

Product Summary

V_{RRM} (V)	I_O (A)	V_F typ @ 125°C (V)	$I_{R\ max}$ @ V_{RRM} (mA)
45	12	0.38	0.3

Description and Applications

The SBR12U45LH uses SBR patented technology that offers ultra low V_F to reduce forward power loss and improve efficiency. Encapsulated in the new PDI-5SP package with a 0.75mm low height profile and protruding leads for easy soldering, it is specially suited for use as a bypass diode in solar panels.

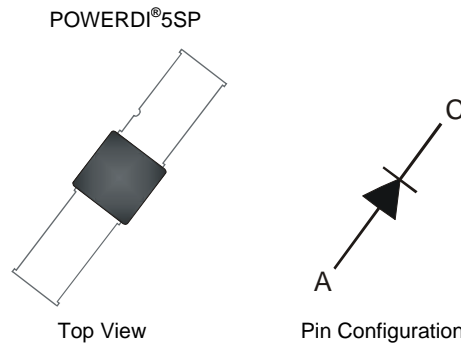
- Solar Bypass Diode

Features and Benefits

- Designed as bypass diodes for solar panels
- Low profile height (0.75mm) and 9mm protruding leads, enabling the package to be integrated within the solar glass panel
- Selectively rated for 200°C maximum junction temperature for high thermal reliability and excellent high temperature stability
- Patented Super Barrier Rectifier technology
- Ultra low forward voltage drop to minimize forward power losses
- Very low reverse leakage to ensure maximum efficiency of solar panel
- Lead Free Finish, RoHS Compliant (Note 1)**
- “Green” Molding Compound (No Br, Sb) Qualified to IEC 61730-2 Standard**

Mechanical Data

- Case: POWERDI[®]5SP
- Case Material: Molded Plastic, UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Weight: 0.199 grams (approximate)

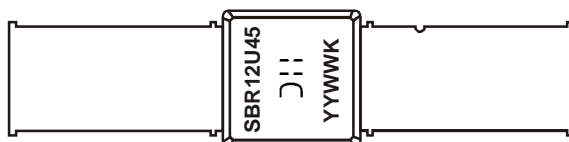


Ordering Information (Note 2)

Part Number	Case	Packaging
SBR12U45LH-13	POWERDI [®] 5SP	3,500Tape & Reel, 13-inch

- 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



SBR12U45 = Product Type Marking Code
 ⏏ = Manufacturers' Code Marking
 YYWWK = Date Code Marking
 YY = Last Two Digits of Year (ex: 11 for 2011)
 WW = Week Code (01 ~ 53)
 K = Factory Designator

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	V _{RRM}	45	V
Working Peak Reverse Voltage	V _{RWM}		
DC Blocking Voltage	V _{RM}		
Average Rectified Output Current	I _O	12	A
Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load	I _{FSM}	300	A

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Typical Thermal Resistance Junction to Ambient (Note 3)	R _{θJA}	66	°C/W
Operating Temperature Range	T _J	V _R ≤ 80% V _{RRM}	-65 to +150
		V _R ≤ 50% V _{RRM}	≤180
		DC Forward Mode	≤200
Storage Temperature Range	T _{STG}	-65 to +200	°C

Electrical Characteristics @T_A = 25°C unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Forward Voltage Drop	V _F	-	0.40	-	V	I _F = 10A, T _J = 25°C
		-	0.42	0.50		I _F = 12A, T _J = 25°C
		-	0.38	0.45		I _F = 12A, T _J = 125°C
Leakage Current (Note 4)	I _R	-	86	300	μA	V _R = 45V, T _J = 25°C
		-	19	75	mA	V _R = 45V, T _J = 125°C
		-	60	180		V _R = 45V, T _J = 150°C

Notes: 3. FR-4 PCB, 2oz. Copper, minimum recommended pad layout per <http://www.diodes.com.pdf>
4. Short duration pulse test used to minimize self-heating effect.

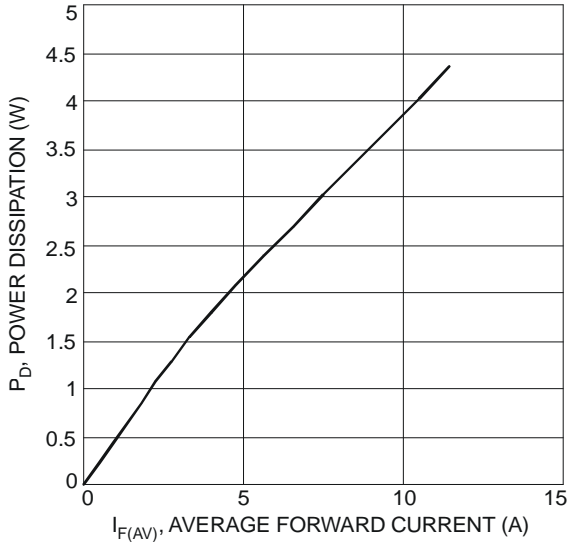


Fig. 1 Forward Power Dissipation

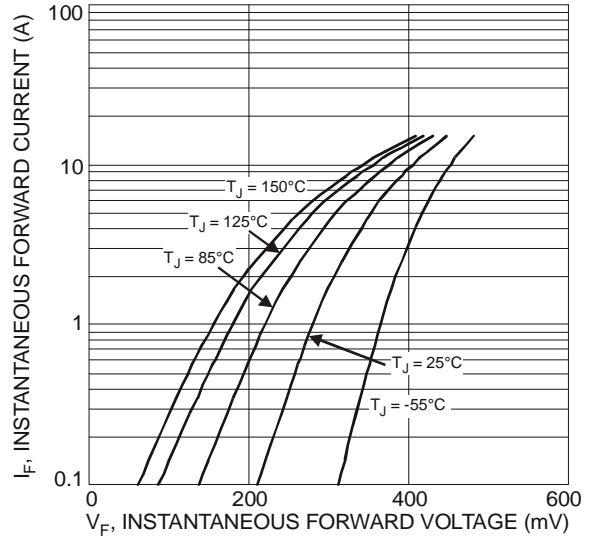


Fig. 2 Typical Forward Characteristics

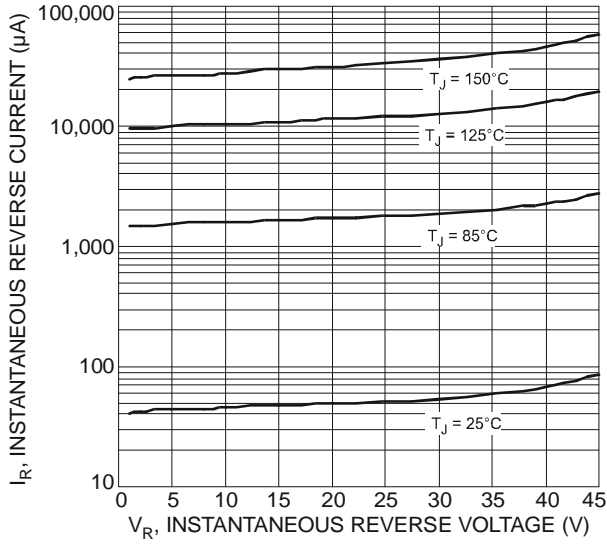


Fig. 3 Typical Reverse Characteristics

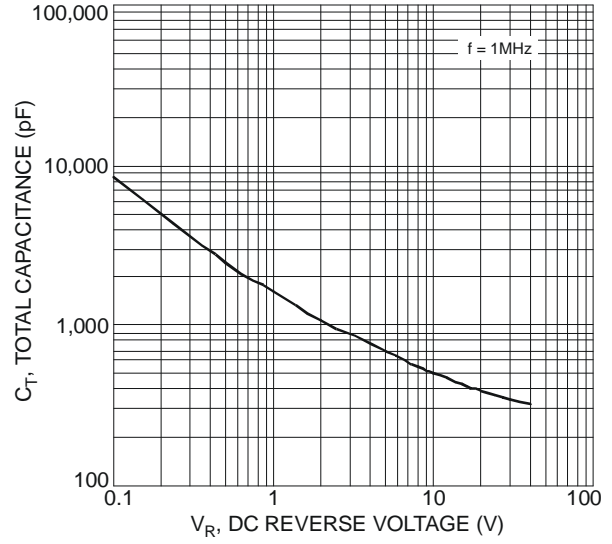


Fig. 4 Total Capacitance vs. Reverse Voltage

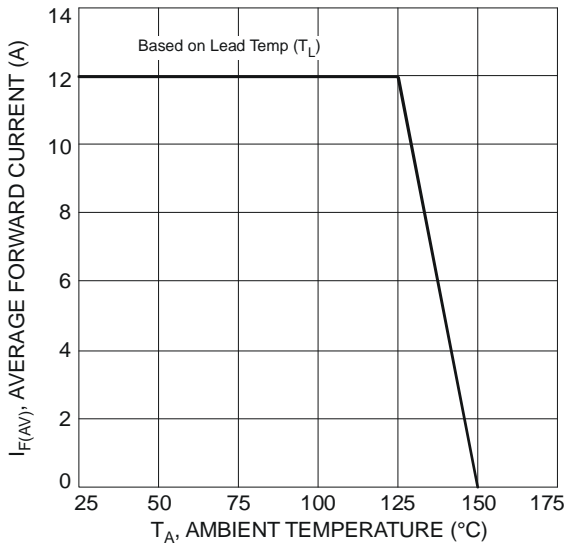


Fig. 5 Forward Current Derating Curve

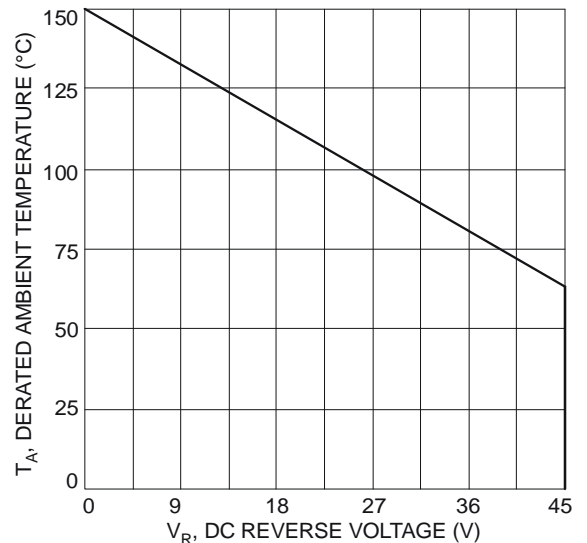
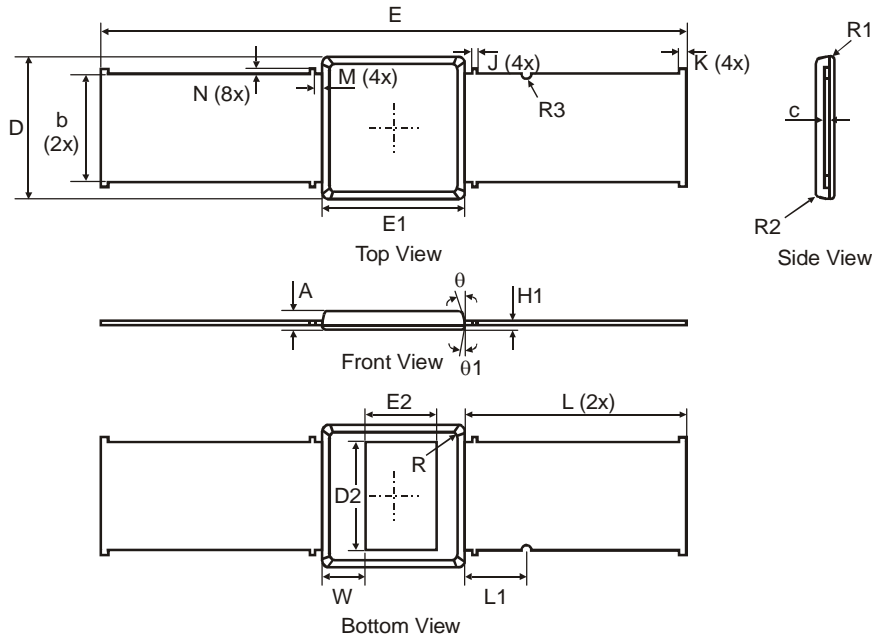


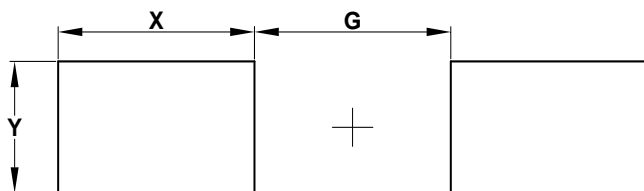
Fig. 6 Operating Temperature Derating

Package Outline Dimensions



POWERDI [®] 5SP			
Dim	Min	Max	Typ
A	-	0.75	0.736
c	0.155	0.195	-
b	4.30	4.50	4.40
D	5.70	5.90	5.80
D2	-	-	4.40
E	23.6	24.0	23.8
E1	5.70	5.90	5.80
E2	-	-	2.90
H1	0.19	0.21	0.20
L	-	-	9.00
L1	-	-	2.50
W	1.63	1.97	1.80
J	-	-	0.20
K	-	-	0.30
M	-	-	0.03
N	0	0.20	-
R	-	-	0.40
R1	-	-	0.15
R2	-	-	0.25
R3	-	-	0.40
θ	4°	12°	-
$\theta 2$	0°	8°	-
All Dimensions in mm			

Suggested Pad Layout



Dimensions	Value (in mm)
G	8.101
X	8.100
Y	5.100

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