

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

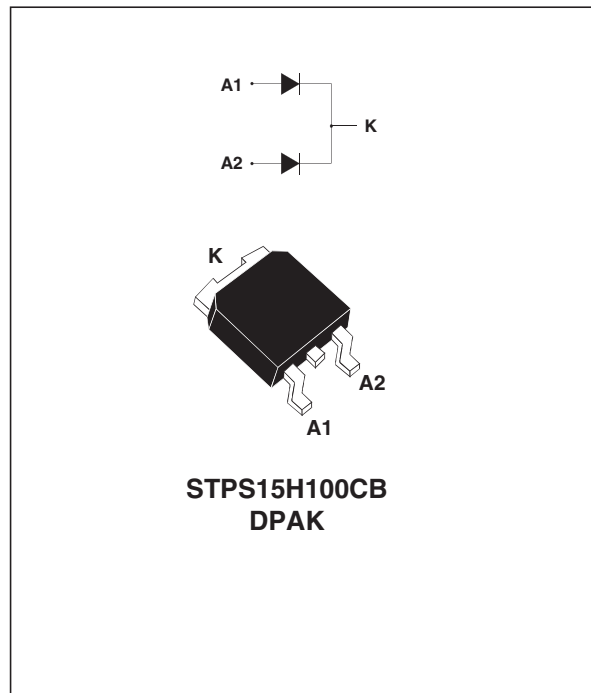
FEATURES AND BENEFITS

- 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.



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	Per diode 7.5	A
		δ = 0.5	Per device 15	
I _{FSM}	Surge non repetitive forward current	t _p = 10 ms sinusoidal	75	A
I _{RRM}	Peak repetitive reverse current	t _p = 2 μs square F=1kHz	1	A
P _{ARM}	Repetitive peak avalanche power	t _p = 1 μs T _j = 25°C	6600	W
T _{stg}	Storage temperature range		- 65 to + 175	°C
T _j	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

STPS15H100C

THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
$R_{th(j-c)}$	Junction to case	Per diode	4	$^{\circ}\text{C}/\text{W}$
		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	μA	
		$T_j = 125^{\circ}\text{C}$			1.3	4	mA	
V_F^*	Forward voltage drop	$T_j = 25^{\circ}\text{C}$	$I_F = 7.5 \text{ A}$			0.8	V	
		$T_j = 125^{\circ}\text{C}$			0.62	0.67		
		$T_j = 25^{\circ}\text{C}$		$I_F = 12 \text{ A}$				0.85
		$T_j = 125^{\circ}\text{C}$				0.68		0.73
		$T_j = 25^{\circ}\text{C}$		$I_F = 15 \text{ A}$				0.89
		$T_j = 125^{\circ}\text{C}$				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.

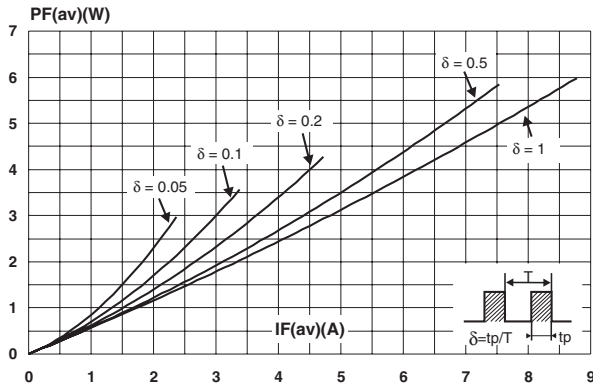


Fig. 3: Normalized avalanche power derating versus pulse duration.

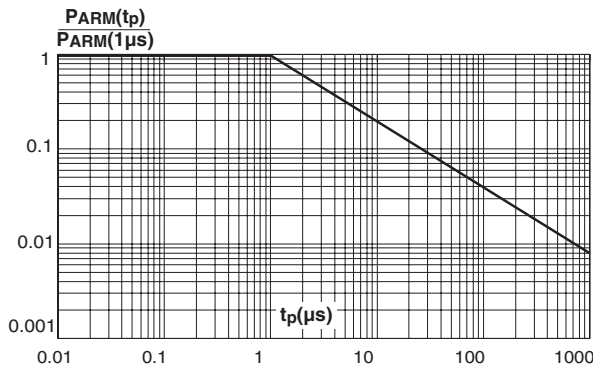


Fig. 2: Average forward current versus ambient temperature ($\delta = 0.5$).

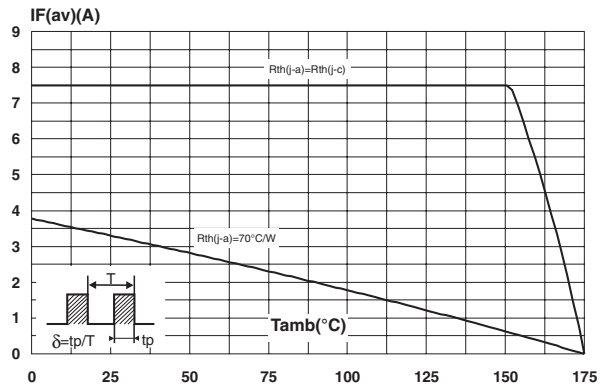


Fig. 4: Normalized avalanche power derating versus junction temperature.

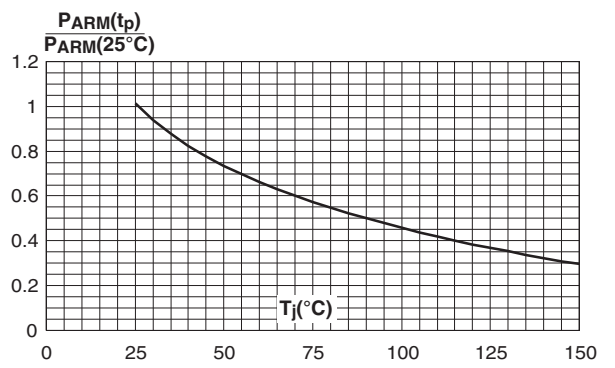


Fig. 5: Non repetitive surge peak forward current versus overload duration (maximum values).

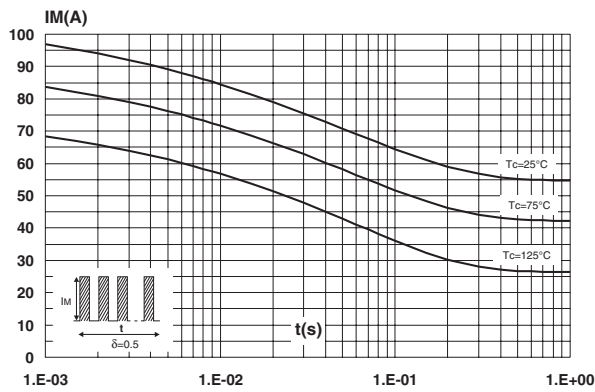


Fig. 6: Relative variation of thermal impedance junction to case versus pulse duration.

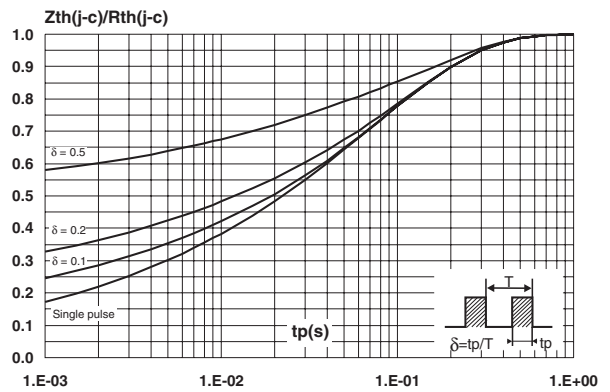


Fig. 7: Reverse leakage current versus reverse voltage applied (typical values).

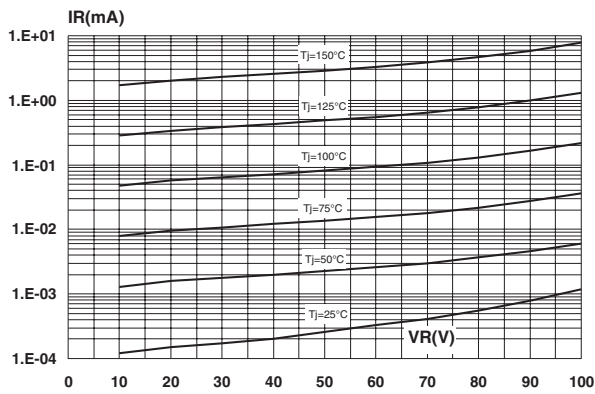


Fig. 8: Junction capacitance versus reverse voltage applied (typical values).

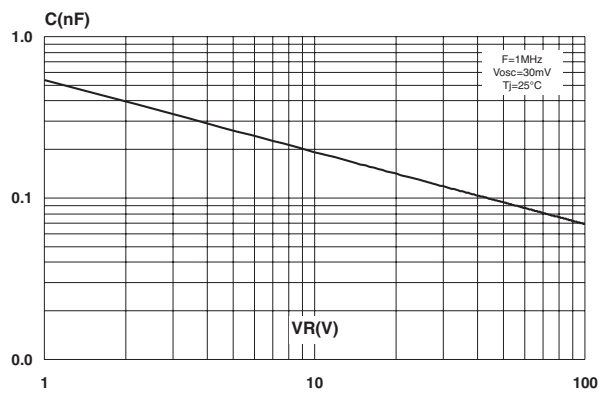


Fig. 9: Forward voltage drop versus forward current.

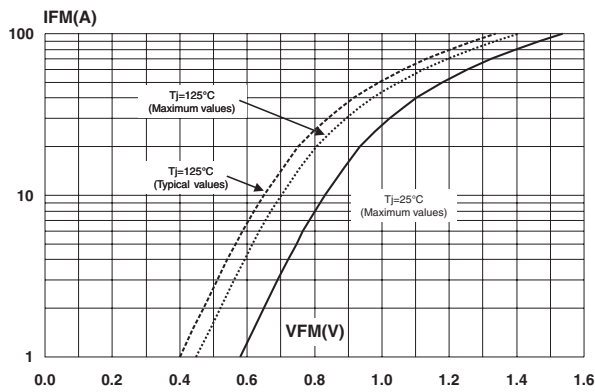
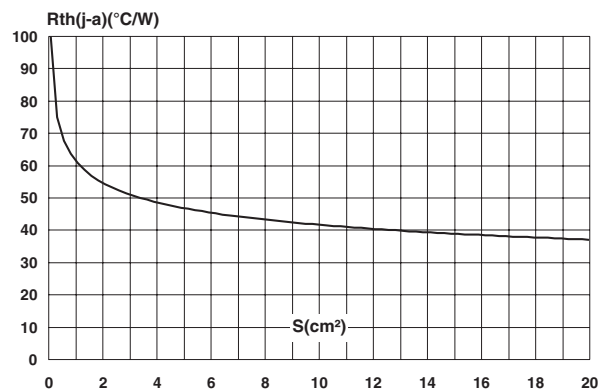
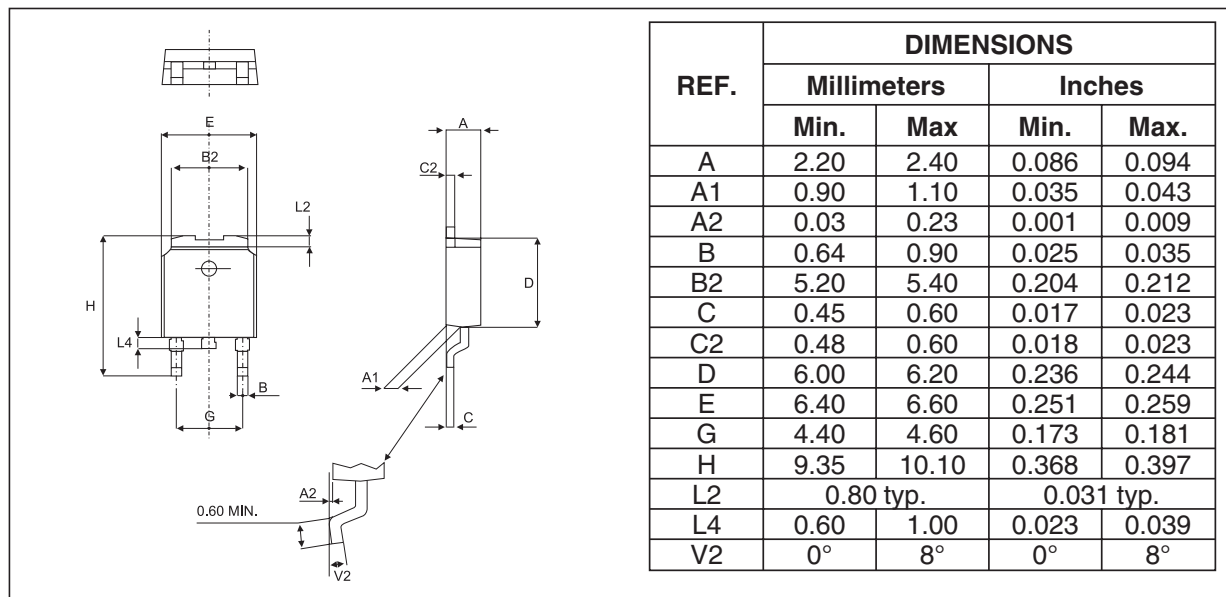


Fig. 10: Thermal resistance junction to ambient versus copper surface area under tab (epoxy printed board FR4, Cu = 35µm).

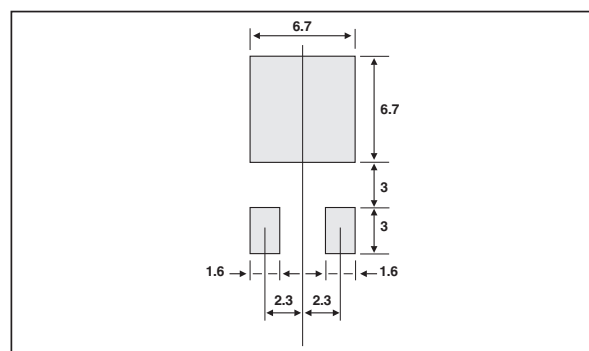


STPS15H100C

PACKAGE MECHANICAL DATA DPAK



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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