STPS1H100A/U

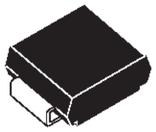
HIGH VOLTAGE POWER SCHOTTKY RECTIFIER

MAIN PRODUCT CHARACTERISTICS

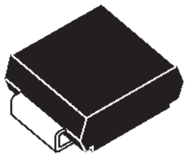
$I_{F(AV)}$	**1 A**
V_{RRM}	**100 V**
Tj (max)	**175 °C**
V_F (max)	**0.62 V**

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



SMA
(JEDEC DO-214AC)
STPS1H100A



SMB
(JEDEC DO-214AA)
STPS1H100U

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°C δ = 0.5	1	A
I_{FSM}	Surge non repetitive forward current	tp = 10 ms sinusoidal	50	A
I_{RRM}	Repetitive peak reverse current	tp = 2 µ square F = 1kHz	1	A
I_{RSM}	Non repetitive peak reverse current	tp = 100 µs square	1	A
T_{stg}	Storage temperature range		- 65 to + 175	°C
Tj	Maximum operating junction temperature *		175	°C
dV/dt	Critical rate of rise of reverse voltage		10000	V/µs

* : $\frac{dPtot}{dTj} < \frac{1}{Rth(j-a)}$ thermal runaway condition for a diode on its own heatsink

THERMAL RESISTANCES

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

STATIC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Tests Conditions		Min.	Typ.	Max.	Unit
I_R *	Reverse leakage current	Tj = 25°C	$V_R = V_{RRM}$			1	µA
		Tj = 125°C			0.2	0.5	mA
V_F **	Forward voltage drop	Tj = 25°C	I_F = 1 A			0.77	V
		Tj = 125°C	I_F = 1 A		0.58	0.62	
		Tj = 25°C	I_F = 2 A			0.86	
		Tj = 125°C	I_F = 2 A		0.65	0.7	

Pulse test : * tp = 5 ms, $\delta < 2\%$

** tp = 380 µs, $\delta < 2\%$

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.

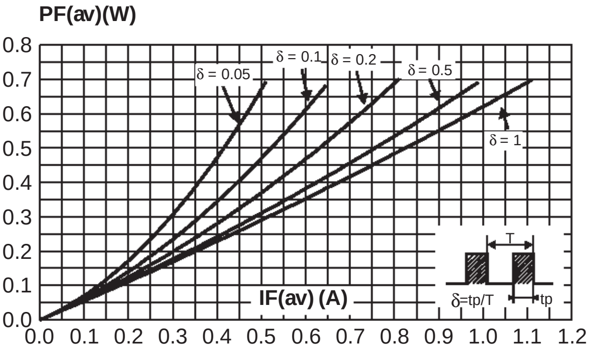


Fig. 2: Average forward current versus ambient temperature (δ=0.5).

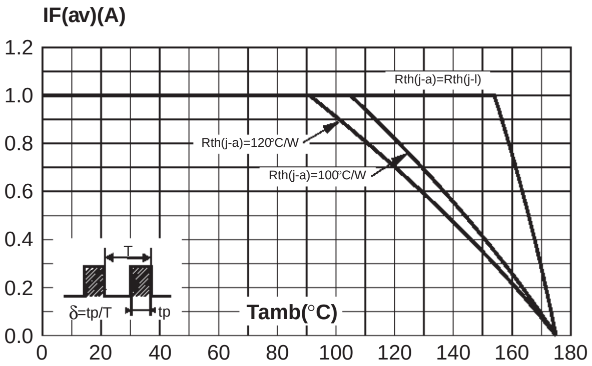


Fig. 3: Non repetitive surge peak forward current versus overload duration (maximum values) (SMB).

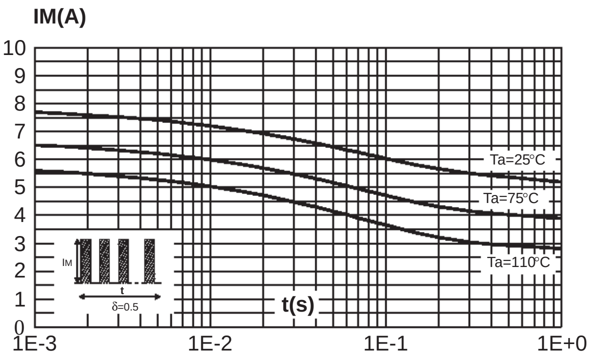


Fig. 4: Non repetitive surge peak forward current versus overload duration (maximum values) (SMA).

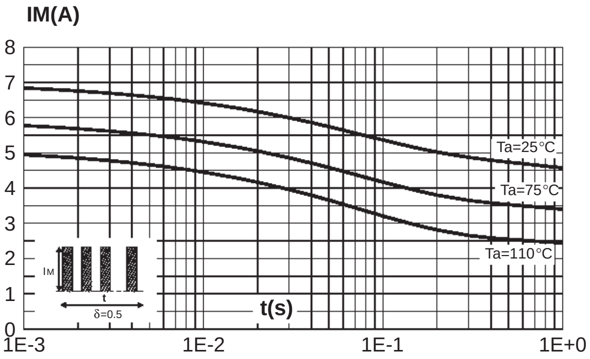


Fig. 5: Relative variation of thermal impedance junction to ambient versus pulse duration (SMB).

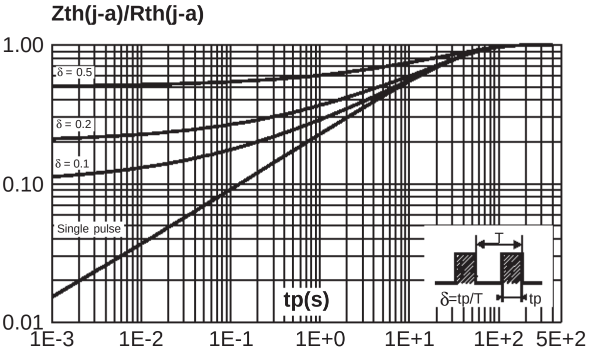


Fig. 6: Relative variation of thermal impedance junction to ambient versus pulse duration (SMA).

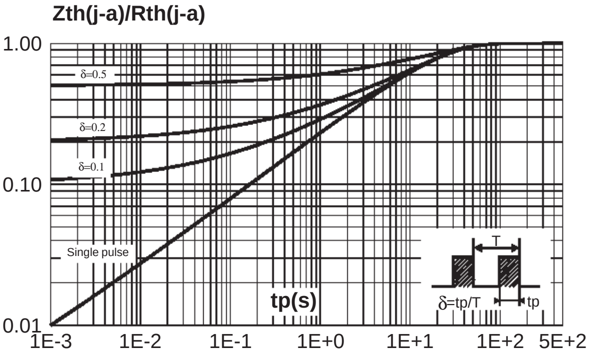


Fig. 7: Reverse leakage current versus reverse voltage applied (typical values).

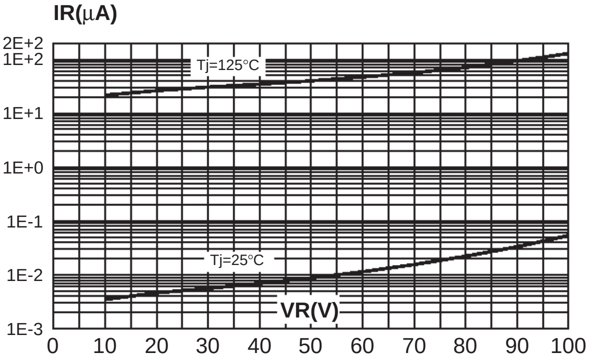


Fig. 8: Junction capacitance versus reverse voltage applied (typical values).

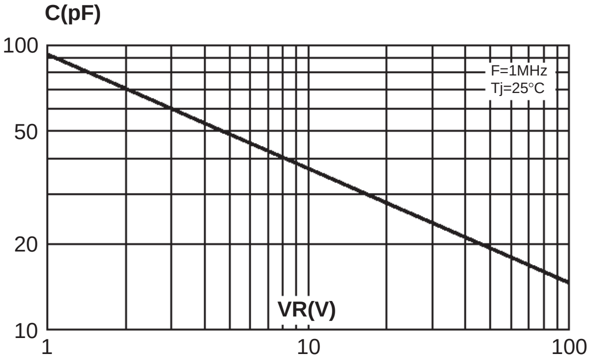


Fig. 9: Thermal resistance junction to ambient versus copper surface under each lead (Epoxy printed circuit board FR4, copper thickness: 35µm) (SMB).

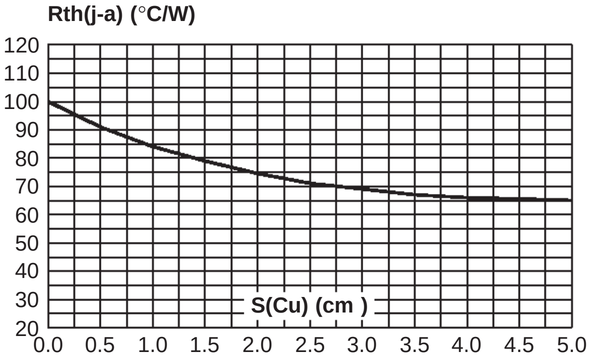


Fig. 10: Thermal resistance junction to ambient versus copper surface under each lead (Epoxy printed circuit board FR4, copper thickness: 35µm) (SMA).

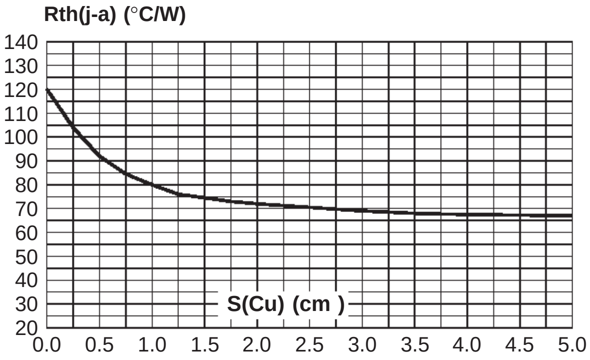
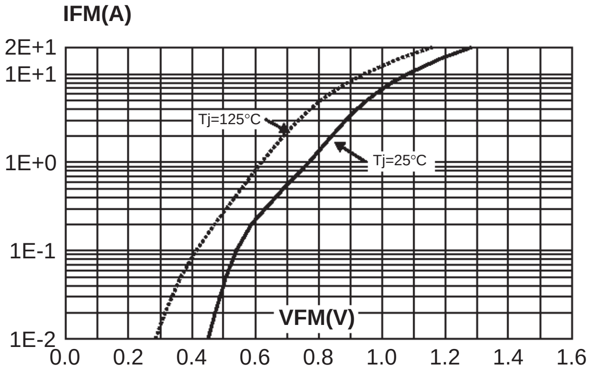
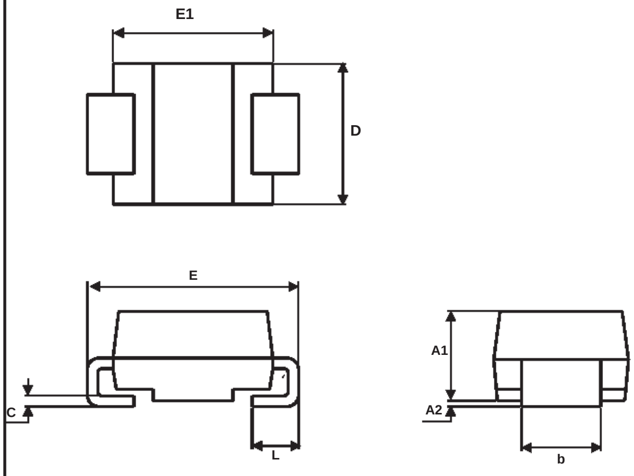


Fig. 11: Forward voltage drop versus forward current (maximum values).



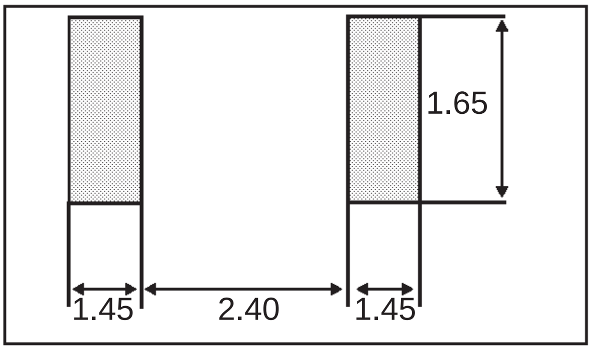
PACKAGE MECHANICAL DATA

SMA



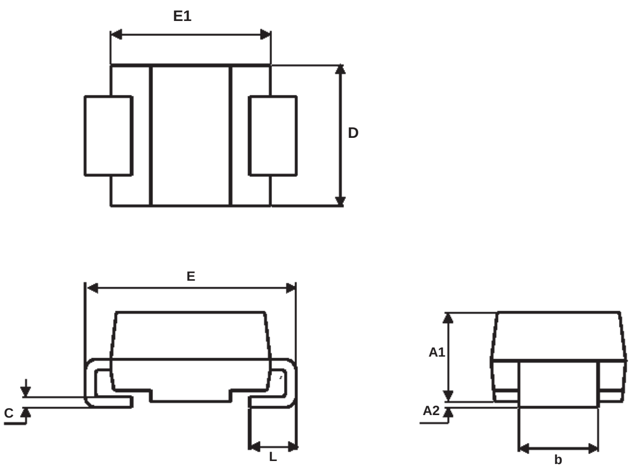
REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A1	1.90	2.70	0.075	0.106
A2	0.05	0.20	0.002	0.008
b	1.25	1.65	0.049	0.065
c	0.15	0.41	0.006	0.016
E	4.80	5.60	0.189	0.220
E1	3.95	4.60	0.156	0.181
D	2.25	2.95	0.089	0.116
L	0.75	1.60	0.030	0.063

FOOT PRINT (in millimeters)



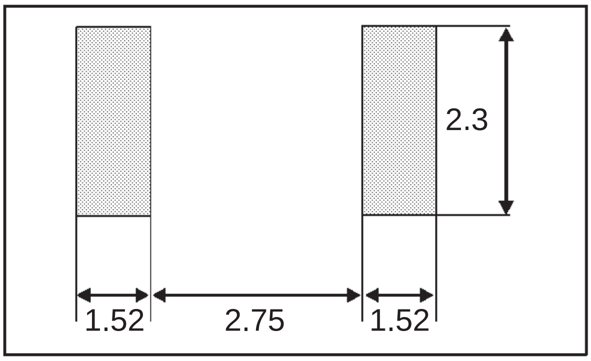
PACKAGE MECHANICAL DATA

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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