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Vishay Semiconductor/Diodes Division
SB15H45-E3/73

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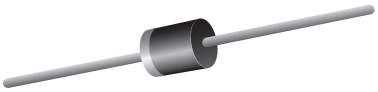
Photovoltaic Solar Cell Protection Schottky Plastic Rectifier

High Barrier Technology for Improved High Temperature Performance

This datasheet reflects specifications of product in actual application.



P600

FEATURES

- Guardring for overvoltage protection
- Low forward voltage drop, low power losses
- High efficiency operation
- High forward surge capability
- Solder dip 275 °C max. 10 s, per JESD 22-B106
- Material categorization: For definitions of compliance please see www.vishay.com/doc?99912

RoHS COMPLIANT

TYPICAL APPLICATIONS

For use in solar cell junction box as a bypass diode for protection, using DC forward current without reverse bias.

MECHANICAL DATA

Case: P600, molded epoxy over passivated junction Molding compound meets UL 94 V-0 flammability rating Base P/N-E3 - RoHS compliant, commercial grade

Terminals: Matte tin plated leads, solderable per J-STD-002 and JESD 22-B102
E3 suffix meets JESD 201 class 1A whisker test

Polarity: Color band denotes cathode end

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	15 A
V_{RRM}	45 V
I_{FSM}	300 A
V_F at I_F = 15 A	0.46 V
T_{OP} max.	175 °C
T_J max. (DC forward current)	200 °C
Package	P600
Diode variation	Single die

MAXIMUM RATINGS (T_A = 25 °C unless otherwise noted)

PARAMETER	SYMBOL	SB15H45	UNIT
Maximum repetitive peak reverse voltage	V_{RRM}	45	V
Maximum average forward rectified current (fig. 1)	$I_{F(AV)}$ (1)	15	A
	$I_{F(AV)}$ (2)	7	
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	I_{FSM}	300	A
Operating junction and storage temperature range	T_{OP}, T_{STG}	- 55 to + 175	°C
Junction temperature in DC forward current without reverse bias, t ≤ 1 h (fig. 1)	T_J (3)	≤ 200	°C

Notes

(1) With heatsink, T_L = 25 °C
(2) Without heatsink, free air
(3) Meets the requirements of IEC 61215 ed. 2 bypass diode thermal test

ELECTRICAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)						
PARAMETER	**TEST CONDITIONS**		**SYMBOL**	**TYP.**	**MAX.**	**UNIT**
Instantaneous forward voltage	I_F = 5 A	T_A = 25 °C	V_F (1)	0.48	-	V
	I_F = 7.5 A			0.50	-	
	I_F = 15 A			0.56	0.64	
	I_F = 5 A	T_A = 125 °C		0.35	-	
	I_F = 7.5 A			0.39	-	
	I_F = 15 A			0.46	0.54	
Reverse current	V_R = 45 V	T_A = 25 °C	I_R (2)	10	300	µA
		T_A = 125 °C		8	20	mA
Typical junction capacitance	4.0 V, 1 MHz		C_J	1020	-	pF

Notes
(1) Pulse test: 300 µs pulse width, 1 % duty cycle
(2) Pulse test: 10 ms pulse width

THERMAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)			
PARAMETER	**SYMBOL**	**SB15H45**	**UNIT**
Thermal resistance	$R_{\theta JA}$ (1)	66	°C/W
	$R_{\theta JL}$ (1)	14	
Typical thermal resistance	$R_{\theta JL}$ (2)	3.5	°C/W

Notes
(1) Without heatsink, free air
(2) T_A = 75 °C, T_L = 125 °C, T_J = 175 °C, infinite mass at 0.375" (9.5 mm) lead length

ORDERING INFORMATION (Example)				
PREFERRED P/N	**UNIT WEIGHT (g)**	**PREFERRED PACKAGE CODE**	**BASE QUANTITY**	**DELIVERY MODE**
SB15H45-E3/54	1.756	54	800	13" diameter paper tape and reel

RATINGS AND CHARACTERISTICS CURVES

(T_A = 25 °C unless otherwise noted)

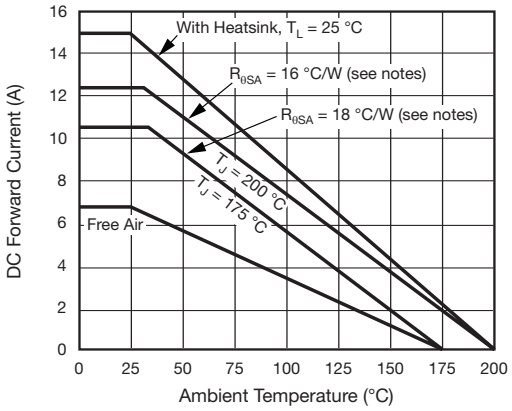


Fig. 1 - Forward Current Derating Curve

Notes
- Mounted on junction box
- Using DC forward current
- Junction box SA (sink to ambient)
- Assumes $R_{\theta LS}$ (lead to sink) of 5 °C/W
- Thermal resistance $R_{\theta SA}$ (sink to ambient):

$$R_{\theta SA} = \frac{(T_J - T_A)}{P_D} - (R_{\theta JL} + R_{\theta LS})$$

- P_D: Power dissipation $P_D = V_F \times I_F$

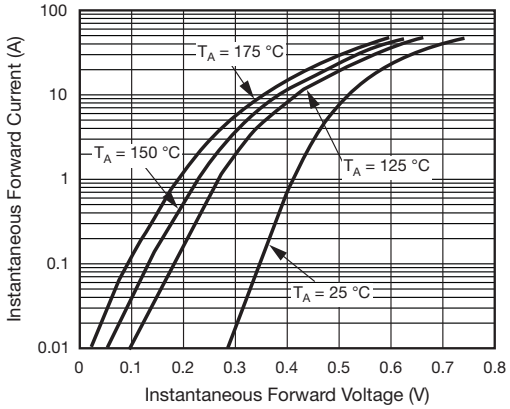


Fig. 2 - Typical Instantaneous Forward Characteristics

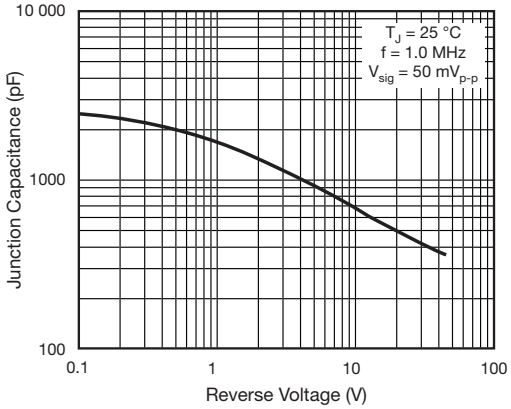


Fig. 4 - Typical Junction Capacitance

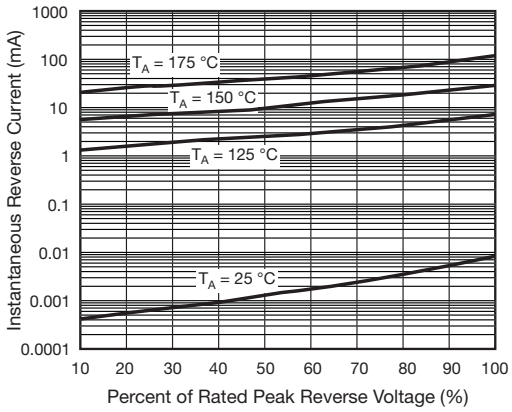
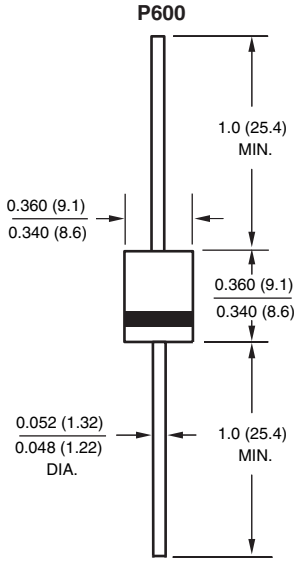


Fig. 3 - Typical Reverse Characteristics

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)



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