



SBRT10U50SP5

10A Trench SBR TRENCH SUPER BARRIER RECTIFIER POWERDI®5

Product Summary (@ T_A = +25 ℃)

V _{RRM} (V)	I _O (A)	V _{F(MAX)} (V)	I _{R(MAX)} (mA)
50	10	0.45	0.3

Description and Applications

Packaged in the compact thermally efficient POWERDI5 package, the TrenchSBR SBRT10U50SP5 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 Adapters/Chargers
- DC/DC Converters

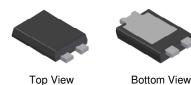
Features and Benefits

- 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: POWERDI[®]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)





RIGHT PIN O BOTTOMSIDE HEAT SINK

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

Ordering Information (Note 4)

Part Number	Case	Packaging
SBRT10U50SP5-13	POWERDI5	5,000/Tape & Reel
SBRT10U50SP5-13D	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 + Cl) and <1000ppm antimony compounds.
- 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

T10U50S

OHIO

YYWWK

T10U50S = 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}	320	Α
I ₂ t Rating for fusing (t < 8.3ms)	l ² t	425	A ² S

Thermal Characteristics

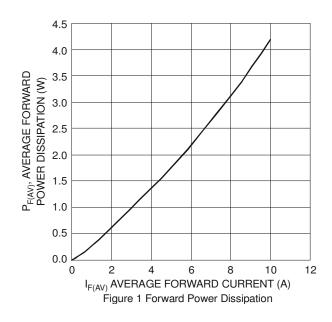
Characteristic	Symbol	Value	Unit
Typical Thermal Resistance Junction to Ambient (Note 5)	$R_{\theta JA}$	18	°C/W
Typical Thermal Resistance Junction to Case (Note 5)	$R_{ heta JC}$	2	°C/W
Typical Thermal Resistance Junction to Lead (Notes 5 & 6)	$R_{ heta JL}$	4	°C/W
Operating and Storage Temperature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

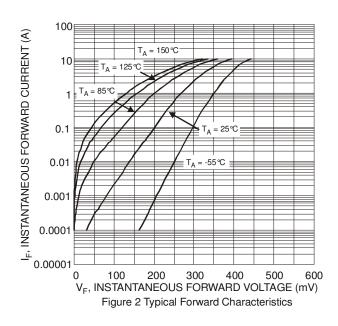
Electrical Characteristics (@TA = +25 °C, unless otherwise specified.)

Characteristic	Symbol	Min	Тур	Max	Unit	Test Condition
Forward Voltage Drop	V _F		0.29 0.40 0.34	0.31 — 0.43 0.45 0.39	V	$I_F = 1A$, $T_J = +25$ °C $I_F = 5A$, $T_J = +85$ °C $I_F = 8A$, $T_J = +25$ °C $I_F = 10A$, $T_J = +25$ °C $I_F = 10A$, $T_J = +125$ °C
Leakage Current (Note 7)	I _R		0.1 4 29	0.3 15 75	mA	$V_{R} = 50V$, $T_{J} = +25$ °C $V_{R} = 50V$, $T_{J} = +85$ °C $V_{R} = 50V$, $T_{J} = +125$ °C

Notes:

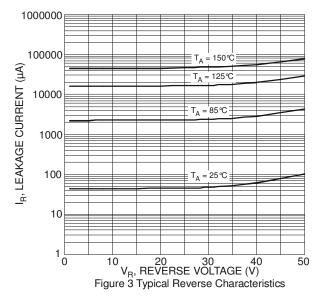
- 5. Device mounted on FR4 PCB with 1inch copper pad layout with AL substrate and additional HK1 (37mm x 55mm x15mm)
- 6. Junction to Lead (Cathode Terminal)
- 7. Short duration pulse test used to minimize self-heating effect.

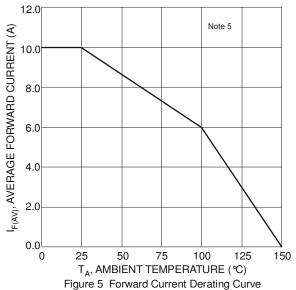


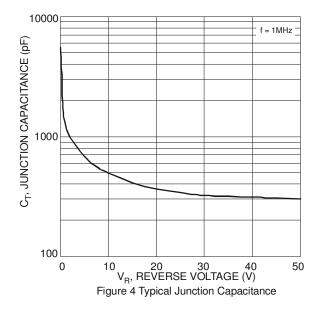








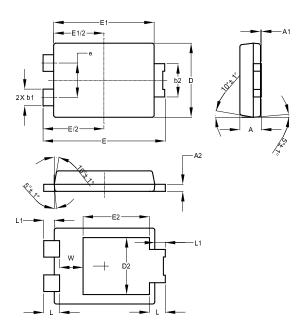






Package Outline Dimensions

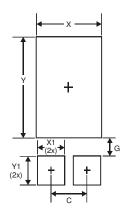
Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for the latest version.



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	-	-	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		
X	3.360		
X1	1.390		
Υ	4.860		
Y1	1.400		



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