

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

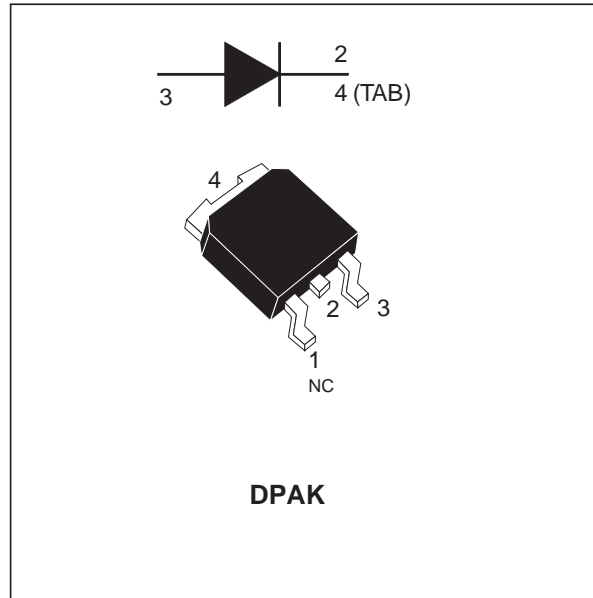
Single Schottky rectifier suited to Switched Mode Power Supplies and high frequency DC to DC converters.

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°C δ = 0.5	5	A
I _{FSM}	Surge non repetitive forward current	tp = 10 ms Sinusoidal	75	A
I _{RRM}	Repetitive peak reverse current	tp=2 μs square F=1kHz	1	A
I _{RSM}	Non repetitive peak reverse current	tp = 100 μs square	2	A
P _{ARM}	Repetitive peak avalanche power	tp = 1μs T _j = 25°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.

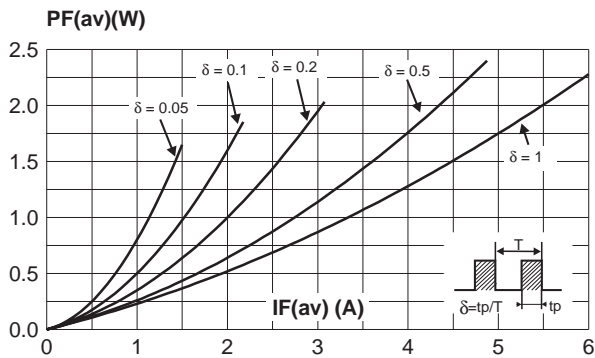


Fig. 3: Normalized avalanche power derating versus pulse duration.

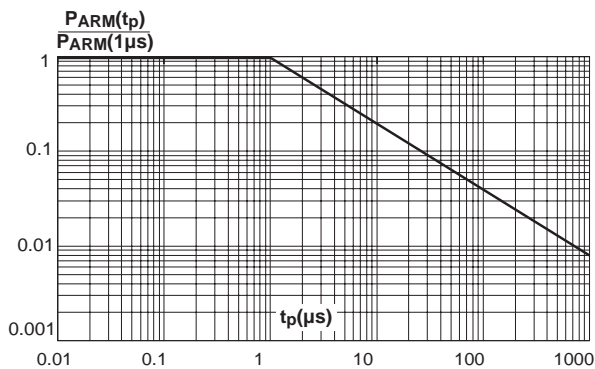


Fig. 2: Average forward current versus ambient temperature ($\delta=0.5$).

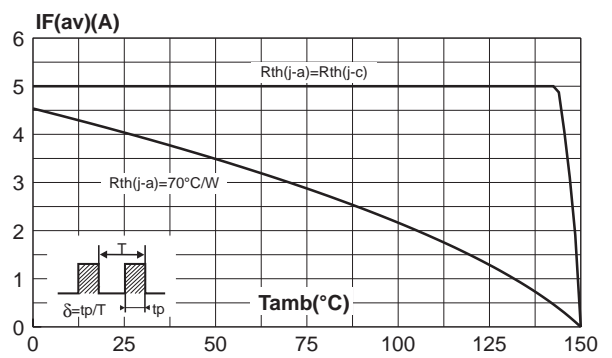


Fig. 4: Normalized avalanche power derating versus junction temperature.

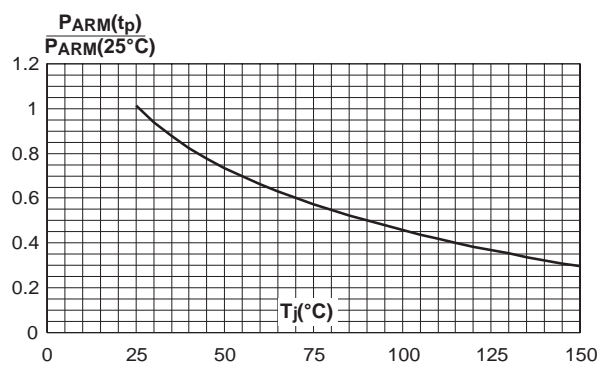


Fig. 5: Non repetitive surge peak forward current versus overload duration (maximum values).

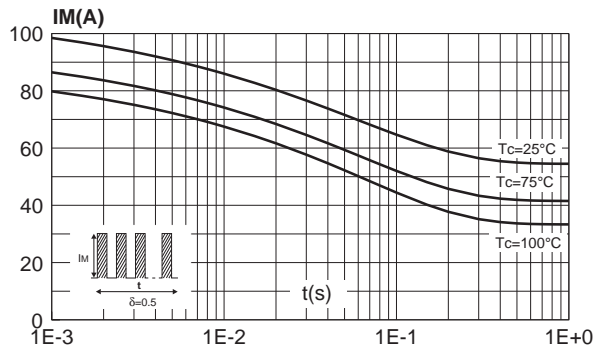


Fig. 5: Relative variation of thermal impedance junction to case versus pulse duration.

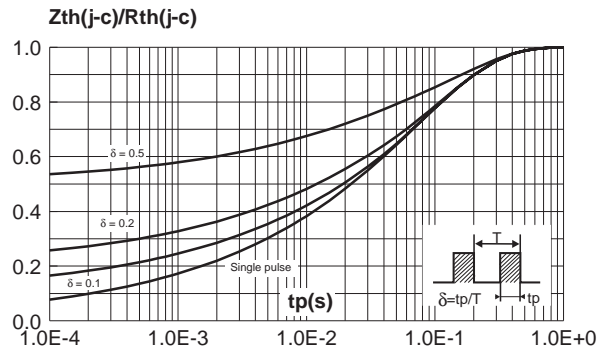


Fig. 7: Reverse leakage current versus reverse voltage applied (typical values).

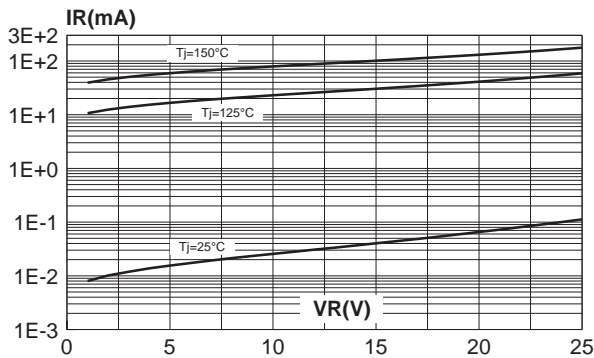


Fig. 8: Junction capacitance versus reverse voltage applied (typical values).

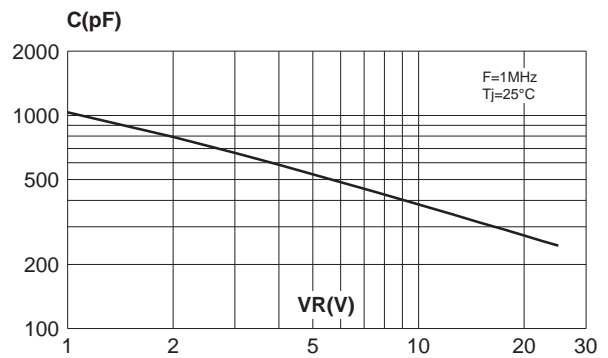


Fig. 9: Forward voltage drop versus forward current (maximum values).

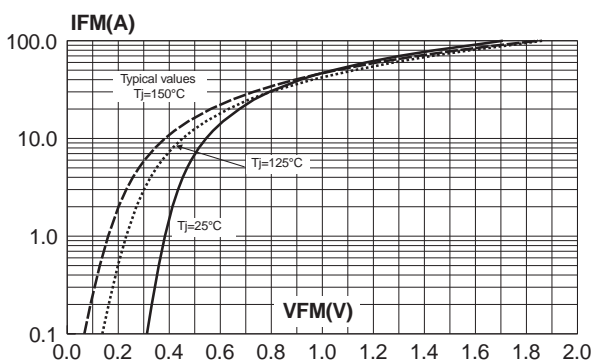
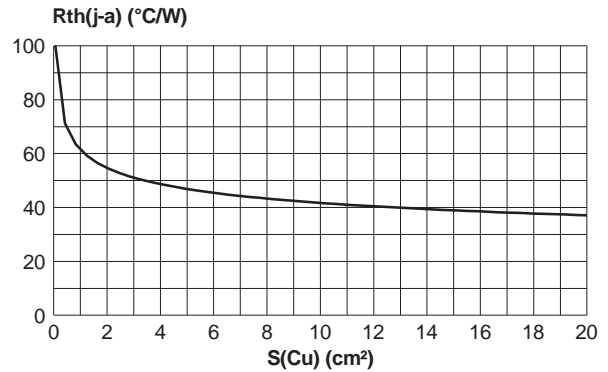
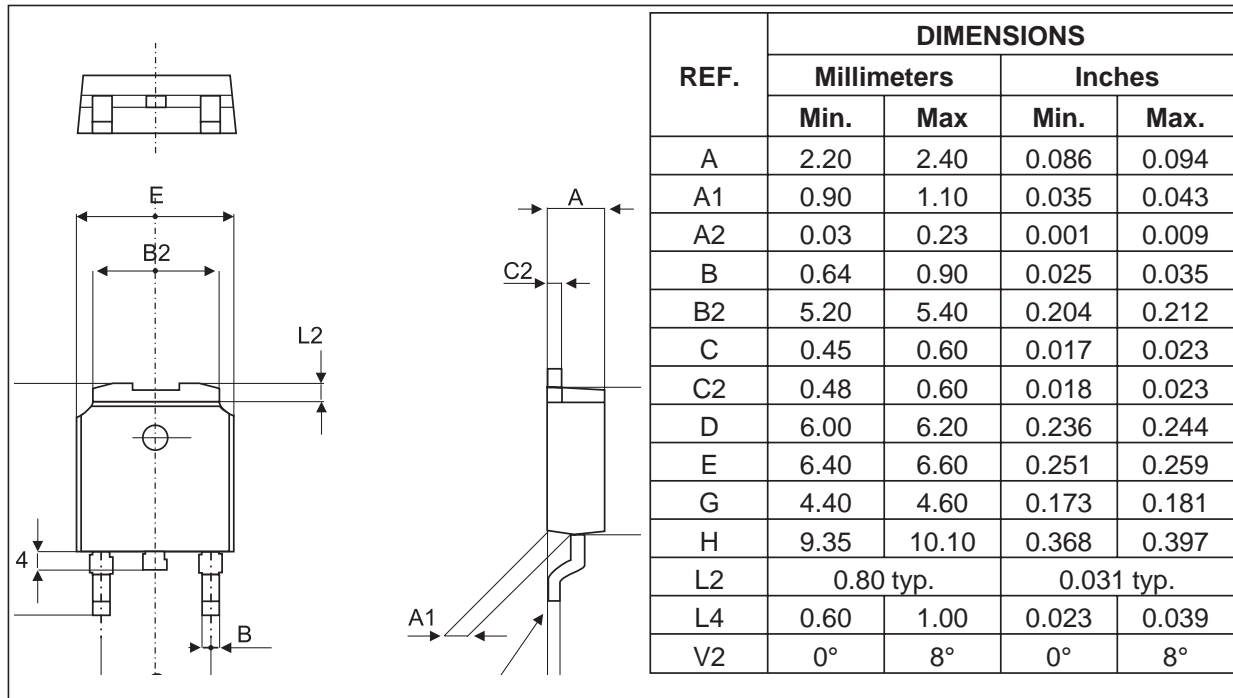


Fig. 10: Thermal resistance junction to ambient versus copper surface under tab (Epoxy printed circuit board FR4, copper thickness: 35µm).

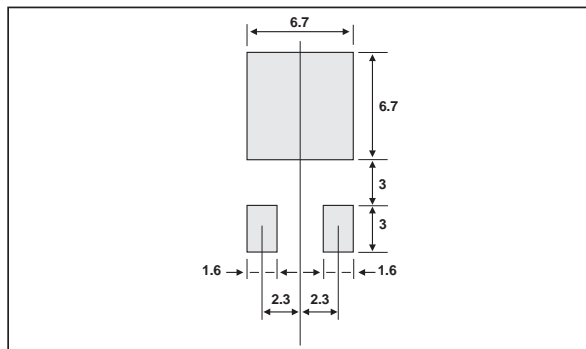


STPS5L25B

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

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