

HIGH VOLTAGE POWER SCHOTTKY RECTIFIER

MAIN PRODUCT CHARACTERISTICS

$I_{F(AV)}$	2 A
V_{RRM}	100 V
T_j (max)	175°C
V_F (max)	0.70 V



FEATURES AND BENEFITS

- NEGLIGIBLE SWITCHING LOSSES
- HIGH JUNCTION TEMPERATURE CAPABILITY
- GOOD TRADE OFF BETWEEN LEAKAGE CURRENT AND FORWARD VOLTAGE DROP
- LOW LEAKAGE CURRENT
- AVALANCHE CAPABILITY SPECIFIED

DESCRIPTION

Axial Power Schottky rectifier suited for Switch Mode Power Supply and high frequency DC/DC converters. Packaged in DO-41, this device is intended for use in low voltage, high frequency inverters and small battery chargers.

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	$T_L = 120^\circ\text{C} \quad \delta = 0.5$	2	A
I_{FSM}	Surge non repetitive forward current	$t_p = 10 \text{ ms}$ sinusoidal	50	A
I_{RRM}	Repetitive peak reverse current	$t_p = 2 \mu\text{s}$ square $F = 1\text{kHz}$	1	A
P_{ARM}	Repetitive peak avalanche power	$t_p = 1 \mu\text{s} \quad T_j = 25^\circ\text{C}$	1500	W
T_{stg}	Storage temperature range		- 65 to + 175	°C
T_j	Maximum operating junction temperature *		175	°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

STPS2H100

THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
$R_{th(j-a)}$	Junction to ambient	Lead length = 10 mm	100	°C/W
$R_{th(j-l)}$	Junction to lead	Lead length = 10 mm	35	

STATIC ELECTRICAL CHARACTERISTICS (per diode)

Symbol	Parameter	Tests conditions		Min.	Typ.	Max.	Unit	
I_R^*	Reverse leakage current	$T_j = 25^\circ\text{C}$	$V_R = V_{RRM}$			1	μA	
		$T_j = 125^\circ\text{C}$			0.2	0.5	mA	
V_F^{**}	Forward voltage drop	$T_j = 25^\circ\text{C}$	$I_F = 2\text{ A}$			0.86	V	
		$T_j = 125^\circ\text{C}$			0.65	0.70		
		$T_j = 25^\circ\text{C}$		$I_F = 4\text{ A}$				0.92
		$T_j = 125^\circ\text{C}$				0.72		0.78

Pulse test : * $t_p = 5\text{ ms}$, $\delta < 2\%$
 ** $t_p = 380\text{ }\mu\text{s}$, $\delta < 2\%$

To evaluate the maximum conduction losses use the following equation :
 $P = 0.62 \times I_{F(AV)} + 0.04 \times I_{F(RMS)}^2$

Fig. 1: Conduction losses versus average current.

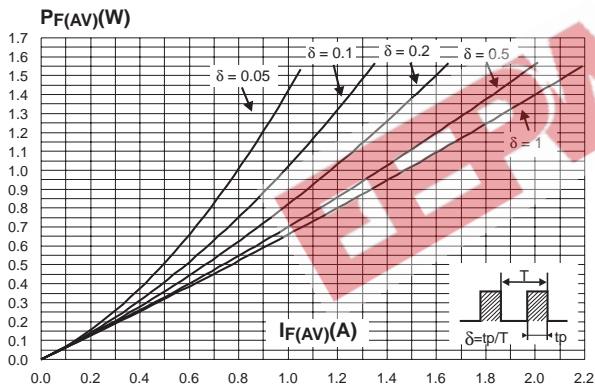


Fig. 3: Normalized avalanche power derating versus pulse duration.

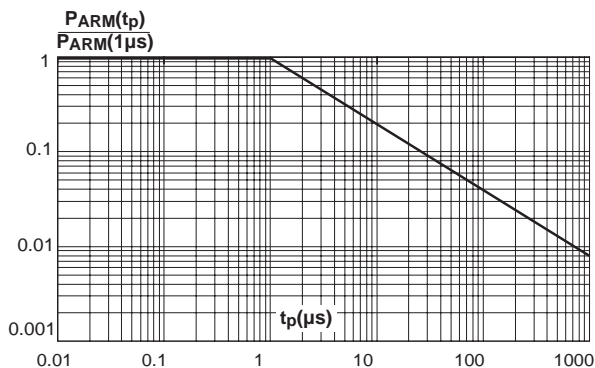


Fig. 2: Average forward current versus ambient temperature ($\delta=0.5$).

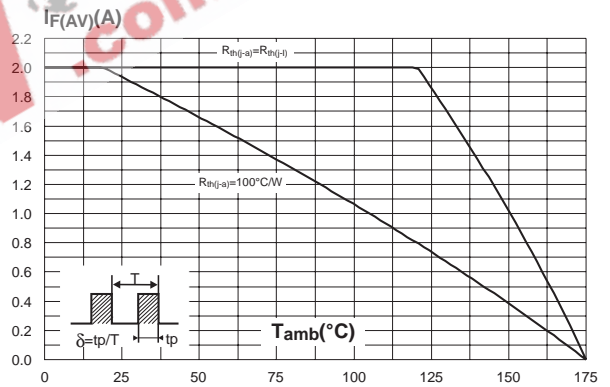


Fig. 4: Normalized avalanche power derating versus junction temperature.

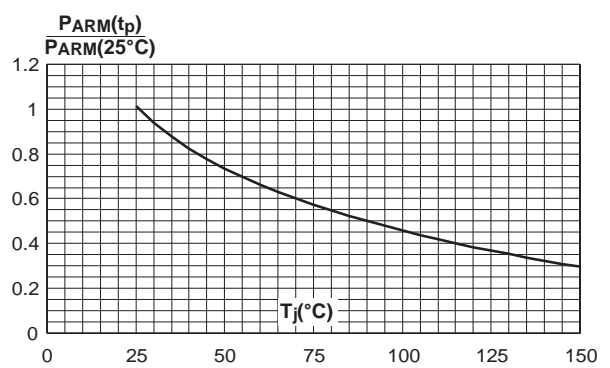


Fig. 5: Non repetitive surge peak forward current versus overload duration (maximum values).

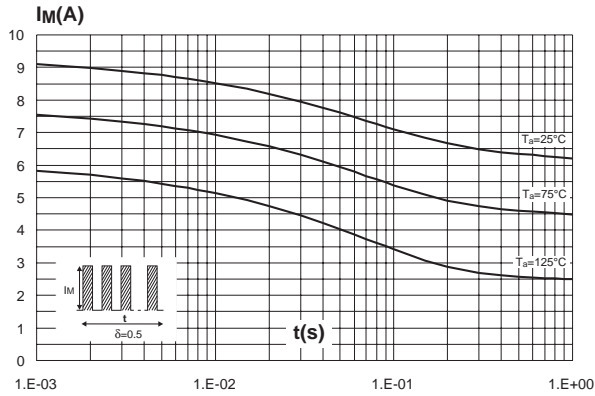


Fig. 6: Relative variation of thermal impedance junction to ambient versus pulse duration.

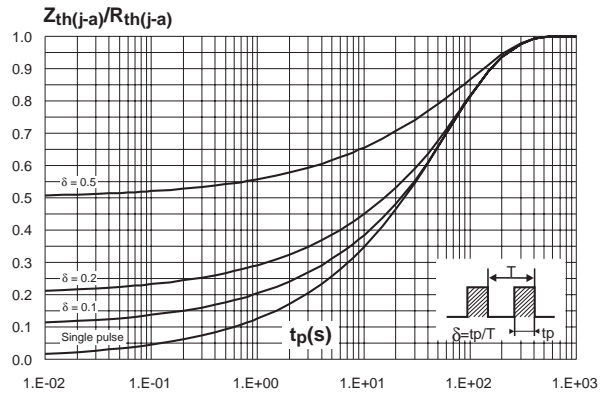


Fig. 7: Reverse leakage current versus reverse voltage applied (typical values).

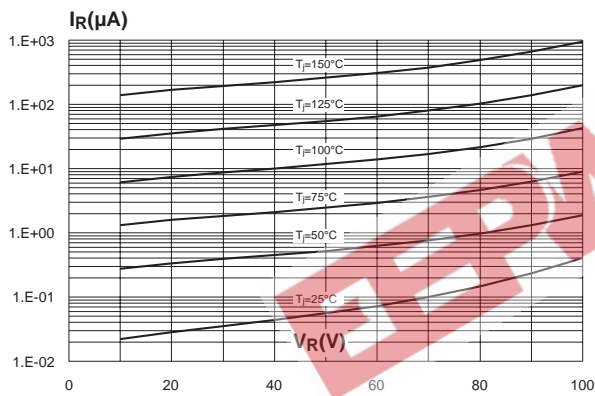


Fig. 8: Junction capacitance versus reverse voltage applied (typical values).

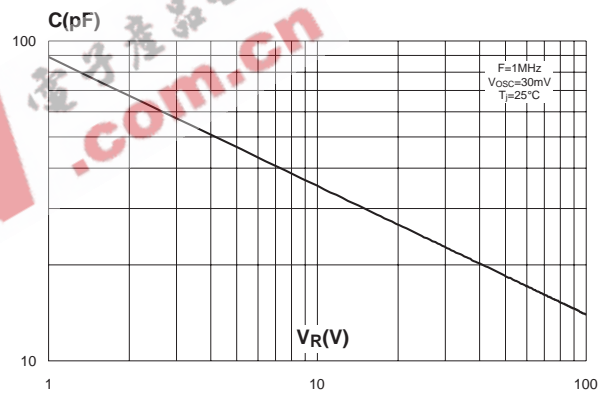


Fig. 9-1: Forward voltage drop versus forward current (low level).

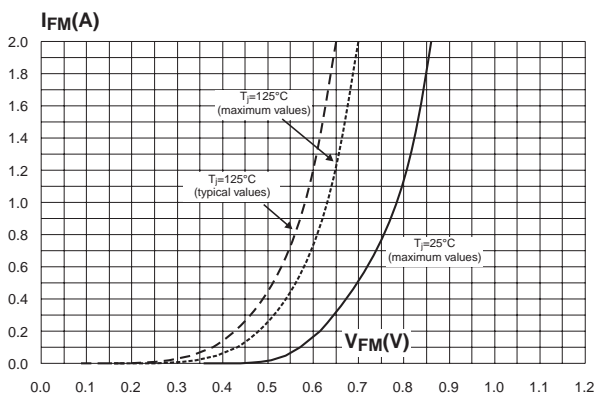
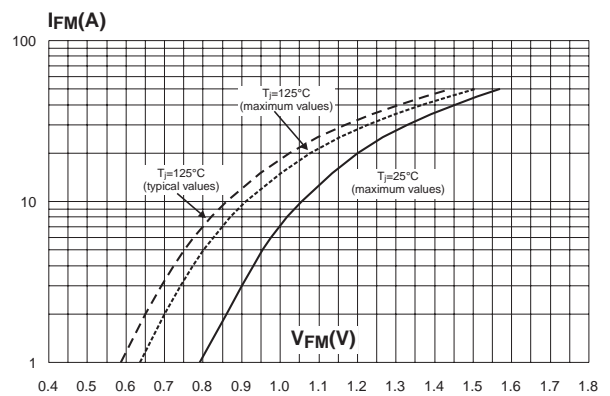
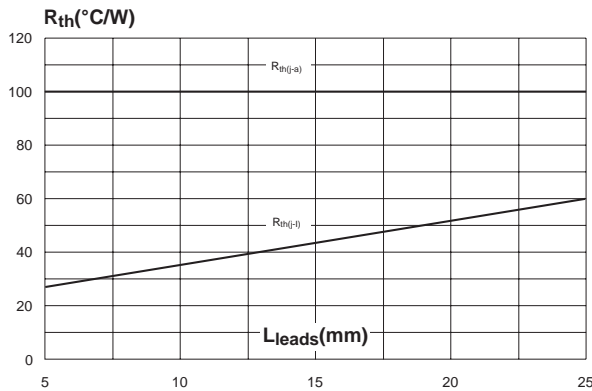


Fig. 9-2: Forward voltage drop versus forward current (high level).



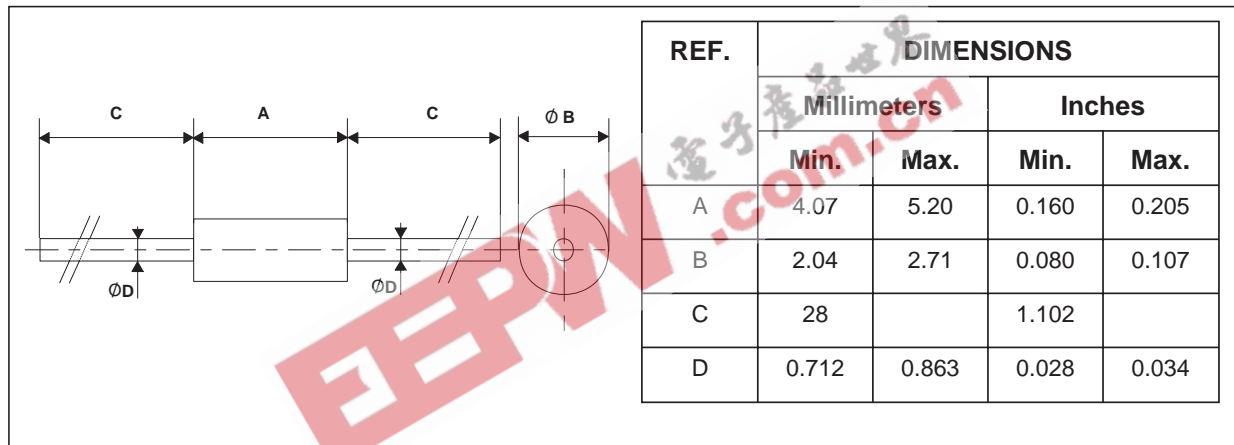
STPS2H100

Fig. 10: Thermal resistance versus lead length.



PACKAGE MECHANICAL DATA

DO-41 (plastic)



Ordering type	Marking	Package	Weight	Base qty	Delivery mode
STPS2H100	STPS2H100 cathode ring	DO-41	0.34 g	2000	Ammopack
STPS2H100RL	STPS2H100 cathode ring			5000	Tape & Reel

■ EPOXY MEETS UL94,V0

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