

**Product Summary** (@ T<sub>A</sub> = +25°C)

V <sub>RRM</sub> (V)	I <sub>O</sub> (A)	V <sub>F</sub> MAX (V) @ +25°C	I <sub>R</sub> MAX (mA) @ +25°C
50	15	0.52	0.5

**Description**

Packaged in the compact thermally efficient PowerDI5 package, the SBR15U50SP5 provides very low V<sub>F</sub> and provides excellent reverse leakage stability at high temperatures. It is ideal for use as a rectification, freewheeling or polarity protection diode.

**Applications**

- DC/DC Converters
- AC/DC Adaptors

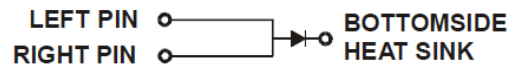
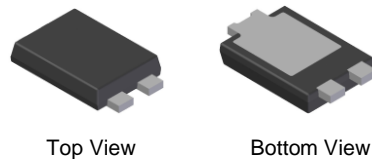
**Features and Benefits**

- Low Forward Voltage Drop (V<sub>F</sub>) Helps – Minimizes Power Losses
- Excellent 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)**
- **An Automotive-Compliant Part is Available Under Separate Datasheet ([SBR15U50SP5Q](#))**

**Mechanical Data**

- Case: PowerDI<sup>®</sup>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)

PowerDI5

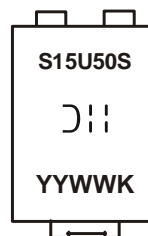


**Note:** Pins Left & Right must be electrically connected at the printed circuit board.

**Ordering Information** (Note 4)

Part Number	Case	Packaging
SBR15U50SP5-13	PowerDI5	5000/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 [http://www.diodes.com/quality/lead\\_free/](http://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/>.

**Marking Information**


= Manufacturer's Marking  
 S15U50S = Product Type Marking Code  
 YYWW = Date Code Marking  
 YY = Last Two Digits of Year (ex: 18 = 2018)  
 WW = Week Code (01 to 53)  
 K = Factory Designator

**Maximum Ratings** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	V <sub>RRM</sub>	50	V
Average Rectified Output Current	I <sub>o</sub>	15	A
Non-Repetitive Peak Forward Surge Current 8.3ms	I <sub>FSM</sub>	256	A
Non-Repetitive Avalanche Energy at I <sub>AS</sub> = 10A, L = 50mH	E <sub>AS</sub>	1600	mJ
Non-Repetitive Avalanche Energy at I <sub>AS</sub> = 40A, L = 1mH	E <sub>AS</sub>	300	mJ
Electrostatic Discharge	HBM	8000	V
Electrostatic Discharge	MM	400	V
Electrostatic Discharge	CDM	1000	V

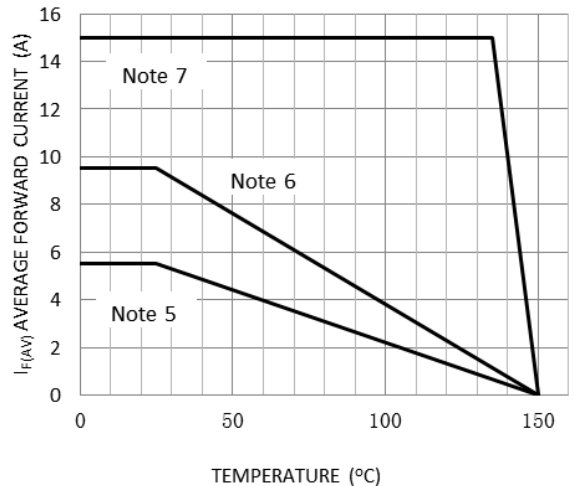
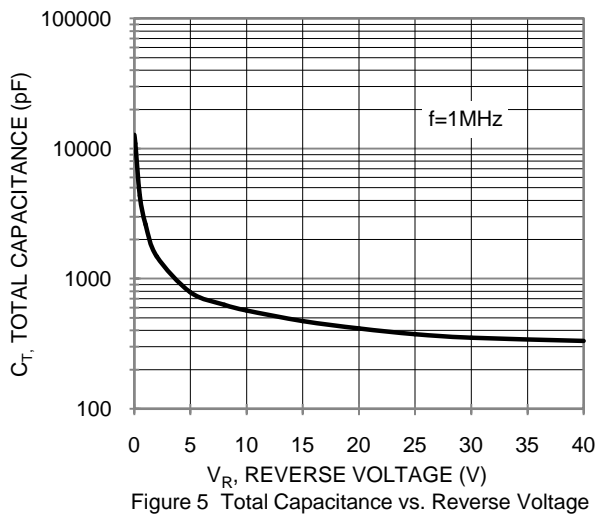
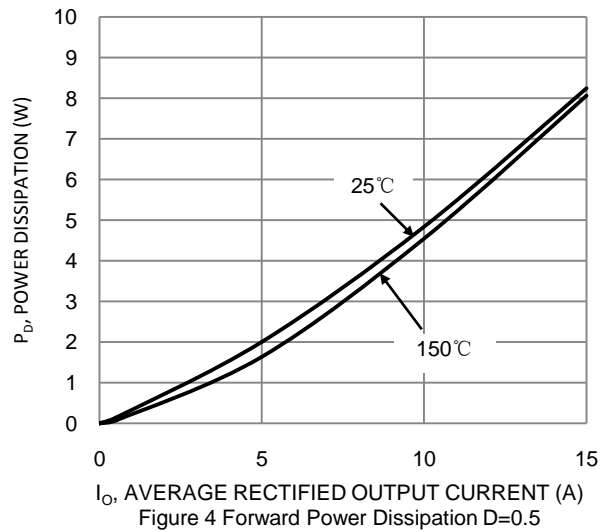
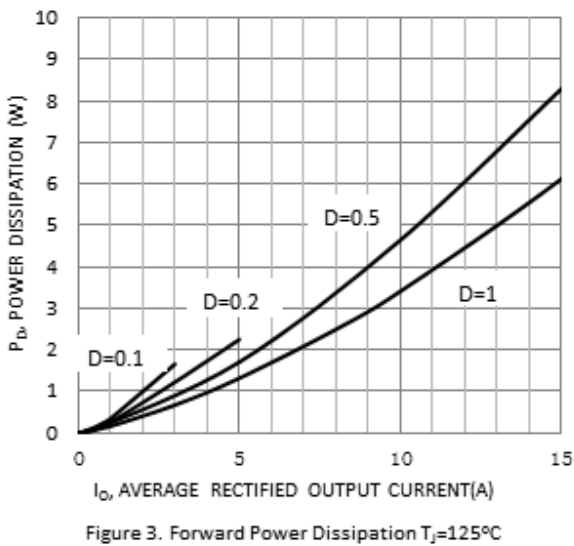
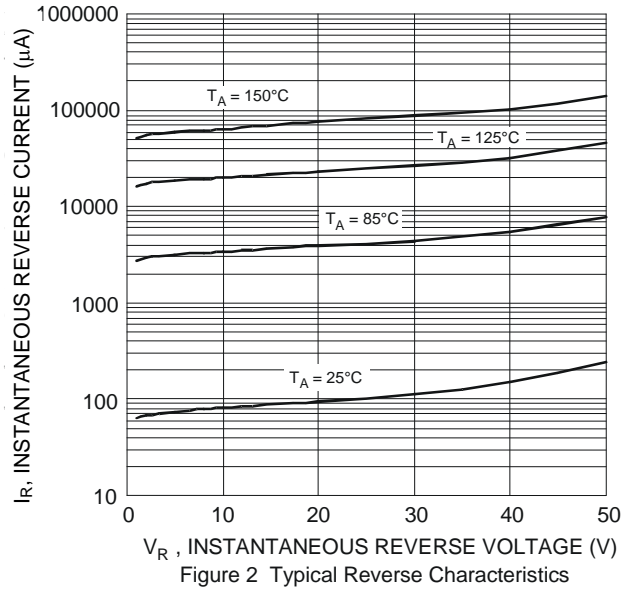
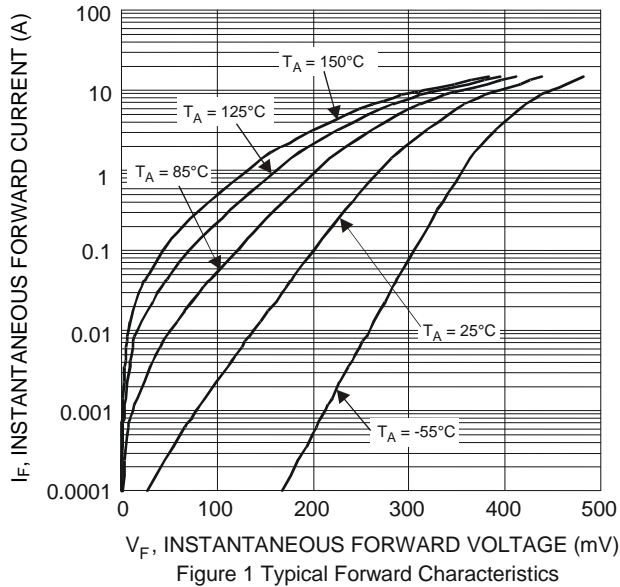
**Thermal Characteristics**

Characteristic	Symbol	Value	Unit
Typical Thermal Resistance (Note 5)	R <sub>θJA</sub>	90	°C/W
Typical Thermal Resistance (Note 6)	R <sub>θJA</sub>	39	°C/W
Typical Thermal Resistance (Note 7)	R <sub>θJL</sub>	2.5	°C/W
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-65 to +150	°C

**Electrical Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Forward Voltage Drop (Note 8)	V <sub>F</sub>	—	—	0.48	V	I <sub>F</sub> = 10A, T <sub>J</sub> = +25°C
		—	0.33	—		I <sub>F</sub> = 10A, T <sub>J</sub> = +125°C
		—	0.44	0.52		I <sub>F</sub> = 15A, T <sub>J</sub> = +25°C
		—	0.40	—		I <sub>F</sub> = 15A, T <sub>J</sub> = +125°C
Leakage Current (Note 8)	I <sub>R</sub>	—	—	0.5	mA	V <sub>R</sub> = 50V, T <sub>J</sub> = +25°C
		—	50	—		V <sub>R</sub> = 50V, T <sub>J</sub> = +125°C
Junction Capacitance	C <sub>J</sub>	—	400	—	pF	V <sub>R</sub> = 25V, T <sub>J</sub> = +25°C
Switching Speed t <sub>RR</sub>	t <sub>RR</sub>	—	50	—	ns	I <sub>F</sub> = 0.5A, I <sub>R</sub> = 1A, I <sub>RR</sub> = 0.25A (RG1)

- Notes:
5. FR-4 PCB, 2oz. Copper, minimum recommended pad layout per <http://www.diodes.com/package-outlines.html>.
  6. FR-4 PCB, 2oz. Copper. Cathode pad dimensions 18.8mm x 14.4mm. Anode pad dimensions 5.6mm x 14.4mm.
  7. Junction to Lead (Cathode Terminal).
  8. Short duration pulse test used to minimize self-heating effect.



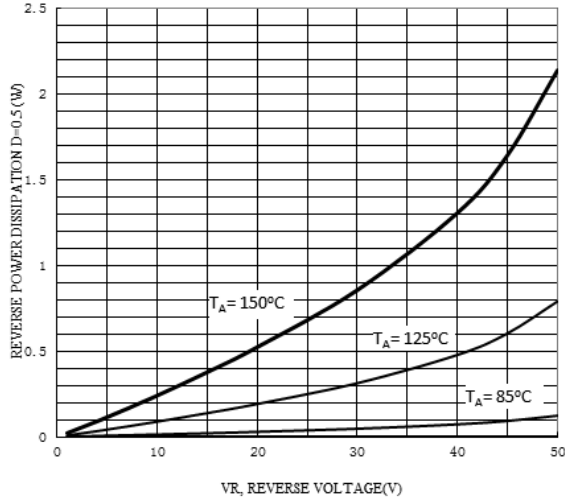


Figure 7 Reverse power dissipation D=0.5

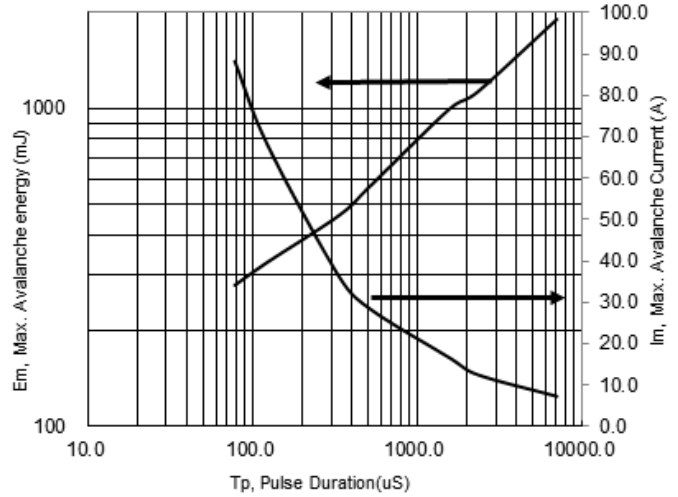


Figure 8: Single pulse Max. Avalanche Energy and Current

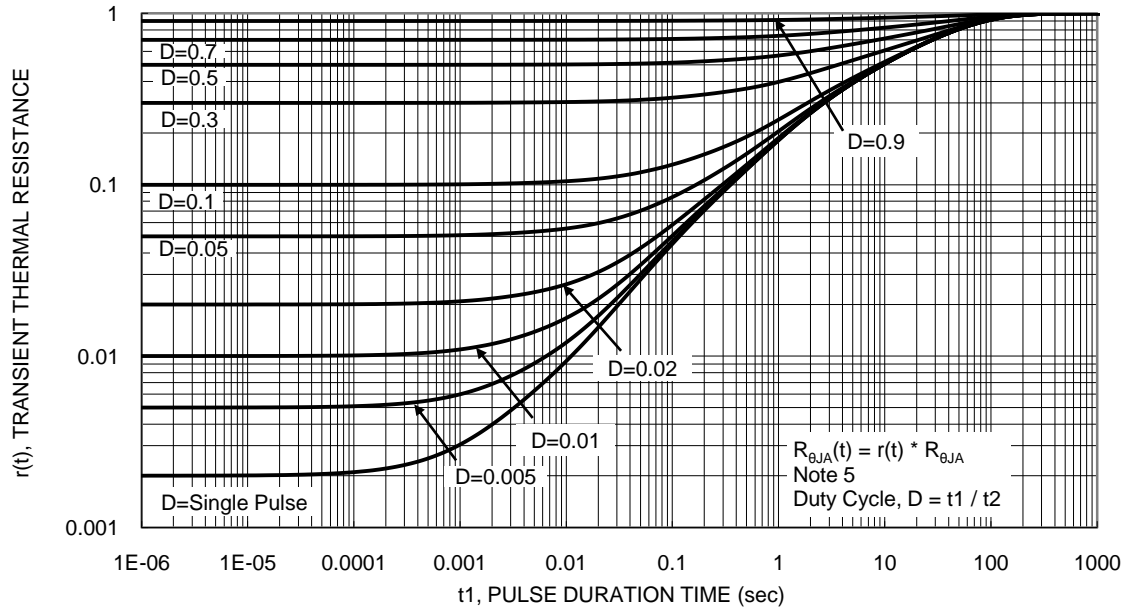
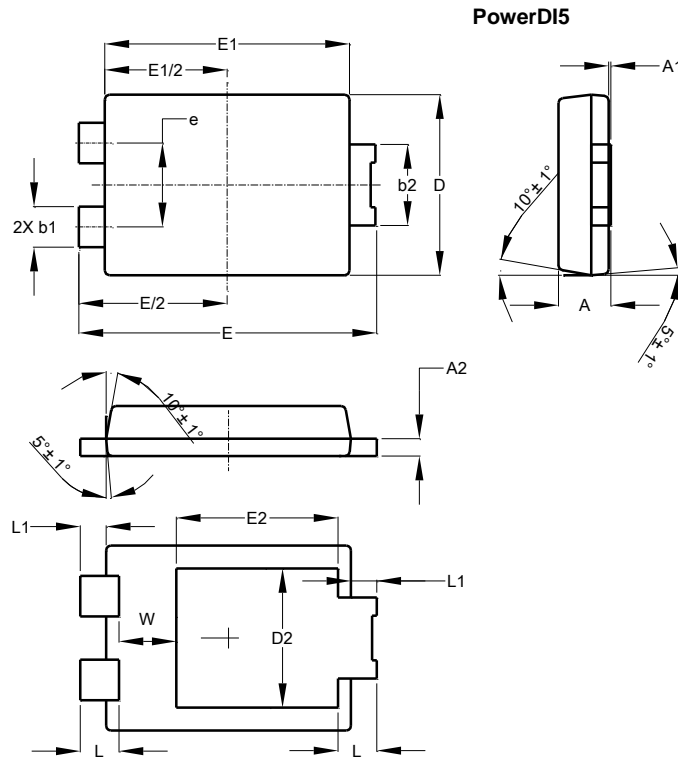


Figure 9. Transient Thermal Resistance

**Package Outline Dimensions**

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

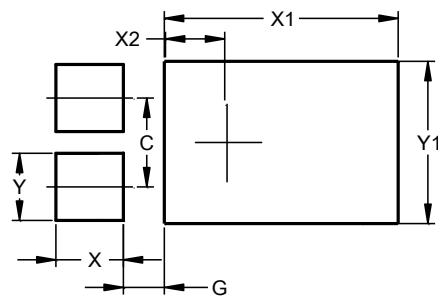


PowerDI5			
Dim	Min	Max	Typ
A	1.05	1.15	1.10
A1	0.00	0.05	--
A2	0.33	0.43	0.381
b1	0.80	0.99	0.89
b2	1.70	1.88	1.78
D	3.90	4.05	3.966
D2	--	--	3.054
E	6.40	6.60	6.51
e	--	--	1.84
E1	5.30	5.45	5.37
E2	--	--	3.549
L	0.75	0.95	0.85
L1	0.50	0.65	0.57
W	1.10	1.41	1.255
All Dimensions in mm			

**Suggested Pad Layout**

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

**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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