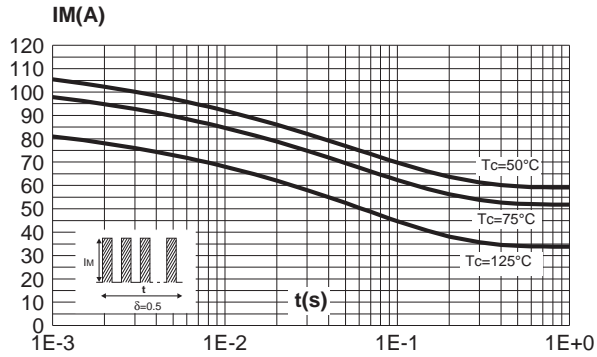
**Fig. 2:** Average forward current versus ambient temperature ( $\delta=0.5$ ).



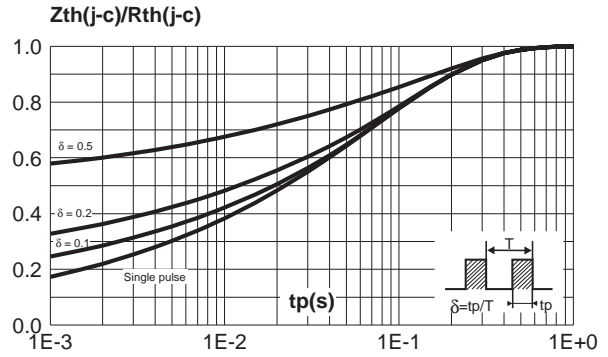
**Fig. 4:** Normalized avalanche power derating versus junction temperature.



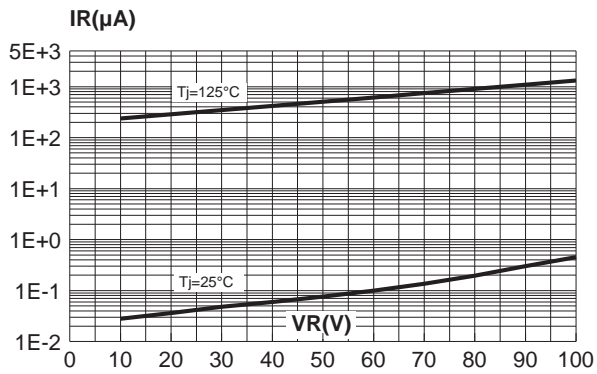
**Fig. 5:** Non repetitive surge peak forward current versus overload duration (maximum values).



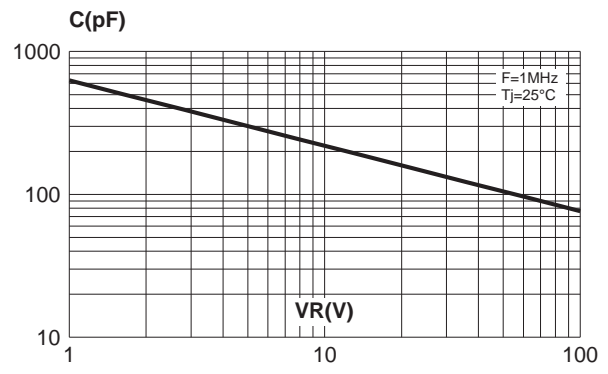
**Fig. 6:** Relative variation of thermal impedance junction to case versus pulse duration.



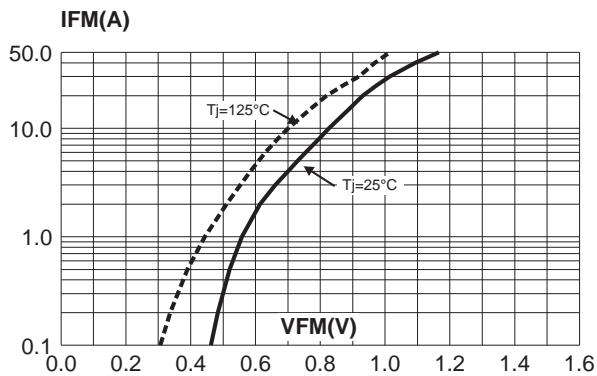
**Fig. 7:** Reverse leakage current versus reverse voltage applied.



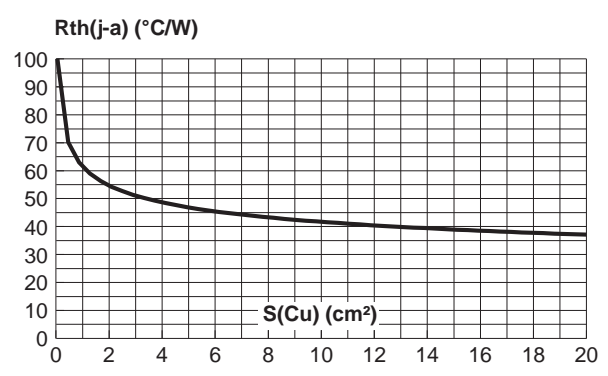
**Fig. 8:** Junction capacitance versus reverse voltage applied (typical values).



**Fig. 9:** Forward voltage drop versus forward current (maximum values).

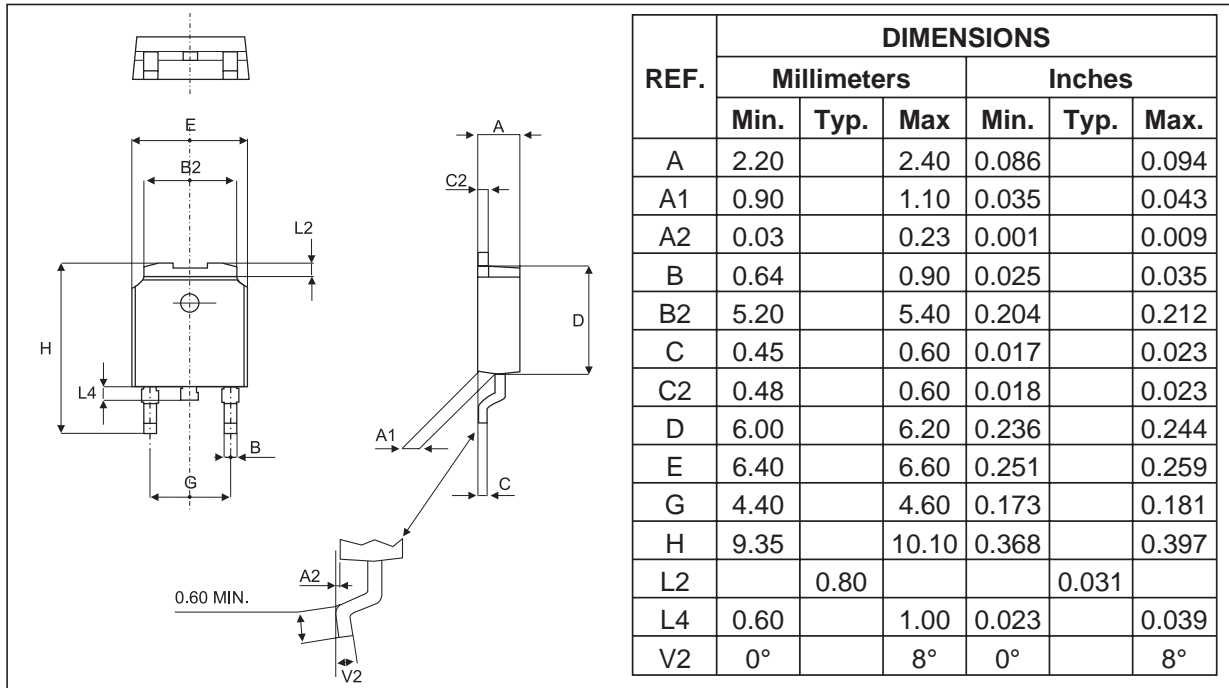


**Fig. 10:** Thermal resistance junction to ambient versus copper surface under tab (Epoxy printed circuit board FR4, copper thickness: 35μm).

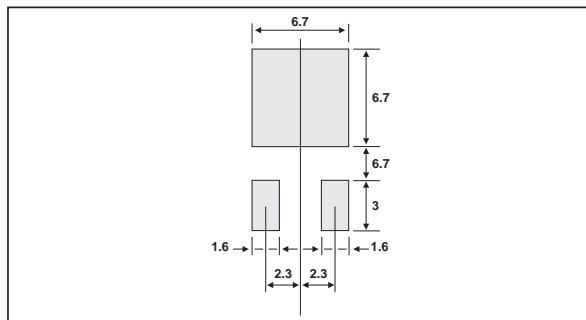


# STPS5H100B

## PACKAGE MECHANICAL DATA DPAK



### FOOT PRINT (in millimeters)



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

### ■ EPOXY MEETS UL94,V0

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