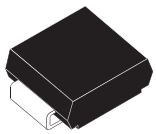
STPS160A/U

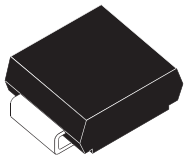
POWER SCHOTTKY RECTIFIER

MAIN PRODUCT CHARACTERISTICS

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



SMA
(JEDEC DO-214AC)
STPS160A



SMB
(JEDEC DO-214AA)
STPS160U

FEATURES AND BENEFITS

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

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 = 100 µs square	1	A
P_{ARM}	Repetitive peak avalanche power	tp = 1µs Tj = 25°C	2400	W
T_{stg}	Storage temperature range		- 65 to + 150	°C
Tj	Maximum junction temperature *		150	
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	23	

STATIC ELECTRICAL CHARACTERISTICS

Symbol	Tests Conditions	Tests Conditions		Min.	Typ.	Max.	Unit
I_R *	Reverse leakage current	Tj = 25°C	V_R = 60V			4	µA
		Tj = 125°C			1.1	4	mA
V_F *	Forward voltage drop	Tj = 25°C	I_F = 1 A			0.67	V
		Tj = 125°C	I_F = 1 A		0.49	0.57	
		Tj = 25°C	I_F = 2 A			0.8	
		Tj = 125°C	I_F = 2 A		0.58	0.65	

Pulse test : * tp = 380 µs, δ < 2%

To evaluate the maximum conduction losses use the following equation :
$P = 0.49 \times I_{F(AV)} + 0.08 \times I_F{}^2{}_{(RMS)}$

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

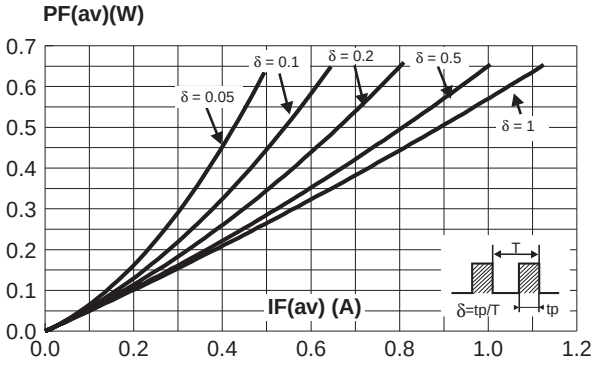


Fig. 2: Average forward current versus ambient temperature (δ=0.5).

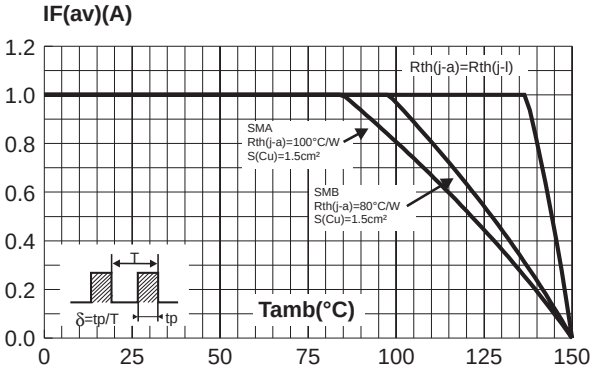


Fig. 3: Normalized avalanche power derating versus pulse duration.

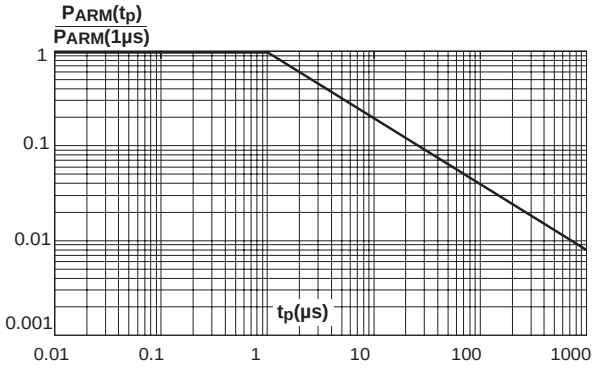


Fig. 4: Normalized avalanche power derating versus junction temperature.

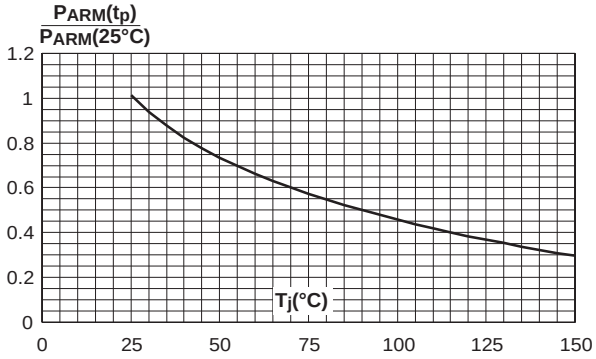


Fig. 5-1: Non repetive surge peak forward current versus overload duration (maximum values) (SMB).

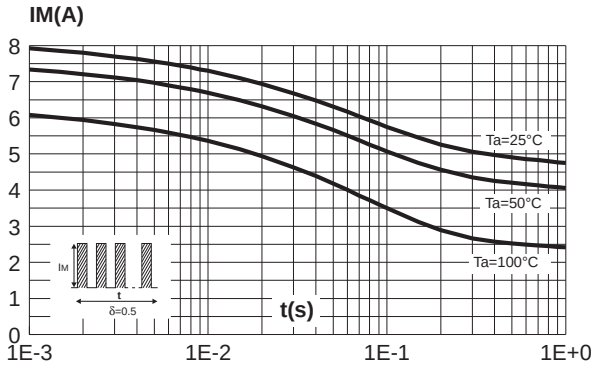


Fig. 5-2: Non repetive surge peak forward current versus overload duration (maximum values) (SMA).

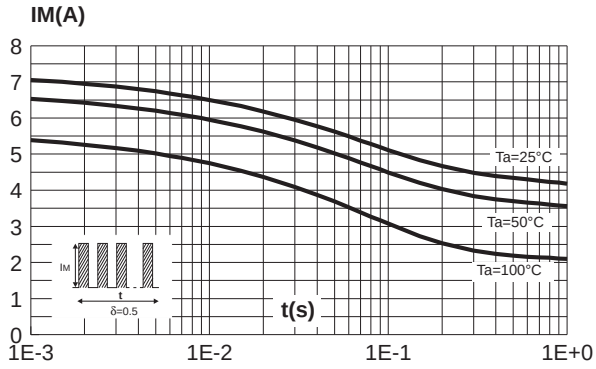


Fig. 6-1: Relative variation of thermal impedance junction to ambient versus pulse duration (SMB).

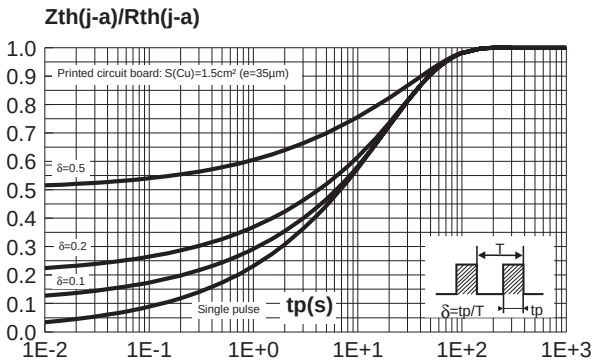


Fig. 6-2: Relative variation of thermal impedance junction to ambient versus pulse duration (SMA).

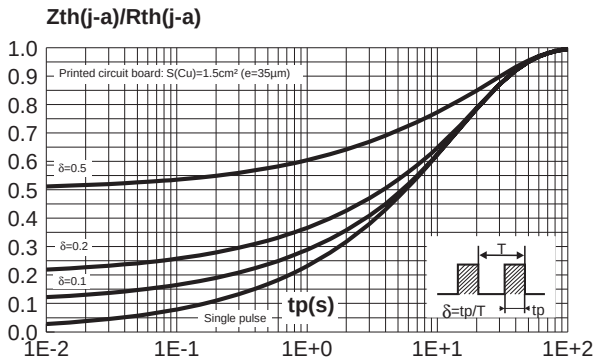


Fig. 7: Reverse leakage current versus reverse voltage applied (typical values).

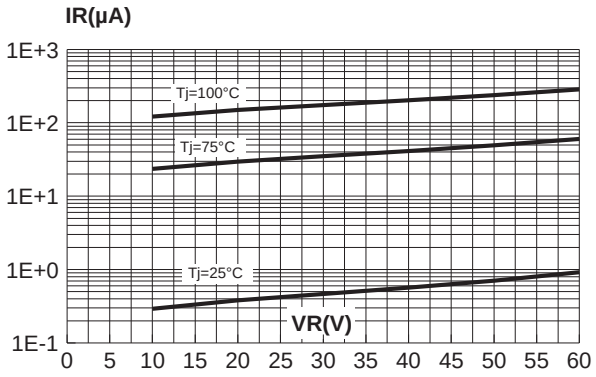


Fig. 8: Junction capacitance versus reverse voltage applied (typical values).

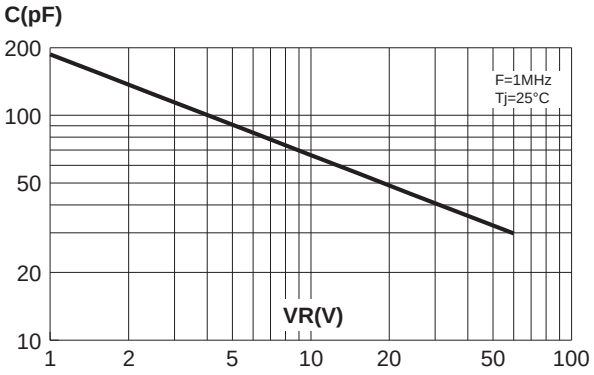


Fig. 9: Forward voltage drop versus forward current (maximum values).

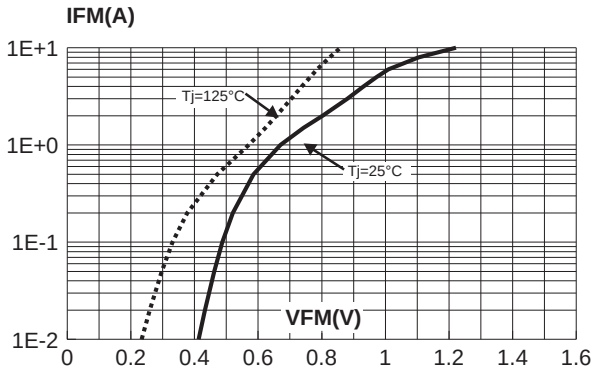


Fig. 10-1: Thermal resistance junction to ambient versus copper surface under each lead (Epoxy printed circuit board, copper thickness: 35µm)(SMB).

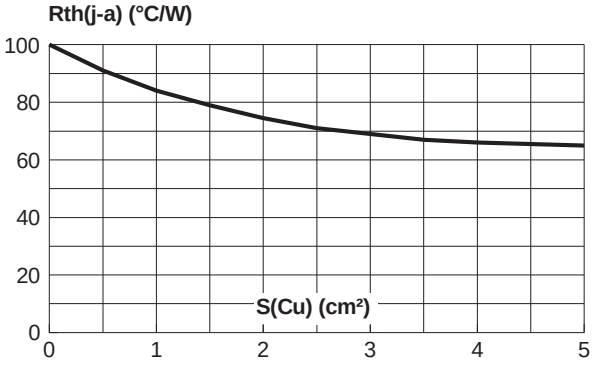
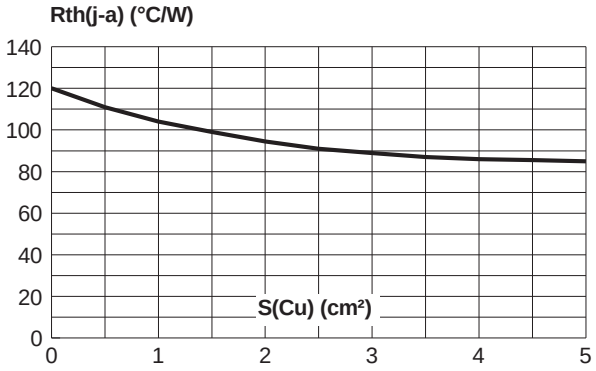
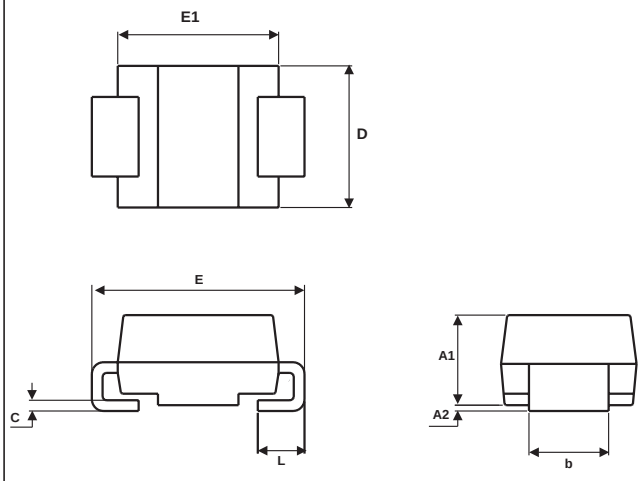


Fig. 10-2: Thermal resistance junction to ambient versus copper surface under each lead (Epoxy printed circuit board, copper thickness: 35µm)(SMA).

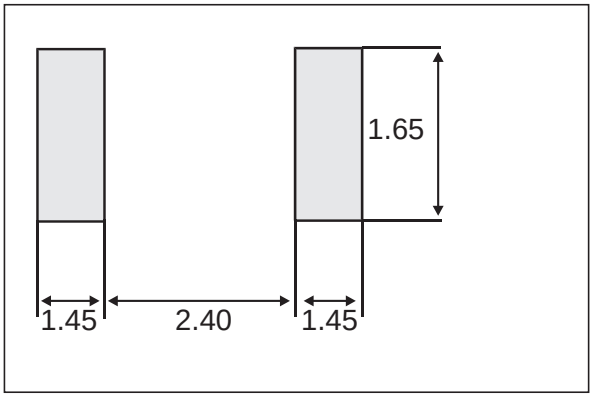


PACKAGE MECHANICAL DATA
SMA



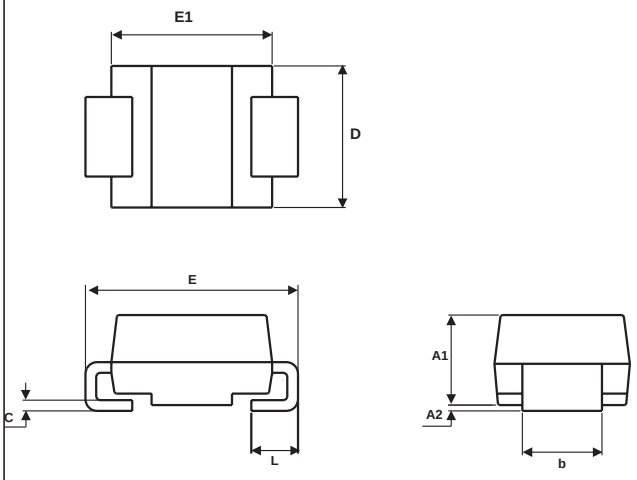
REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A1	1.90	2.70	0.075	0.106
A2	0.05	0.20	0.002	0.008
b	1.25	1.65	0.049	0.065
c	0.15	0.41	0.006	0.016
E	4.80	5.60	0.189	0.220
E1	3.95	4.60	0.156	0.181
D	2.25	2.95	0.089	0.116
L	0.75	1.60	0.030	0.063

FOOT PRINT DIMENSIONS (in millimeters)



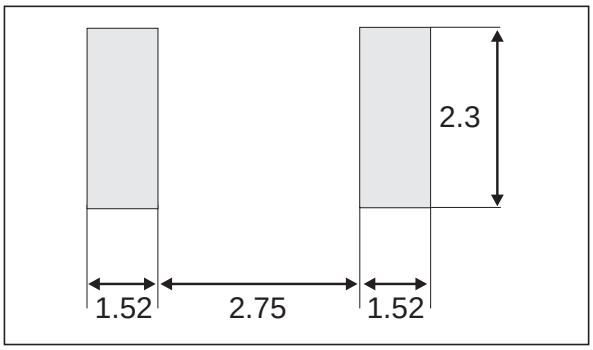
PACKAGE MECHANICAL DATA

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 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