

**Product Summary (@ T<sub>A</sub> = +25°C)**

V <sub>RRM</sub> (V)	I <sub>O</sub> (A)	V <sub>F(MAX)</sub> (V)	I <sub>R(MAX)</sub> (mA)
50	15	0.47	0.5

**Features and Benefits**

- Ultra low forward voltage drop (V<sub>F</sub>) helps – minimizes power losses
- Excellent reverse leakage (I<sub>R</sub>) 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)**
- **Qualified to AEC-Q101 Standards for High Reliability**

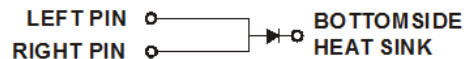
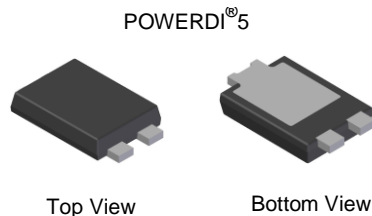
**Description and Applications**

Packaged in the compact, thermally efficient POWERDI<sup>®</sup>5, the TrenchSBR SBRT15U50SP5 provides ultra-low forward voltage drop (V<sub>F</sub>) 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

**Mechanical Data**

- Case: POWERDI<sup>®</sup>5
- 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)



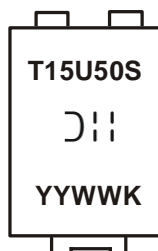
**Note: Pins Left & Right must be electrically connected at the printed circuit board.**

**Ordering Information (Note 4)**

Part Number	Case	Packaging
SBRT15U50SP5-13	POWERDI <sup>®</sup> 5	5,000/Tape & Reel
SBRT15U50SP5-13D (Note 5)	POWERDI <sup>®</sup> 5	5,000/Tape & Reel
SBRT15U50SP5-7	POWERDI <sup>®</sup> 5	1,500/Tape & Reel
SBRT15U50SP5-7D (Note 5)	POWERDI <sup>®</sup> 5	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](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. POWERDI<sup>®</sup>5 available in 5K quantity on 13-inch reel & 12mm tape, part number suffix “13D”; 1.5K quantity on 7-inch reel also, part number suffix “7”. Diodes also provides 12mm tape with 7-inch reel, part number suffix “7D”.

**Marking Information**



T15U50S = Product Type Marking Code  
 YYWW = Date Code Marking  
 YY = Last Two Digits of Year (ex: 14 = 2014)  
 K = Factory Designator

**Maximum Ratings** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	V <sub>RRM</sub>	50	V
Average Rectified Output Current	I <sub>o</sub>	15	A
Non-Repetitive Peak Forward Surge Current 8.3mS Single Half Sine-Wave Superimposed on Rated Load	I <sub>FSM</sub>	290	A

**Thermal Characteristics**

Characteristic	Symbol	Value	Unit
Typical Thermal Resistance Junction to Ambient (Note 6)	R <sub>θJA</sub>	101	°C/W
Typical Thermal Resistance Junction to Ambient (Note 7)	R <sub>θJA</sub>	20	°C/W
Typical Thermal Resistance Junction to Lead (Notes 7 & 8)	R <sub>θJL</sub>	4	°C/W
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-65 to +150	°C

**Electrical Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Forward Voltage Drop	V <sub>F</sub>	—	—	0.44	V	I <sub>F</sub> = 10A, T <sub>J</sub> = +25°C
		—	0.310	—		I <sub>F</sub> = 10A, T <sub>J</sub> = +125°C
		—	0.410	0.47		I <sub>F</sub> = 15A, T <sub>J</sub> = +25°C
		—	0.365	—		I <sub>F</sub> = 15A, T <sub>J</sub> = +125°C
Leakage Current (Note 9)	I <sub>R</sub>	—	0.08	0.3	mA	V <sub>R</sub> = 30V, T <sub>J</sub> = +25°C
		—	0.17	0.5		V <sub>R</sub> = 50V, T <sub>J</sub> = +25°C
		—	3.5	—		V <sub>R</sub> = 30V, T <sub>J</sub> = +85°C
		—	35	105		V <sub>R</sub> = 50V, T <sub>J</sub> = +125°C
Junction Capacitance	C <sub>J</sub>	—	440	—	pF	V <sub>R</sub> = 25V, T <sub>J</sub> = +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.

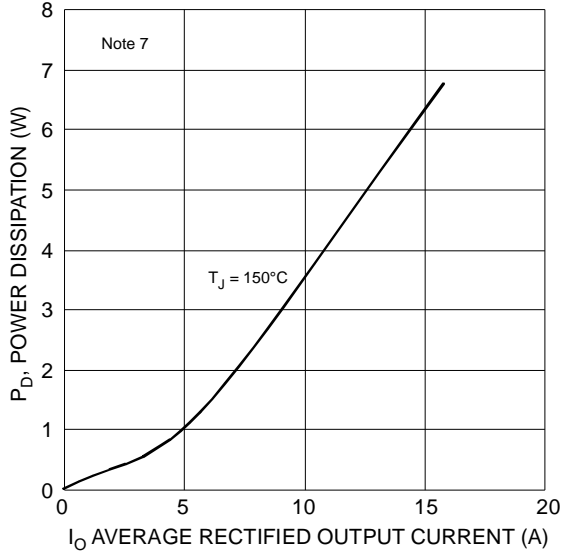


Figure 1 Forward Power Dissipation

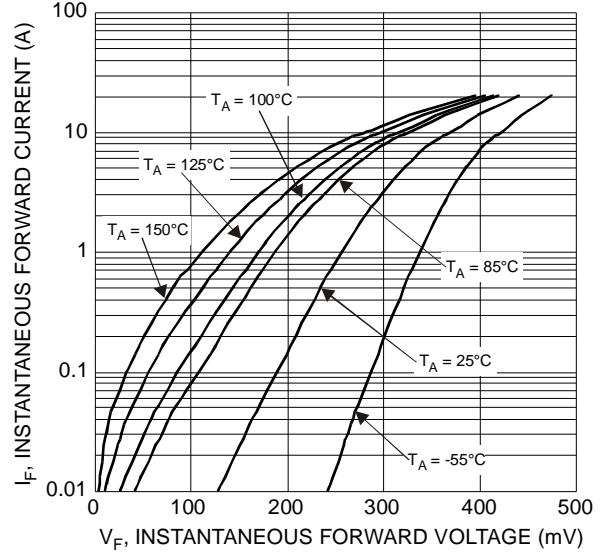


Figure 2 Typical Forward Characteristics

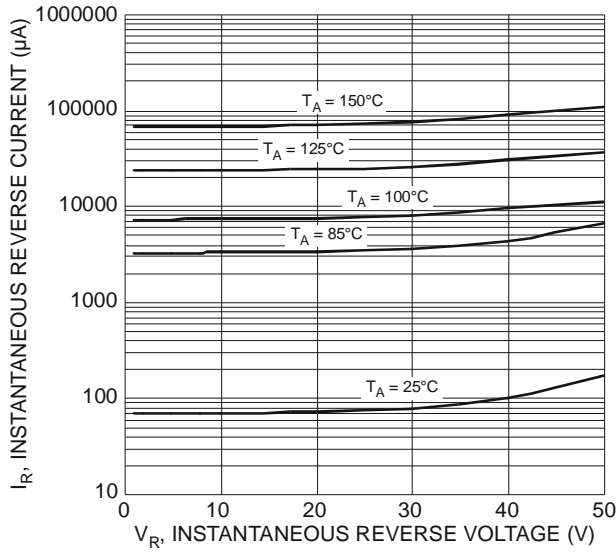


Figure 3 Typical Reverse Characteristics

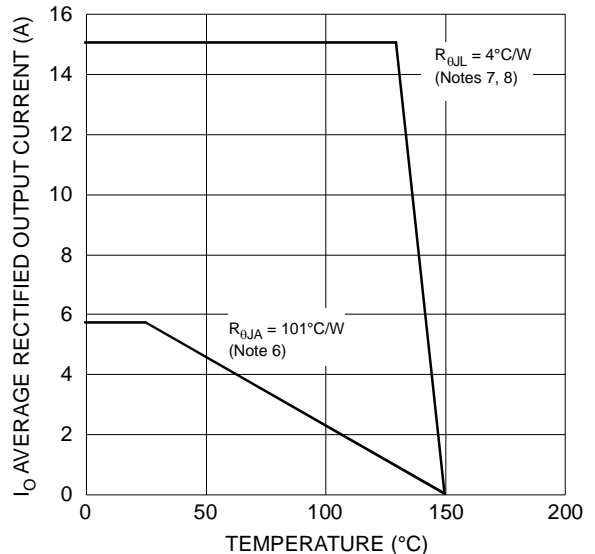


Figure 4 Forward Current Derating Curve

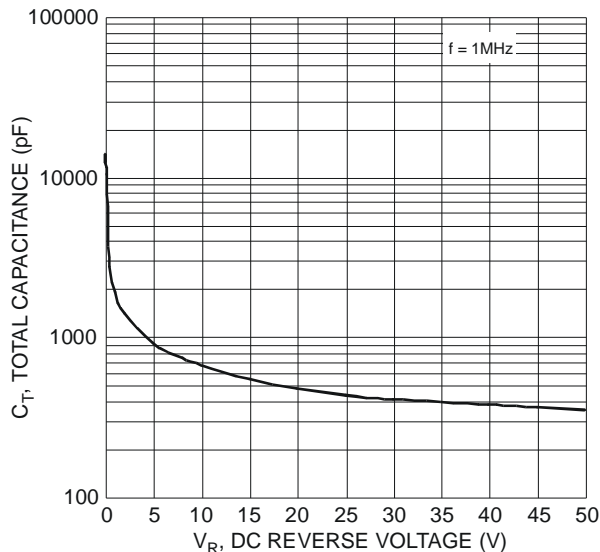
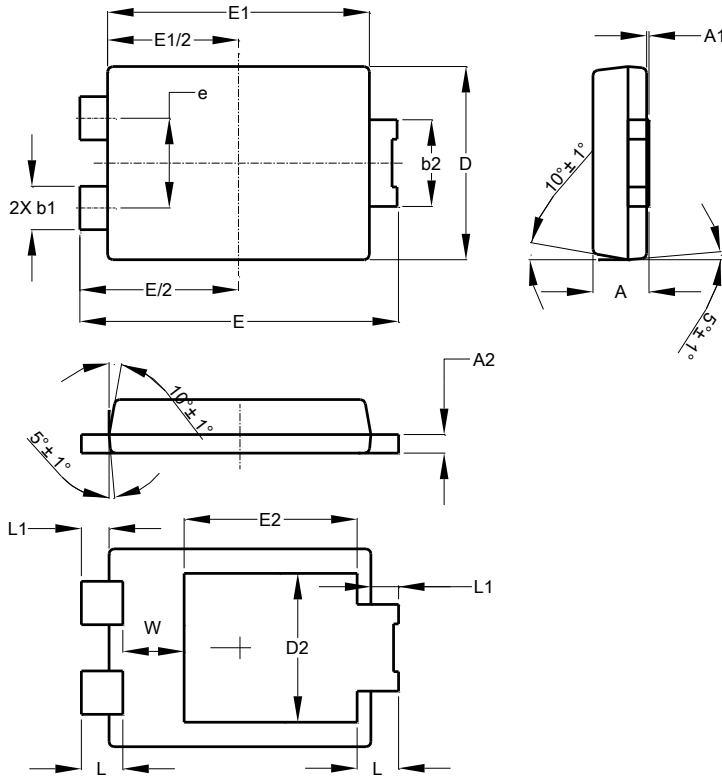


Figure 5 Total Capacitance vs. Reverse Voltage

## Package Outline Dimensions

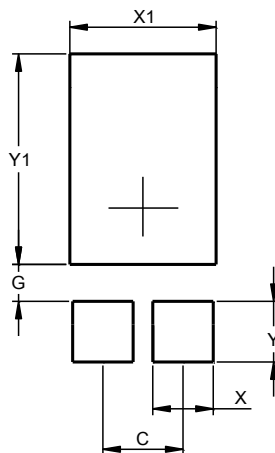
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for the latest version.



POWERDI <sup>®</sup> 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.



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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