

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

V <sub>RRM</sub> (V)	I <sub>O</sub> (A)	V <sub>F(MAX)</sub> (V) @ +25°C	I <sub>R(MAX)</sub> (mA) @ +25°C
30	15	0.59	0.1

## Description

Packaged in the compact thermally efficient POWERDI5 package, the SBR15A30SP5 provides very low V<sub>F</sub> and excellent reverse leakage stability at high temperatures. It is ideal for use as a rectification, freewheeling or polarity protection diode.

## Applications

- Solar Panels
- DC-DC Converters
- AC-DC Adaptors

## Features and Benefits

- Low forward voltage drop (V<sub>F</sub>) helps minimize 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)**
- **Qualified to AEC-Q101 Standards for High Reliability**

## 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)

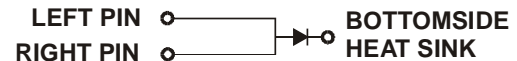
POWERDI5



Top View



Bottom View



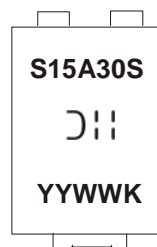
**Note:** Pins Left & Right must be electrically connected at the printed circuit board.

## Ordering Information

Part Number	Case	Packaging
SBR15A30SP5-13	POWERDI5	5000/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](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.

## Marking Information



S15A30S = Product Type Marking Code  
YYWW = Date Code Marking  
YY = Last Two Digits of Year (ex: 14 = 2014)  
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>	30	V
Average Rectified Output Current	I <sub>O</sub>	15	A
Non-Repetitive Peak Forward Surge Current 8.3mS	I <sub>FSM</sub>	136	A
Non-Repetitive Avalanche Energy (T <sub>J</sub> = +25°C, I <sub>AS</sub> = 10A, L = 10mH)	E <sub>AS</sub>	460	mJ
Repetitive Peak Avalanche Energy (1μs, +25°C)	P <sub>ARM</sub>	2700	W

**Thermal Characteristics**

Characteristic	Symbol	Value	Unit
Typical Thermal Resistance Junction to Ambient (Note 4)	R <sub>θJA</sub>	100	°C/W
Typical Thermal Resistance Junction to Case (Notes 4, 6)	R <sub>θJC</sub>	25	°C/W
Typical Thermal Resistance Junction to Ambient (Note 5)	R <sub>θJA</sub>	20	°C/W
Typical Thermal Resistance Junction to Case (Notes 5, 6)	R <sub>θJC</sub>	3	°C/W
Operating Temperature Range VR ≤ 80% VRRM VR ≤ 50% VRRM DC Forward Mode (Note 7)	T <sub>J</sub>	-65 to +150 ≤180 ≤200	°C
Storage Temperature Range	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	V <sub>F</sub>	—	0.42	0.52	V	I <sub>F</sub> = 7.5A, T <sub>J</sub> = +25°C
		—	0.38	—		I <sub>F</sub> = 7.5A, T <sub>J</sub> = +125°C
		—	0.54	0.59		I <sub>F</sub> = 15A, T <sub>J</sub> = +25°C
		—	0.51	—		I <sub>F</sub> = 15A, T <sub>J</sub> = +125°C
Leakage Current (Note 6)	I <sub>R</sub>	—	0.03	0.1	mA	V <sub>R</sub> = 30V, T <sub>J</sub> = +25°C
		—	13	—		V <sub>R</sub> = 30V, T <sub>J</sub> = +125°C
Junction Capacitance	C <sub>T</sub>	—	300	—	pF	V <sub>R</sub> = 15V, T <sub>J</sub> = +25°C

- Notes:
- Device mounted on FR4 PCB with minimum recommended pad layout per <http://www.diodes.com>.
  - Device mounted on FR4 PCB with 1inch pad layout and additional HK2 (45mm x 20mm x 12mm).
  - Short duration pulse test used to minimize self-heating effect.
  - Max junction temperature guaranteed for 2 hours.

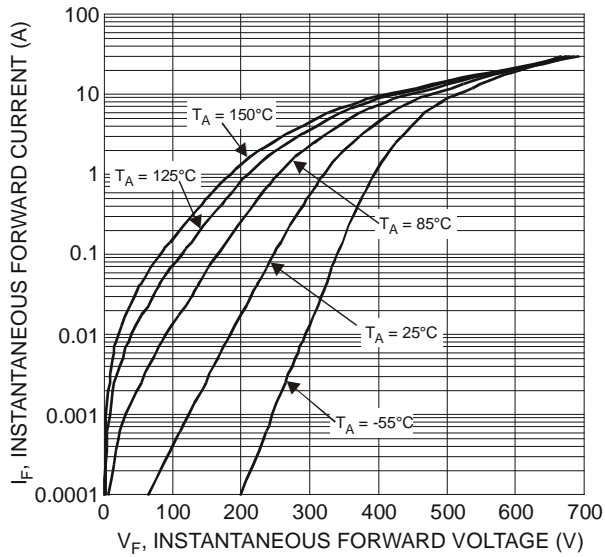


Figure 1 Typical Forward Characteristics

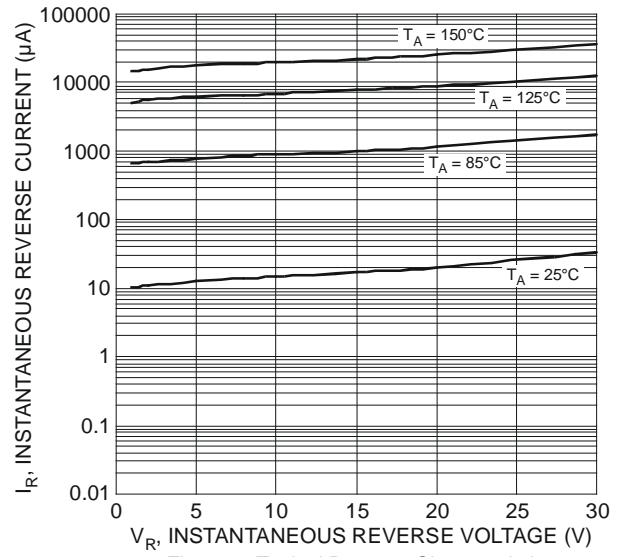


Figure 2 Typical Reverse Characteristics

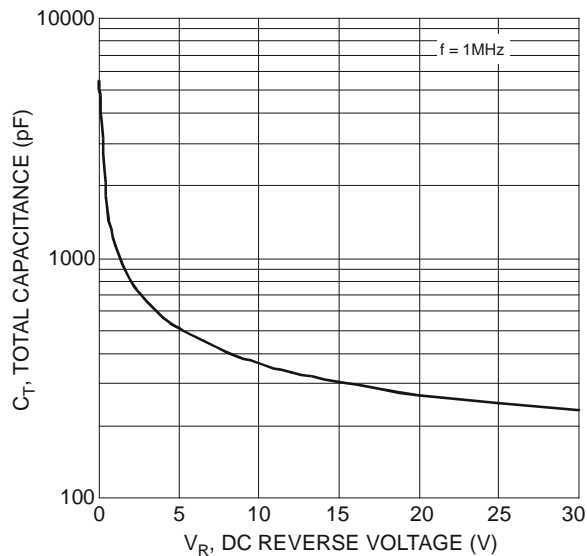


Figure 3 Total Capacitance vs. Reverse Voltage

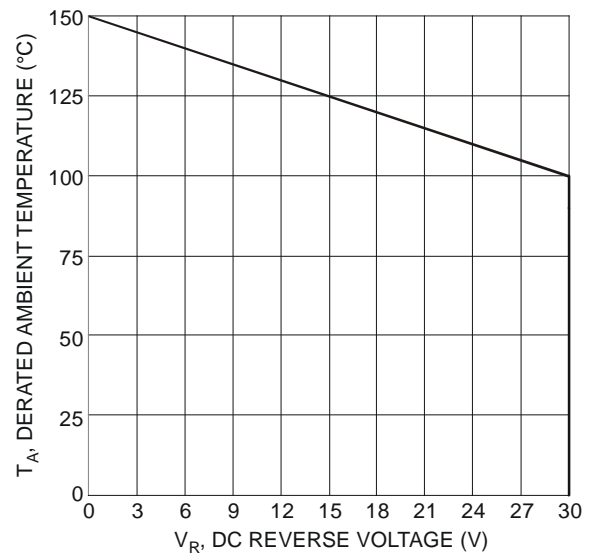


Figure 4 Operating Temperature Derating

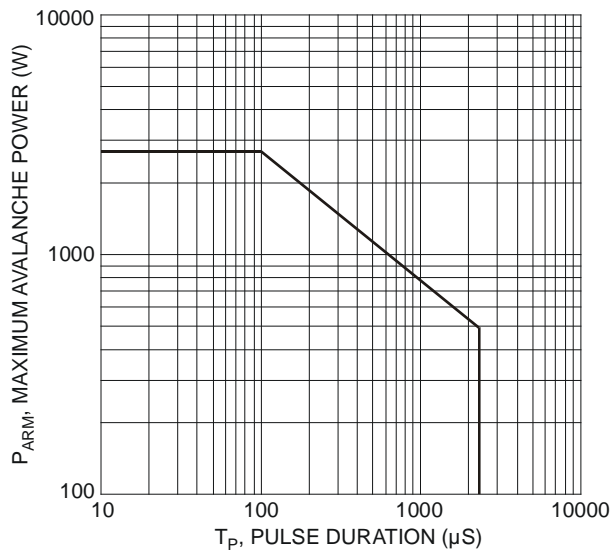


Figure 5 Maximum Avalanche Power Curve

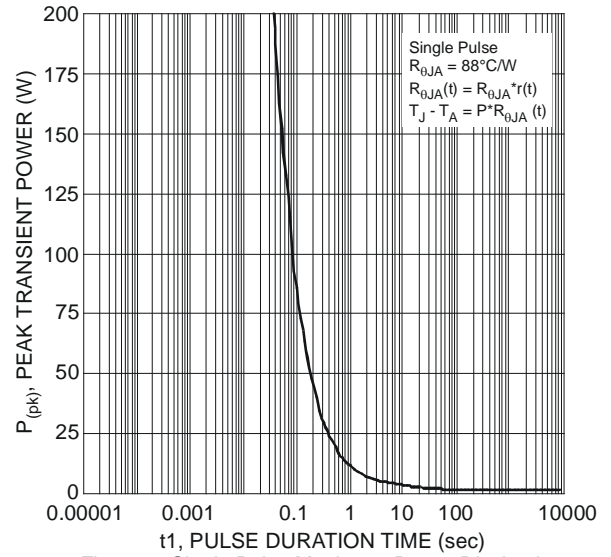


Figure 6 Single Pulse Maximum Power Dissipation

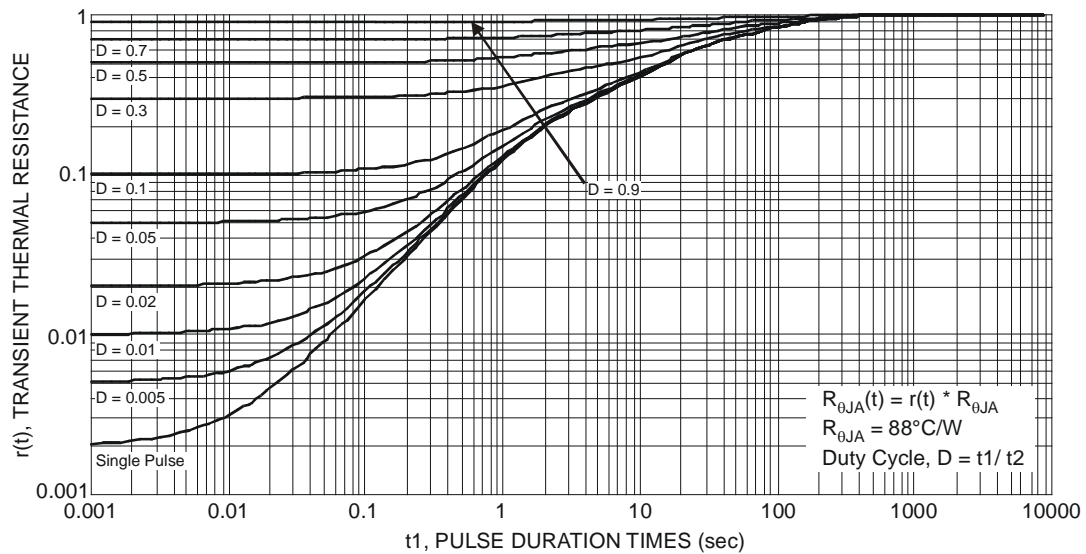
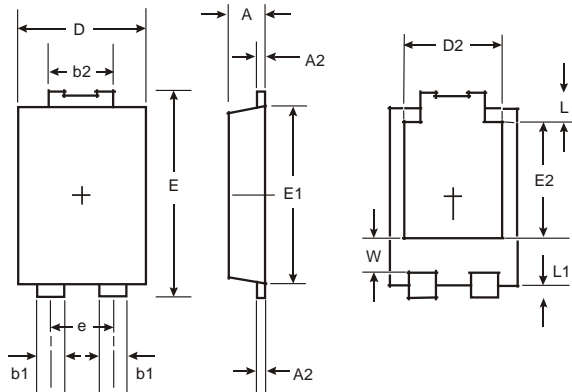


Figure 7 Transient Thermal Resistance

## Package Outline Dimensions

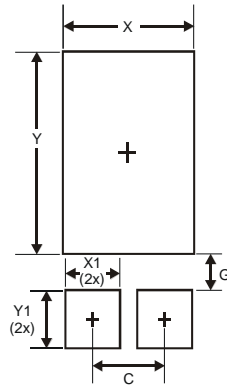
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for latest version.



POWERDI <sup>®</sup> 5		
Dim	Min	Max
A	1.05	1.15
A2	0.33	0.43
b1	0.80	0.99
b2	1.70	1.88
D	3.90	4.05
D2	3.054 Typ	
E	6.40	6.60
e	1.84 Typ	
E1	5.30	5.45
E2	3.549 Typ	
L	0.75	0.95
L1	0.50	0.65
W	1.10	1.41
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)
C	1.840
G	0.852
X	3.360
X1	1.390
Y	4.860
Y1	1.400

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