



SBRT10M50SP5

10A Trench SBR TRENCH SUPER BARRIER RECTIFIER POWERDI®5

Product Summary (@ T_A = +25 °C)

V _{RRM} (V)	I _O (A)	V _{F(MAX)} (V)	I _{R(MAX)} (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_R) and provides excellent forward voltage drop (V_F) 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

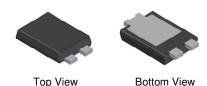
Features and Benefits

- 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)
- 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



LEFT PIN O **BOTTOMSIDE** ₩0 RIGHT PIN O

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 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 + CI) 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 (@ $T_A = +25$ °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	lo	10	Α
Non-Repetitive Peak Forward Surge Current 8.3mS	I _{FSM}	300	Α

Thermal Characteristics

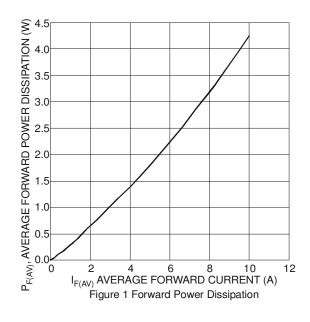
Characteristic	Symbol	Value	Unit
Typical Thermal Resistance Junction to Ambient (Note 5)	$R_{\theta JA}$	18	°C/W
Typical Thermal Resistance Junction to Case (Note 5)	R ₀ JC	2	°C/W
Typical Thermal Resistance Junction to Lead (Notes 5 & 6)	$R_{ heta JL}$	4	°C/W
Operating and Storage Temperature Range	T _{J,} T _{STG}	-55 to +150	℃

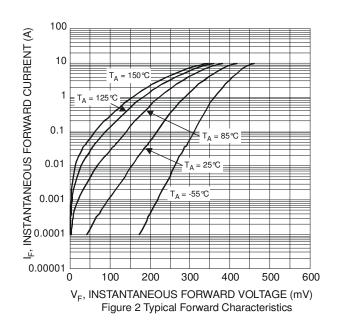
Electrical Characteristics (@T_A = +25 °C, unless otherwise specified.)

Characteristic	Symbol	Min	Тур	Max	Unit	Test Condition
		_	0.31	_		I _F = 5A, T _J = +85℃
Forward Voltage Drop	V_{F}	_	0.42	0.47	V	I _F = 10A, T _J = +25 ℃
		_	0.36	0.41		I _F = 10A, T _J = +125℃
		_	0.06	0.15		V _R = 50V , T _J = +25℃
Leakage Current (Note 7)	I _R	_	2	12	mA	V _R = 50V , T _J = +85℃
		_	15	50		V _R = 50V , T _J = +125℃

Notes:

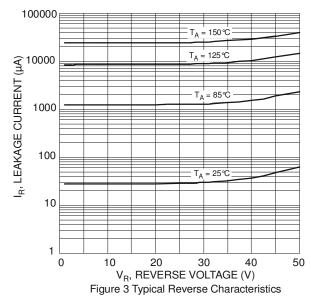
- 5. Device mounted on FR4 PCB with 1inch copper pad layout with AL substrate and additional HK1 (37mm x 55mm x15mm).
- 6. Junction to Lead (Cathode Terminal).
- 7. Short duration pulse test used to minimize self-heating effect.

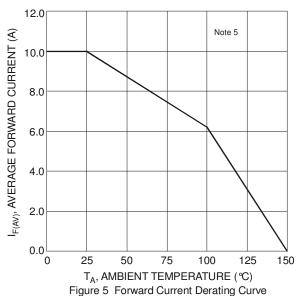


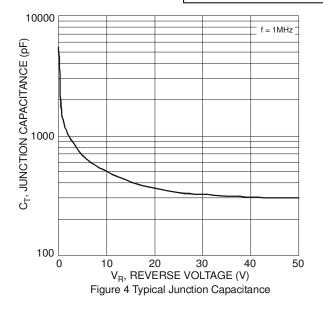








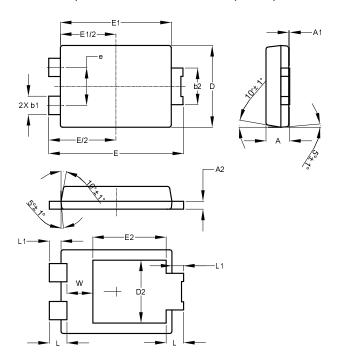






Package Outline Dimensions

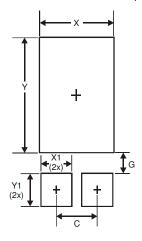
Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for the latest version.



POWERDI [®] 5				
Dim	Min	Max	Тур	
Α	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	1	-	3.054	
Е	6.40	6.60	6.504	
е	-	-	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)
С	1.840
G	0.852
Х	3.360
X1	1.390
Υ	4.860
Y1	1.400



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