

HIGH VOLTAGE POWER SCHOTTKY RECTIFIER

MAIN PRODUCT CHARACTERISTICS

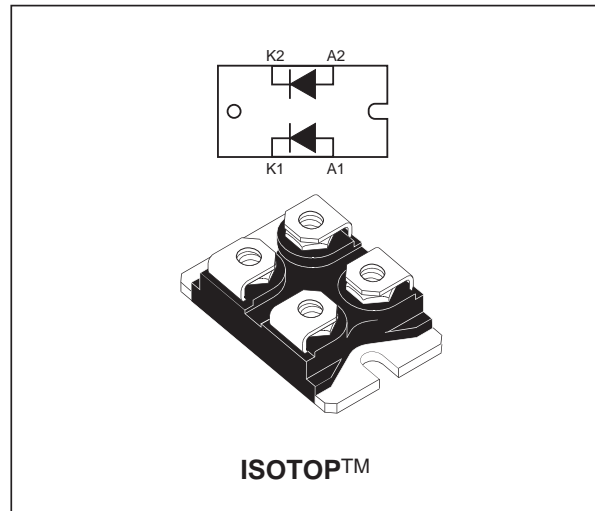
$I_{F(AV)}$	2 x 80 A
V_{RRM}	100 V
T_j (max)	150 °C
V_F (max)	0.68 V

FEATURES AND BENEFITS

- NEGLIGIBLE SWITCHING LOSSES
- HIGH JUNCTION TEMPERATURE CAPABILITY
- LOW LEAKAGE CURRENT
- GOOD TRADE OFF BETWEEN LEAKAGE CURRENT AND FORWARD VOLTAGE DROP
- AVALANCHE RATED
- LOW INDUCTION PACKAGE
- INSULATED PACKAGE:
Insulating Voltage = 2500 V_(RMS)
Capacitance = 45 pF
- AVALANCHE CAPABILITY SPECIFIED

DESCRIPTION

High voltage dual Schottky rectifier designed for high frequency telecom and computer Switched Mode Power Supplies and other power converters.



Packaged in ISOTOP, this device is intended for use in medium voltage operation, and particularly, in high frequency circuitries where low switching losses and low noise are required.

ABSOLUTE RATINGS (limiting values, per diode)

Symbol	Parameter		Value	Unit	
V_{RRM}	Repetitive peak reverse voltage		100	V	
$I_{F(RMS)}$	RMS forward current		180	A	
$I_{F(AV)}$	Average forward current	$T_c = 110^\circ\text{C}$ $\delta = 0.5$	Per diode Per device	80 160	A
I_{FSM}	Surge non repetitive forward current	$t_p = 10 \text{ ms}$ sinusoidal	1000	A	
I_{RRM}	Repetitive peak reverse current	$t_p = 2 \mu\text{s}$ square $F = 1\text{kHz}$	2	A	
I_{RSM}	Non repetitive peak reverse current	$t_p = 100 \mu\text{s}$ square	10	A	
P_{ARM}	Repetitive peak avalanche power	$t_p = 1 \mu\text{s}$ $T_j = 25^\circ\text{C}$	78400	W	
T_{stg}	Storage temperature range		-55 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

STPS160H100TV

THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
$R_{th(j-c)}$	Junction to case	Per leg	0.9	°C/W
		Total	0.5	°C/W
$R_{th(c)}$		Coupling	0.14	°C/W

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	$T_j = 25^\circ\text{C}$	$V_R = V_{RRM}$			40	μA
		$T_j = 125^\circ\text{C}$			13	50	mA
V_F^{**}	Forward Voltage drop	$T_j = 25^\circ\text{C}$	$I_F = 60\text{ A}$			0.75	V
		$T_j = 125^\circ\text{C}$	$I_F = 60\text{ A}$		0.59	0.63	
		$T_j = 25^\circ\text{C}$	$I_F = 80\text{ A}$			0.80	
		$T_j = 125^\circ\text{C}$	$I_F = 80\text{ A}$		0.63	0.68	
		$T_j = 25^\circ\text{C}$	$I_F = 120\text{ A}$			0.87	
		$T_j = 125^\circ\text{C}$	$I_F = 120\text{ A}$		0.69	0.74	
		$T_j = 25^\circ\text{C}$	$I_F = 160\text{ A}$			0.92	
		$T_j = 125^\circ\text{C}$	$I_F = 160\text{ A}$		0.75	0.80	

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

To evaluate the conduction losses use the following equation :
 $P = 0.56 \times I_{F(AV)} + 0.0015 \times I_{F(RMS)}^2$

Fig. 1: Average forward power dissipation versus average forward current (per diode).

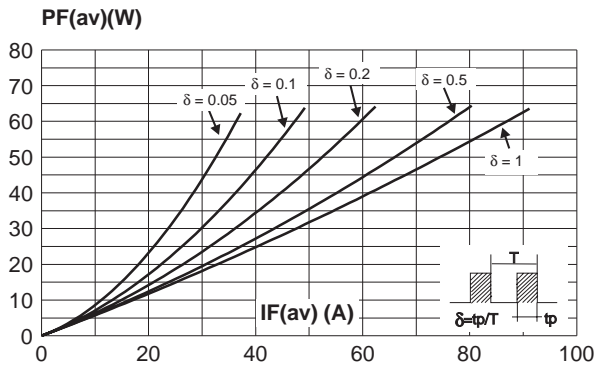


Fig. 2: Average forward current versus ambient temperature ($\delta=0.5$, per diode).

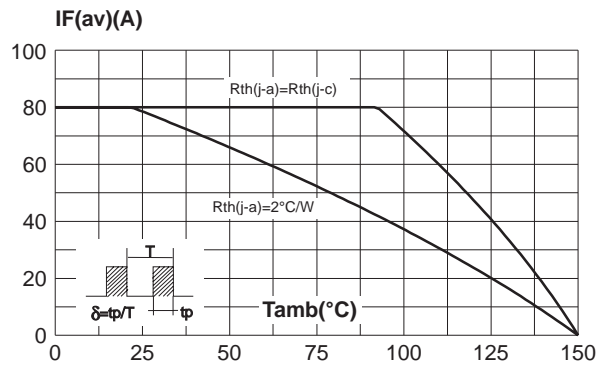


Fig. 3: Normalized avalanche power derating versus pulse duration.

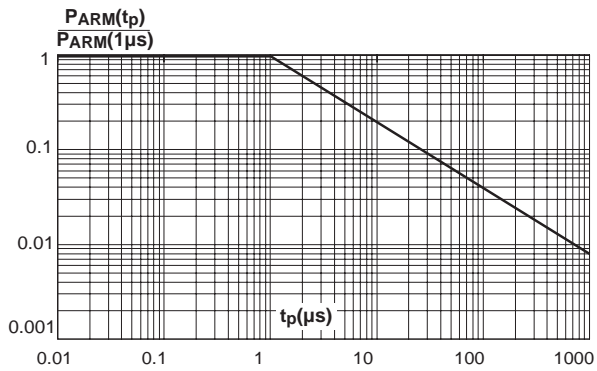


Fig. 4: Normalized avalanche power derating versus junction temperature.

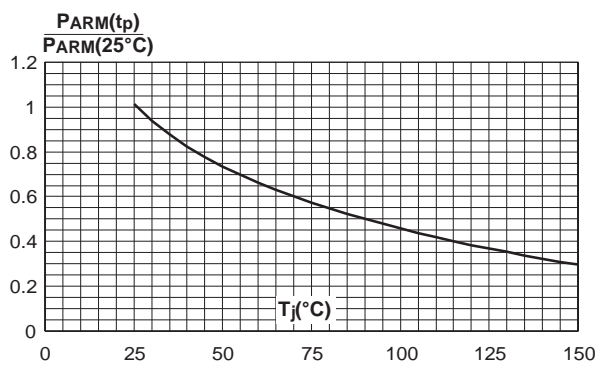


Fig. 5: Non repetitive surge peak forward current versus overload duration (maximum values, per diode).

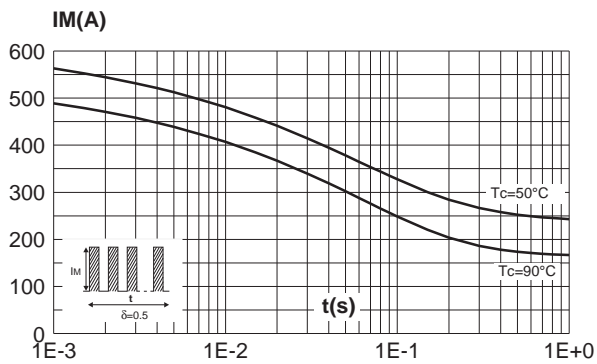
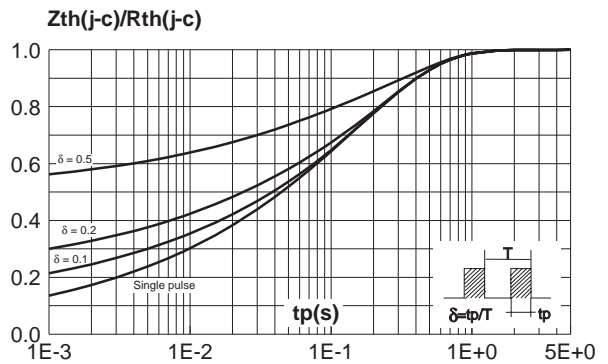


Fig. 6: Relative variation of thermal impedance junction to case versus pulse duration (per diode).



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

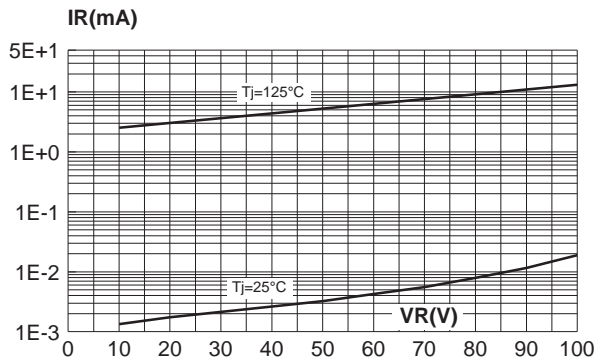


Fig. 8: Junction capacitance versus reverse voltage applied (typical values, per diode).

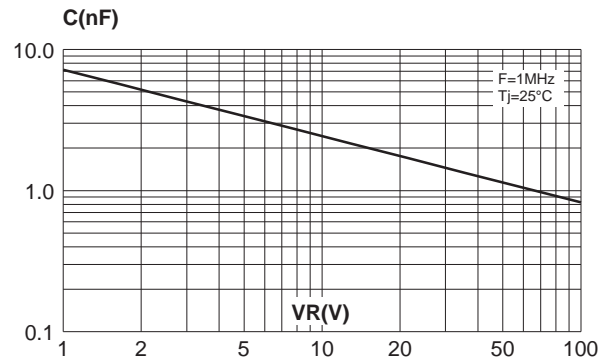
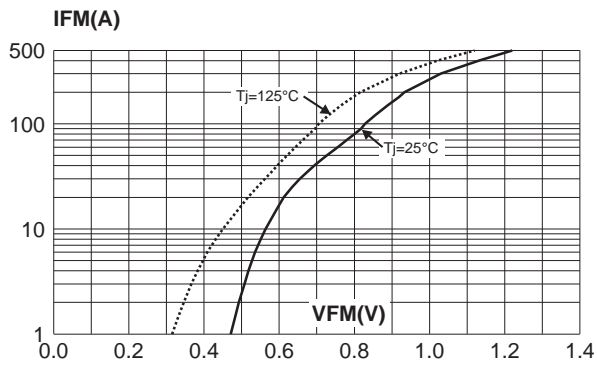


Fig. 9: Forward voltage drop versus forward current (maximum values, per diode).



PACKAGE MECHANICAL DATA
 ISOTOP™

REF.	DIMENSIONS					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	11.80		12.20	0.465		0.480
A1	8.90		9.10	0.350		0.358
B	7.8		8.20	0.307		0.323
C	0.75		0.85	0.030		0.033
C2	1.95		2.05	0.077		0.081
D	37.80		38.20	1.488		1.504
D1	31.50		31.70	1.240		1.248
E	25.15		25.50	0.990		1.004
E1	23.85		24.15	0.939		0.951
E2		24.80			0.976	
G	14.90		15.10	0.587		0.594
G1	12.60		12.80	0.496		0.504
G2	3.50		4.30	0.138		0.169
F	4.10		4.30	0.161		0.169
F1	4.60		5.00	0.181		0.197
P	4.00		4.30	0.157		0.69
P1	4.00		4.40	0.157		0.173
S	30.10		30.30	1.185		1.193

- Cooling method: C
- Recommended torque value: 1.3 N.m.
- Maximum torque value: 1.5 N.m.

Ordering type	Marking	Package	Weight	Base qty	Delivery mode
STPS160H100TV	STPS160H100TV	ISOTOP	27g without screws	10	Tube

- Epoxy meets UL94,V0

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