

Vishay General Semiconductor

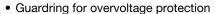
Photovoltaic Solar Cell Protection Schottky Plastic Rectifier

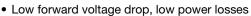
High Barrier Technology for Improved High Temperature Performance This datasheet reflects specifications of product in actual application.



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			

FEATURES







• High forward surge capability

RoHS

• Solder dip 275 °C max. 10 s, per JESD 22-B106

 Material categorization: For definitions of compliance please see www.vishay.com/doc?99912

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

MAXIMUM RATINGS (T_A = 25 °C unless otherwise noted) **SYMBOL PARAMETER** SB15H45 UNIT V Maximum repetitive peak reverse voltage 45 V_{RRM} I_{F(AV)} (1) 15 Maximum average forward rectified current (fig. 1) Α I_{F(AV)} (2) 7 Peak forward surge current 8.3 ms single half sine-wave 300 Α I_{FSM} superimposed on rated load Operating junction and storage temperature range - 55 to + 175 °С T_{OP}, T_{STG} Junction temperature in DC forward current T.1 (3) ≤ 200 °C without reverse bias, $t \le 1 h$ (fig. 1)

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



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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	μΑ
	VR = 45 V	T _A = 125 °C		8	20	mA
Typical junction capacitance	4.0 V, 1 MHz		CJ	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 _{0JA} (1)	66	°C/W	
	R _{0JL} (1)	14		
Typical thermal resistance	R _{0JL} (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)

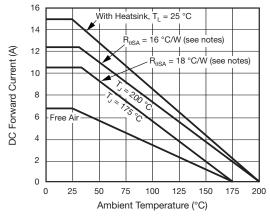


Fig. 1 - Forward Current Derating Curve

Notes

- · Mounted on junction box
- Using DC forward current
- Junction box SA (sink to ambient)
- Assumes R_{θLS} (lead to sink) of 5 °C/W
- Thermal resistance R_{θSA} (sink to ambient):

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

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



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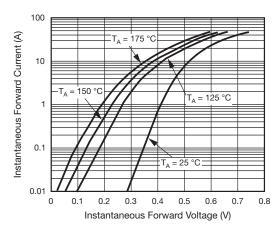
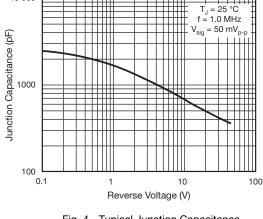


Fig. 2 - Typical Instantaneous Forward Characteristics



10 000

Fig. 4 - Typical Junction Capacitance

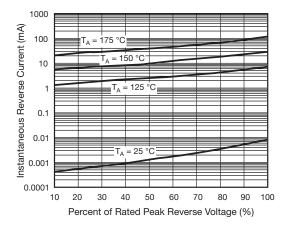
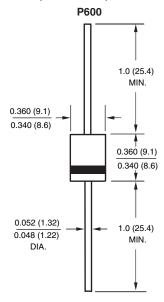


Fig. 3 - Typical Reverse Characteristics

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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