

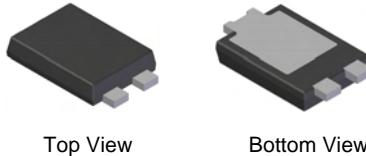
Features

- Designed as Bypass Diodes for Solar Panels
- Selectively Rated for 200°C 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 (3)
- Weight: 0.093 grams (approximate)

POWERDI5



Top View

Bottom View

LEFT PIN o ——————> o BOTTOMSIDE
RIGHT PIN o ——————> o HEAT SINK

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

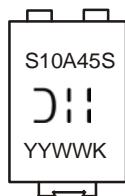
Ordering Information (Note 4)

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

Notes:

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

Marking Information



S10A45S = Product Type Marking Code

DII = 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)

Maximum Ratings (@ $T_A = +25^\circ\text{C}$, 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	V_{RRM}		
Working Peak Reverse Voltage	V_{RWM}	45	V
DC Blocking Voltage	V_{RM}		
Average Rectified Output Current	I_O	10	A
Non-Repetitive Peak Forward Surge Current 8.3ms	I_{FSM}	180	A
Single Half Sine-Wave Superimposed on Rated Load			

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Typical Thermal Resistance			
Thermal Resistance Junction to Ambient (Note 5)	$R_{\theta JA}$	102	$^\circ\text{C}/\text{W}$
Thermal Resistance Junction to Ambient (Note 6)	$R_{\theta JA}$	60	
Operating Temperature Range	T_J	-65 to +150	$^\circ\text{C}$
		≤ 180	
		≤ 200	
DC Forward Mode			
Storage Temperature Range	T_{STG}	-65 to +175	$^\circ\text{C}$

Electrical Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

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

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

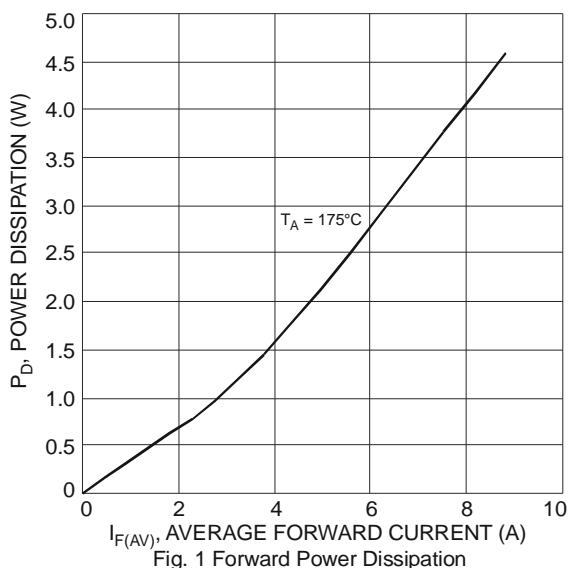


Fig. 1 Forward Power Dissipation

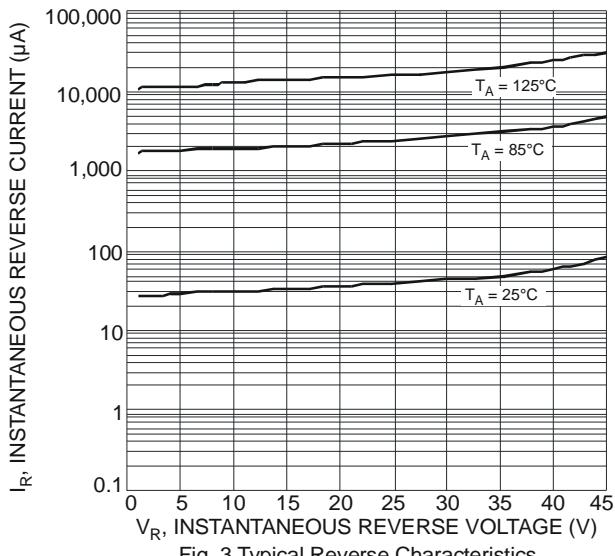


Fig. 3 Typical Reverse Characteristics

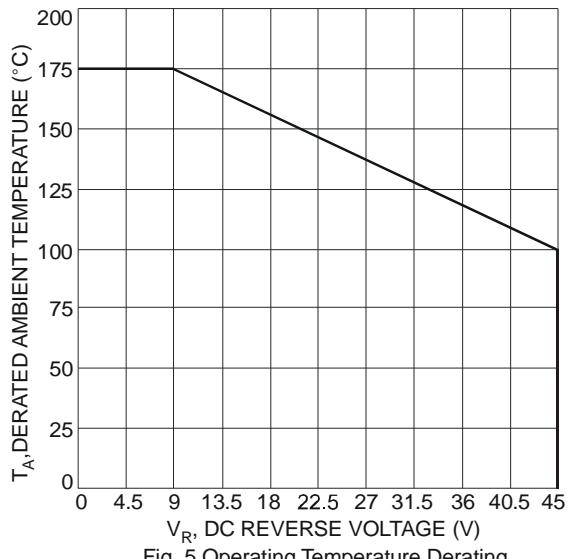


Fig. 5 Operating Temperature Derating

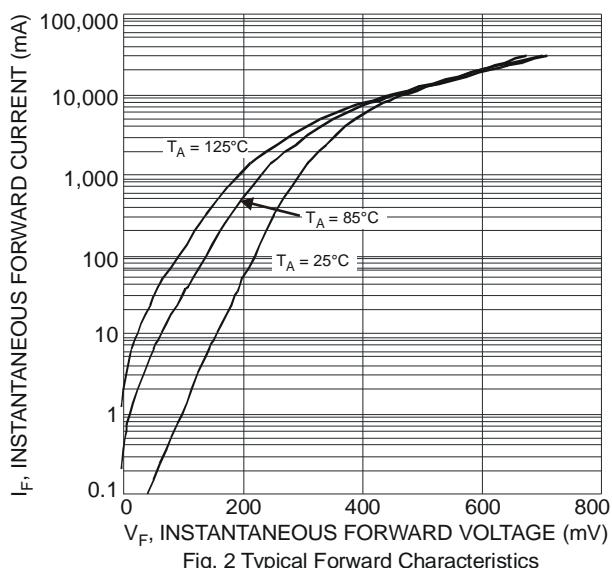


Fig. 2 Typical Forward Characteristics

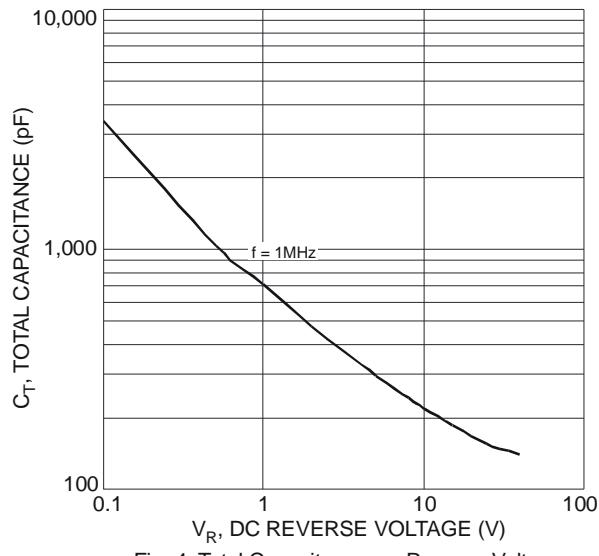


Fig. 4 Total Capacitance vs. Reverse Voltage

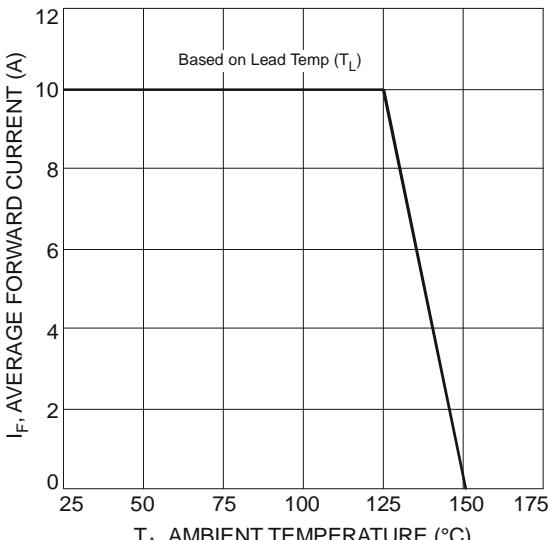
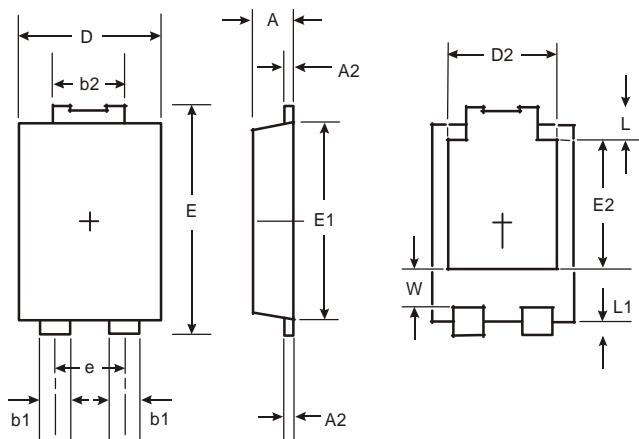


Fig. 6 Forward Current Derating Curve

Package Outline Dimensions

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

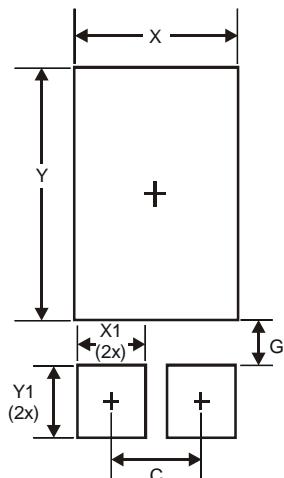


POWERDI5		
Dim	Min	Max
A	1.05	1.15
A2	0.33	0.43
b1	0.80	0.99
b2	1.70	1.88
D	3.90	4.05
D2	3.054 Typ	
E	6.40	6.60
e	1.84 Typ	
E1	5.30	5.45
E2	3.549 Typ	
L	0.75	0.95
L1	0.50	0.65
W	1.10	1.41

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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