SBR10U45SP5

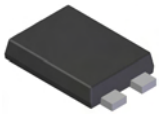
10A SBR®
SUPER BARRIER RECTIFIER
PowerDI®5

Features

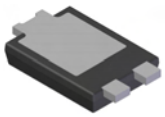
- Designed as Bypass Diodes for Solar Panels
- Selectively Rated for 200ºC Maximum Junction Temperature for High Thermal Reliability
- Patented Super Barrier Rectifier Technology
- High Forward Surge Capability
- Ultra Low Forward Voltage Drop
- Excellent High Temperature Stability
- **Lead Free Finish, RoHS Compliant (Note 1)**

Mechanical Data

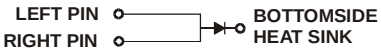
- Case: PowerDI®5
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish – Matte Tin annealed over Copper leadframe. Solderable per MIL-STD-202, Method 208 e3
- Weight: 0.093 grams (approximate)



Top View



Bottom View



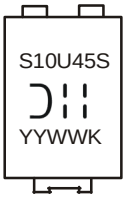
Note: Pins Left & Right must be electrically connected at the printed circuit board.

Ordering Information (Note 2)

Part Number	Case	Packaging
SBR10U45SP5-13	PowerDI®5	5000/Tape & Reel

Notes: 1. EU Directive 2002/95/EC (RoHS). All applicable RoHS exemptions applied, see *EU Directive 2002/95/EC Annex Notes*
2. For packaging details, go to our website at http://www.diodes.com.

Marking Information



S10U45S = 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)

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
RMS Reverse Voltage	$V_{R(RMS)}$	32	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}	275	A
Repetitive Peak Avalanche Power (1μs, 25°C)	P_{ARM}	30000	W

Thermal Characteristics

Characteristic		Symbol	Value	Unit
Maximum Thermal Resistance Thermal Resistance Junction to Ambient (Note 3) Thermal Resistance Junction to Ambient (Note 4)		 $R_{\theta JA}$ $R_{\theta JA}$	 73 31	°C/W
Operating Temperature Range	$V_R \le 80\% V_{RRM}$	T_J	-65 to +150	°C
	$V_R \le 50\% V_{RRM}$		≤180	
	DC Forward Mode		≤200	
Storage Temperature Range		T_{STG}	-65 to +175	°C

Electrical Characteristics @T_A = 25°C unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Breakdown Voltage (Note 5)	$V_{(BR)R}$	45	-	-	V	I_R = 0.3mA
Forward Voltage Drop	V_F	- - -	- 0.42 0.38	0.42 0.47 0.41	V	I_F = 8A, T_J = 25°C I_F = 10A, T_J = 25°C I_F = 10A, T_J = 125°C
Leakage Current (Note 5)	I_R	- - -	0.05 - 28.0	0.3 15 75	mA	V_R = 45V, T_J = 25°C V_R = 45V, T_J = 100°C V_R = 45V, T_J = 150°C

Notes:
3. FR-4 PCB, 2oz. Copper, minimum recommended pad layout per http://www.diodes.com.
4. Polymide PCB, 2oz. Copper. Cathode pad dimensions 18.8mm x 14.4mm. Anode pad dimensions 5.6mm x 14.4mm.
5. Short duration pulse test used to minimize self-heating effect.

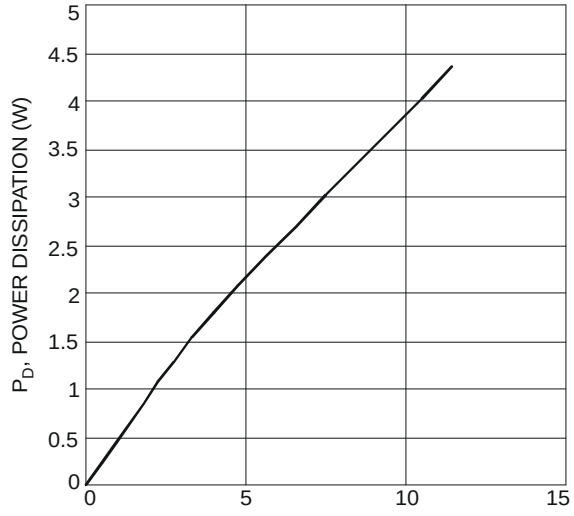


Fig. 1 Forward Power Dissipation

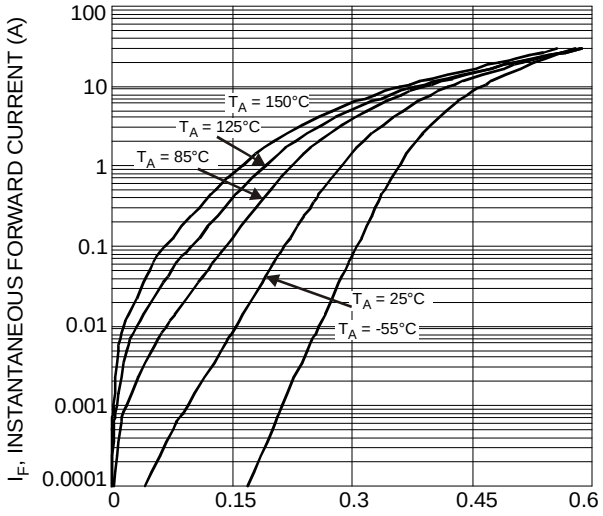


Fig. 2 Typical Forward Characteristics

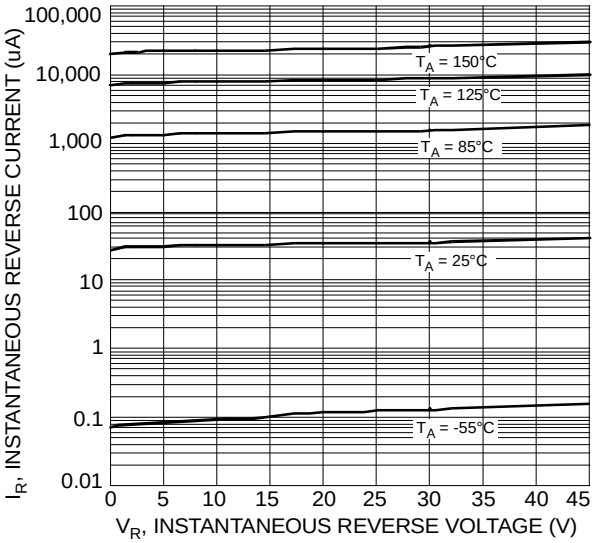


Fig. 3 Typical Reverse Characteristics

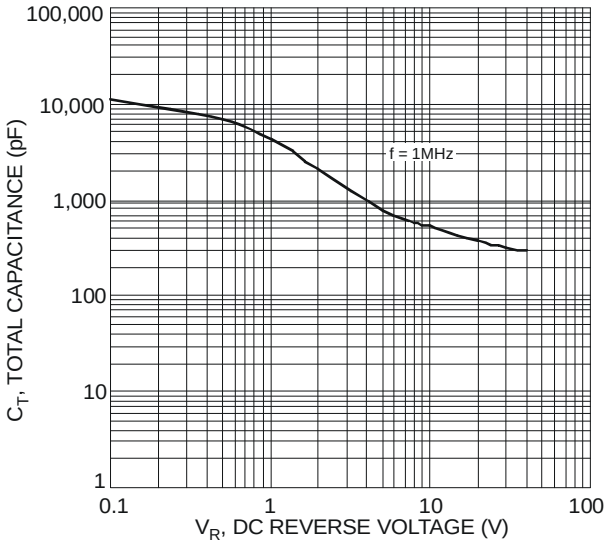


Fig. 4 Total Capacitance vs. Reverse Voltage

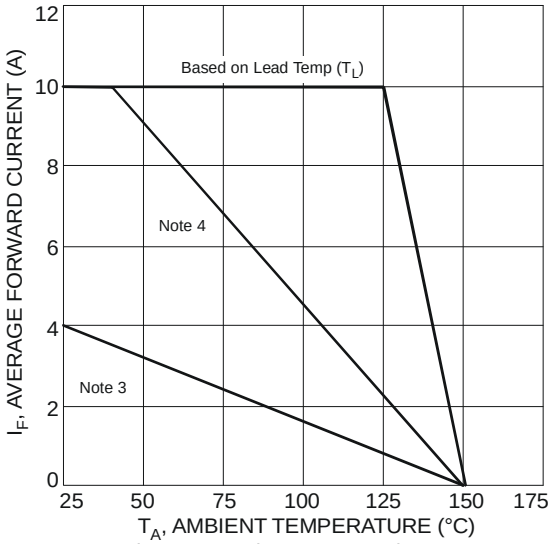


Fig. 5 Forward Current Derating Curve

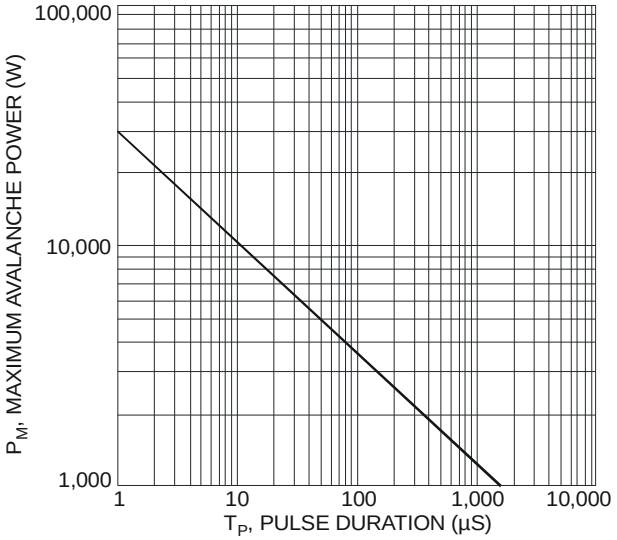
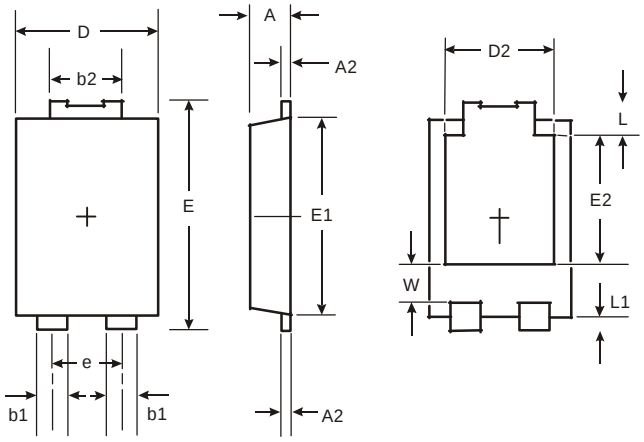


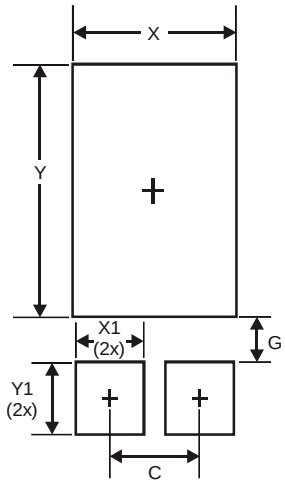
Fig. 6 Maximum Avalanche Power

Package Outline Dimensions



PowerDI®5		
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



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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