

**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	10	0.47	0.15

**Description and Applications**

Packaged in the compact thermally efficient POWERDI5 package, the Trench SBR SBRT10M50SP5 provides ultra-low reverse leakage (I<sub>R</sub>) and provides excellent forward voltage drop (V<sub>F</sub>) 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

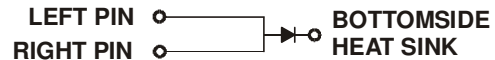
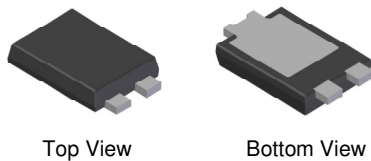
**Features and Benefits**

- Ultra low forward voltage drop (V<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**

**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



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

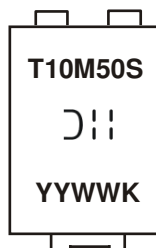
**Ordering Information (Note 4)**

Part Number	Case	Packaging
SBRT10M50SP5-13	POWERDI5	5,000/Tape & Reel
SBRT10M50SP5-13D	POWERDI5	5,000/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>. POWERDI5 available in 5K quantity on 13inch reel & 12mm tape, part number suffix "13D".

**Marking Information**

POWERDI5



T10M50S = Product Type Marking Code  
 YYWW = Date Code Marking  
 YY = Last Two Digits of Year (ex: 15 = 2015)  
 K = Factory Designator

**Maximum Ratings** (@ $T_A = +25^\circ\text{C}$ , 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	$I_O$	10	A
Non-Repetitive Peak Forward Surge Current 8.3ms	$I_{FSM}$	300	A

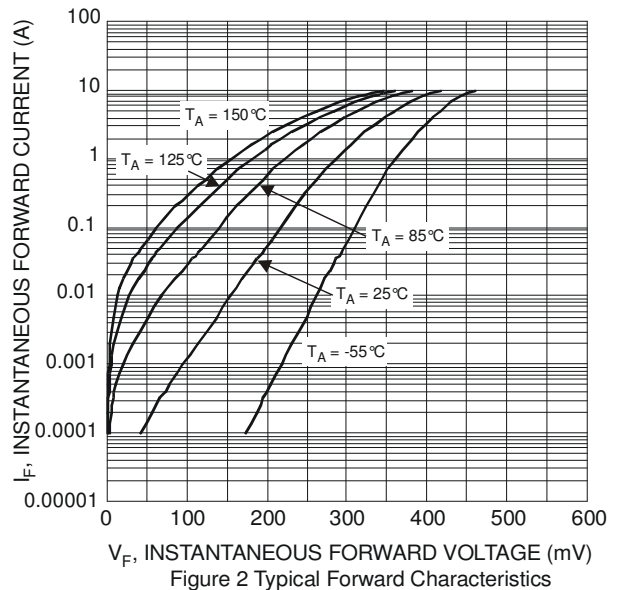
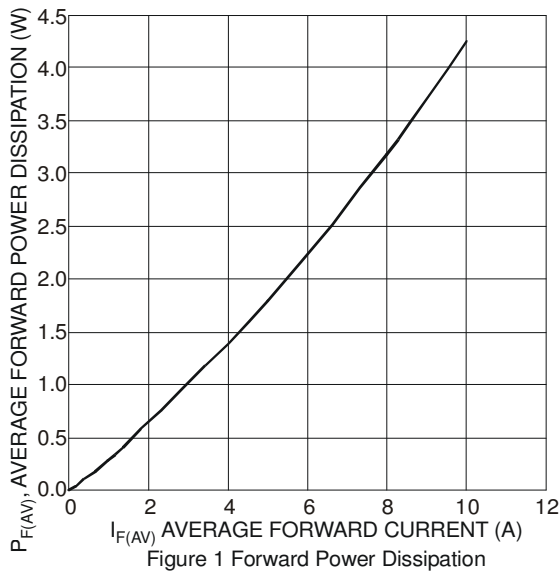
**Thermal Characteristics**

Characteristic	Symbol	Value	Unit
Typical Thermal Resistance Junction to Ambient (Note 5)	$R_{\theta JA}$	18	$^\circ\text{C/W}$
Typical Thermal Resistance Junction to Case (Note 5)	$R_{\theta JC}$	2	$^\circ\text{C/W}$
Typical Thermal Resistance Junction to Lead (Notes 5 & 6)	$R_{\theta JL}$	4	$^\circ\text{C/W}$
Operating and Storage Temperature Range	$T_J, T_{STG}$	-55 to +150	$^\circ\text{C}$

**Electrical Characteristics** (@ $T_A = +25^\circ\text{C}$ , unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Forward Voltage Drop	$V_F$	—	0.31	—	V	$I_F = 5\text{A}, T_J = +85^\circ\text{C}$
		—	0.42	0.47		$I_F = 10\text{A}, T_J = +25^\circ\text{C}$
		—	0.36	0.41		$I_F = 10\text{A}, T_J = +125^\circ\text{C}$
Leakage Current (Note 7)	$I_R$	—	0.06	0.15	mA	$V_R = 50\text{V}, T_J = +25^\circ\text{C}$
		—	2	12		$V_R = 50\text{V}, T_J = +85^\circ\text{C}$
		—	15	50		$V_R = 50\text{V}, T_J = +125^\circ\text{C}$

- Notes:
- Device mounted on FR4 PCB with 1inch copper pad layout with AL substrate and additional HK1 (37mm x 55mm x 15mm).
  - Junction to Lead (Cathode Terminal).
  - Short duration pulse test used to minimize self-heating effect.



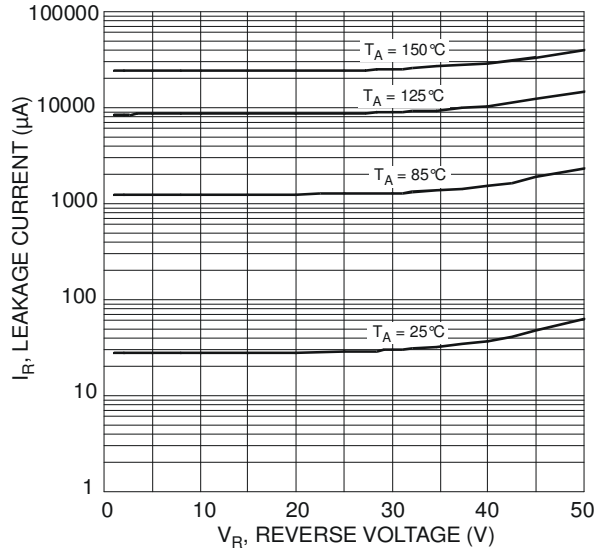


Figure 3 Typical Reverse Characteristics

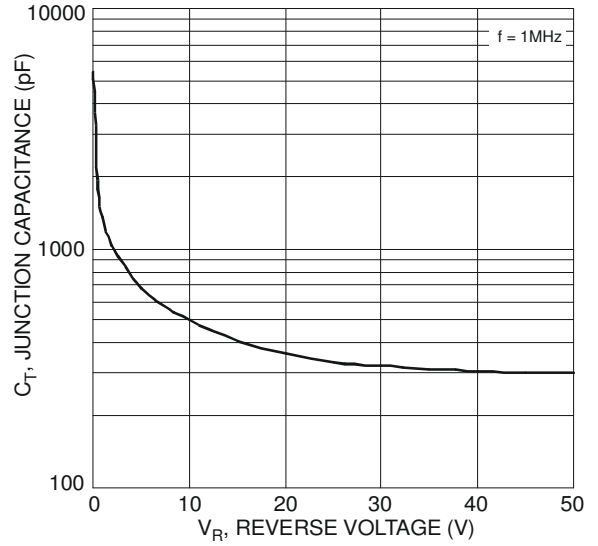


Figure 4 Typical Junction Capacitance

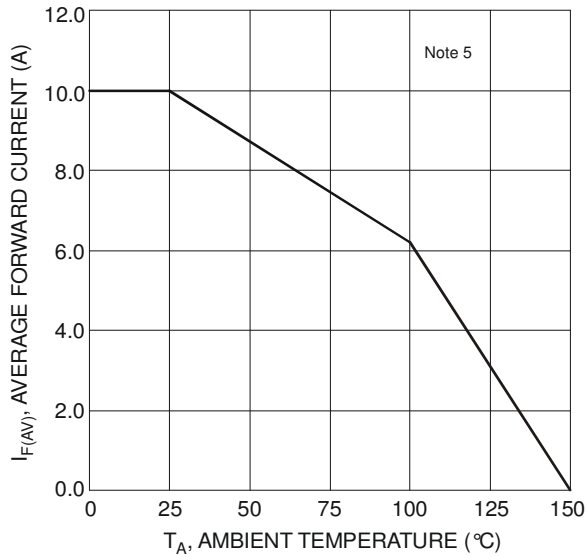
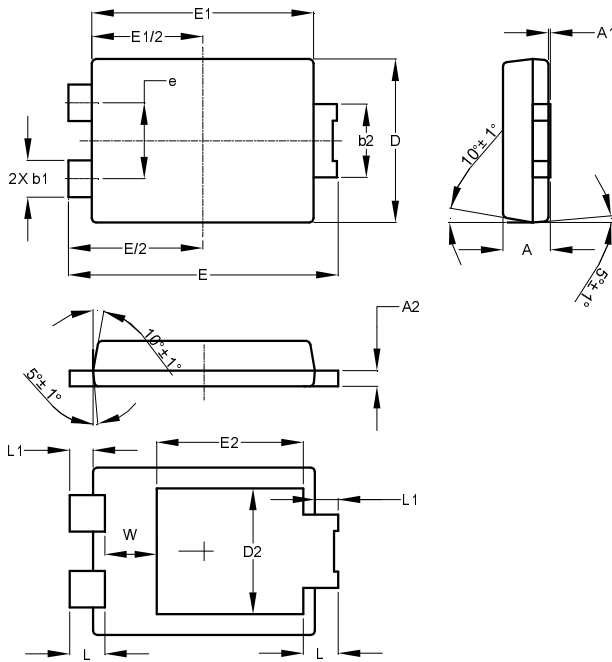


Figure 5 Forward Current Derating Curve

**Package Outline Dimensions**

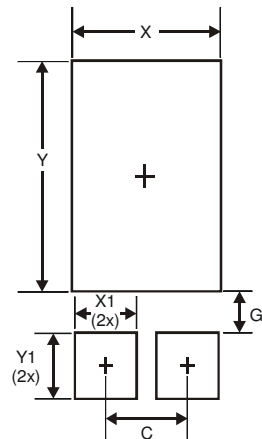
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for the latest version.



POWERDI <sup>®</sup> 5			
Dim	Min	Max	Typ
A	1.05	1.15	1.10
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	3.360
X1	1.390
Y	4.860
Y1	1.400

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