



STPS5L25B

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

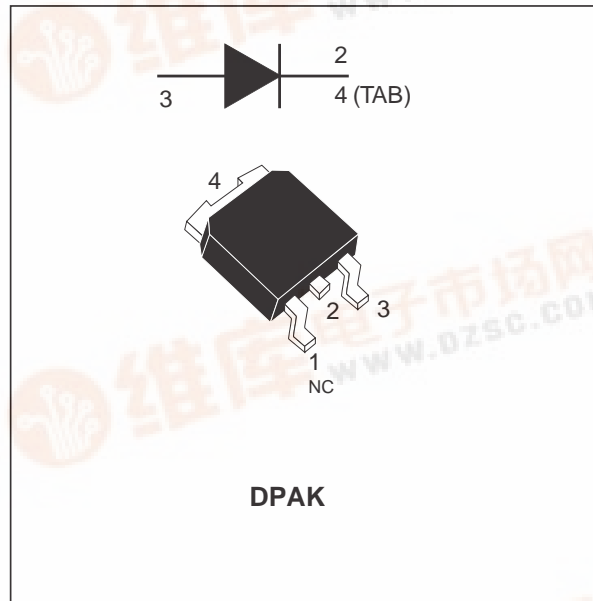
Single Schottky rectifier suited to Switched Mode Power Supplies and high frequency DC to DC converters.

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	$T_c = 145^\circ\text{C} \delta = 0.5$	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/ μs

* : $\frac{dP_{tot}}{dT_j} < \frac{1}{R_{th}(j - a)}$ 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	μA	
		$T_j = 125^{\circ}\text{C}$			55	115	mA	
V_F^*	Forward voltage drop	$T_j = 25^{\circ}\text{C}$	$I_F = 5\text{ A}$			0.47	V	
		$T_j = 125^{\circ}\text{C}$			0.31	0.35		
		$T_j = 25^{\circ}\text{C}$		$I_F = 10\text{ A}$				0.59
		$T_j = 125^{\circ}\text{C}$			0.41	0.50		

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

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

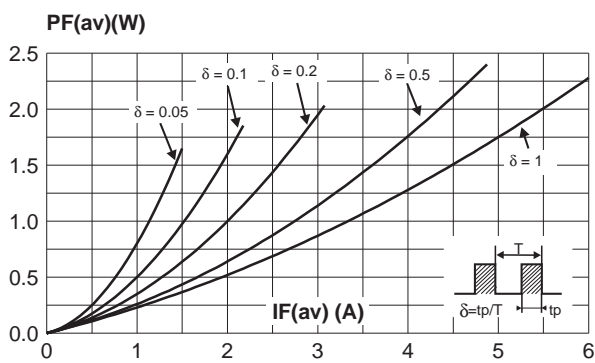


Fig. 3: Normalized avalanche power derating versus pulse duration.

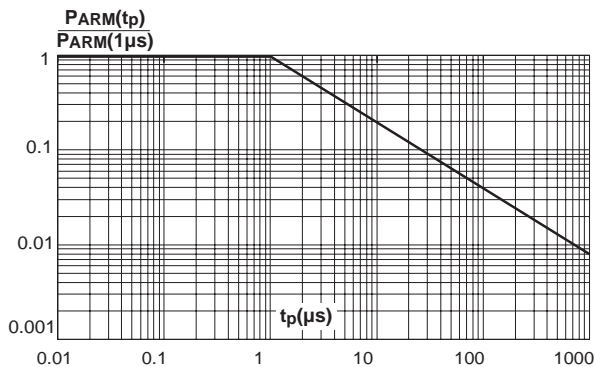


Fig. 2: Average forward current versus ambient temperature ($\delta=0.5$).

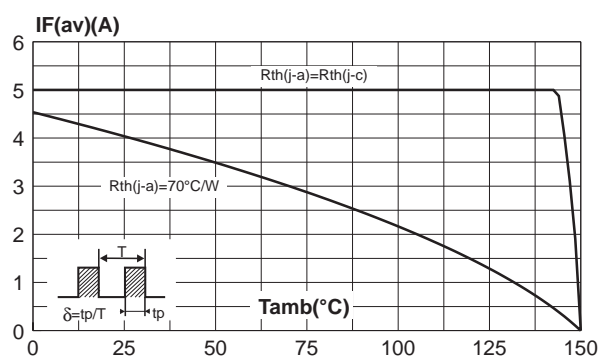


Fig. 4: Normalized avalanche power derating versus junction temperature.

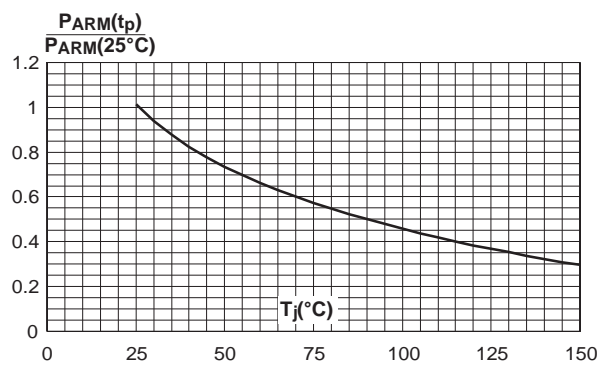


Fig. 5: Non repetitive surge peak forward current versus overload duration (maximum values).

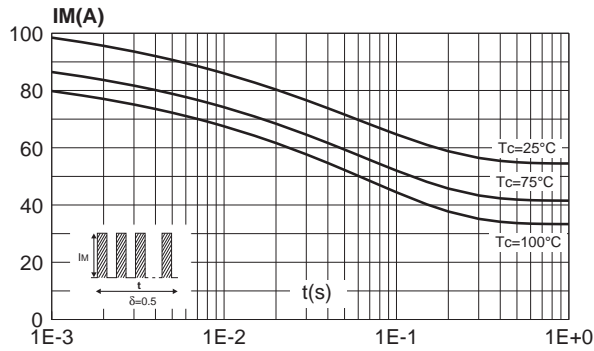


Fig. 5: Relative variation of thermal impedance junction to case versus pulse duration.

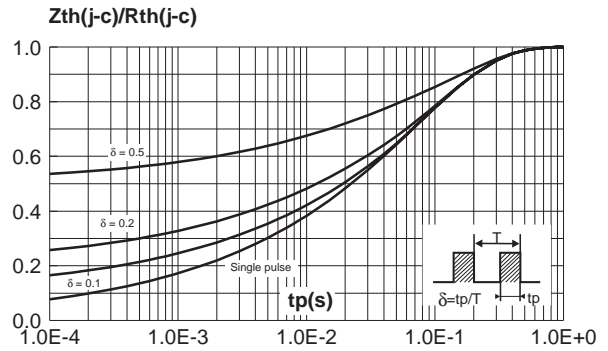


Fig. 7: Reverse leakage current versus reverse voltage applied (typical values).

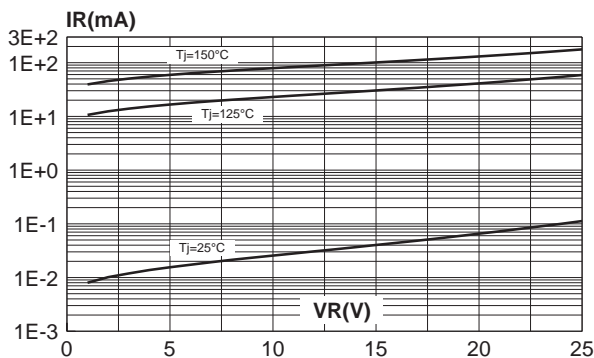


Fig. 8: Junction capacitance versus reverse voltage applied (typical values).

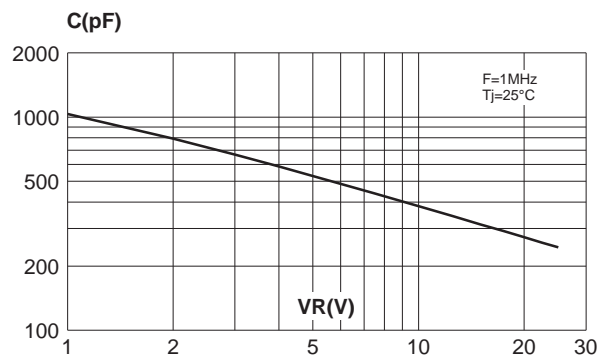


Fig. 9: Forward voltage drop versus forward current (maximum values).

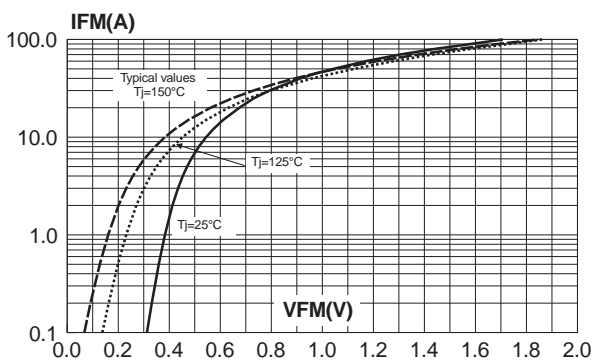
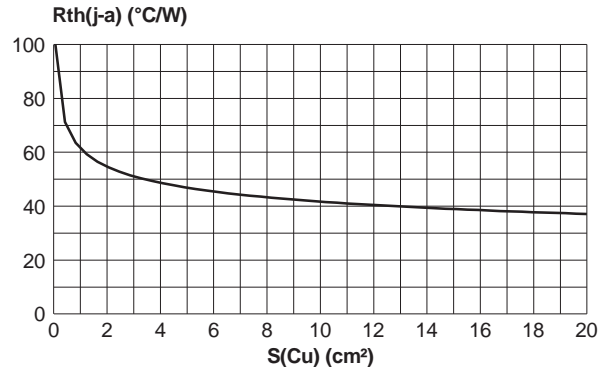
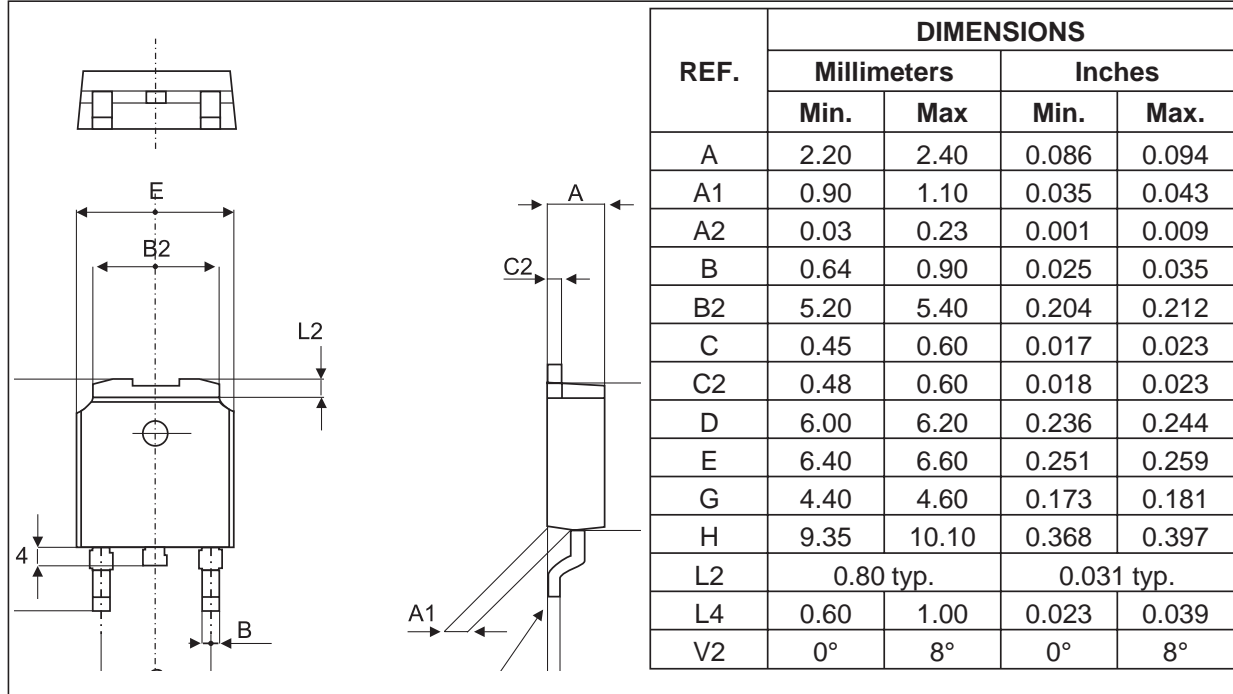


Fig. 10: Thermal resistance junction to ambient versus copper surface under tab (Epoxy printed circuit board FR4, copper thickness: 35µm).

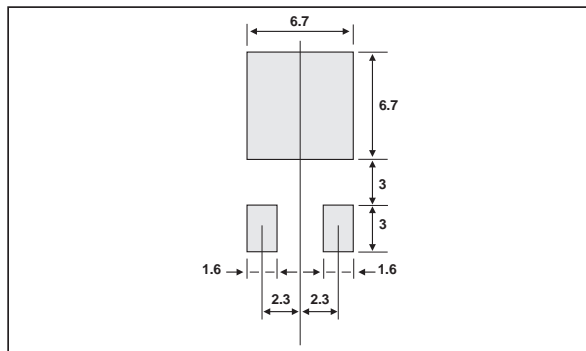


STPS5L25B

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

Information furnished is believed to be accurate and reliable. However, STMicroelectronics assumes no responsibility for the consequences of use of such information nor for any infringement of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of STMicroelectronics. Specifications mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information previously supplied. STMicroelectronics products are not authorized for use as critical components in life support devices or systems without express written approval of STMicroelectronics.

The ST logo is a registered trademark of STMicroelectronics

© 2003 STMicroelectronics - Printed in Italy - All rights reserved.

STMicroelectronics GROUP OF COMPANIES

Australia - Brazil - Canada - China - Finland - France - Germany
 Hong Kong - India - Israel - Italy - Japan - Malaysia - Malta - Morocco - Singapore
 Spain - Sweden - Switzerland - United Kingdom - United States.

<http://www.st.com>