SBR15U50SP5

15A SBR
SUPER BARRIER RECTIFIER
PowerDI5

Product Summary (@ T_A = +25°C)

V_{RRM} (V)	I_O (A)	$V_{F\ MAX}$ (V) @ +25°C	$I_{R\ MAX}$ (mA) @ +25°C
50	15	0.52	0.5

Description

Packaged in the compact thermally efficient PowerDI5 package, the SBR15U50SP5 provides very low V_F 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

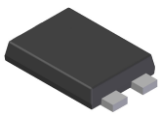
Features and Benefits

- Low Forward Voltage Drop (V_F) 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)**

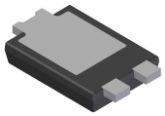
Mechanical Data

- Case: PowerDI®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)

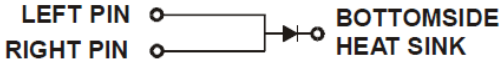
PowerDI5



Top View



Bottom View



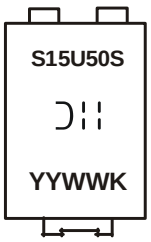
Note: Pins Left & Right must be electrically connected at the printed circuit board.

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/ 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 athttps://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

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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	Io	15	A
Non-Repetitive Peak Forward Surge Current 8.3ms	I_{FSM}	256	A
Non-Repetitive Avalanche Energy at I_{AS} = 10A, L = 50mH	E_{AS}	1600	mJ
Non-Repetitive Avalanche Energy at I_{AS} = 40A, L = 1mH	E_{AS}	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)	$R_{\theta JA}$	90	°C/W
Typical Thermal Resistance (Note 6)	$R_{\theta JA}$	39	°C/W
Typical Thermal Resistance (Note 7)	$R_{\theta JL}$	2.5	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-65 to +150	°C

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Forward Voltage Drop (Note 8)	V_F	— — — —	— 0.33 0.44 0.40	0.48 — 0.52 —	V	I_F =10A, T_J = +25°C I_F =10A, T_J = +125°C I_F =15A, T_J = +25°C I_F =15A, T_J = +125°C
Leakage Current (Note 8)	I_R	— —	— 50	0.5 —	mA	V_R = 50V , T_J = +25°C V_R = 50V , T_J = +125°C
Junction Capacitance	C_J	—	400	—	pF	V_R = 25V , T_J = +25°C
Switching Speed t_{RR}	t_{RR}	—	50	—	ns	I_F = 0.5A, I_R = 1A, I_{RR} = 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.

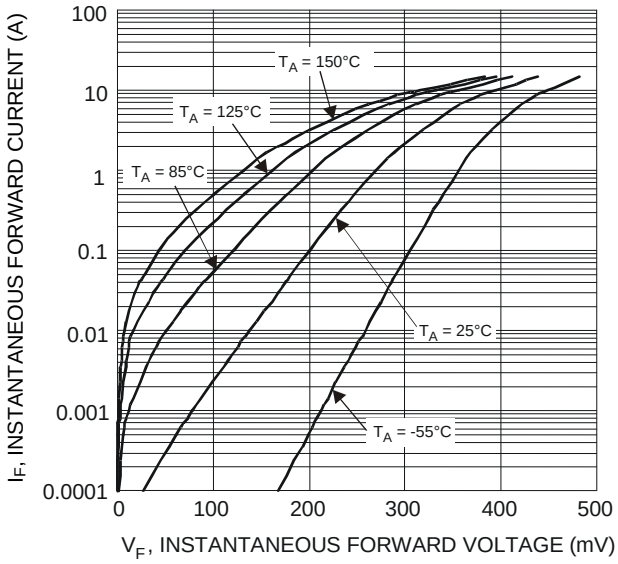


Figure 1 Typical Forward Characteristics

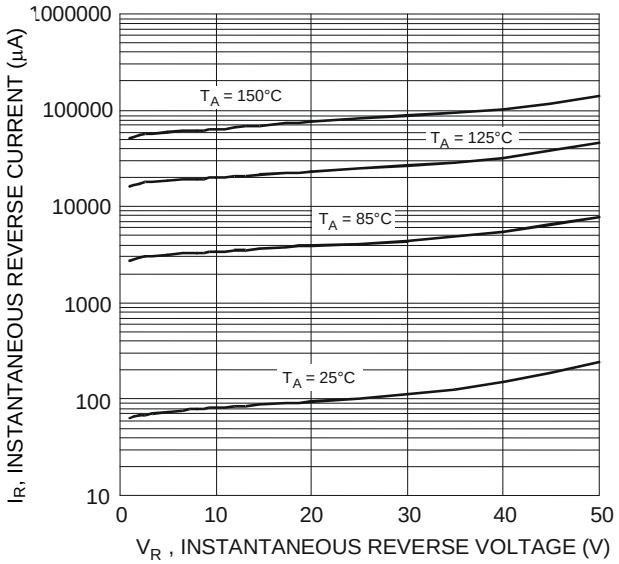


Figure 2 Typical Reverse Characteristics

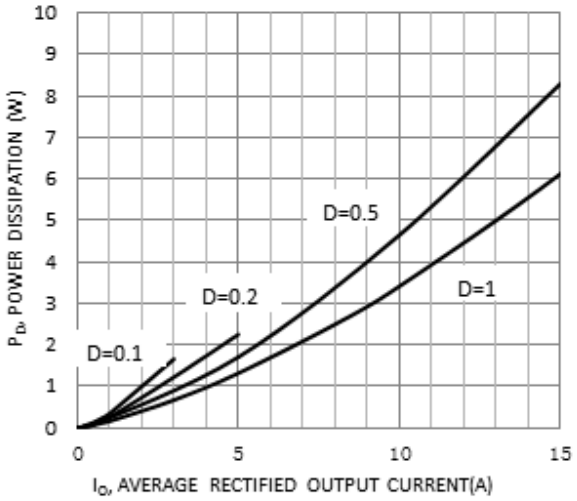


Figure 3. Forward Power Dissipation T_J=125°C

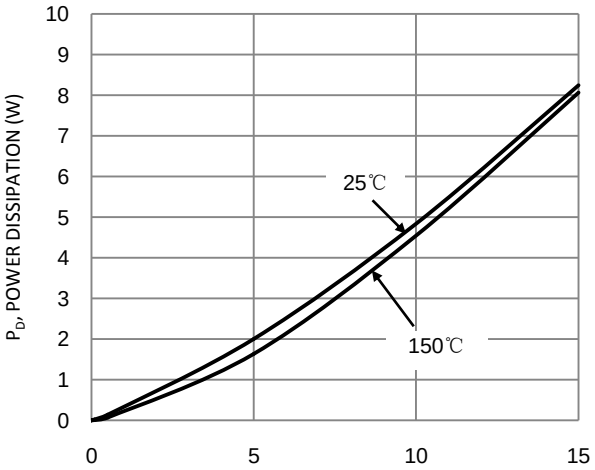


Figure 4 Forward Power Dissipation D=0.5

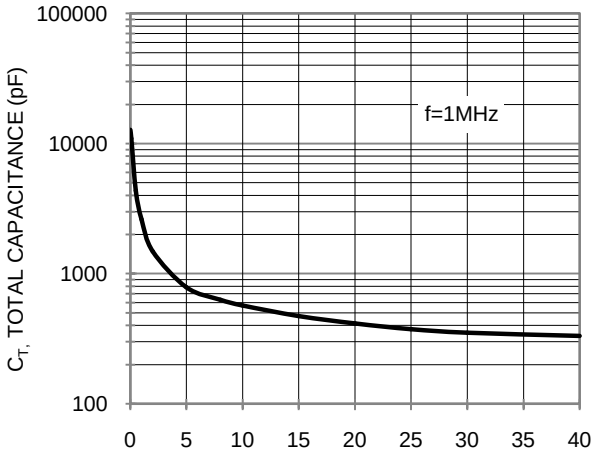


Figure 5 Total Capacitance vs. Reverse Voltage

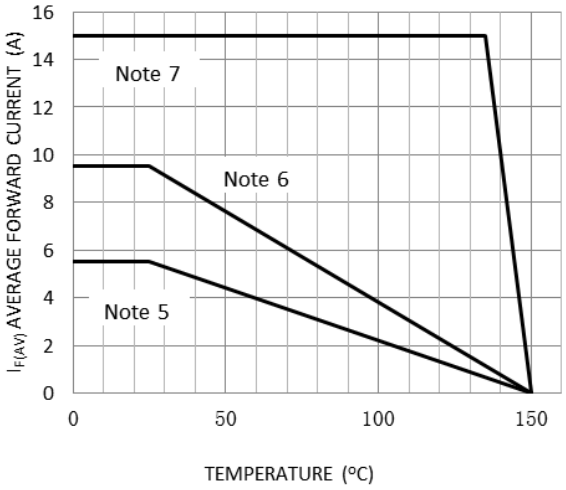


Figure 6 Forward Current Derating Curve D=1

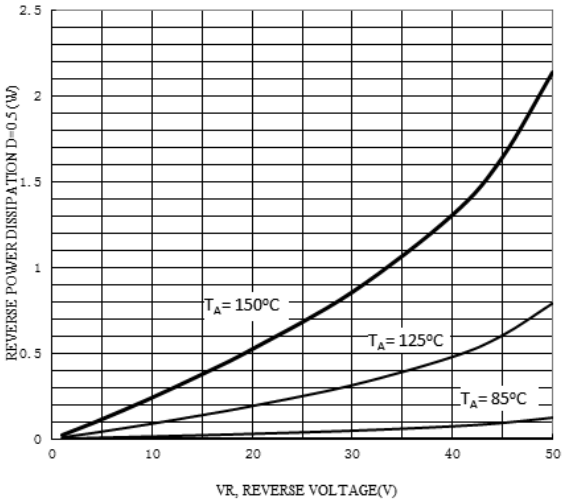


Figure7 Reverse power dissipation D=0.5

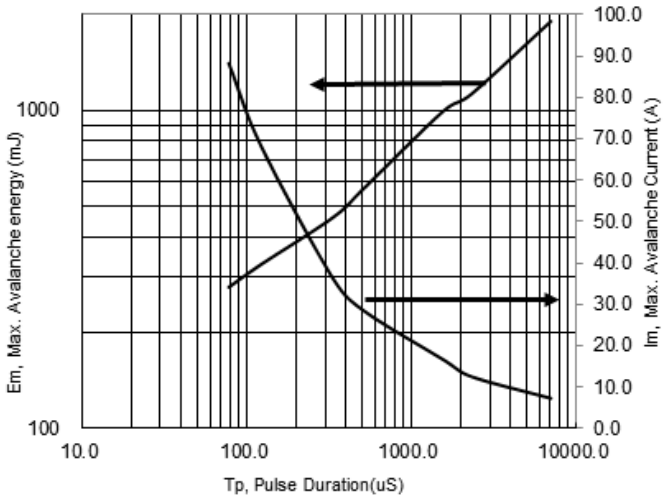


Figure 8: Single pulse Max. Avalanche Energy and Current

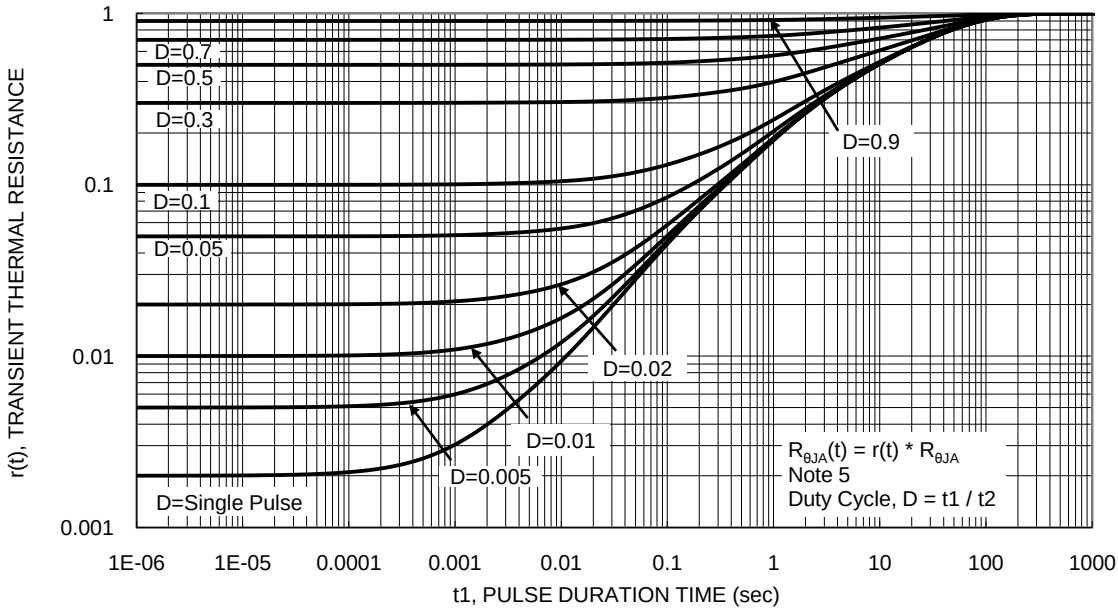
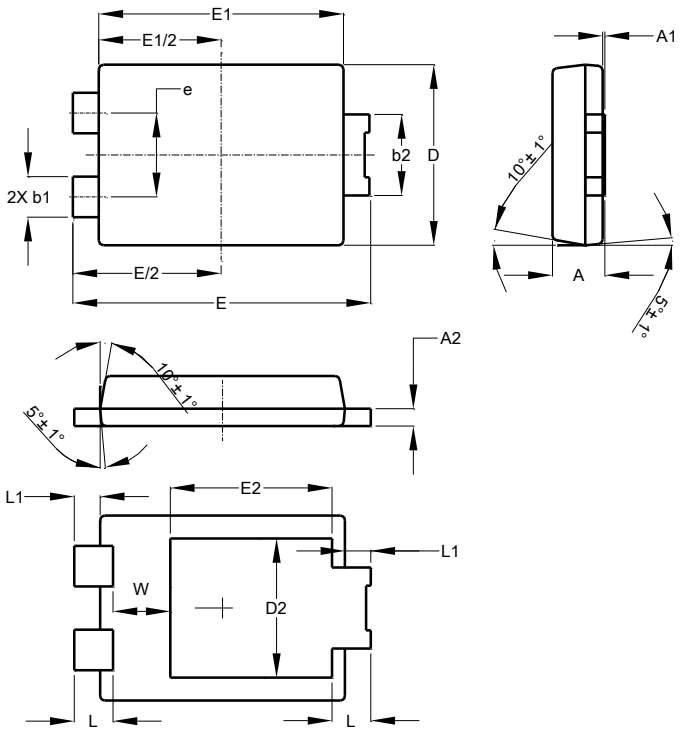


Figure 9. Transient Thermal Resistance

Package Outline Dimensions

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

PowerDI5

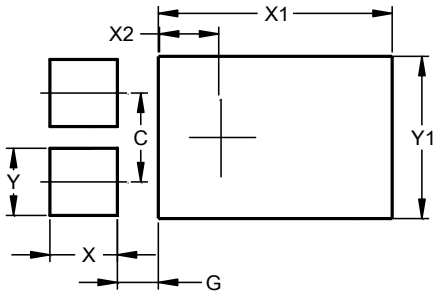


PowerDI5			
Dim	**Min**	**Max**	**Typ**
A	1.05	1.15	1.10
A1	0.00	0.05	--
A2	0.33	0.43	0.381
b1	0.80	0.99	0.89
b2	1.70	1.88	1.78
D	3.90	4.05	3.966
D2	--	--	3.054
E	6.40	6.60	6.51
e	--	--	1.84
E1	5.30	5.45	5.37
E2	--	--	3.549
L	0.75	0.95	0.85
L1	0.50	0.65	0.57
W	1.10	1.41	1.255
All Dimensions in mm			

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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