NOT RECOMMENDED FOR NEW DESIGN - CONTACT US

Green

SBRT10M50SP5

10A TRENCH SBR
TRENCH SUPER BARRIER RECTIFIER
POWERDI5

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 PowerDI®5 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

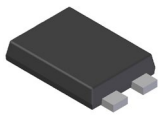
Features and Benefits

- 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)**
- **For automotive applications requiring specific change control (i.e.: parts qualified to AEC-Q100/101/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please refer to the related automotive grade (Q-suffix) part. A listing can be found at https://www.diodes.com/products/automotive/automotive-products/.**
- **This part is qualified to JEDEC standards (as references in AEC-Q) for High Reliability. https://www.diodes.com/quality/product-definitions/**

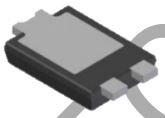
Mechanical Data

- 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)

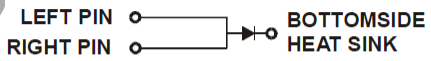
PowerDI5



Top View



Bottom View



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

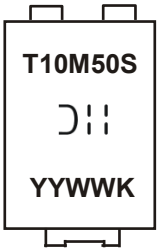
Ordering Information (Notes 4 and 5)

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) & 2015/863/EU (RoHS 3) compliant. All applicable RoHS exemptions applied.
2. See https://www.diodes.com/quality/lead-free/ 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 https://www.diodes.com/design/support/packaging/diodes-packaging/.
5. PowerDI5 available in 5K quantity on 13inch reel &12mm tape, part number suffix "13D".

Marking Information

PowerDI5



= Manufacturer's Marking
T10M50S = Product Type Marking Code
YYWW = Date Code Marking
YY = Last Two Digits of Year (ex: 20 = 2020)
K = Factory Designator

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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	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 6)	$R_{\theta JA}$	18	°C/W
Typical Thermal Resistance Junction to Case (Note 6)	$R_{\theta JC}$	2	°C/W
Typical Thermal Resistance Junction to Lead (Notes 6 and 7)	$R_{\theta JL}$	4	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 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	— — —	0.31 0.42 0.36	— 0.47 0.41	V	I_F = 5A, T_J = +85°C I_F = 10A, T_J = +25°C I_F = 10A, T_J = +125°C
Leakage Current (Note 8)	I_R	— — —	0.06 2 15	0.15 12 50	mA	V_R = 50V, T_J = +25°C V_R = 50V, T_J = +85°C V_R = 50V, T_J = +125°C

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

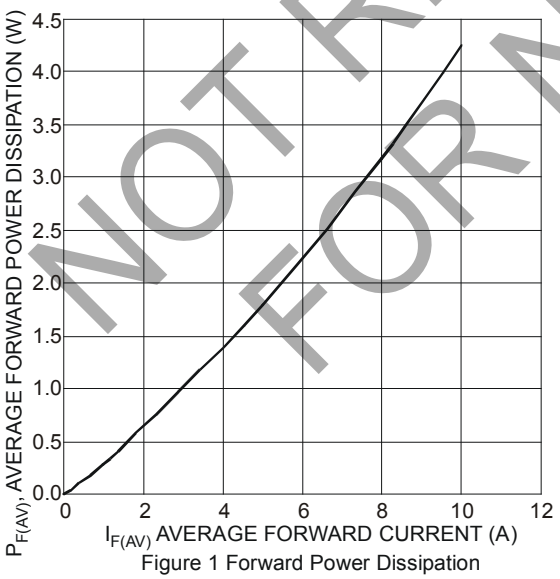


Figure 1 Forward Power Dissipation

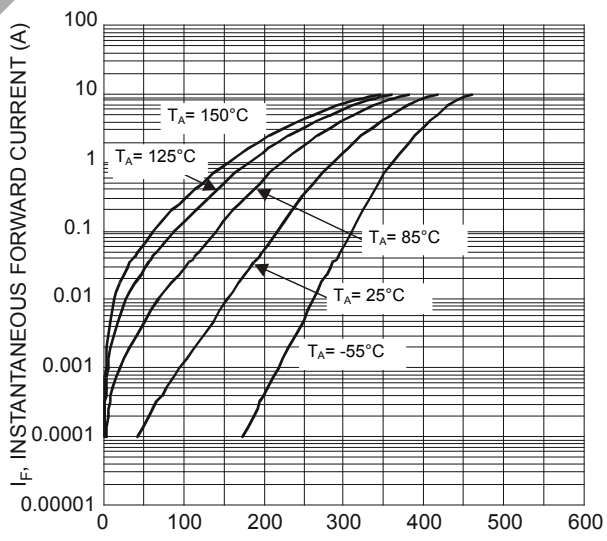


Figure 2 Typical Forward Characteristics

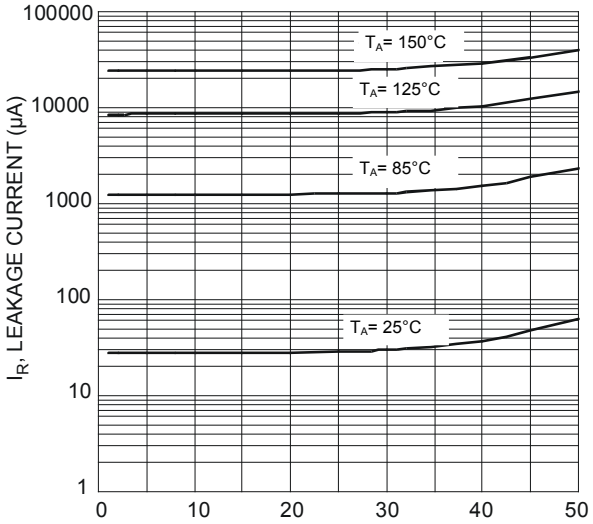


Figure 3 Typical Reverse Characteristics

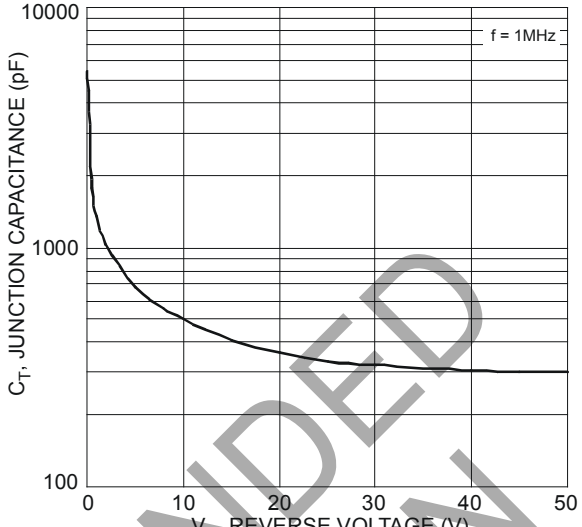


Figure 4 Typical Junction Capacitance

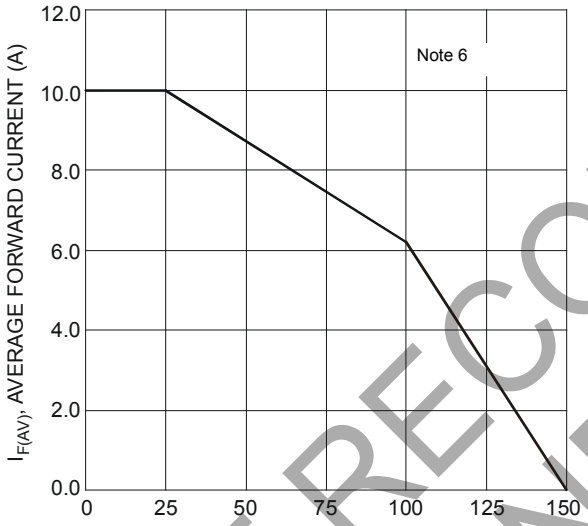
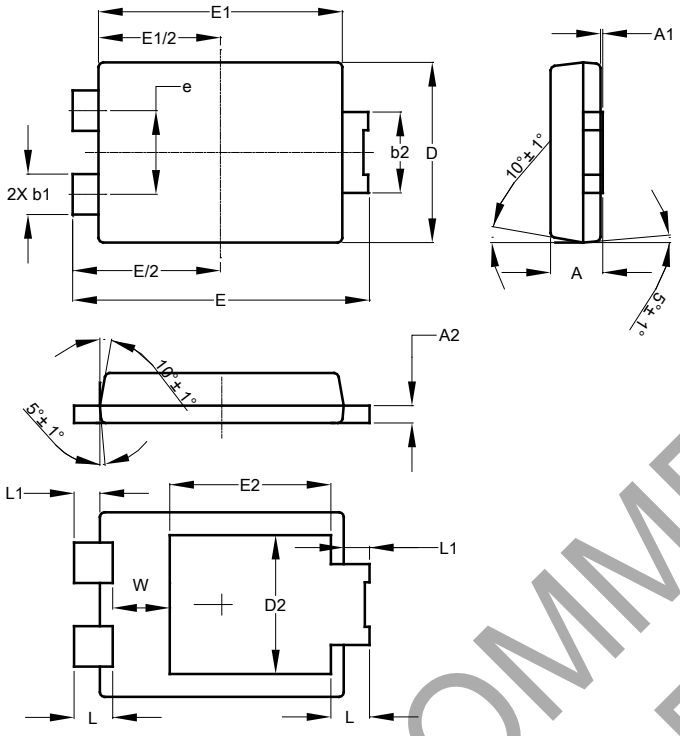


Figure 5 Forward Current Derating Curve

Package Outline Dimensions

Please see http://www.diodes.com/package-outlines.html for the latest version.

PowerDI5



PowerDI5			
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	6.51
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

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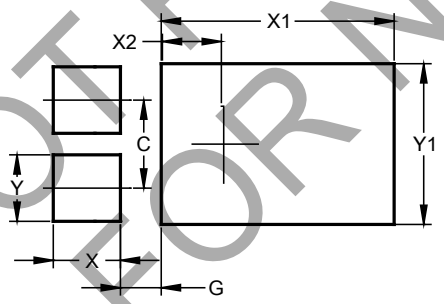
PowerDI5



Dimensions	Value (in mm)
C	1.840
G	0.852
X	1.400
X1	4.860
X2	1.310
Y	1.390
Y1	3.360

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