



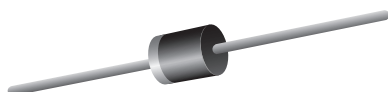
**THE DATASHEET OF  
SB15H45-E3/54**



## Photovoltaic Solarcell Protection Schottky 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
- Compliant to RoHS directive 2002/95/EC and in accordance to WEEE 2002/96/EC



**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

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)	$I_{F(AV)}$ <sup>(1)</sup>	15	A
	$I_{F(AV)}$ <sup>(2)</sup>	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, $t \leq 1$ h (fig. 1)	$T_J$ <sup>(3)</sup>	$\leq 200$	°C

#### Notes

<sup>(1)</sup> With heatsink,  $T_L = 25$  °C

<sup>(2)</sup> Without heatsink, free air

<sup>(3)</sup> Meets the requirements of IEC 61215 ed. 2 bypass diode thermal test

ELECTRICAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT
Instantaneous forward voltage	I <sub>F</sub> = 5 A	T <sub>A</sub> = 25 °C	V <sub>F</sub> <sup>(1)</sup>	0.48	-	V
	I <sub>F</sub> = 7.5 A			0.50	-	
	I <sub>F</sub> = 15 A			0.56	0.64	
	I <sub>F</sub> = 5 A	T <sub>A</sub> = 125 °C		0.35	-	
	I <sub>F</sub> = 7.5 A			0.39	-	
	I <sub>F</sub> = 15 A			0.46	0.54	
Reverse current	V <sub>R</sub> = 45 V	T <sub>A</sub> = 25 °C	I <sub>R</sub> <sup>(2)</sup>	10	300	μA
		T <sub>A</sub> = 125 °C		8	20	mA
Typical junction capacitance	4.0 V, 1 MHz		C <sub>J</sub>	1020	-	pF

Notes

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

THERMAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted)			
PARAMETER	SYMBOL	SB15H45	UNIT
Thermal resistance	R <sub>θJA</sub> <sup>(1)</sup>	66	°C/W
	R <sub>θJL</sub> <sup>(1)</sup>	14	
Typical thermal resistance	R <sub>θJL</sub> <sup>(2)</sup>	3.5	°C/W

Notes

- (1) Without heatsink, free air
- (2) T<sub>A</sub> = 75 °C, T<sub>L</sub> = 125 °C, T<sub>J</sub> = 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<sub>A</sub> = 25 °C unless otherwise noted)

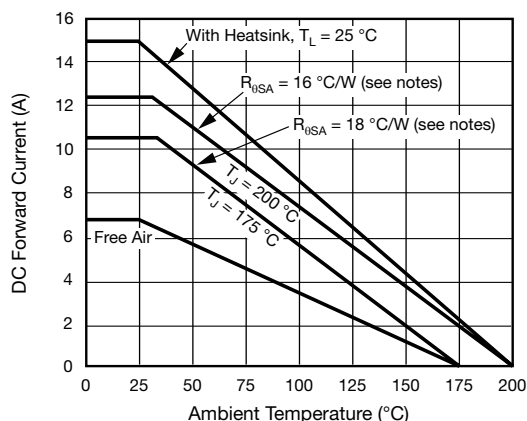


Fig. 1 - Forward Current Derating Curve

Notes

- Mounted on junction box
- Using DC forward current
- Junction box SA (sink to ambient)
- Assumes R<sub>θLS</sub> (lead to sink) of 5 °C/W
- Thermal resistance R<sub>θSA</sub> (sink to ambient):

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

P<sub>D</sub>: Power dissipation P<sub>D</sub> = V<sub>F</sub> x I<sub>F</sub>

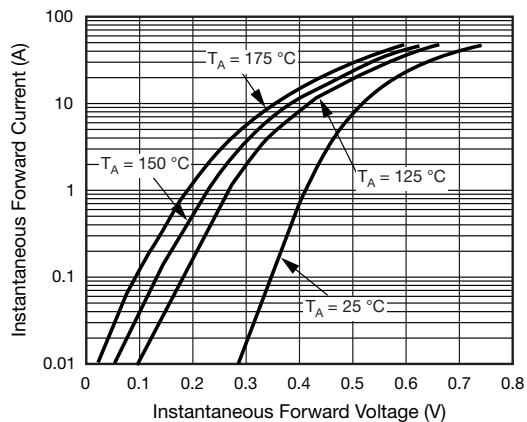


Fig. 2 - Typical Instantaneous Forward Characteristics

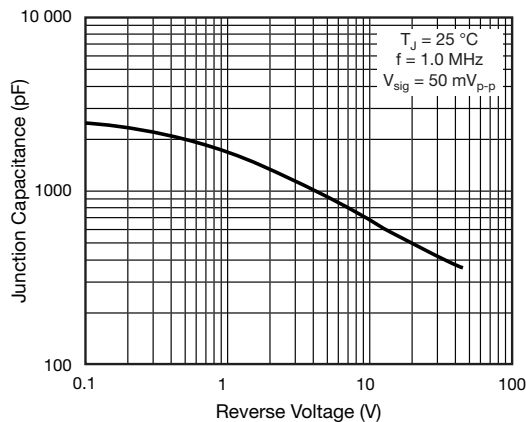


Fig. 4 - Typical Junction Capacitance

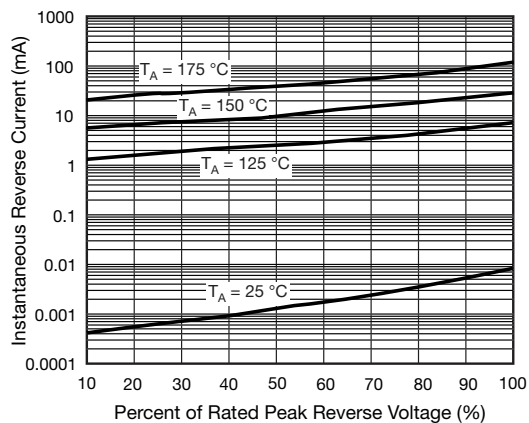
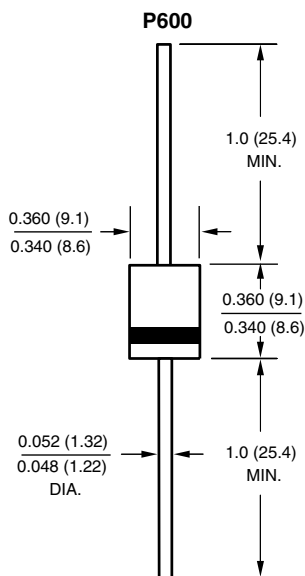


Fig. 3 - Typical Reverse Characteristics

**PACKAGE OUTLINE DIMENSIONS** in inches (millimeters)





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