



# STPS140A/U

## POWER SCHOTTKY RECTIFIER

### MAIN PRODUCT CHARACTERISTICS

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

### FEATURES AND BENEFITS

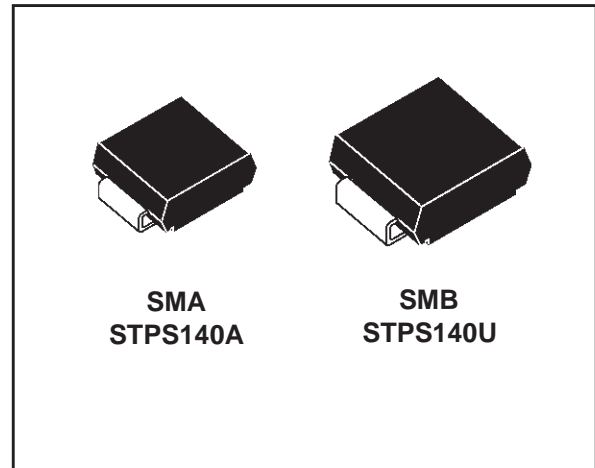
- VERY SMALL CONDUCTION LOSSES
- NEGLIGIBLE SWITCHING LOSSES
- LOW FORWARD VOLTAGE DROP
- SURFACE MOUNTED DEVICE

### DESCRIPTION

Single chip Schottky rectifier suited for Switch-mode 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	$t_p = 10$ ms Sinusoidal	60	A
$I_{RRM}$	Repetitive peak reverse current	$t_p = 2$ $\mu\text{s}$ $F = 1$ kHz	1	A
$I_{RSM}$	Non repetitive peak reverse current	$t_p = 100$ $\mu\text{s}$ square	1	A
$T_{stg}$	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		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	

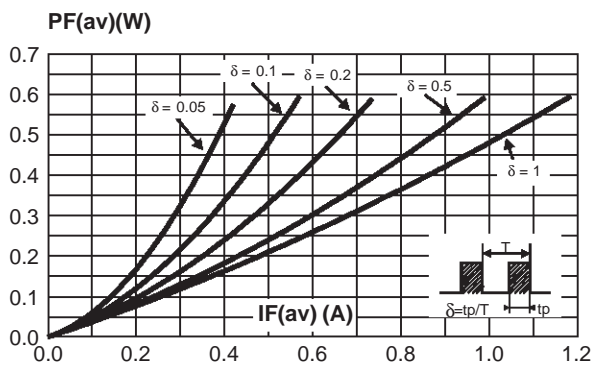
## STATIC ELECTRICAL CHARACTERISTICS

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	$\text{V}$	
		$T_j = 125^{\circ}\text{C}$	$I_F = 1\text{A}$		0.43		0.5
		$T_j = 25^{\circ}\text{C}$	$I_F = 2\text{A}$				0.65
		$T_j = 125^{\circ}\text{C}$	$I_F = 2\text{A}$		0.53		0.6

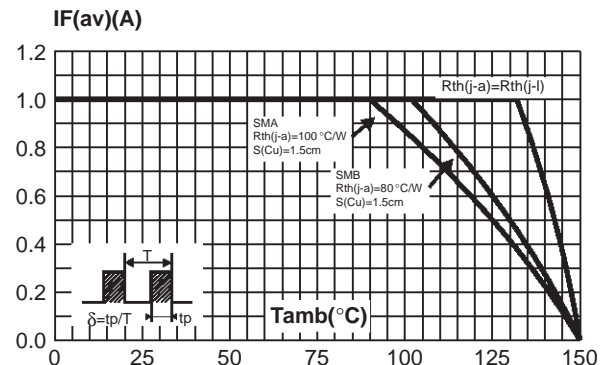
Pulse test : \*  $t_p = 5\text{ms}$ ,  $\delta < 2\%$   
 \*\*  $t_p = 380\mu\text{s}$ ,  $\delta < 2\%$

To evaluate the maximum conduction losses use the following equation :  
 $P = 0.4 \times I_{F(AV)} + 0.10 \times I_F^2(RMS)$

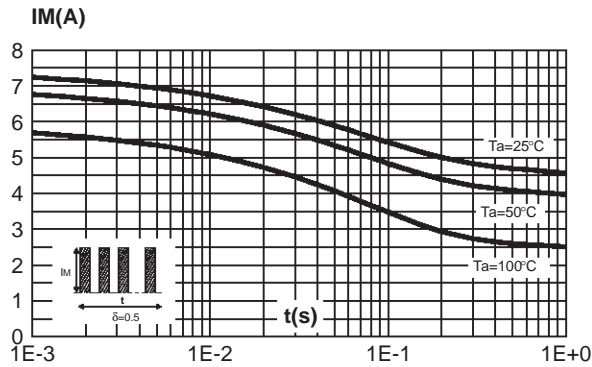
**Fig. 1:** Average forward power dissipation versus average forward current.



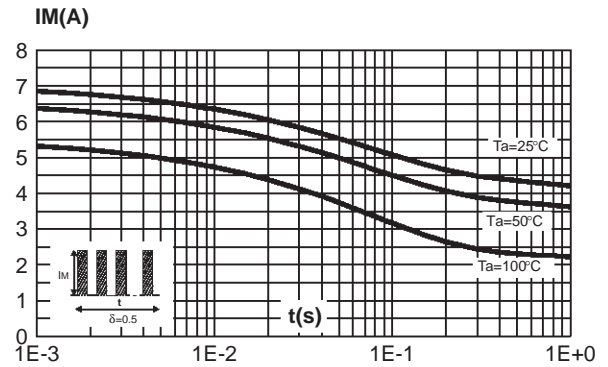
**Fig. 2:** Average forward current versus ambient temperature ( $\delta=0.5$ ).



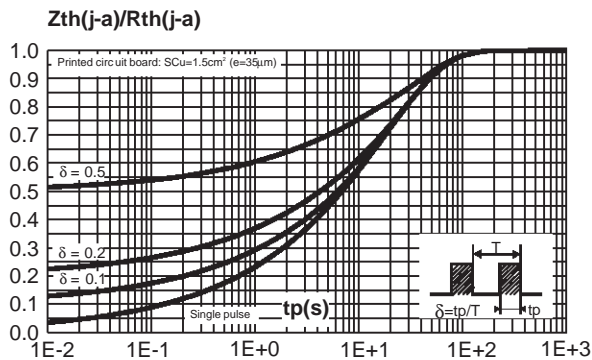
**Fig. 3-1:** Non repetive surge peak forward current versus overload duration (maximum values) (SMB).



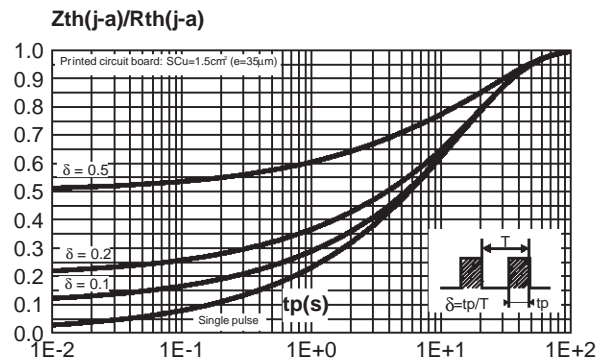
**Fig. 3-2:** Non repetive surge peak forward current versus overload duration (maximum values) (SMA).



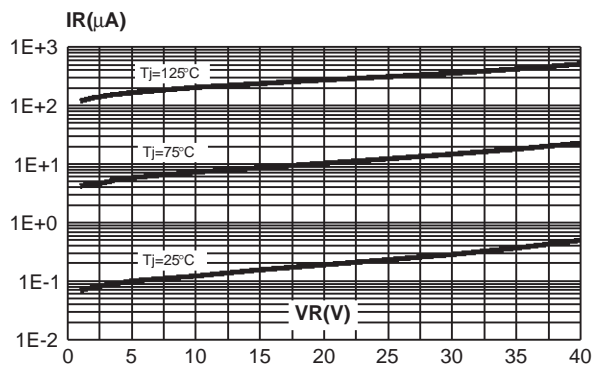
**Fig. 4-1:** Relative variation of thermal impedance junction to ambient versus pulse duration (SMB).



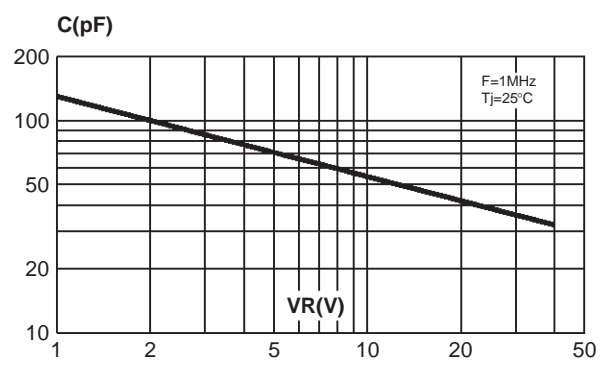
**Fig. 4-2:** Relative variation of thermal impedance junction to ambient versus pulse duration (SMA).



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

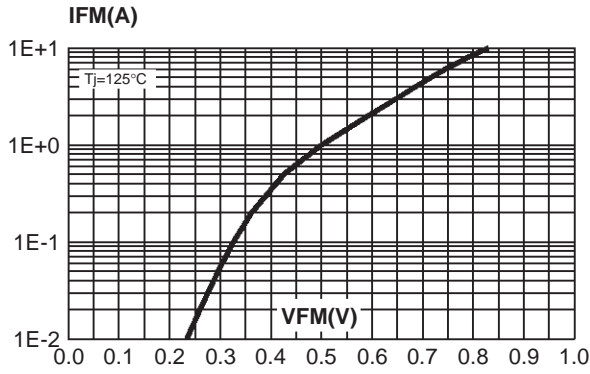


**Fig. 6:** Junction capacitance versus reverse voltage applied (typical values)

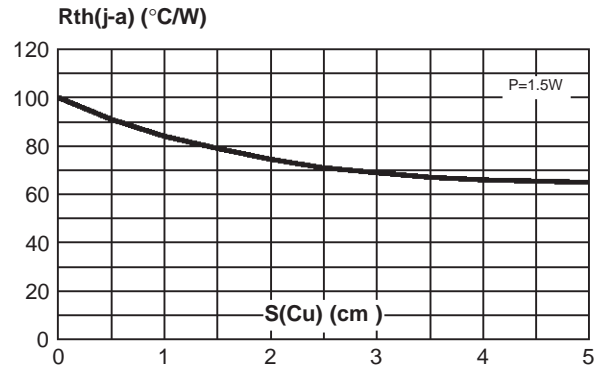


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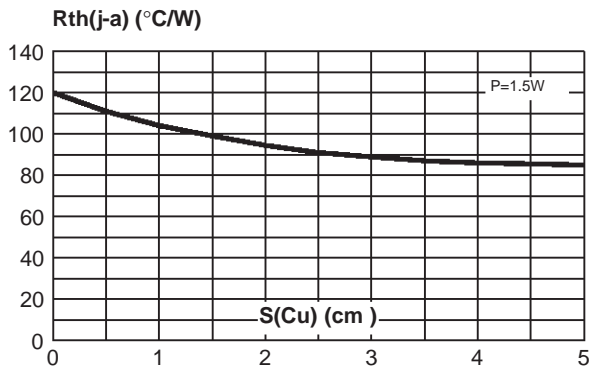
**Fig. 7:** Forward voltage drop versus forward current (maximum values).



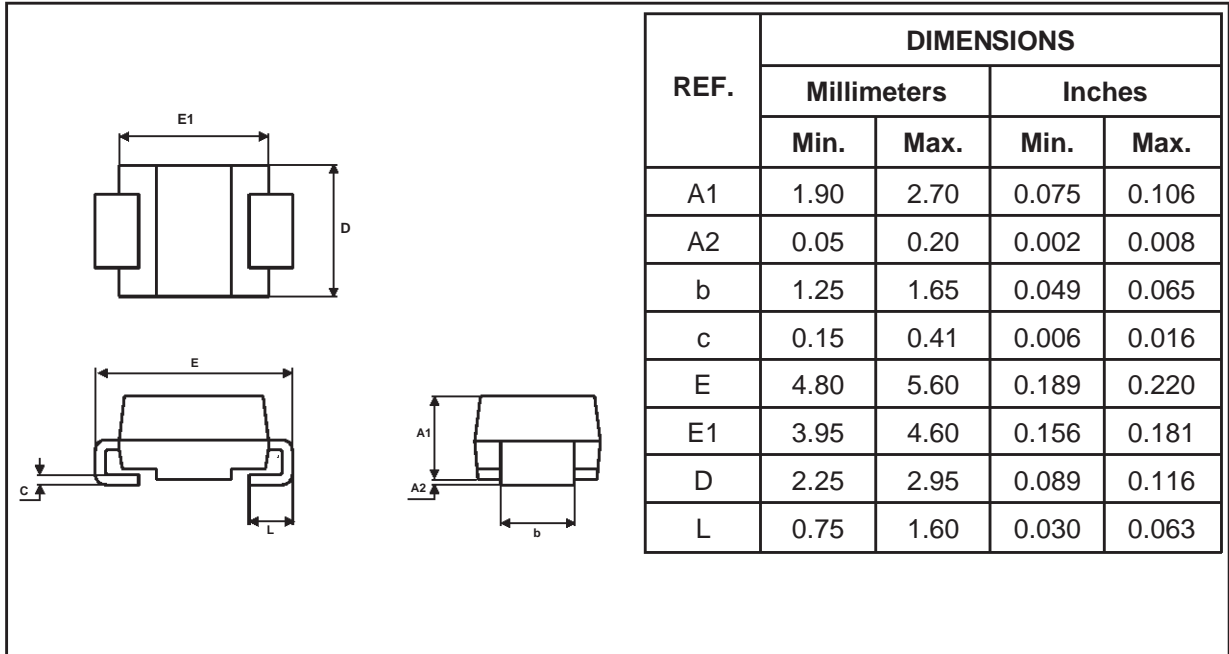
**Fig. 8-1:** Thermal resistance junction to ambient versus copper surface under each lead (Epoxy printed circuit board, copper thickness: 35 $\mu\text{m}$ )(SMB).



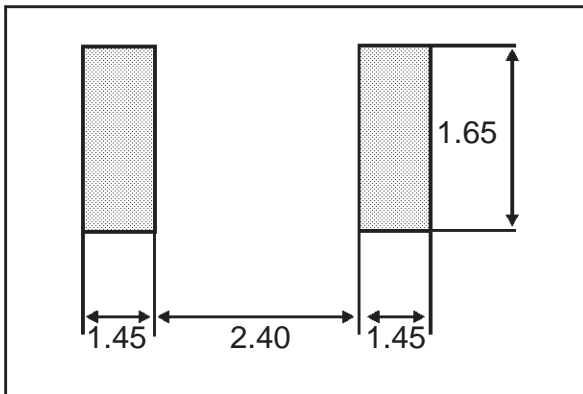
**Fig. 8-2:** Thermal resistance junction to ambient versus copper surface under each lead (Epoxy printed circuit board, copper thickness: 35 $\mu\text{m}$ )(SMA).



**PACKAGE MECHANICAL DATA**  
SMA



**FOOT PRINT (in millimeters)**

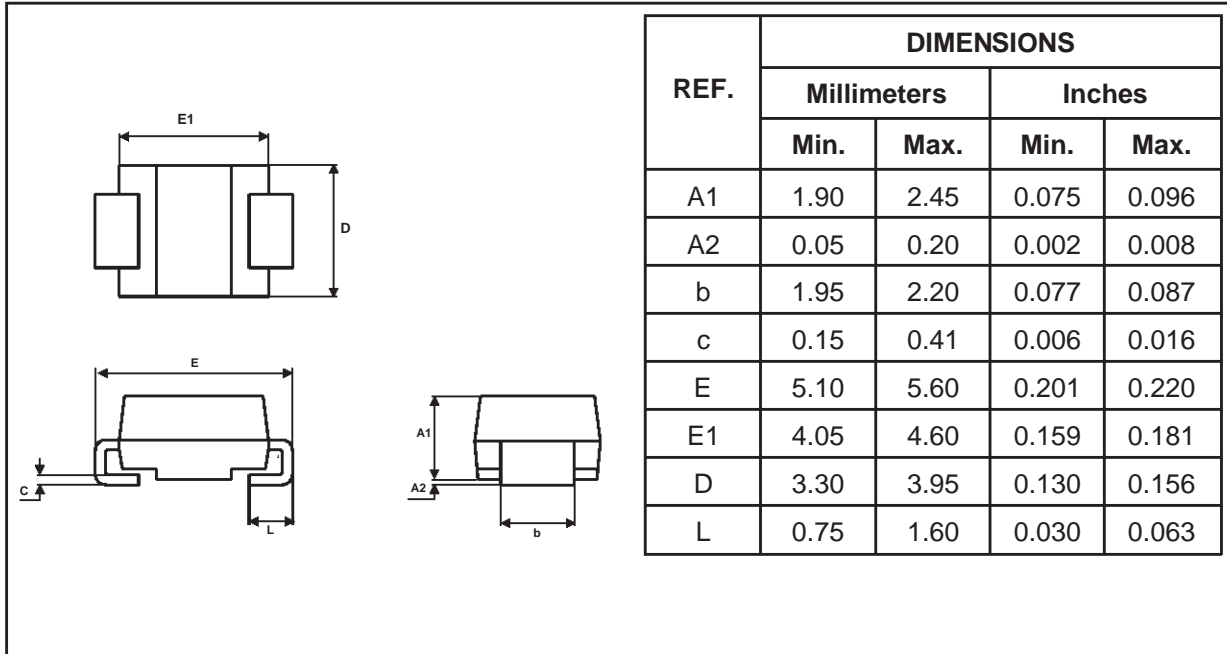


■ Marking: S140

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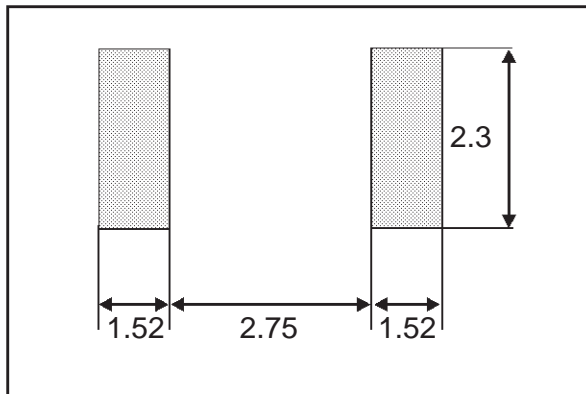
## PACKAGE MECHANICAL DATA

SMB Plastic



### FOOT PRINT (in millimeters)

■ Marking: G14



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