

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)

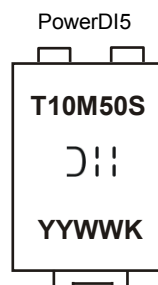


Ordering Information (Notes 4 and 5)

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



- ⌋⌋ = Manufacturer's Marking
- T10M50S = Product Type Marking Code
- YYWW = Date Code Marking
- YY = Last Two Digits of Year (ex: 20 = 2020)
- 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	I _O	10	A
Non-Repetitive Peak Forward Surge Current 8.3ms	I _{FSM}	300	A

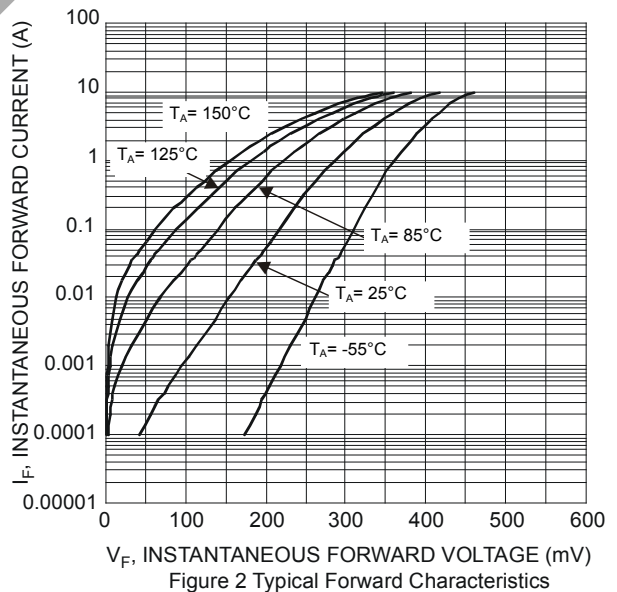
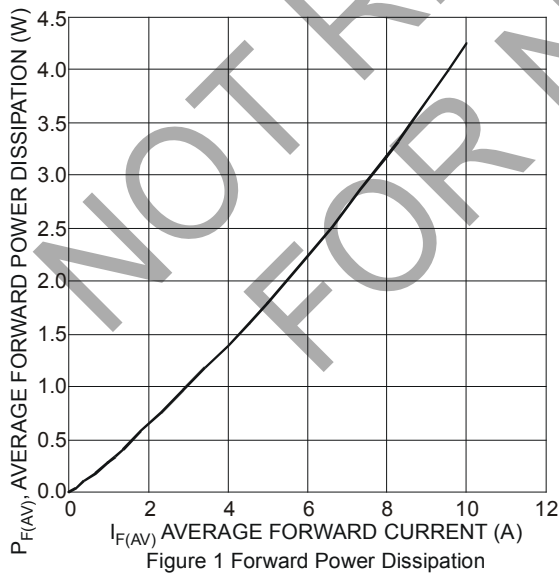
Thermal Characteristics

Characteristic	Symbol	Value	Unit
Typical Thermal Resistance Junction to Ambient (Note 6)	R _{θJA}	18	°C/W
Typical Thermal Resistance Junction to Case (Note 6)	R _{θJC}	2	°C/W
Typical Thermal Resistance Junction to Lead (Notes 6 and 7)	R _{θJL}	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	—	V	I _F = 5A, T _J = +85°C
		—	0.42	0.47		I _F = 10A, T _J = +25°C
		—	0.36	0.41		I _F = 10A, T _J = +125°C
Leakage Current (Note 8)	I _R	—	0.06	0.15	mA	V _R = 50V, T _J = +25°C
		—	2	12		V _R = 50V, T _J = +85°C
		—	15	50		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.



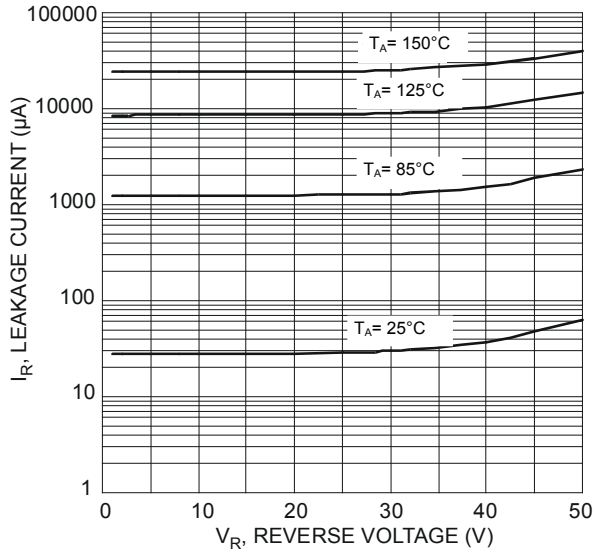


Figure 3 Typical Reverse Leakage Characteristics

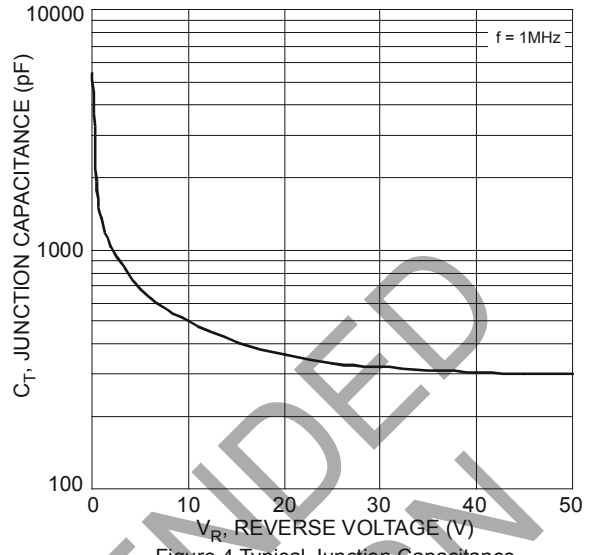


Figure 4 Typical Junction Capacitance

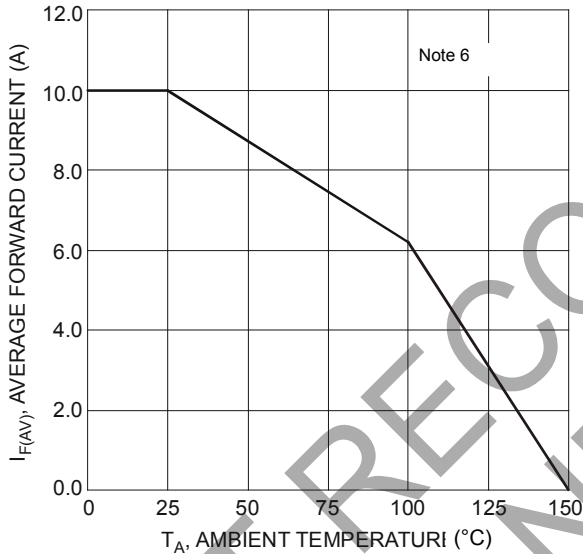
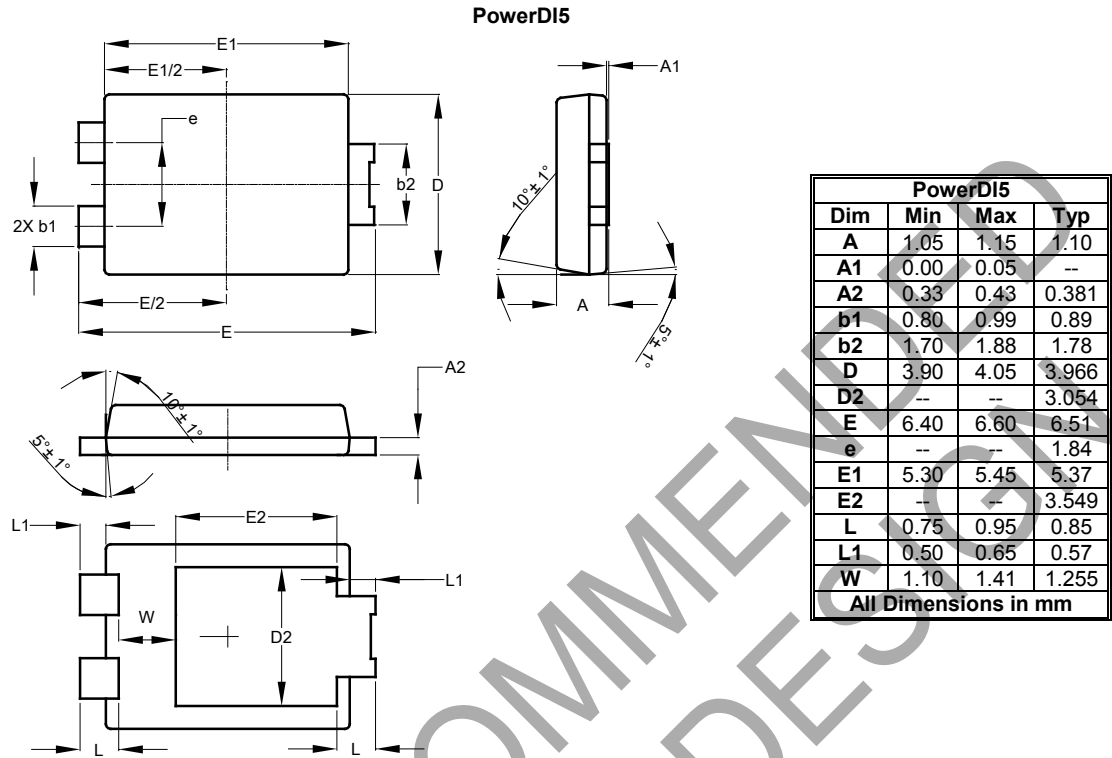


Figure 5 Forward Current Derating Curve

NOT RECOMMENDED FOR NEW DESIGN

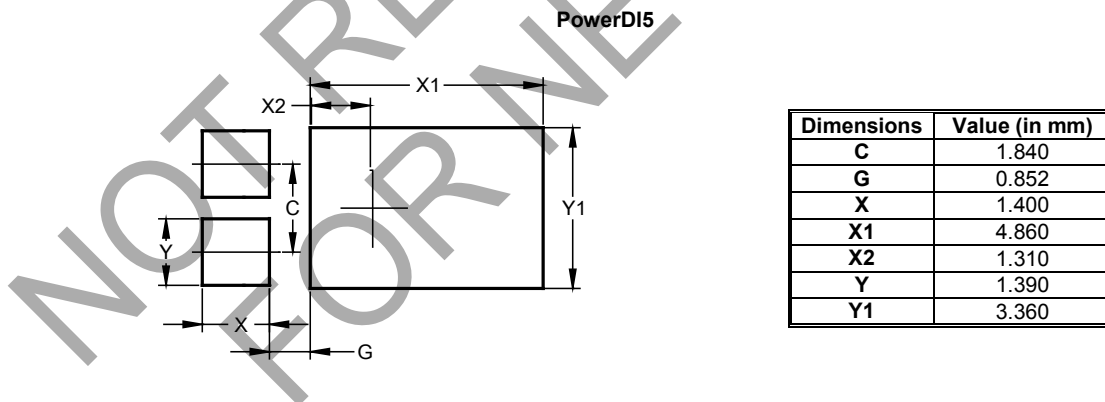
Package Outline Dimensions

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



Suggested Pad Layout

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