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Green

SBR10A45SP5

10A SBR®
SUPER BARRIER RECTIFIER
POWERDI®

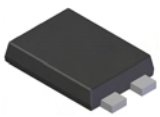
Features

- Designed as Bypass Diodes for Solar Panels
- Selectively Rated for 200ºC Maximum Junction Temperature for High Thermal Reliability
- Patented Super Barrier Rectifier Technology
- Low Forward Voltage Drop
- Excellent High Temperature Stability
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**

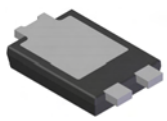
Mechanical Data

- Case: POWERDI5
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish – Matte Tin annealed over Copper leadframe. Solderable per MIL-STD-202, Method 208 e3
- Weight: 0.093 grams (approximate)

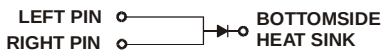
POWERDI5



Top View



Bottom View



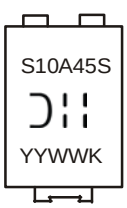
Note: Pins Left & Right must be electrically connected at the printed circuit board.

Ordering Information (Note 4)

Part Number	Case	Packaging
SBR10A45SP5-13	POWERDI5	5000/Tape & Reel
SBR10A45SP5-7	POWERDI5	1500/Tape & Reel
SBR10A45SP5Q-13	POWERDI5	5000/Tape & Reel

Notes:
1. EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant. All applicable RoHS exemptions applied.
2. See http://www.diodes.com for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
4. For packaging details, go to our website at http://www.diodes.com.

Marking Information



S10A45S = Product Type Marking Code
= Manufacturers' code marking
K = Factory designator
YYWW = Date Code Marking
YY = Last two digits of year (ex: 08 for 2008)
WW = Week code (01 - 53)

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Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

Single phase, half wave, 60Hz, resistive or inductive load.
For capacitance load, derate current by 20%.

Characteristic	Symbol	Value	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	V_{RRM} V_{RWM} V_{RM}	45	V
Average Rectified Output Current	I_O	10	A
Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load	I_{FSM}	180	A

Thermal Characteristics

Characteristic		Symbol	Value	Unit
Typical Thermal Resistance Thermal Resistance Junction to Ambient (Note 5) Thermal Resistance Junction to Ambient (Note 6)		 $R_{\theta JA}$ $R_{\theta JA}$	 102 60	ºC/W
Operating Temperature Range	$V_R \le 80\%\ V_{RRM}$	T_J	-65 to +150	ºC
	$V_R \le 50\%\ V_{RRM}$		≤180	
	DC Forward Mode		≤200	
Storage Temperature Range		T_{STG}	-65 to +175	ºC

Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Breakdown Voltage (Note 7)	$V_{(BR)R}$	45	-	-	V	I_R = 0.5mA
Forward Voltage Drop	V_F	- -	0.39 0.46	- 0.53	V	I_F = 5A, T_J = +25ºC I_F = 10A, T_J = +25ºC
Leakage Current (Note 7)	I_R	-	-	400	µA	V_R = 45V, T_J = +25ºC

Notes:
5. FR-4 PCB, 2oz. Copper, minimum recommended pad layout per http://www.diodes.com.
6. Polymide PCB, 2oz. Copper, minimum recommended pad layout per http://www.diodes.com.
7. Short duration pulse test used to minimize self-heating effect.

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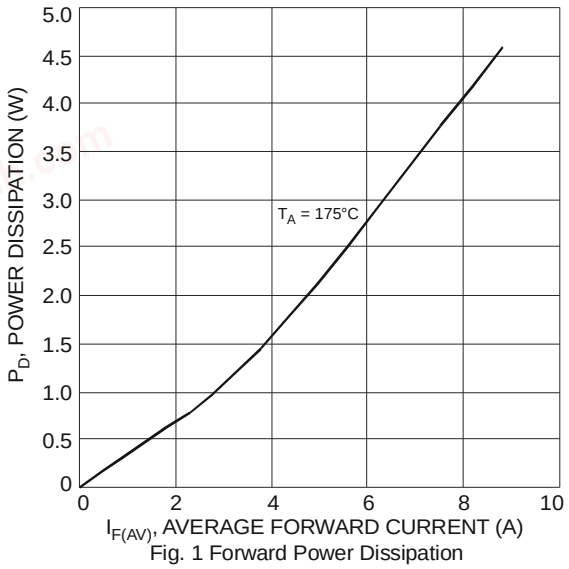


Fig. 1 Forward Power Dissipation

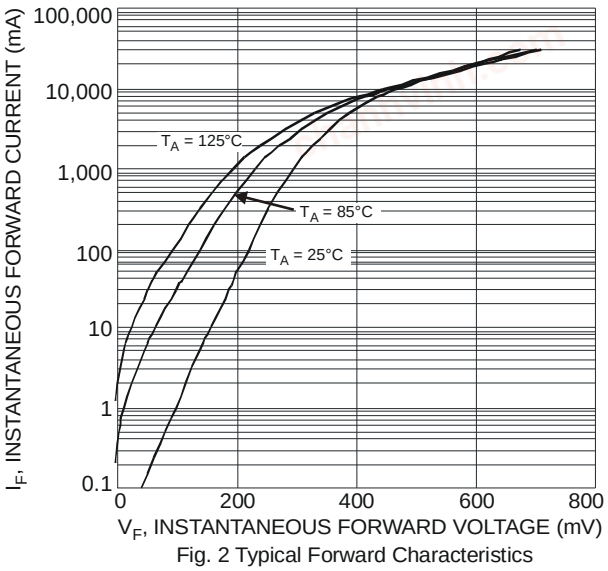


Fig. 2 Typical Forward Characteristics

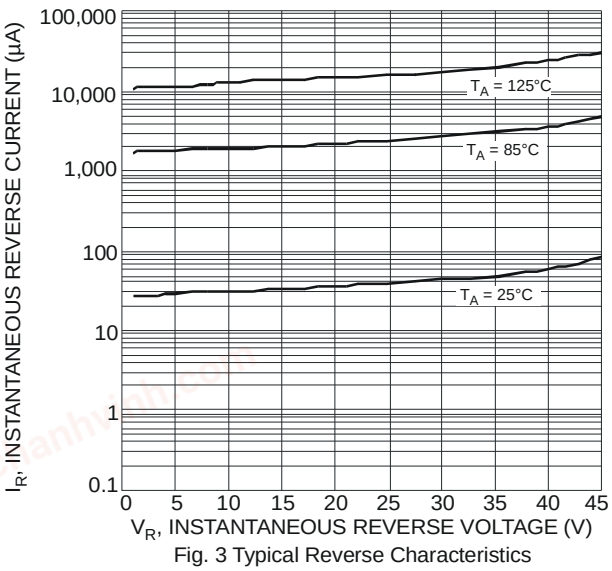


Fig. 3 Typical Reverse Characteristics

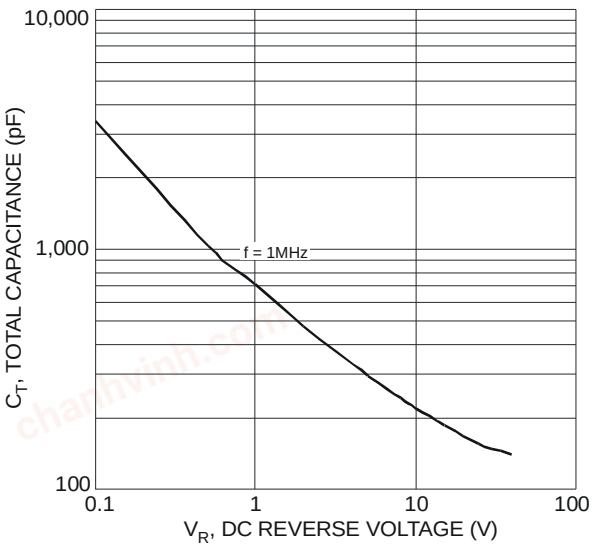


Fig. 4 Total Capacitance vs. Reverse Voltage

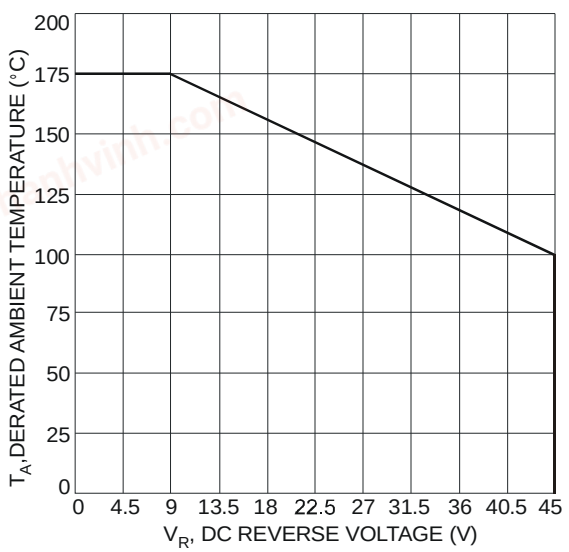


Fig. 5 Operating Temperature Derating

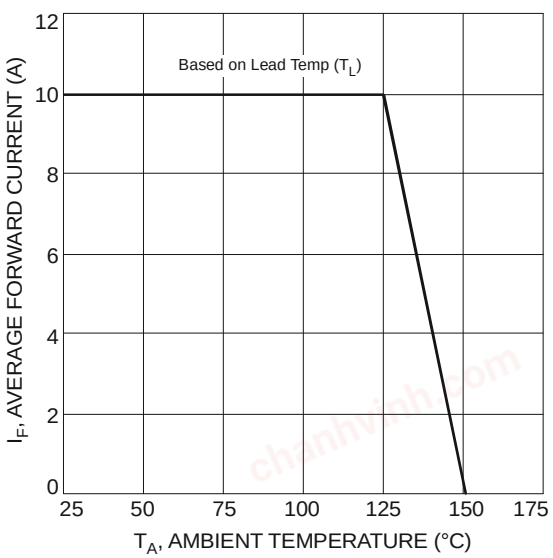


Fig. 6 Forward Current Derating Curve

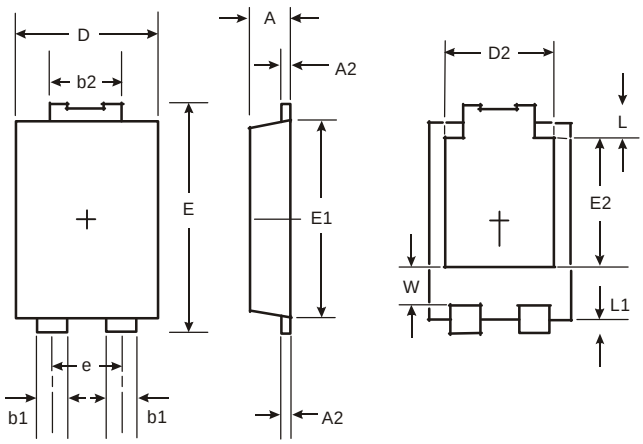
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Package Outline Dimensions

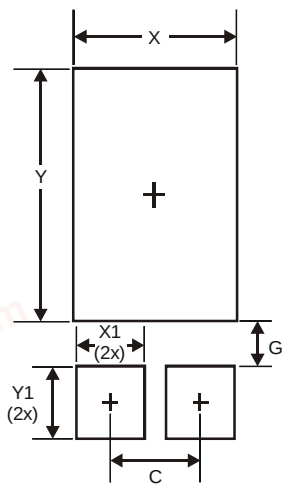
Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for latest version.



POWERDI5		
Dim	**Min**	**Max**
A	1.05	1.15
A2	0.33	0.43
b1	0.80	0.99
b2	1.70	1.88
D	3.90	4.05
D2	3.054 Typ	
E	6.40	6.60
e	1.84 Typ	
E1	5.30	5.45
E2	3.549 Typ	
L	0.75	0.95
L1	0.50	0.65
W	1.10	1.41
All Dimensions in mm		

Suggested Pad Layout

Please see AP02001 at http://www.diodes.com/datasheets/ap02001.pdf for the latest version.



Dimensions	Value (in mm)
C	1.840
G	0.852
X	3.360
X1	1.390
Y	4.860
Y1	1.400

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