SBRT15U50SP5

15A TrenchSBR
TRENCH SUPER BARRIER RECTIFIER
POWERDI®5

Product Summary (@ T_A = +25°C)

V_{RRM} (V)	I_O (A)	$V_{F(MAX)}$ (V) @ +25°C	$I_{R(MAX)}$ (mA) @ +25°C
50	15	0.47	0.5

Description and Applications

Packaged in the compact thermally efficient POWERDI5 package, the TrenchSBR SBRT15U50SP5 provides ultra-low forward voltage drop (V_F) and provides excellent low reverse leakage stability at high temperatures. It is ideal for use as a rectification, freewheeling or polarity protection diode in applications such as:

- >10W AC/DC Adaptors/Chargers
- DC/DC Converters

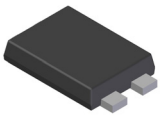
Features and Benefits

- Ultra low forward voltage drop (V_F) helps – minimizes 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)**

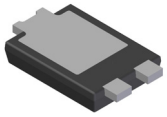
Mechanical Data

- 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)

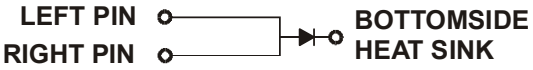
POWERDI5



Top View



Bottom View



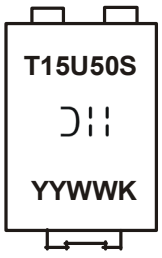
Note: Pins Left & Right must be electrically connected at the printed circuit board.

Ordering Information (Note 4)

Part Number	Case	Packaging
SBRT15U50SP5-13	POWERDI5	5000/Tape & Reel
SBRT15U50SP5-13D(Note 5)	POWERDI5	5000/Tape & Reel
SBRT15U50SP5-7	POWERDI5	1500/Tape & Reel
SBRT15U50SP5-7D(Note 5)	POWERDI5	1500/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 13inch reel &12mm tape, part number suffix "13D"; 1.5K quantity on 7inch reel also, part number suffix "7". Diodes also provides 12mm tape with 7inch reel, part number suffix "7D".

Marking Information



T15U50S = Product Type Marking Code
YYWW = Date Code Marking
YY = Last Two Digits of Year (ex: 13 = 2013)
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}	50	V
Average Rectified Output Current	Io	15	A
Non-Repetitive Peak Forward Surge Current 8.3mS Single Half Sine-Wave Superimposed on Rated Load	I_{FSM}	290	A

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Typical Thermal Resistance Junction to Ambient (Note 6)	$R_{\theta JA}$	101	°C/W
Typical Thermal Resistance Junction to Ambient (Note 7)	$R_{\theta JA}$	20	°C/W
Typical Thermal Resistance Junction to Lead (Note 7, 8)	$R_{\theta JL}$	4	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-65 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	— — — —	— 0.310 0.410 0.365	0.44 — 0.47 —	V	I_F =10A, T_J = +25°C I_F =10A, T_J = +125°C I_F =15A, T_J = +25°C I_F =15A, T_J = +125°C
Leakage Current (Note 9)	I_R	— — — —	0.08 0.17 3.5 35	0.3 0.5 — 105	mA	V_R = 30V , T_J = +25°C V_R = 50V , T_J = +25°C V_R = 30V , T_J = +85°C V_R = 50V , T_J = +125°C
Junction Capacitance	C_J	—	440	—	pF	V_R = 25V , T_J = +25°C

Notes:
6. FR-4 PCB, 2oz. Copper, minimum recommended pad layout per http://www.diodes.com.
7. Aluminum substrate PCB with 30mm x 30mm , full of 2oz. Copper pad and additional heatsink 42mm x 20mm x 12mm.
8. Junction to Lead (Cathode Terminal)
9. Short duration pulse test used to minimize self-heating effect.

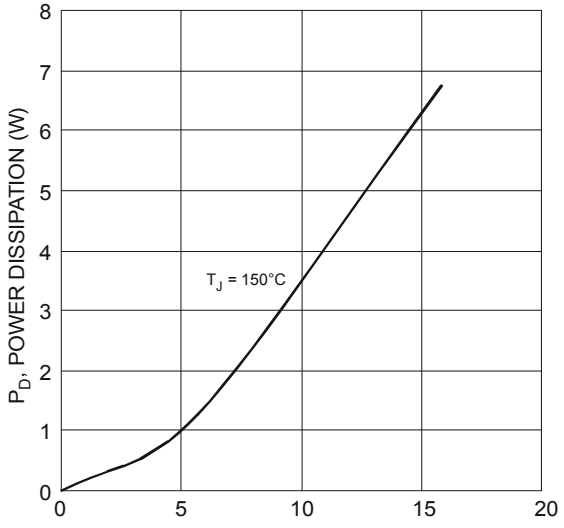


Figure 1 Forward Power Dissipation

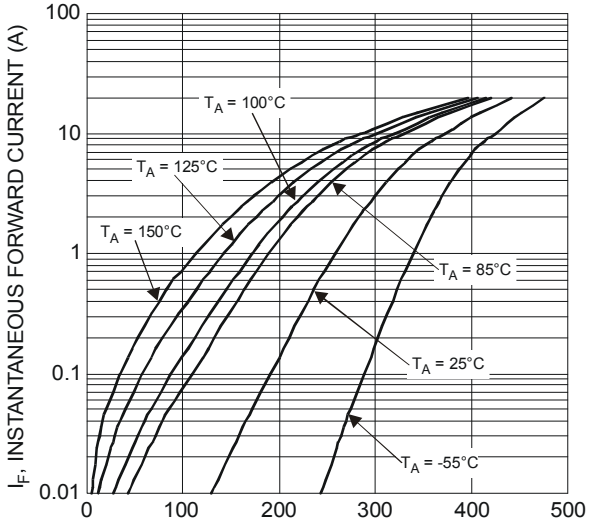


Figure 2 Typical Forward Characteristics

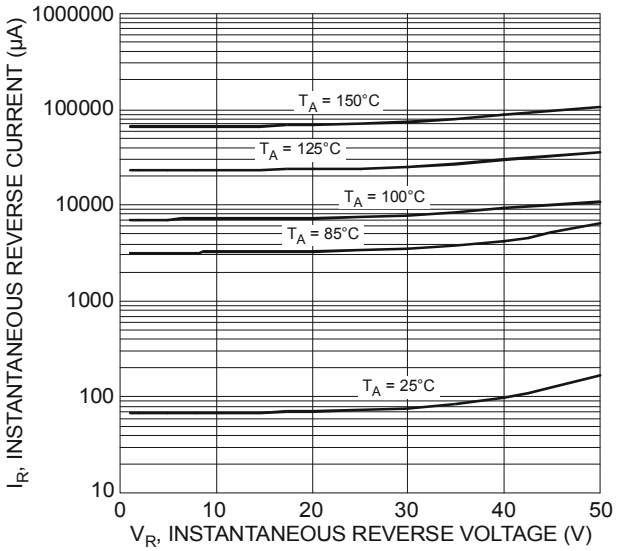


Figure 3 Typical Reverse Characteristics

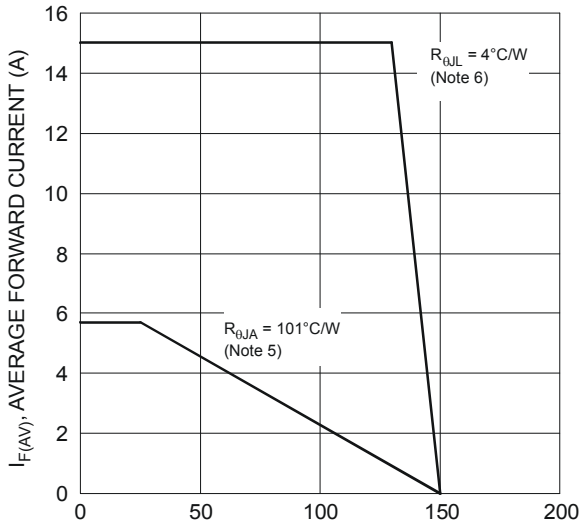


Figure 4 Forward Current Derating Curve

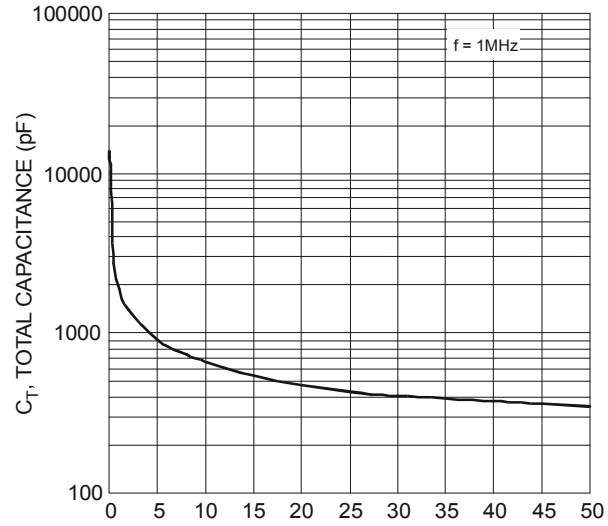
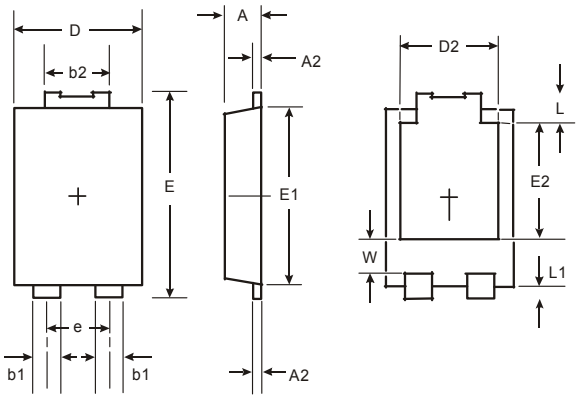


Figure 5 Total Capacitance vs. Reverse Voltage

Package Outline Dimensions

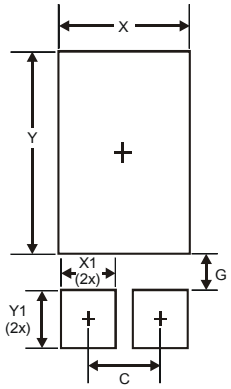
Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for latest version.



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

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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