

HIGH VOLTAGE POWER SCHOTTKY RECTIFIER

MAIN PRODUCTS CHARACTERISTICS

$I_{F(AV)}$	2 x 7.5 A
V_{RRM}	100 V
$T_j (max)$	175 °C
$V_F (max)$	0.67 V

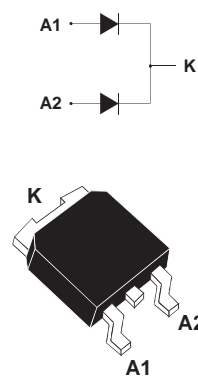
FEATURES AND BENEFITS

- NEGLIGIBLE SWITCHING LOSSES
- LOW LEAKAGE CURRENT
- GOOD TRADE OFF BETWEEN LEAKAGE CURRENT AND FORWARD VOLTAGE DROP
- LOW THERMAL RESISTANCE
- AVALANCHE CAPABILITY SPECIFIED

DESCRIPTION

Dual center tab Schottky rectifier suited for Switch Mode Power Supply and high frequency DC to DC converters.

Package in DPAK, this device is intended for use in high frequency inverters.



DPAK

ABSOLUTE RATINGS (limiting values, per diode)

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 = 135°C δ = 0.5	Per diode Per device	7.5 15	A
I _{FSM}	Surge non repetitive forward current	tp = 10 ms sinusoidal		75	A
I _{RRM}	Peak repetitive reverse current	tp = 2 μs square F=1kHz		1	A
P _{ARM}	Repetitive peak avalanche power	tp = 1μs Tj = 25°C		6600	W
T _{stg}	Storage temperature range			- 65 to + 175	°C
Tj	Maximum operating junction temperature *			175	°C
dV/dt	Critical rate of rise 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

STPS15H100CB

THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
$R_{th(j-c)}$	Junction to case	Per diode	4	$^{\circ}\text{C/W}$
		Total	2.4	
$R_{th(c)}$	Coupling		0.7	

When the diodes 1 and 2 are used simultaneously :

$$\Delta T_j(\text{diode 1}) = P(\text{diode 1}) \times R_{th(j-c)}(\text{Per diode}) + P(\text{diode 2}) \times R_{th(c)}$$

STATIC ELECTRICAL CHARACTERISTICS (per diode)

Symbol	Parameter	Tests Conditions		Min.	Typ.	Max.	Unit
I_R^*	Reverse leakage current	$T_j = 25^{\circ}\text{C}$	$V_R = V_{RRM}$			3	mA
		$T_j = 125^{\circ}\text{C}$			1.3	4	
V_F^*	Forward voltage drop	$T_j = 25^{\circ}\text{C}$	$I_F = 7.5 \text{ A}$			0.8	V
		$T_j = 125^{\circ}\text{C}$	$I_F = 7.5 \text{ A}$		0.62	0.67	
		$T_j = 25^{\circ}\text{C}$	$I_F = 12 \text{ A}$			0.85	
		$T_j = 125^{\circ}\text{C}$	$I_F = 12 \text{ A}$		0.68	0.73	
		$T_j = 25^{\circ}\text{C}$	$I_F = 15 \text{ A}$			0.89	
		$T_j = 125^{\circ}\text{C}$	$I_F = 15 \text{ A}$		0.71	0.76	

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

To evaluate the conduction losses use the following equation :

$$P = 0.58 \times I_{F(AV)} + 0.012 I_{F(RMS)}^2$$

Fig. 1: Conduction losses versus average current.

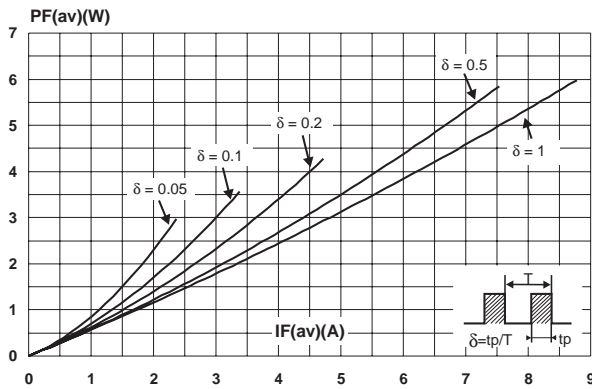


Fig. 3: Normalized avalanche power derating versus pulse duration.

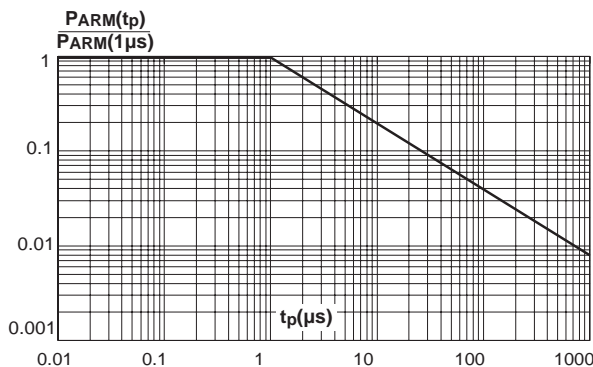


Fig. 2: Average forward current versus ambient temperature ($\delta = 0.5$).

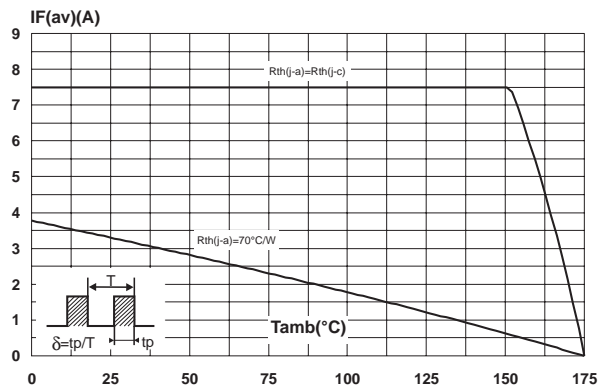


Fig. 4: Normalized avalanche power derating versus junction temperature.

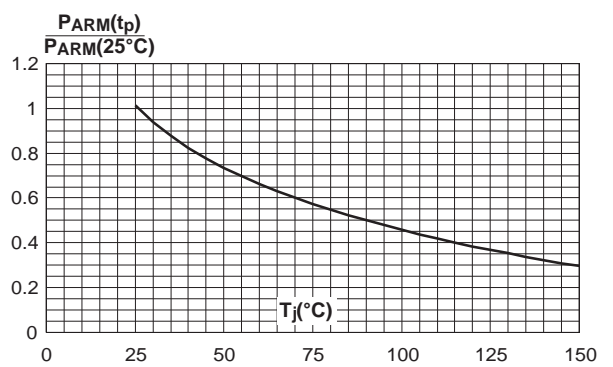


Fig. 5: Non repetitive surge peak forward current versus overload duration (maximum values).

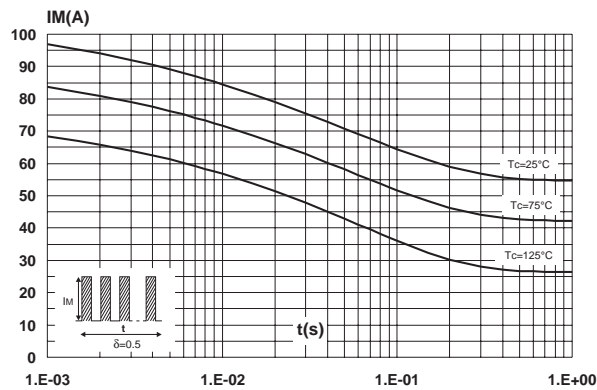


Fig. 6: Relative variation of thermal impedance junction to case versus pulse duration.

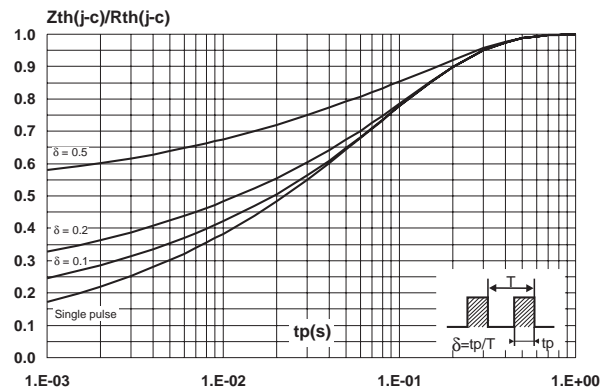


Fig. 7: Reverse leakage current versus reverse voltage applied (typical values).

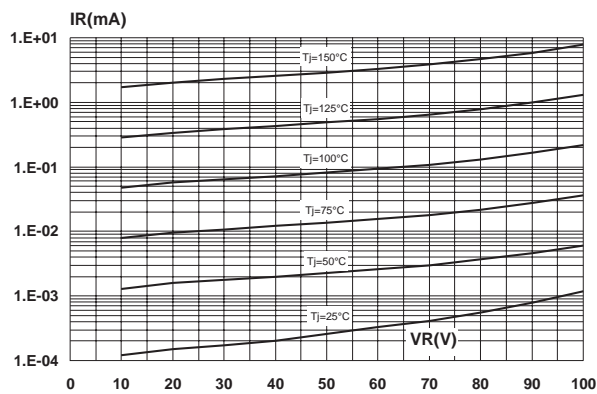


Fig. 8: Junction capacitance versus reverse voltage applied (typical values).

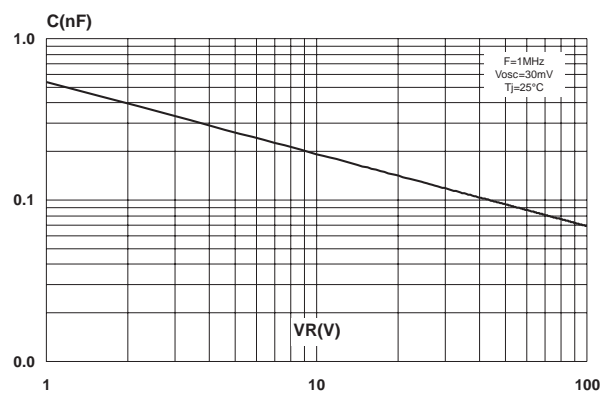


Fig. 9: Forward voltage drop versus forward current.

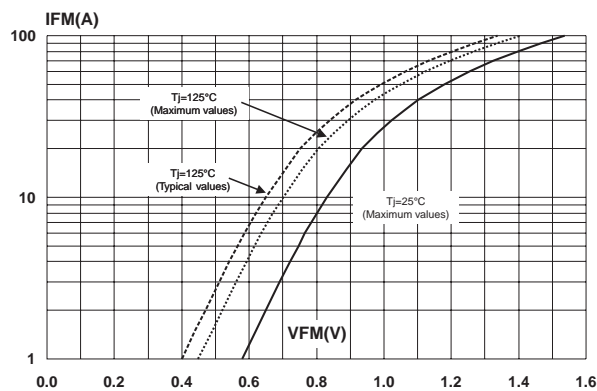
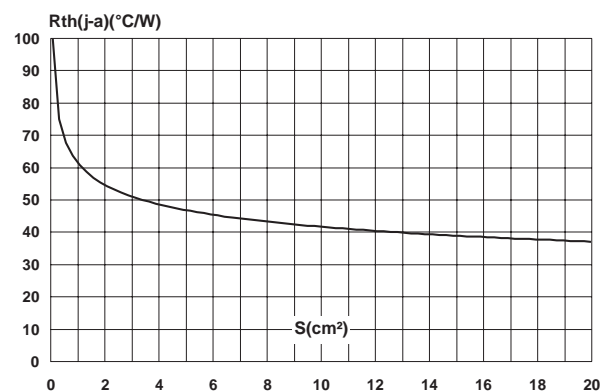


Fig. 10: Thermal resistance junction to ambient versus copper surface under tab (epoxy printed board FR4, Cu = 35μm).

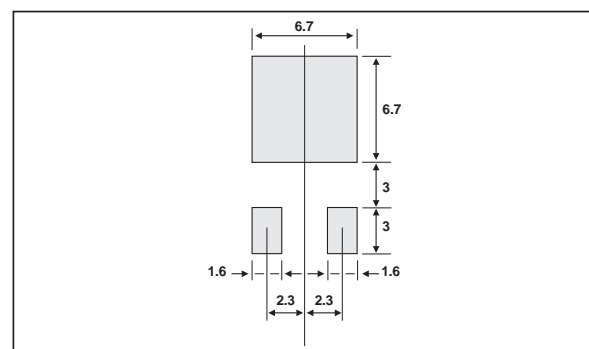


STPS15H100CB

PACKAGE MECHANICAL DATA DPAK

REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max	Min.	Max.
A	2.20	2.40	0.086	0.094
A1	0.90	1.10	0.035	0.043
A2	0.03	0.23	0.001	0.009
B	0.64	0.90	0.025	0.035
B2	5.20	5.40	0.204	0.212
C	0.45	0.60	0.017	0.023
C2	0.48	0.60	0.018	0.023
D	6.00	6.20	0.236	0.244
E	6.40	6.60	0.251	0.259
G	4.40	4.60	0.173	0.181
H	9.35	10.10	0.368	0.397
L2	0.80 typ.		0.031 typ.	
L4	0.60	1.00	0.023	0.039
V2	0°	8°	0°	8°

FOOTPRINT (dimensions in mm)



Ordering type	Marking	Package	Weight	Base qty	Delivery mode
STPS15H100CB	S15H100	DPAK	0.30 g	75	Tube
STPS15H100CB-TR	S15H100	DPAK	0.30 g	2500	Tape & reel

■ EPOXY MEETS UL94,V0

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