



STPS160A/U

POWER SCHOTTKY RECTIFIER

MAIN PRODUCT CHARACTERISTICS

I_{F(AV)}	1 A
V_{RRM}	60 V
T_j (max)	150°C
V_F (max)	0.57 V

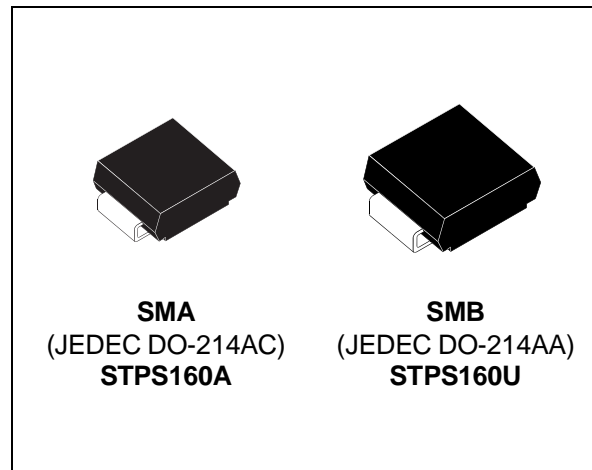
FEATURES AND BENEFITS

- VERY SMALL CONDUCTION LOSSES
- NEGLIGIBLE SWITCHING LOSSES
- LOW FORWARD VOLTAGE DROP
- SURFACE MOUNTED DEVICE

DESCRIPTION

Single chip Schottky rectifier suited for Switched Mode Power Supplies and high frequency DC to DC converters.

Packaged in SMA or SMB, this device is intended for surface mounting and used in low voltage, high frequency inverters, free wheeling and polarity protection applications.



ABSOLUTE RATINGS (limiting values)

Symbol	Parameter	Value	Unit
V _{RRM}	Repetitive peak reverse voltage	60	V
I _{F(RMS)}	RMS forward current	10	A
I _{F(AV)}	Average forward current	T _{Lead} = 130°C δ = 0.5 1	A
I _{FSM}	Surge non repetitive forward current	tp = 10 ms Sinusoidal 75	A
I _{RRM}	Repetitive peak reverse current	tp = 2 μs square F = 1kHz 1	A
I _{RSM}	Non repetitive peak reverse current	tp = 100μs square 1	A
T _{stg}	Storage temperature range	- 65 to + 150	°C
T _j	Maximum junction temperature *	150	
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

STPS160A/U

THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
$R_{th(j-l)}$	Junction to lead	SMA	30	$^{\circ}\text{C}/\text{W}$
		SMB	23	

STATIC ELECTRICAL CHARACTERISTICS

Symbol	Tests Conditions	Tests Conditions	Min.	Typ.	Max.	Unit
I_R^*	Reverse leakage current	$T_j = 25^{\circ}\text{C}$	$V_R = 60\text{V}$		4	μA
		$T_j = 125^{\circ}\text{C}$		1.1	4	mA
V_F^*	Forward voltage drop	$T_j = 25^{\circ}\text{C}$	$I_F = 1\text{A}$		0.67	V
		$T_j = 125^{\circ}\text{C}$	$I_F = 1\text{A}$	0.49	0.57	
		$T_j = 25^{\circ}\text{C}$	$I_F = 2\text{A}$		0.8	
		$T_j = 125^{\circ}\text{C}$	$I_F = 2\text{A}$	0.58	0.65	

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

To evaluate the maximum conduction losses use the following equation :

$$P = 0.49 \times I_{F(\text{AV})} + 0.08 \times I_F^2(\text{RMS})$$

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

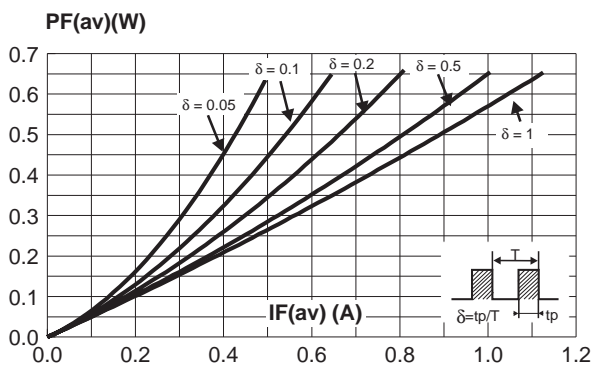


Fig. 2: Average forward current versus ambient temperature ($\delta=0.5$).

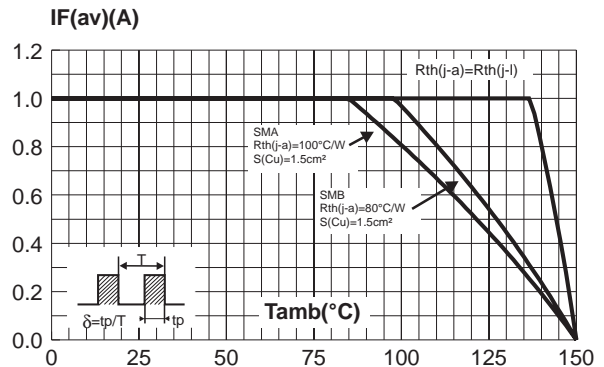


Fig. 3-1: Non repetitive surge peak forward current versus overload duration (maximum values) (SMB).

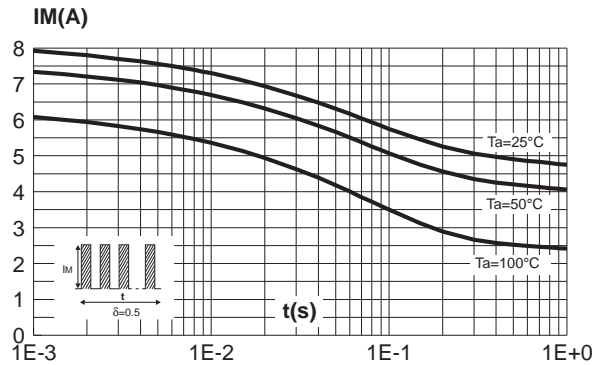


Fig. 3-2: Non repetitive surge peak forward current versus overload duration (maximum values) (SMA).

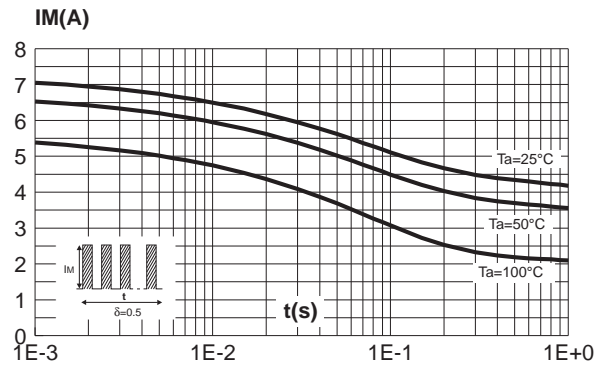


Fig. 4-1: Relative variation of thermal impedance junction to ambient versus pulse duration (SMB).

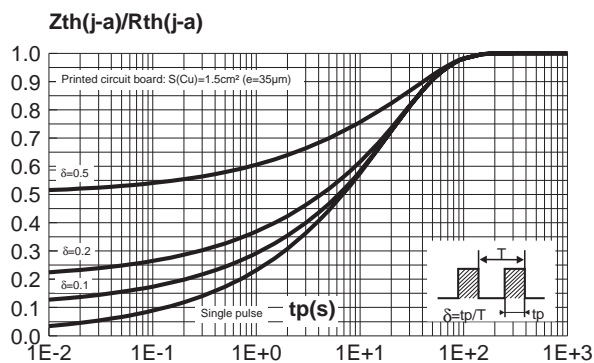


Fig. 4-2: Relative variation of thermal impedance junction to ambient versus pulse duration (SMA).

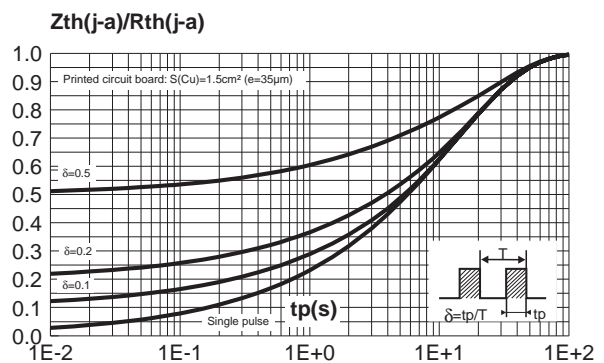


Fig. 5: Reverse leakage current versus reverse voltage applied (typical values).

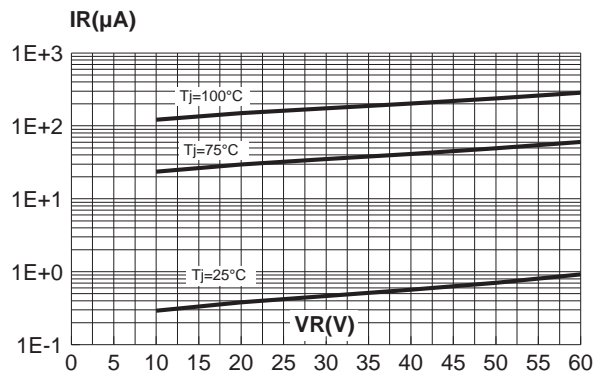


Fig. 6: Junction capacitance versus reverse voltage applied (typical values)

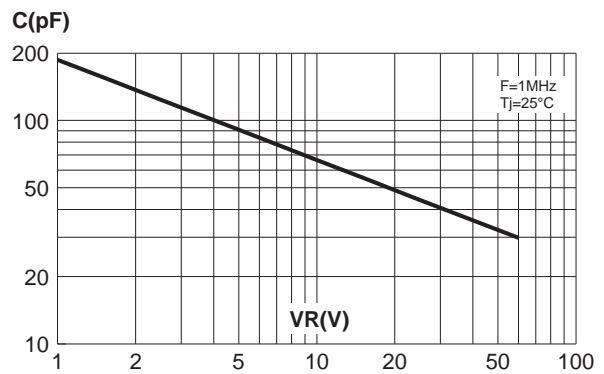


Fig. 7: Forward voltage drop versus forward current (maximum values).

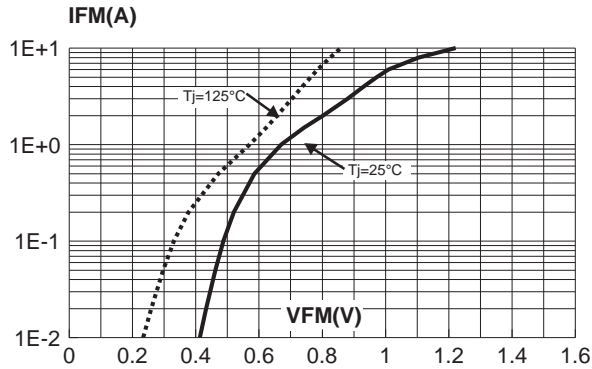


Fig. 8-1: Thermal resistance junction to ambient versus copper surface under each lead (Epoxy printed circuit board, copper thickness: 35μm)(SMB).

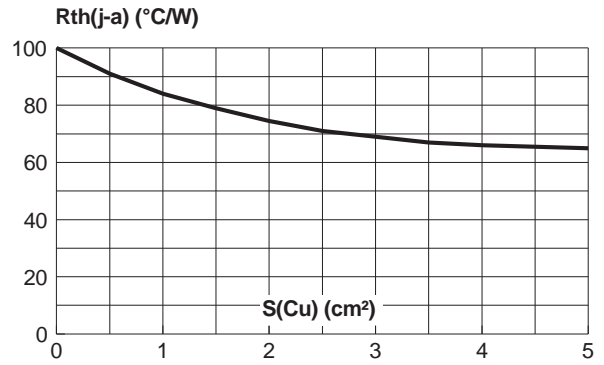
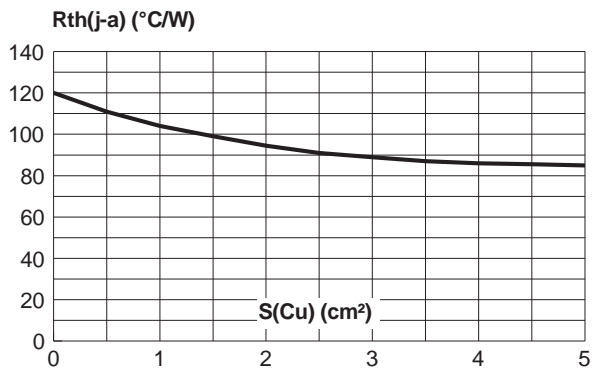
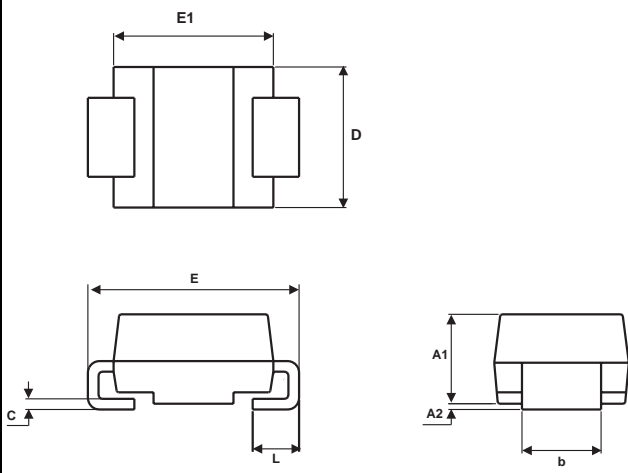


Fig. 8-2: Thermal resistance junction to ambient versus copper surface under each lead (Epoxy printed circuit board, copper thickness: 35μm)(SMA).

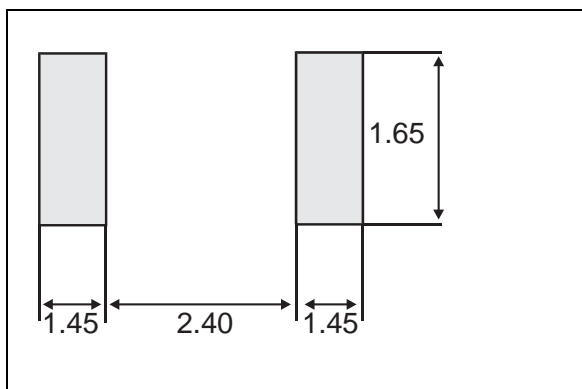


PACKAGE MECHANICAL DATA
SMA

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 DIMENSIONS (in millimeters)



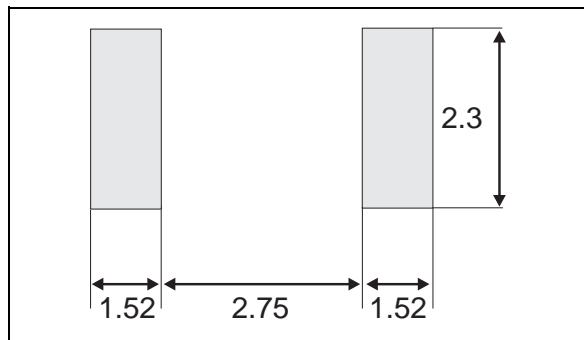
STPS160A/U

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 DIMENSIONS (in millimeters)



Ordering type	Marking	Package	Weight	Base qty	Delivery mode
STPS160A	GA6	SMA	0.068 g.	5000	Tape & reel
STPS160U	E16	SMB	0.107 g.	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

© 1999 STMicroelectronics - Printed in Italy - All rights reserved.

STMicroelectronics GROUP OF COMPANIES

Australia - Brazil - China - Finland - France - Germany - Hong Kong - India - Italy - Japan - Malaysia
Malta - Morocco - Singapore - Spain - Sweden - Switzerland - United Kingdom - U.S.A.

<http://www.st.com>