

## POWER SCHOTTKY RECTIFIER

### MAIN PRODUCT CHARACTERISTICS

$I_{F(AV)}$	1 A
$V_{RRM}$	40 V
$V_F$ (max)	0.5 V

### FEATURES AND BENEFITS

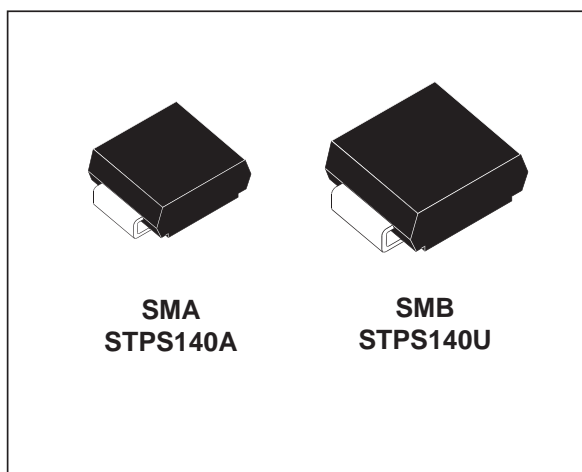
- VERY SMALL CONDUCTION LOSSES
- NEGLIGIBLE SWITCHING LOSSES
- LOW FORWARD VOLTAGE DROP
- SURFACE MOUNTED DEVICE
- AVALANCHE CAPABILITY SPECIFIED

### DESCRIPTION

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

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

(\*) in accordance with DO214AA and DO21AC JEDEC



### ABSOLUTE RATINGS (limiting values)

Symbol	Parameter	Value	Unit	
$V_{RRM}$	Repetitive peak reverse voltage	40	V	
$I_{F(RMS)}$	RMS forward current	7	A	
$I_{F(AV)}$	Average forward current $\delta = 0.5$	SMA $T_L = 130^\circ\text{C}$	1	A
		SMB $T_L = 135^\circ\text{C}$		
$I_{FSM}$	Surge non repetitive forward current	$t_p = 10 \text{ ms}$ Sinusoidal	60	A
$I_{RRM}$	Repetitive peak reverse current	$t_p = 2 \mu\text{s}$ $F = 1 \text{ kHz}$	1	A
$I_{RSM}$	Non repetitive peak reverse current	$t_p = 100 \mu\text{s}$ square	1	A
$P_{ARM}$	Repetitive peak avalanche power	$t_p = 1 \mu\text{s}$ $T_j = 25^\circ\text{C}$	900	W
$T_{stg}$	Storage temperature range	- 65 to + 150		$^\circ\text{C}$
$T_j$	Maximum junction temperature	150		
$dV/dt$	Critical rate of rise of reverse voltage	10000		$\text{V}/\mu\text{s}$

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## THERMAL RESISTANCES

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

## STATIC ELECTRICAL CHARACTERISTICS

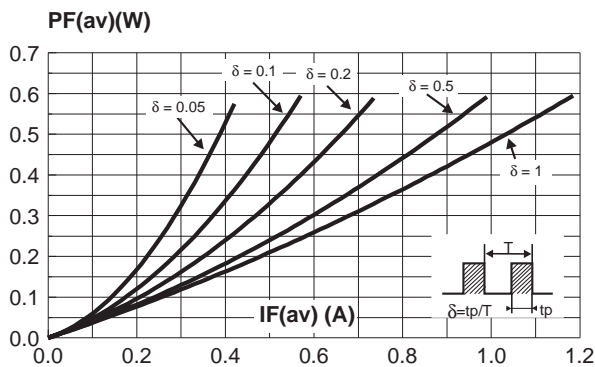
Symbol	Tests Conditions	Tests Conditions	Min.	Typ.	Max.	Unit	
$I_R^*$	Reverse leakage current	$T_j = 25^{\circ}\text{C}$	$V_R = 40\text{V}$		12	$\mu\text{A}$	
		$T_j = 100^{\circ}\text{C}$		0.25	2	$\text{mA}$	
$V_F^{**}$	Forward voltage drop	$T_j = 25^{\circ}\text{C}$	$I_F = 1\text{A}$		0.55	$\text{V}$	
		$T_j = 125^{\circ}\text{C}$		0.43	0.5		
		$T_j = 25^{\circ}\text{C}$		$I_F = 2\text{A}$			0.65
		$T_j = 125^{\circ}\text{C}$			0.53		0.6

Pulse test : \*  $t_p = 5\text{ms}$ ,  $\delta < 2\%$   
 \*\*  $t_p = 380\mu\text{s}$ ,  $\delta < 2\%$

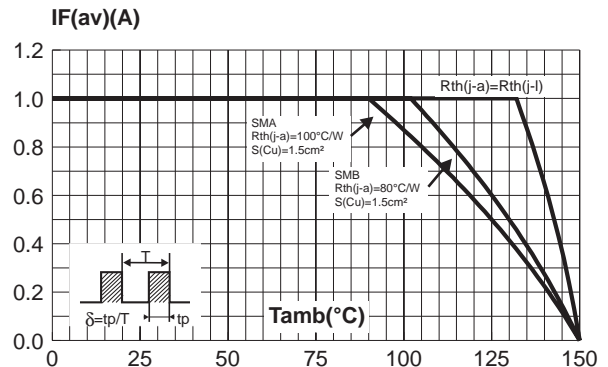
To evaluate the maximum conduction losses use the following equation :

$$P = 0.4 \times I_{F(AV)} + 0.10 \times I_{F(RMS)}^2$$

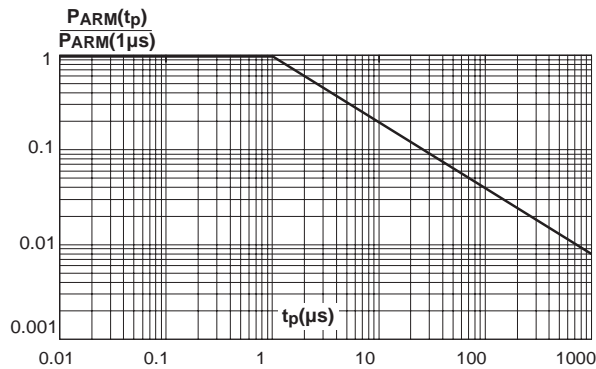
**Fig. 1:** Average forward power dissipation versus average forward current.



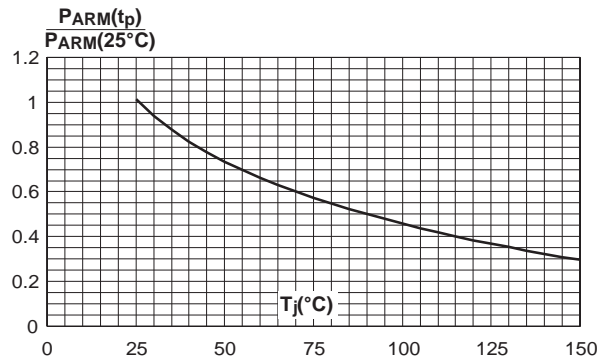
**Fig. 2:** Average forward current versus ambient temperature ( $\delta=0.5$ ).



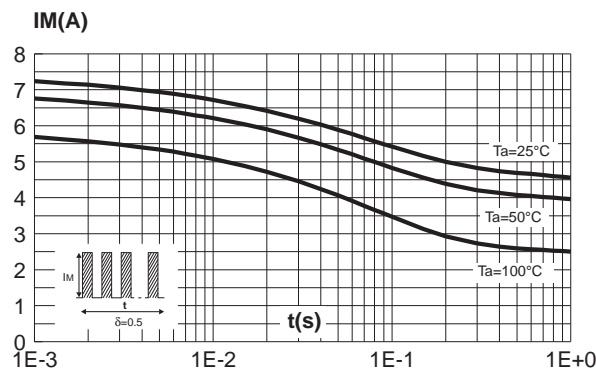
**Fig. 3:** Normalized avalanche power derating versus pulse duration.



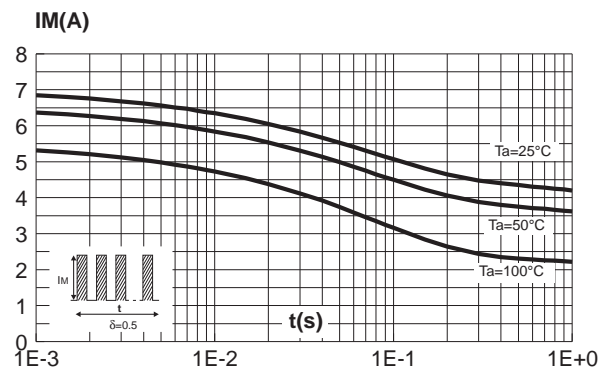
**Fig. 4:** Normalized avalanche power derating versus junction temperature.



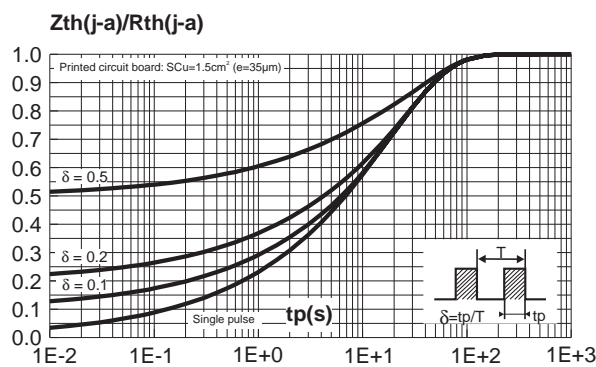
**Fig. 5-1:** Non repetive surge peak forward current versus overload duration (maximum values) (SMB).



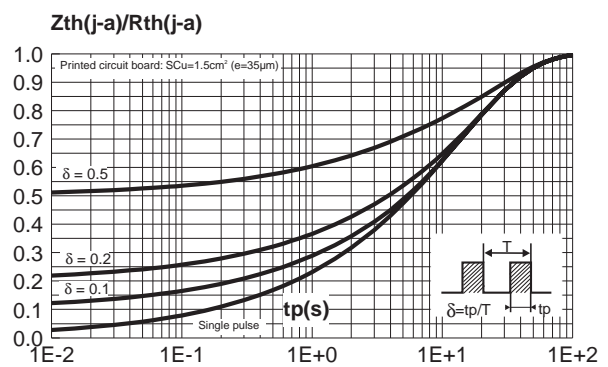
**Fig. 5-2:** Non repetive surge peak forward current versus overload duration (maximum values) (SMA).



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

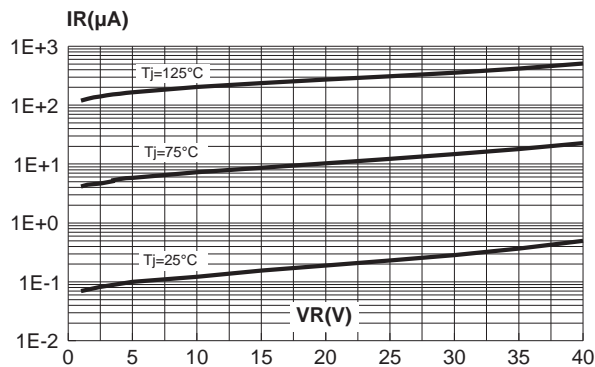


**Fig. 6-2:** Relative variation of thermal impedance junction to ambient versus pulse duration (SMA).

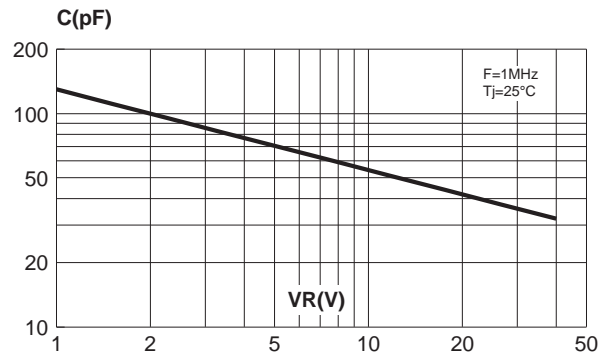


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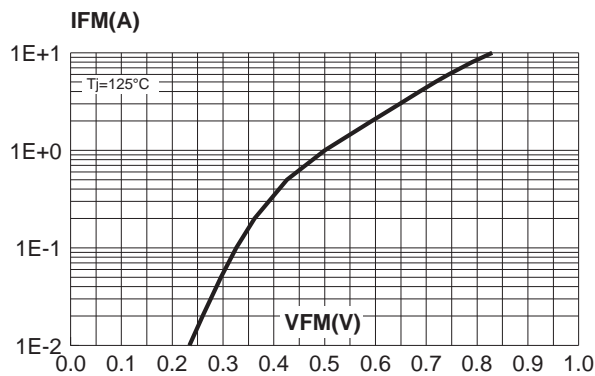
**Fig. 7:** Reverse leakage current versus reverse voltage applied (typical values).



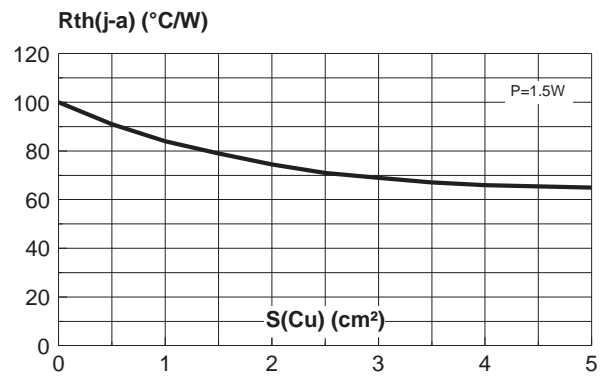
**Fig. 8:** Junction capacitance versus reverse voltage applied (typical values)



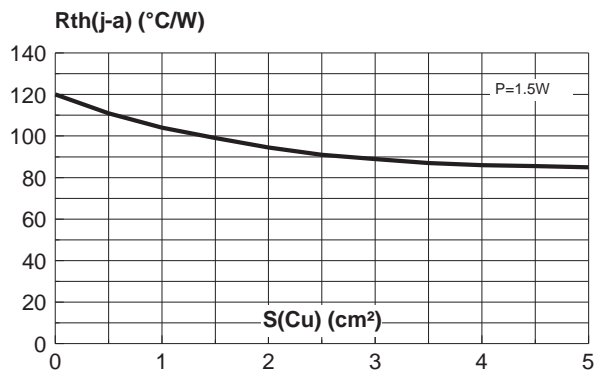
**Fig. 9:** Forward voltage drop versus forward current (maximum values).



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

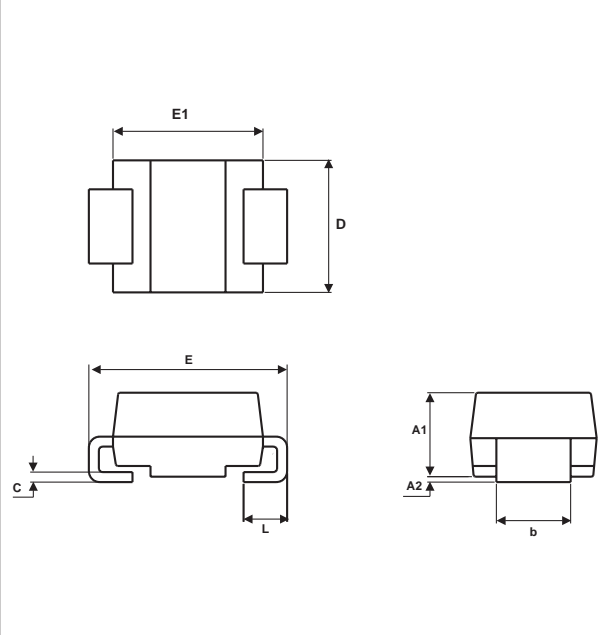


**Fig. 10-2:** Thermal resistance junction to ambient versus copper surface under each lead (Epoxy printed circuit board, copper thickness:  $35\mu m$ )(SMA).

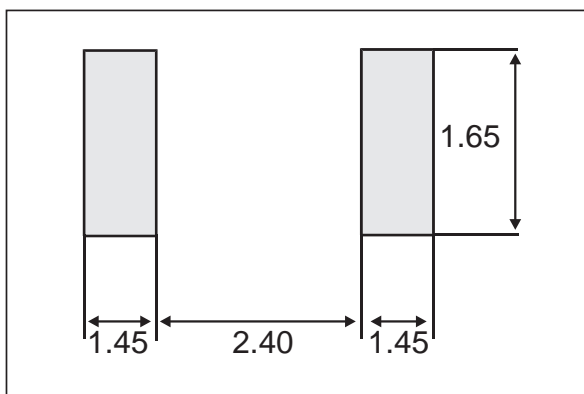


**PACKAGE MECHANICAL DATA**  
SMA

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 (in millimeters)**

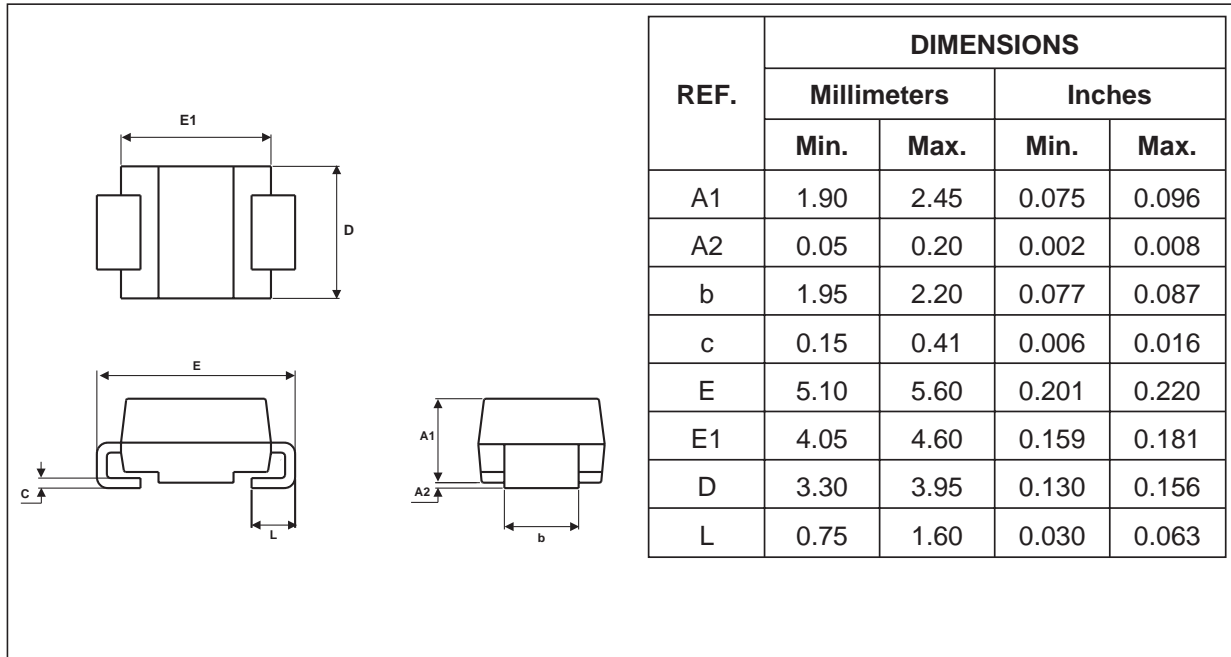


• **MARKING:** S140

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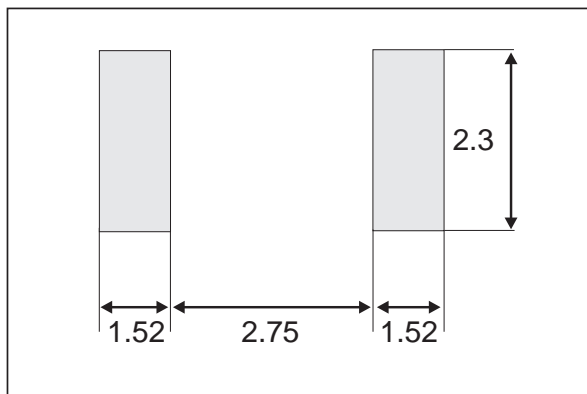
## PACKAGE MECHANICAL DATA

SMB Plastic



### FOOT PRINT (in millimeters)

### MARKING: G14



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