



# STPS1H100A/U

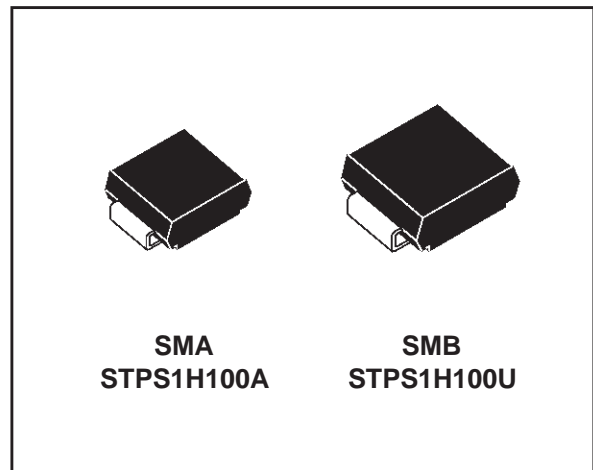
## HIGH VOLTAGE POWER SCHOTTKY RECTIFIER

### MAIN PRODUCT CHARACTERISTICS

$I_{F(AV)}$	1 A
$V_{RRM}$	100 V
$T_j(\text{max})$	175 °C
$V_F(\text{max})$	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	$T_L = 160^\circ\text{C} \delta = 0.5$	A
$I_{FSM}$	Surge non repetitive forward current	$t_p = 10 \text{ ms}$ sinusoidal	A
$I_{RRM}$	Repetitive peak reverse current	$t_p = 2 \mu\text{s}$ $F = 1\text{kHz}$ square	A
$I_{RSM}$	Non repetitive peak reverse current	$t_p = 100 \mu\text{s}$ square	A
Eas	Non repetitive avalanche energy	$T_j = 25^\circ\text{C}$ $I_{as} = 1 \text{ A}$ $L = 11\text{mH}$	mJ
$I_{ar}$	Repetitive avalanche current	$V_a = 1.5 \times V_R$ typ. Current decaying linearly to zero in $1 \mu\text{s}$ Frequency limited by $T_j$ max.	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/ $\mu\text{s}$

# STPS1H100A/U

## 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	$\mu\text{A}$
		$T_j = 125^{\circ}\text{C}$			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	

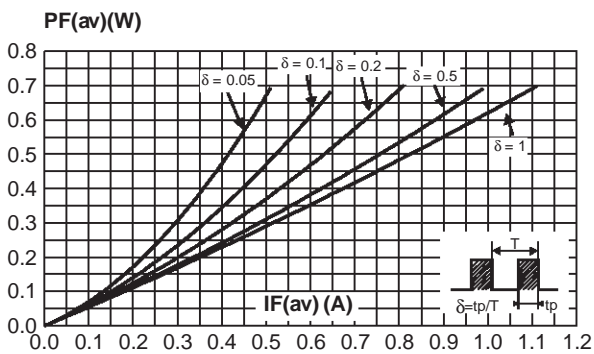
Pulse test : \*  $t_p = 5\text{ ms}$ ,  $\delta < 2\%$

\*\*  $t_p = 380\text{ }\mu\text{s}$ ,  $\delta < 2\%$

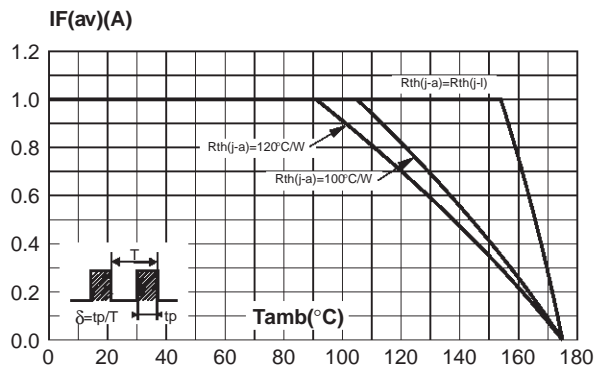
To evaluate the maximum conduction losses use the following equation :

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

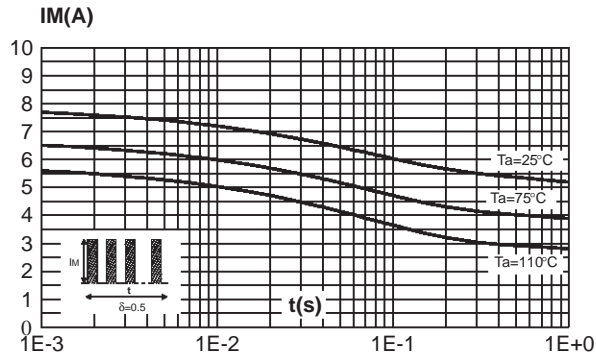
**Fig. 1:** Average forward power dissipation versus average forward current.



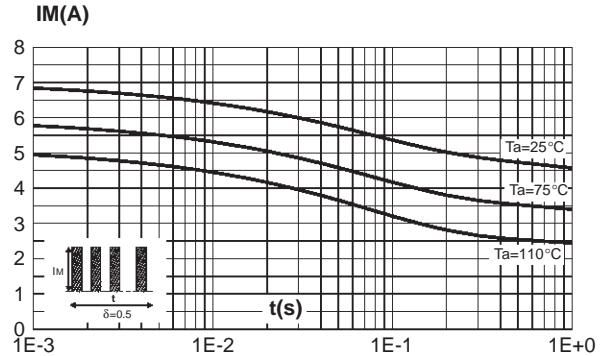
**Fig. 2:** Average forward current versus ambient temperature ( $\delta=0.5$ ).



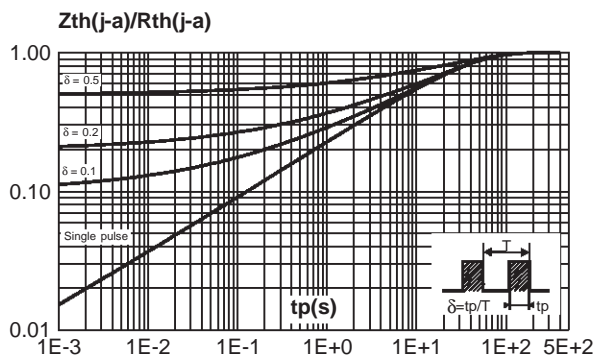
**Fig. 3:** Non repetitive surge peak forward current versus overload duration (maximum values) (SMB).



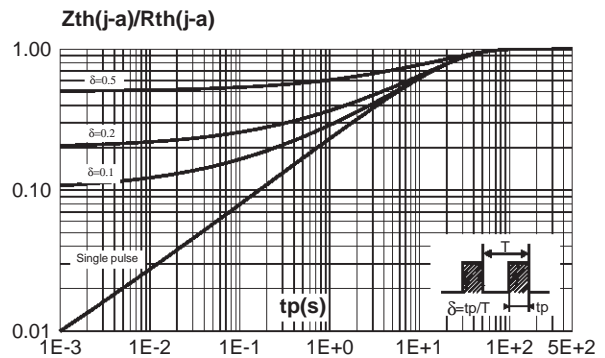
**Fig. 4:** Non repetitive surge peak forward current versus overload duration (maximum values) (SMA).



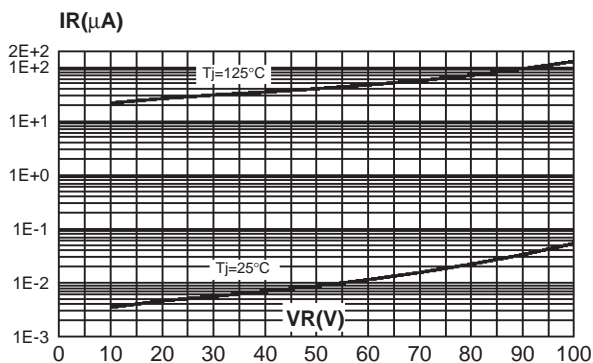
**Fig. 5:** Relative variation of thermal impedance junction to ambient versus pulse duration (SMB).



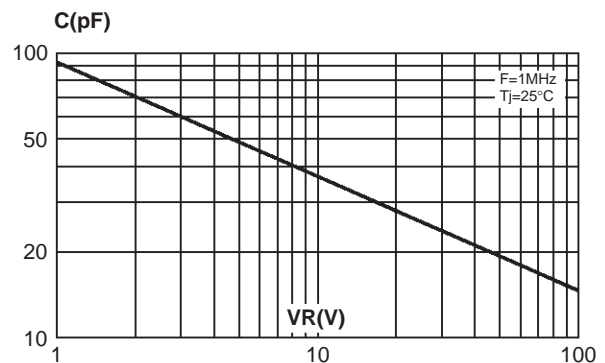
**Fig. 6:** Relative variation of thermal impedance junction to ambient versus pulse duration (SMA).



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

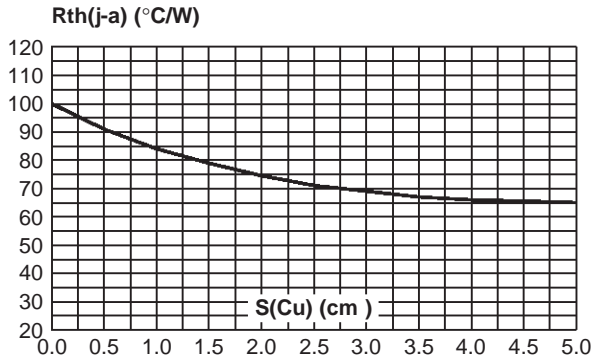


**Fig. 8:** Junction capacitance versus reverse voltage applied (typical values).

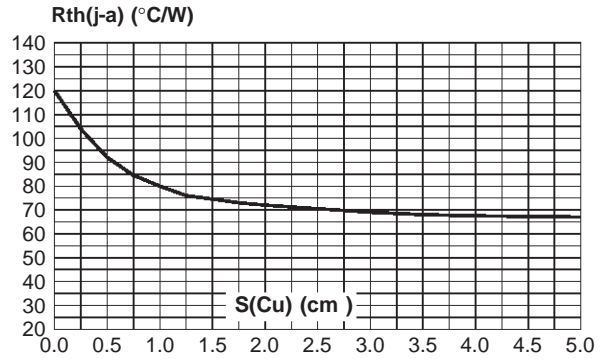


## STPS1H100A/U

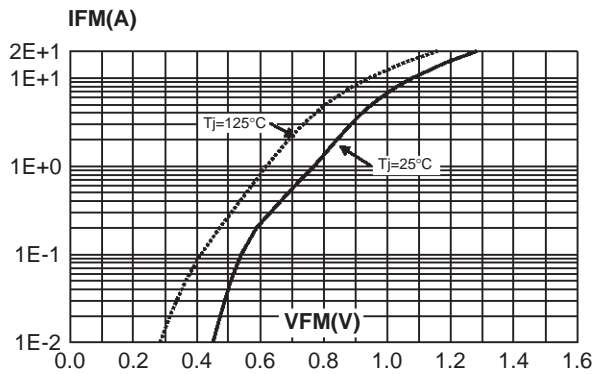
**Fig. 9:** Thermal resistance junction to ambient versus copper surface under tab (Epoxy printed circuit board FR4, copper thickness: 35 $\mu$ m) (SMB).



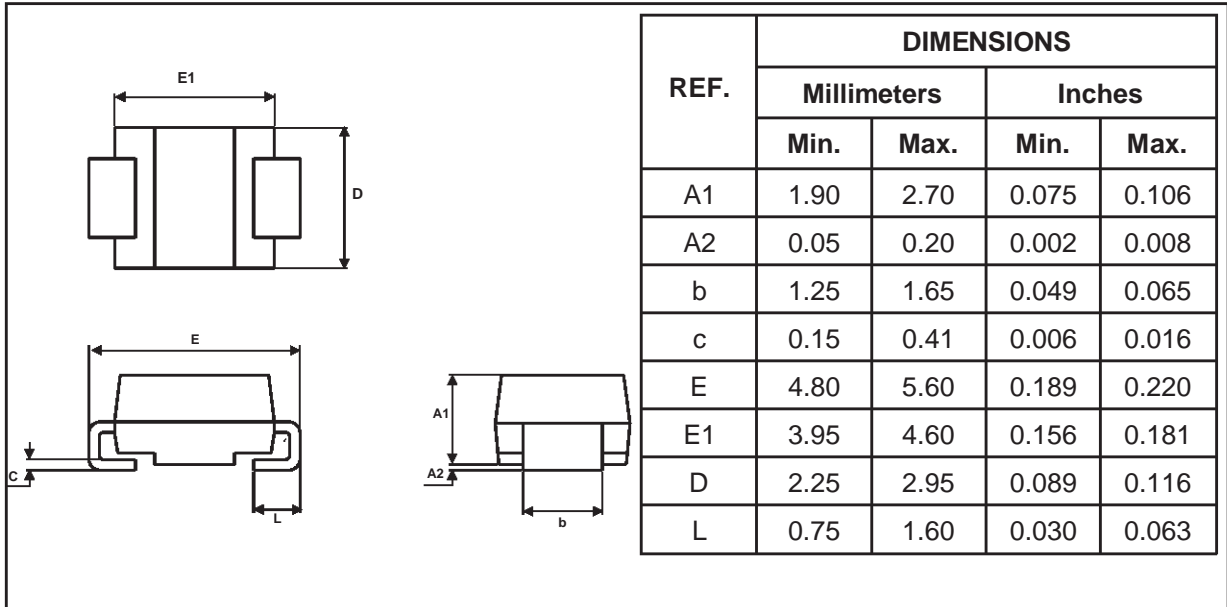
**Fig. 10:** Thermal resistance junction to ambient versus copper surface under tab (Epoxy printed circuit board FR4, copper thickness: 35 $\mu$ m) (SMA).



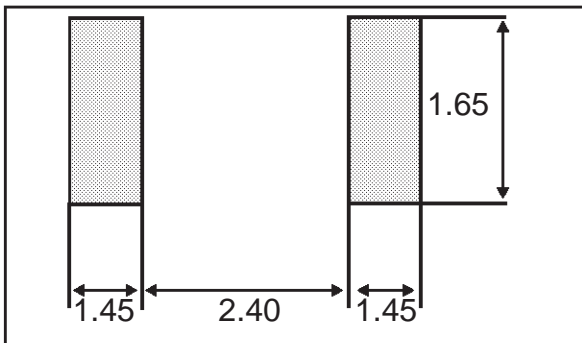
**Fig. 11:** Forward voltage drop versus forward current (maximum values).



**PACKAGE MECHANICAL DATA**  
SMA



**FOOT PRINT (in millimeters)**

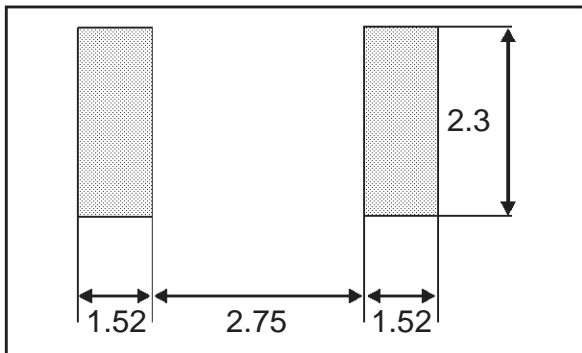


# STPS1H100A/U

## PACKAGE MECHANICAL DATA SMB

	DIMENSIONS				
	REF.	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

Information furnished is believed to be accurate and reliable. However, STMicroelectronics assumes no responsibility for the consequences of use of such information nor for any infringement of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of STMicroelectronics. Specifications mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information previously supplied. STMicroelectronics products are not authorized for use as critical components in life support devices or systems without express written approval of STMicroelectronics.

The ST logo is a registered trademark of STMicroelectronics

© 1998 STMicroelectronics - Printed in Italy - All rights reserved.

STMicroelectronics GROUP OF COMPANIES

Australia - Brazil - Canada - China - France - Germany - Italy - Japan - Korea - Malaysia - Malta - Mexico - Morocco - The Netherlands - Singapore - Spain - Sweden - Switzerland - Taiwan - Thailand - United Kingdom - U.S.A.

<http://www.st.com>