

## LOW DROP POWER SCHOTTKY RECTIFIER

### MAIN PRODUCT CHARACTERISTICS

$I_{F(AV)}$	5 A
$V_{RRM}$	25 V
$T_j (max)$	150°C
$V_F (max)$	0.35 V

### FEATURES AND BENEFITS

- VERY LOW FORWARD VOLTAGE DROP FOR LESS POWER DISSIPATION AND REDUCED HEATSINK
- OPTIMIZED CONDUCTION/REVERSE LOSSES TRADE-OFF WHICH MEANS THE HIGHEST EFFICIENCY IN THE APPLICATIONS
- HIGH POWER SURFACE MOUNT MINIATURE PACKAGE
- AVALANCHE CAPABILITY SPECIFIED

### DESCRIPTION

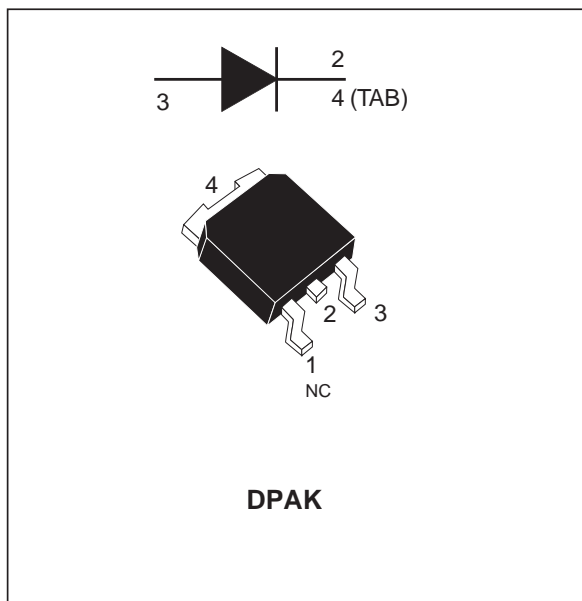
Single Schottky rectifier suited to Switched Mode Power Supplies and high frequency DC to DC converters.

This device is especially intended for use as a Rectifier at the secondary of 3.3V SMPS units.

### ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
$V_{RRM}$	Repetitive peak reverse voltage		25	V
$I_{F(RMS)}$	RMS forward current		7	A
$I_{F(AV)}$	Average forward current	$T_c = 145^\circ\text{C} \quad \delta = 0.5$	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	$t_p = 1 \mu\text{s } T_j = 25^\circ\text{C}$	3000	W
$T_{stg}$	Storage temperature range		- 65 to + 150	°C
$T_j$	Maximum operating junction temperature *		150	°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



# STPS5L25B

## THERMAL RESISTANCES

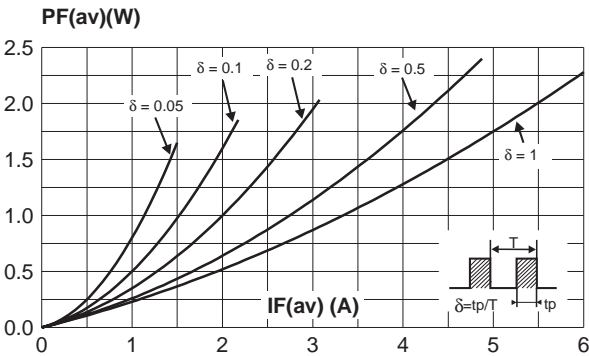
Symbol	Parameter	Value	Unit
$R_{th(j-c)}$	Junction to case	2.5	$^{\circ}\text{C}/\text{W}$

## STATIC ELECTRICAL CHARACTERISTICS

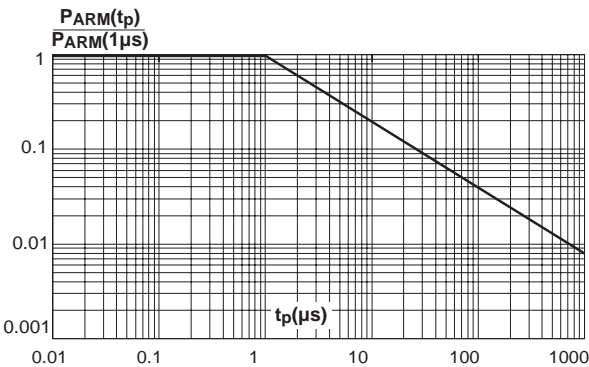
Symbol	Tests Conditions	Tests Conditions	Min.	Typ.	Max.	Unit
$I_R$ *	Reverse leakage current	$T_j = 25^{\circ}\text{C}$	$V_R = V_{RRM}$		350	$\mu\text{A}$
		$T_j = 125^{\circ}\text{C}$		55	115	$\text{mA}$
$V_F$ *	Forward voltage drop	$T_j = 25^{\circ}\text{C}$	$I_F = 5\text{ A}$		0.47	$\text{V}$
		$T_j = 125^{\circ}\text{C}$	$I_F = 5\text{ A}$	0.31	0.35	
		$T_j = 25^{\circ}\text{C}$	$I_F = 10\text{ A}$		0.59	
		$T_j = 125^{\circ}\text{C}$	$I_F = 10\text{ A}$	0.41	0.50	

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

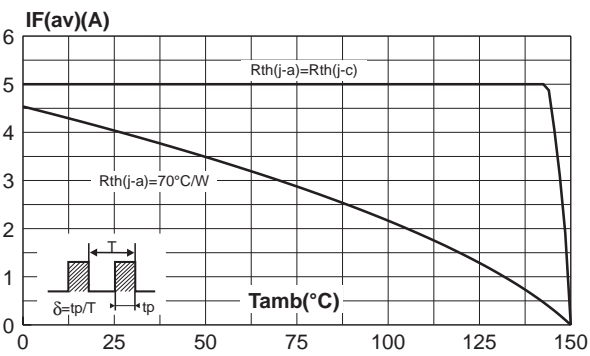
**Fig. 1:** Average forward power dissipation versus average forward current.



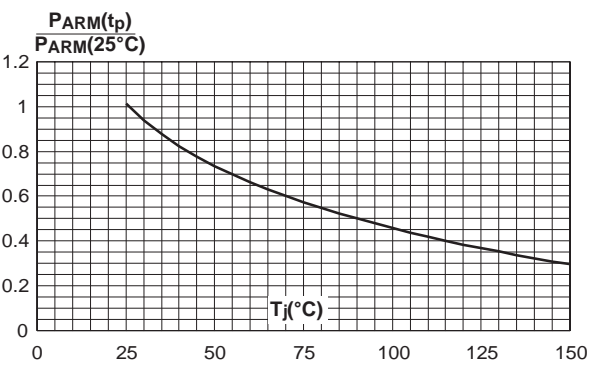
**Fig. 3:** Normalized avalanche power derating versus pulse duration.



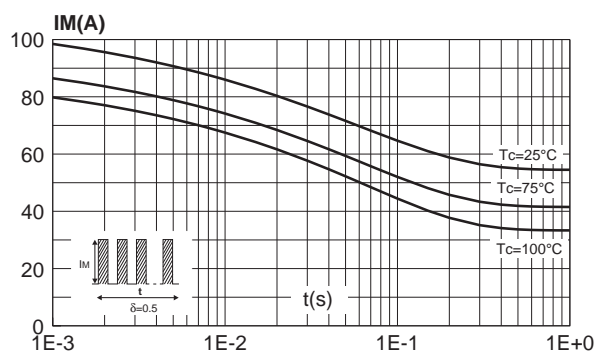
**Fig. 2:** Average forward current versus ambient temperature ( $\delta=0.5$ ).



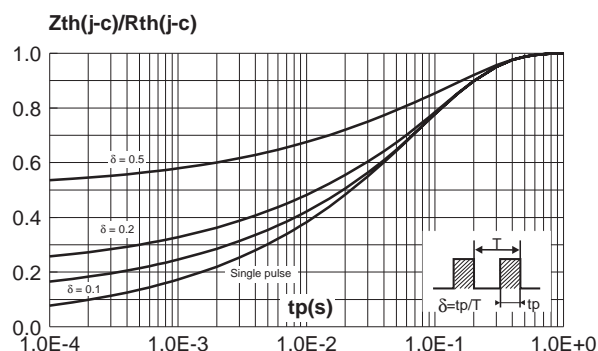
**Fig. 4:** Normalized avalanche power derating versus junction temperature.



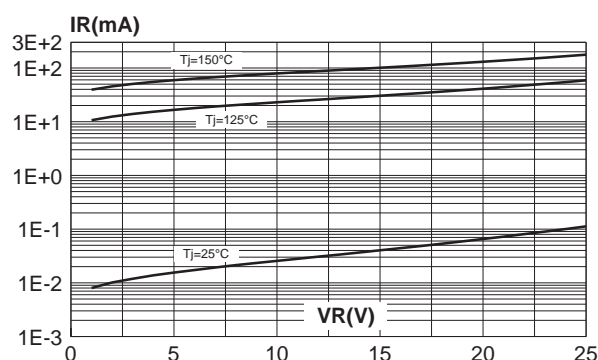
**Fig. 5:** Non repetitive surge peak forward current versus overload duration (maximum values).



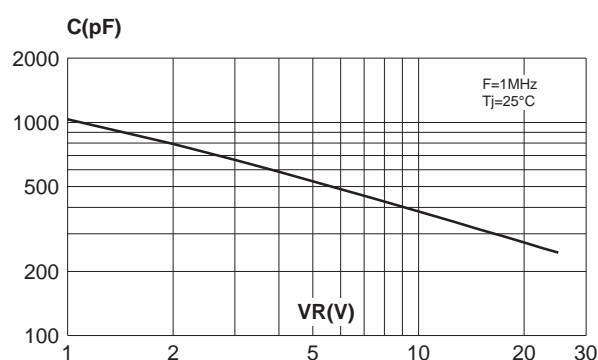
**Fig. 5:** Relative variation of thermal impedance junction to case versus pulse duration.



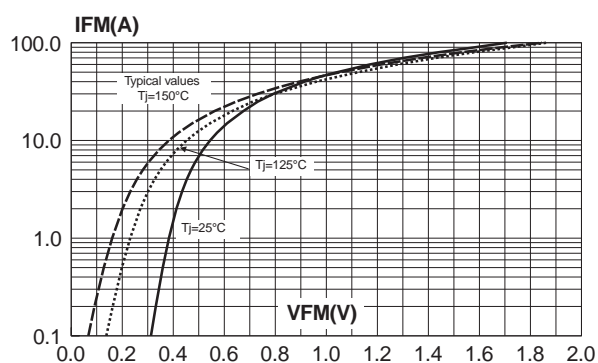
**Fig. 7:** Reverse leakage current versus reverse voltage applied (typical values).



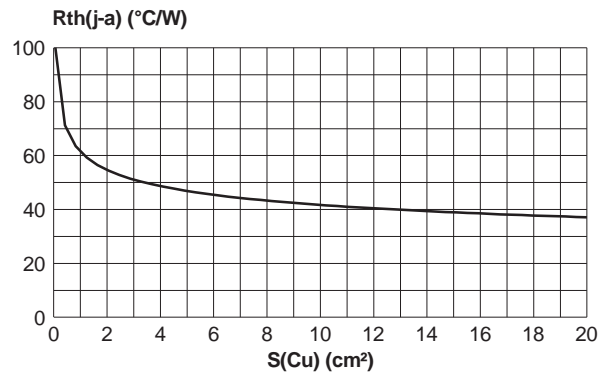
**Fig. 8:** Junction capacitance versus reverse voltage applied (typical values).



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



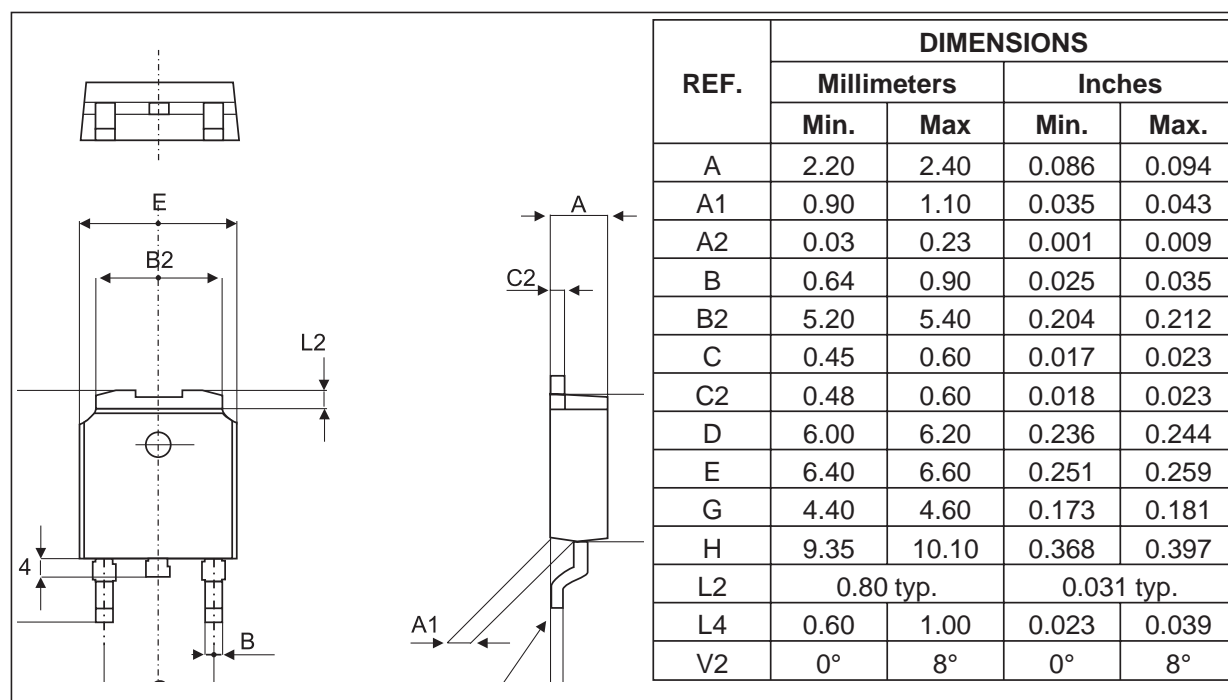
**Fig. 10:** Thermal resistance junction to ambient versus copper surface under tab (Epoxy printed circuit board FR4, copper thickness: 35 $\mu\text{m}$ ).



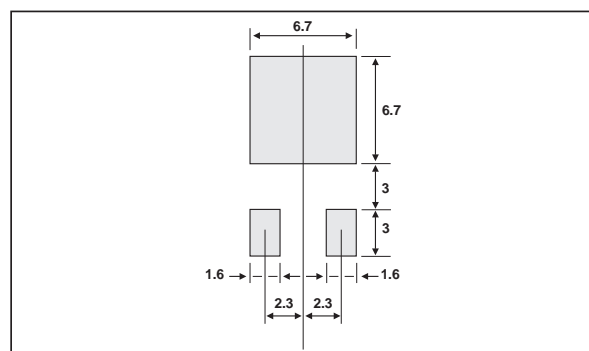
## STPS5L25B

### PACKAGE MECHANICAL DATA

#### DPAK



#### FOOT PRINT DIMENSIONS (in millimeters)



Ordering type	Marking	Package	Weight	Base qty	Delivery mode
STPS5L25B	STPS5L25B	DPAK	0.30g	75	Tube
STPS15LB-TR	STPS5L25B	DPAK	0.30g	2500	Tape & reel

- Epoxy meets UL94,V0

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