10A SBR SUPER BARRIER RECTIFIER POWERDI5

Product Summary (@T_A = +25°C)

V_{RRM} (V)	I_O (A)	V_F Max (V)	I_R Max (mA)
45	10	0.55	0.38

Features and Benefits

- Ultra Low Forward Voltage Drop (V_F) Helps Minimize Power Losses
- Excellent Reverse Leakage (I_R) Stability At Higher Temperatures
- Thermally Efficient Package For Cooler Running Applications
- Less than 1.1mm Package Profile Ideal For Thin Applications
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**

Description

Packaged in the compact thermally efficient POWERDI®5 package, the SBR®10B45P5 provides ultra-low, forward-voltage drop (V_F) and excellent low reverse leakage stability at high temperatures.

Applications

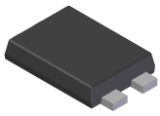
It is ideal for use as a rectification, freewheeling or polarity protection diode in applications such as:

- AC-DC Adaptors/Chargers
- DC-DC Converters

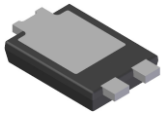
Mechanical Data

- Case: POWERDI5
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminal Connections: See Diagram Below
- Weight: 0.093 grams (Approximate)

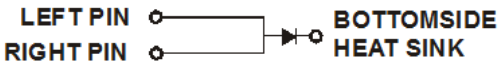
POWERDI5



Top View



Bottom View



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

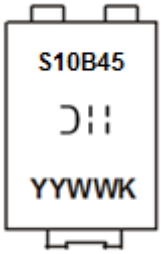
Ordering Information (Note 4)

Part Number	Case	Packaging
SBR10B45P5-13	POWERDI5	5,000/Tape & Reel
SBR10B45P5-13D (Note 5)	POWERDI5	5,000/Tape & Reel
SBR10B45P5-7	POWERDI5	1,500/Tape & Reel
SBR10B45P5-7D (Note 5)	POWERDI5	1,500/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/quality/lead_free.html 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/products/packages.html.
5. POWERDI5 available in 5K quantity on 13-inch reel & 12mm tape, part number suffix "13D"; 1.5K quantity on 7-inch reel, part number suffix "7". Diodes also provides 12mm tape with 7-inch reel, part number suffix "7D".

Marking Information

POWERDI5



S10B45 = Product Type Marking Code
YYWW = Date Code Marking
YY = Last Two Digits of Year (ex: 15 = 2015)
WW = Week (01 to 53)
K = Factory Designator

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

Characteristic	Symbol	Value	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	V_{RRM}	45	V
Average Rectified Output Current	Io	10	A
Non-Repetitive Peak Forward Surge Current 8.3mS	I_{FSM}	140	A

Parameter	Symbol	Value	Unit
Human Body Model ESD Protection	ESD HBM	8	kV
Machine Model ESD Protection	ESD MM	400	V

Caution: Stresses greater than the 'Absolute Maximum Ratings' specified above, may cause permanent damage to the device. These are stress ratings only; functional operation of the device at these or any other conditions exceeding those indicated in this specification is not implied. Device reliability may be affected by exposure to absolute maximum rating conditions for extended periods of time.
Semiconductor devices are ESD sensitive and may be damaged by exposure to ESD events. Suitable ESD precautions should be taken when handling and transporting these devices

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Typical Thermal Resistance Junction to Ambient (Note 6)	$R_{\theta JA}$	93	°C/W
Typical Thermal Resistance Junction to Case (Note 6)	$R_{\theta JC}$	10	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	°C

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Forward Voltage Drop	V_F	— —	0.50 —	0.55 0.53	V	I_F = 10A, T_A = +25°C I_F = 10A, T_A = +125°C
Leakage Current (Note 7)	I_R	—	—	0.38	mA	V_R = 45V , T_A = +25°C

Notes: 6. Device mounted on 1 x MRP FR-4 PC board, 2oz.
7. Short duration pulse test used to minimize self-heating effect.

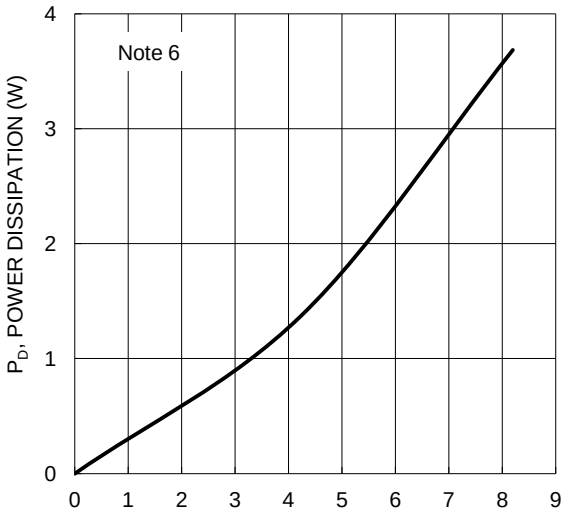


Figure 1. Forward Power Dissipation

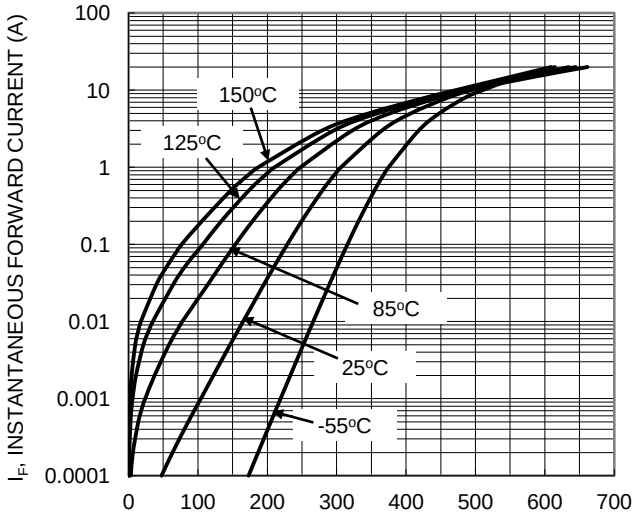


Figure 2. Typical Forward Characteristics

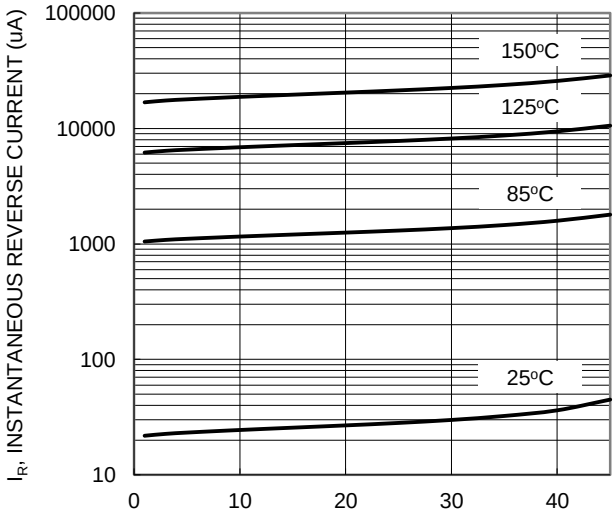


Figure 3. Typical Reverse Characteristics

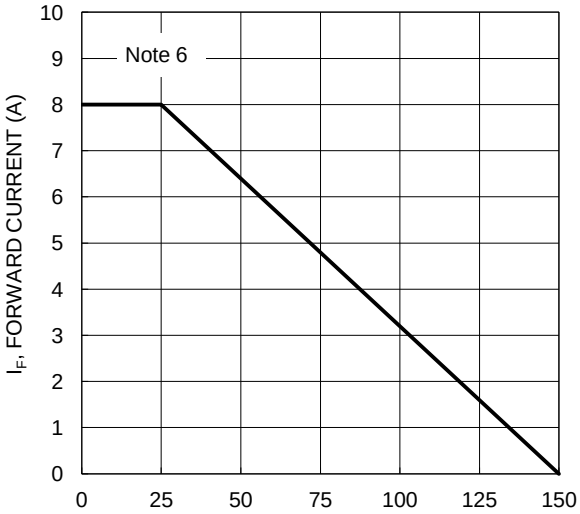


Figure 4. Forward Current Derating Curve

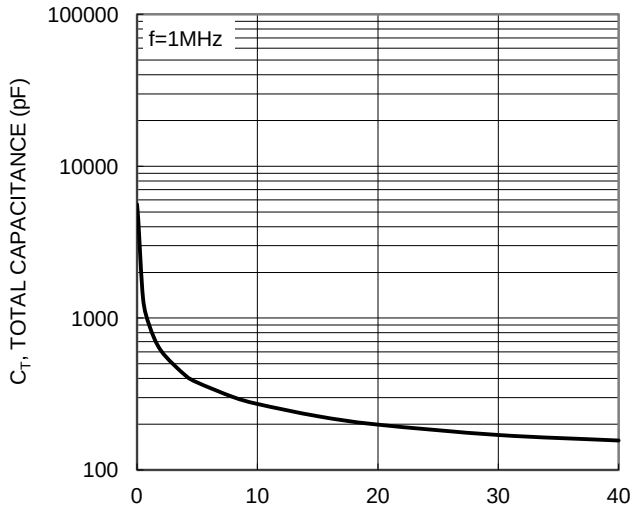
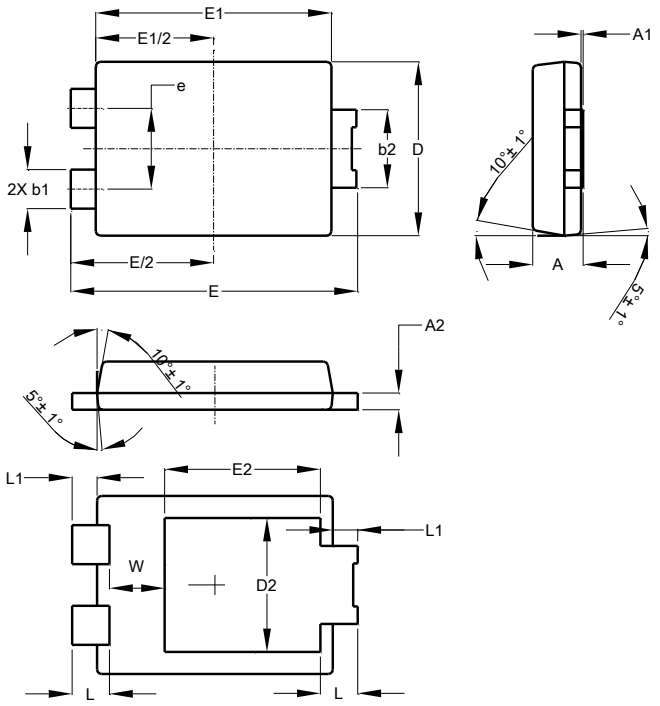


Figure 5. Total Capacitance vs. Reverse Voltage

Package Outline Dimensions

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

POWERDI5

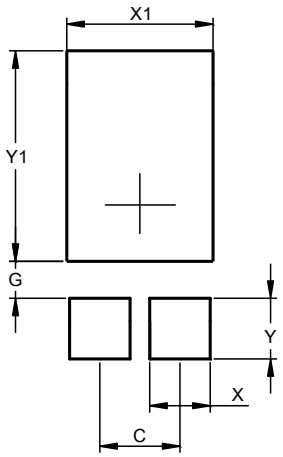


POWERDI®5			
Dim	**Min**	**Max**	**Typ**
A	1.05	1.15	1.10
A1	0.00	0.05	--
A2	0.33	0.43	0.381
b1	0.80	0.99	0.89
b2	1.70	1.88	1.78
D	3.90	4.05	3.966
D2	--	--	3.054
E	6.40	6.60	6.504
e	--	--	1.84
E1	5.30	5.45	5.37
E2	--	--	3.549
L	0.75	0.95	0.85
L1	0.50	0.65	0.57
W	1.10	1.41	1.255
All Dimensions in mm			

Suggested Pad Layout

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

POWERDI5



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

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