

POWER SCHOTTKY RECTIFIER

MAIN PRODUCT CHARACTERISTICS

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

FEATURES AND BENEFITS

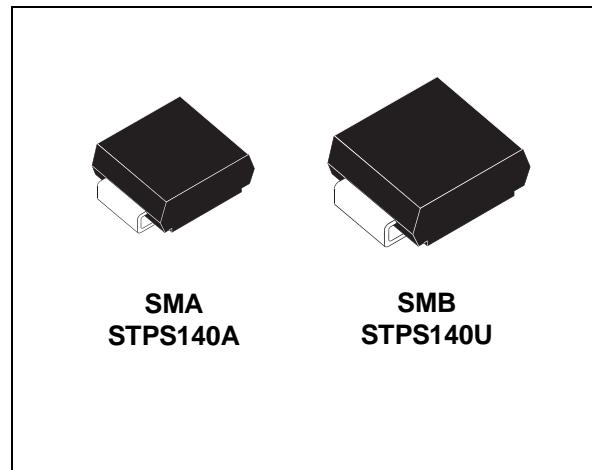
- VERY SMALL CONDUCTION LOSSES
- NEGLIGIBLE SWITCHING LOSSES
- LOW FORWARD VOLTAGE DROP
- SURFACE MOUNTED DEVICE

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°C	1	A
		SMB	T _L = 135°C		
I _{FSM}	Surge non repetitive forward current	tp = 10 ms Sinusoidal	60	A	
I _{RRM}	Repetitive peak reverse current	tp = 2 μ s F = 1kHz	1	A	
I _{RSM}	Non repetitive peak reverse current	tp = 100 μ s 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/ μ s	

STPS140A/U

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	μA
		$T_j = 100^{\circ}\text{C}$		0.25	2	mA
V_F^{**}	Forward voltage drop	$T_j = 25^{\circ}\text{C}$	$I_F = 1\text{A}$		0.55	V
		$T_j = 125^{\circ}\text{C}$	$I_F = 1\text{A}$		0.43	
		$T_j = 25^{\circ}\text{C}$	$I_F = 2\text{A}$		0.65	
		$T_j = 125^{\circ}\text{C}$	$I_F = 2\text{A}$		0.53	

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.

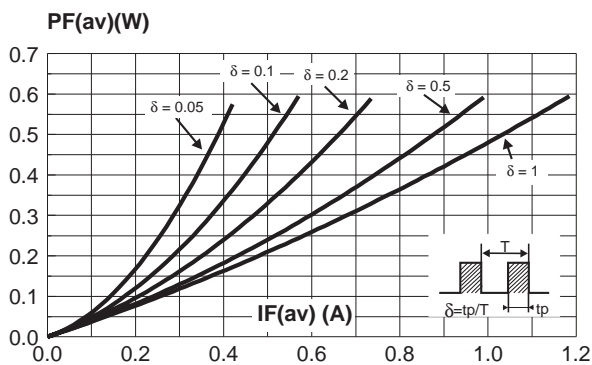


Fig. 2: Average forward current versus ambient temperature ($\delta=0.5$).

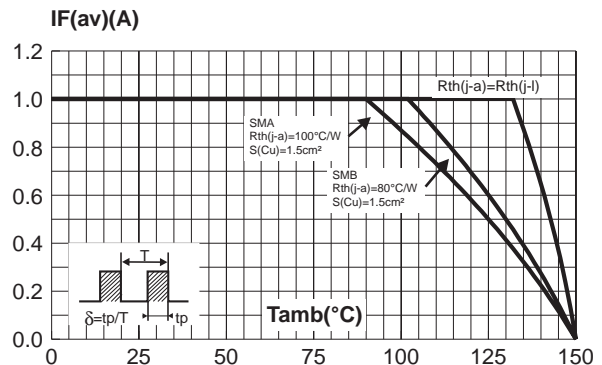


Fig. 3-1: Non repetivesurge peak forward current versus overload duration (maximum values) (SMB).

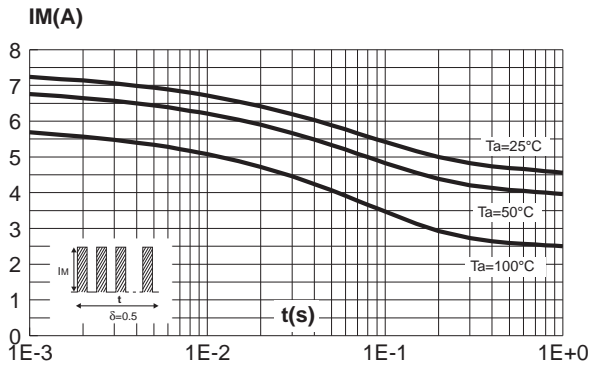


Fig. 3-2: Non repetivesurge peak forward current versus overload duration (maximum values) (SMA).

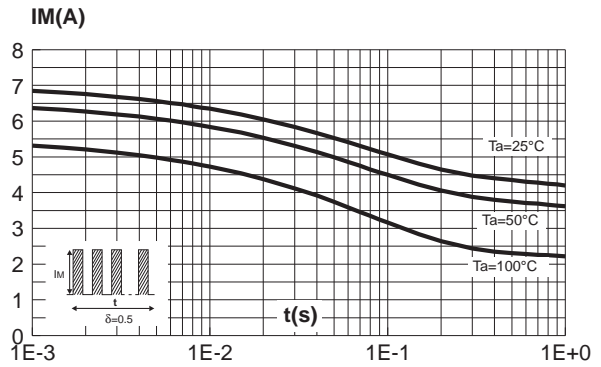


Fig. 4-1: Relative variation of thermal impedance junction to ambient versus pulse duration (SMB).

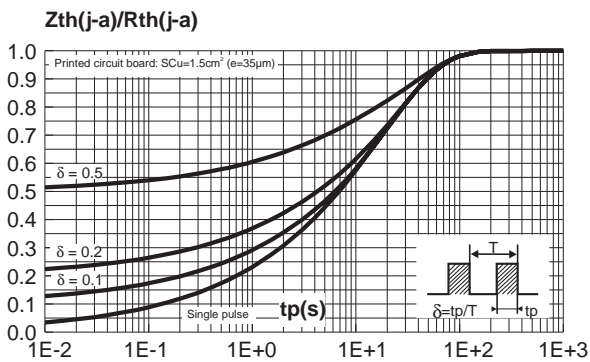


Fig. 4-2: Relative variation of thermal impedance junction to ambient versus pulse duration (SMA).

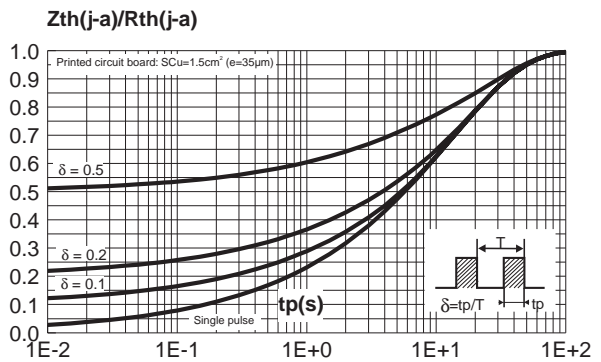


Fig. 5: Reverse leakage current versus reverse voltage applied (typical values).

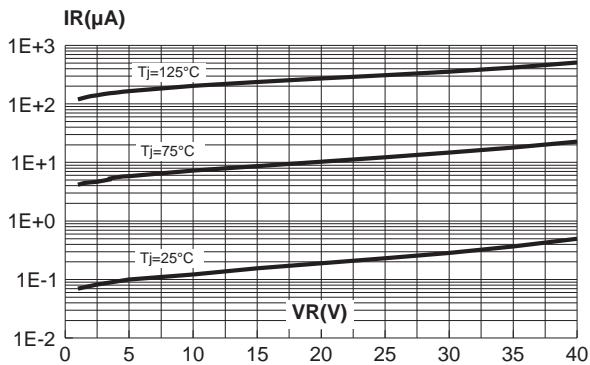


Fig. 6: Junction capacitance versus reverse voltage applied (typical values)

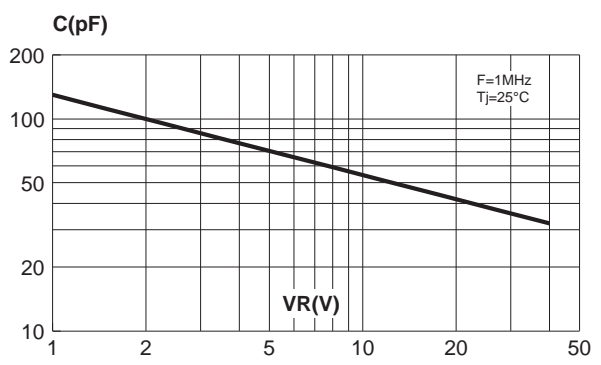


Fig. 7: Forward voltage drop versus forward current (maximum values).

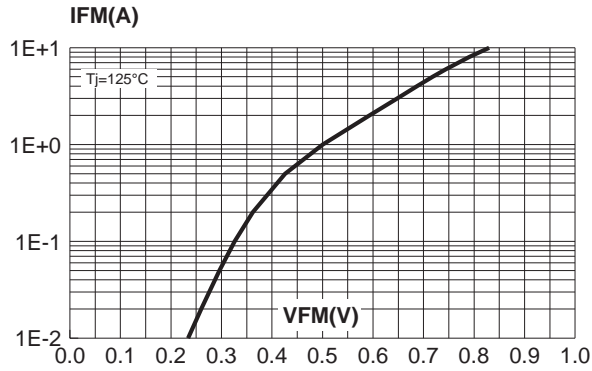


Fig. 8-1: Thermal resistance junction to ambient versus copper surface under each lead (Epoxy printed circuit board, copper thickness: 35 μm)(SMB).

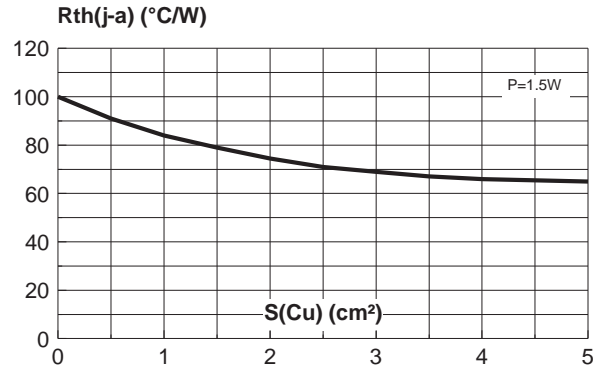
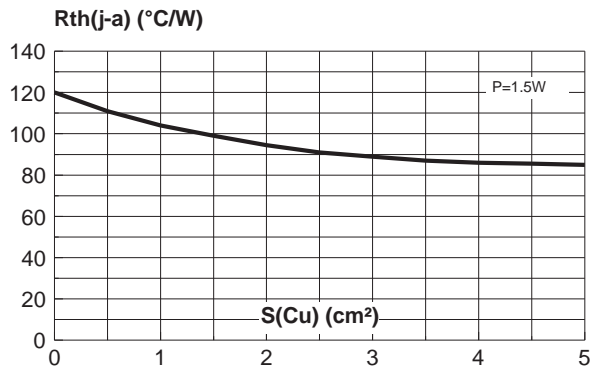


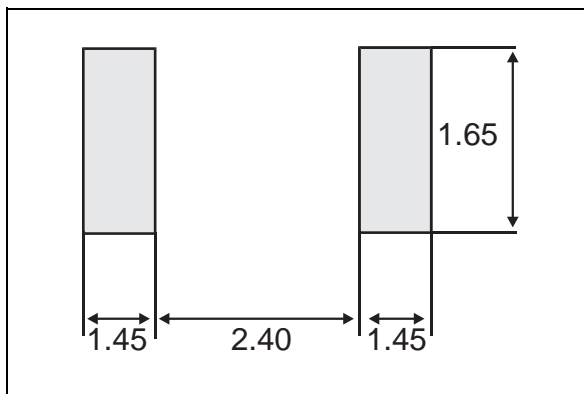
Fig. 8-2: Thermal resistance junction to ambient versus copper surface under each lead (Epoxy printed circuit board, copper thickness: 35 μm)(SMA).



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

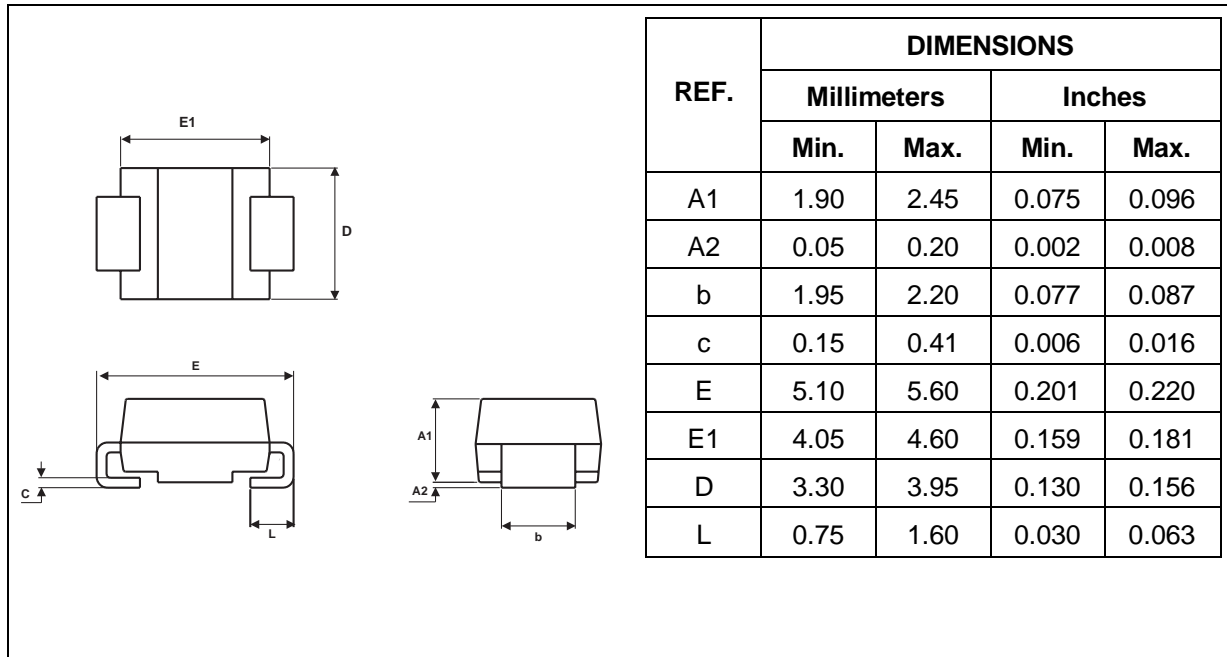
FOOT PRINT (in millimeters)



■ **Marking:** S140

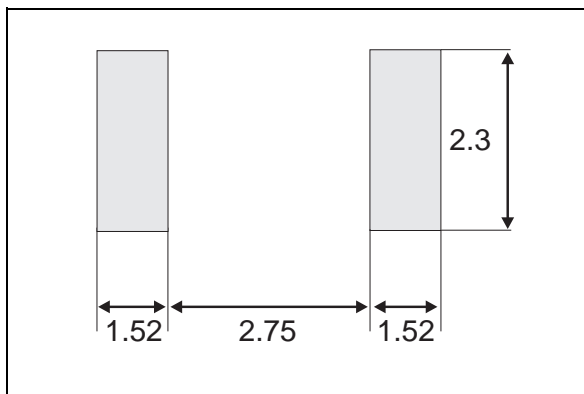
STPS140A/U

PACKAGE MECHANICAL DATA SMB Plastic



FOOT PRINT (in millimeters)

■ Marking: G14



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