



STPS1H100A/U

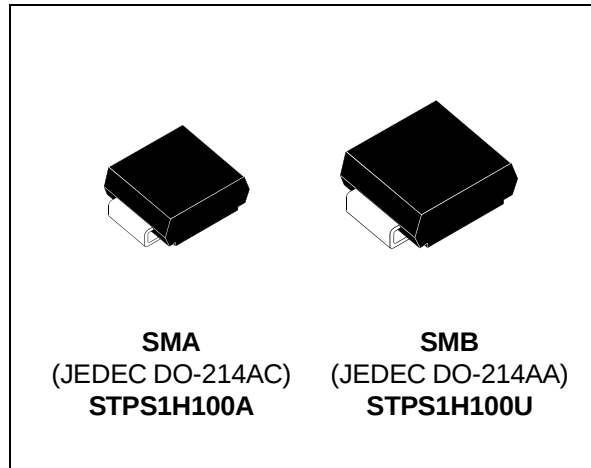
HIGH VOLTAGE POWER SCHOTTKY RECTIFIER

MAIN PRODUCT CHARACTERISTICS

$I_{F(AV)}$	1 A
V_{RRM}	100 V
T_j (max)	175 °C
V_F (max)	0.62 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



DESCRIPTION

Schottky rectifier designed for high frequency miniature Switched Mode Power Supplies such as adaptators and on board DC/DC converters.

Packaged in SMA or SMB.

ABSOLUTE RATINGS (limiting values)

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	$T_L = 160^\circ\text{C}$ $\delta = 0.5$	1	A
I_{FSM}	Surge non repetitive forward current	$t_p = 10$ ms sinusoidal	50	A
I_{RRM}	Repetitive peak reverse current	$t_p = 2$ μ s square $F = 1$ kHz	1	A
I_{RSM}	Non repetitive peak reverse current	$t_p = 100$ μ s square	1	A
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/ μ s

* : $\frac{dP_{tot}}{dT_j} < \frac{1}{R_{th(j-a)}}$ thermal runaway condition for a diode on its own heatsink

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THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
$R_{th(j-l)}$	Junction to lead	SMA	30	$^{\circ}\text{C/W}$
		SMB	25	

STATIC ELECTRICAL CHARACTERISTICS

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	$T_j = 25^{\circ}\text{C}$	$I_F = 1\text{ A}$			0.77	V
		$T_j = 125^{\circ}\text{C}$	$I_F = 1\text{ A}$		0.58	0.62	
		$T_j = 25^{\circ}\text{C}$	$I_F = 2\text{ A}$			0.86	
		$T_j = 125^{\circ}\text{C}$	$I_F = 2\text{ A}$		0.65	0.7	

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 :

$$P = 0.54 I_{F(AV)} + 0.08 I_F^2(RMS)$$

Fig. 1: Average forward power dissipation versus average forward current.

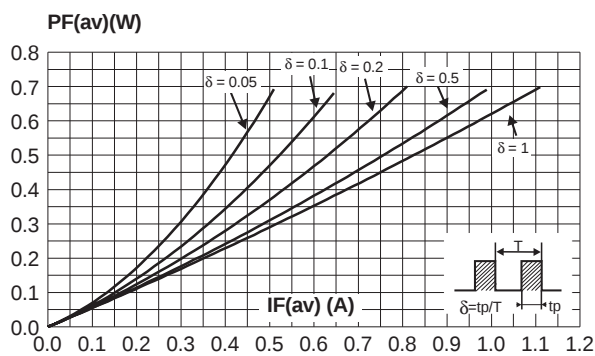


Fig. 2: Average forward current versus ambient temperature ($\delta=0.5$).

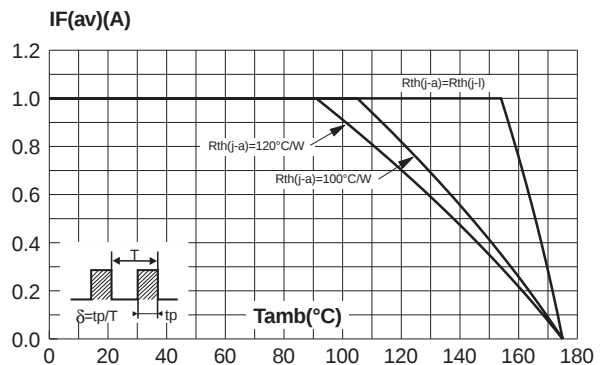


Fig. 3: Non repetitive surge peak forward current versus overload duration (maximum values) (SMB).

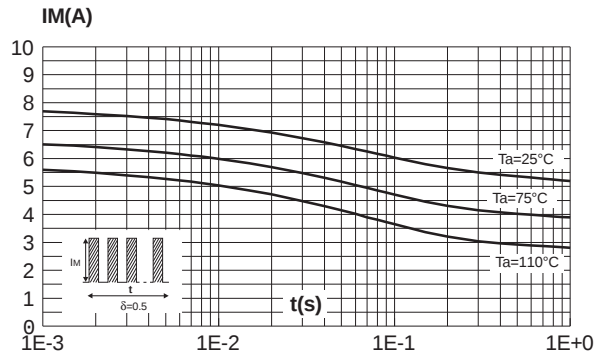


Fig. 4: Non repetitive surge peak forward current versus overload duration (maximum values) (SMA).

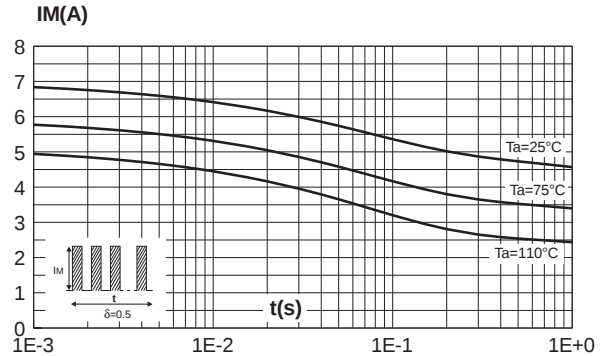


Fig. 5: Relative variation of thermal impedance junction to ambient versus pulse duration (SMB).

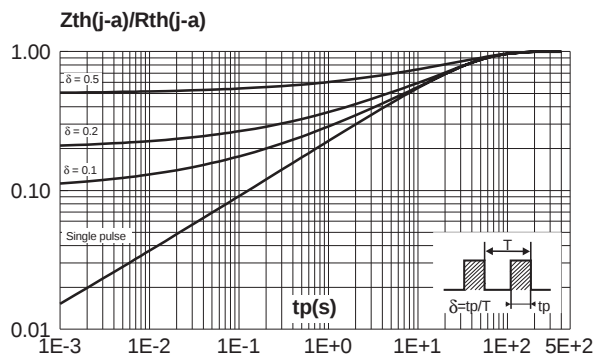


Fig. 6: Relative variation of thermal impedance junction to ambient versus pulse duration (SMA).

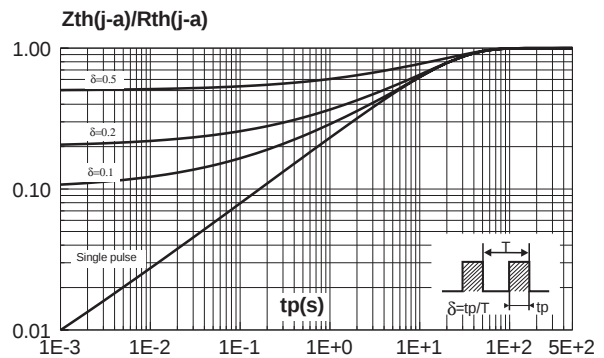


Fig. 7: Reverse leakage current versus reverse voltage applied (typical values).

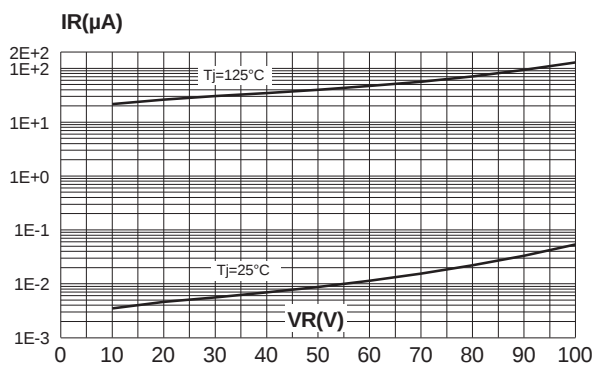
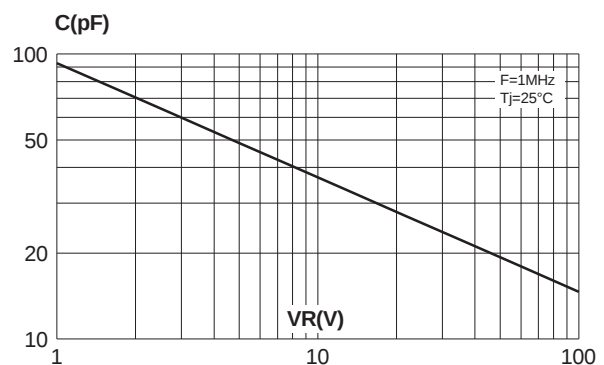


Fig. 8: Junction capacitance versus reverse voltage applied (typical values).



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Fig. 9: Thermal resistance junction to ambient versus copper surface under each lead (Epoxy printed circuit board FR4, copper thickness: 35μm) (SMB).

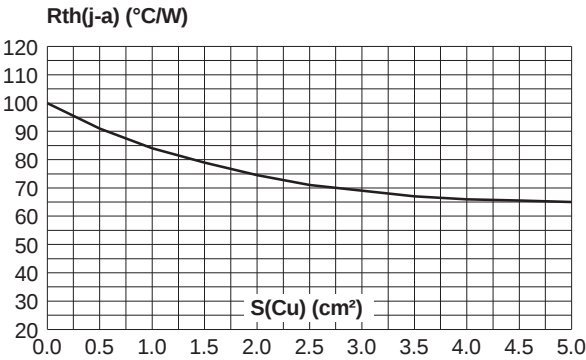


Fig. 10: Thermal resistance junction to ambient versus copper surface under each lead (Epoxy printed circuit board FR4, copper thickness: 35μm) (SMA).

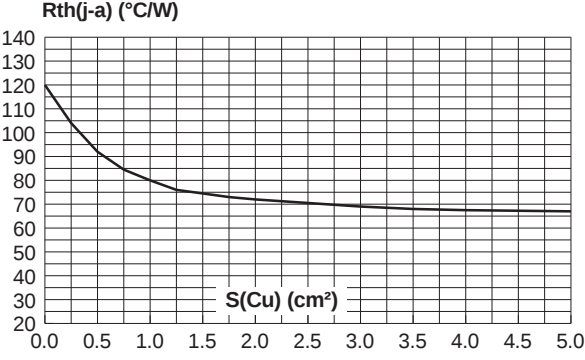
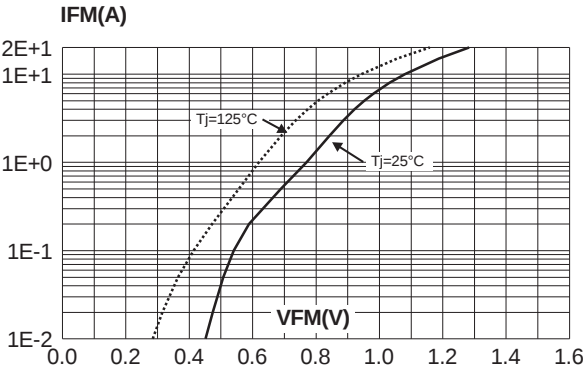


Fig. 11: Forward voltage drop versus forward current (maximum values).



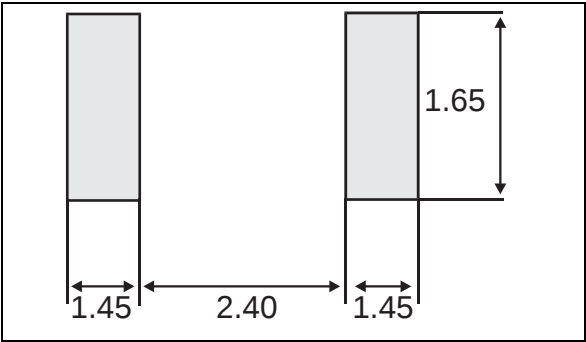
PACKAGE MECHANICAL DATA
SMA

The diagram illustrates the mechanical specifications of an SMA package through three views: a plan view, a side view, and an isometric view.

- Plan View (Top Left):** Shows the top of the package with a central rectangular body and two side leads. Dimension **E1** indicates the total width, and **D** indicates the total height.
- Side View (Bottom Left):** Shows the profile of the package. Dimension **E** is the total width, **L** is the length of the leads, and **C** is the thickness of the leads.
- Isometric View (Right):** Shows the package from a three-dimensional perspective. Dimension **A1** is the total height, **A2** is the height of the base, and **b** is the width of the leads.

REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A1	1.90	2.70	0.075	0.106
A2	0.05	0.20	0.002	0.008
b	1.25	1.65	0.049	0.065
c	0.15	0.41	0.006	0.016
E	4.80	5.60	0.189	0.220
E1	3.95	4.60	0.156	0.181
D	2.25	2.95	0.089	0.116
L	0.75	1.60	0.030	0.063

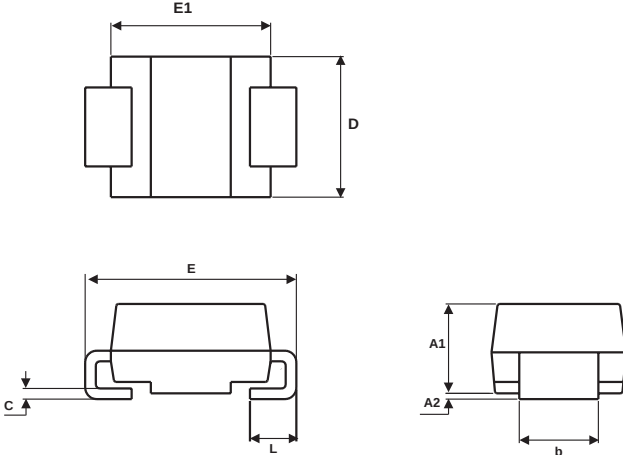
FOOT PRINT (in millimeters)



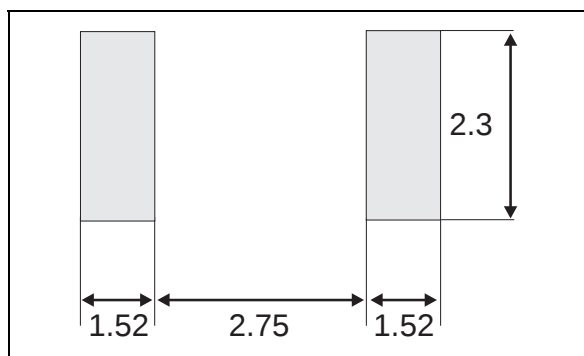
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PACKAGE MECHANICAL DATA

SMB

				
REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A1	1.90	2.45	0.075	0.096
A2	0.05	0.20	0.002	0.008
b	1.95	2.20	0.077	0.087
c	0.15	0.41	0.006	0.016
E	5.10	5.60	0.201	0.220
E1	4.05	4.60	0.159	0.181
D	3.30	3.95	0.130	0.156
L	0.75	1.60	0.030	0.063

FOOT PRINT (in millimeters)



Ordering type	Marking	Package	Weight	Base qty	Delivery mode
STPS1H100A	S11	SMA	0.068g	5000	Tape & reel
STPS1H100U	G11	SMB	0.107g	2500	Tape & reel

- Band indicates cathode
- Epoxy meets UL94,V0

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