SBR15A30SP5

15A SBR®
SUPER BARRIER RECTIFIER
POWERDI®5

Product Summary (@ T_A = +25°C)

V_{RRM} (V)	I_O (A)	$V_{F(MAX)}$ (V) @ +25°C	$I_{R(MAX)}$ (mA) @ +25°C
30	15	0.59	0.1

Description

Packaged in the compact thermally efficient POWERDI5 package, the SBR15A30SP5 provides very low V_F 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_F) 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**

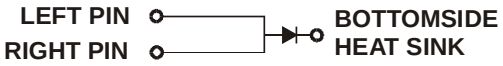
Mechanical Data

- 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



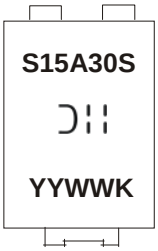
Note: Pins Left & Right must be electrically connected at the printed circuit board.

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 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_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	V_{RRM}	30	V
Average Rectified Output Current	Io	15	A
Non-Repetitive Peak Forward Surge Current 8.3mS	I_{FSM}	136	A
Non-Repetitive Avalanche Energy (T_J = +25°C, I_{AS} = 10A, L = 10mH)	E_{AS}	460	mJ
Repetitive Peak Avalanche Energy (1µs, +25°C)	P_{ARM}	2700	W

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Typical Thermal Resistance Junction to Ambient (Note 4)	$R_{\theta JA}$	100	°C/W
Typical Thermal Resistance Junction to Case (Notes 4, 6)	$R_{\theta JC}$	25	°C/W
Typical Thermal Resistance Junction to Ambient (Note 5)	$R_{\theta JA}$	20	°C/W
Typical Thermal Resistance Junction to Case (Notes 5, 6)	$R_{\theta JC}$	3	°C/W
Operating Temperature Range VR ≤ 80% VRRM VR ≤ 50% VRRM DC Forward Mode (Note 7)	T_J	-65 to +150 ≤180 ≤200	°C
Storage Temperature Range	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	V_F	— — — —	0.42 0.38 0.54 0.51	0.52 — 0.59 —	V	I_F =7.5A, T_J = +25°C I_F =7.5A, T_J = +125°C I_F =15A, T_J = +25°C I_F =15A, T_J = +125°C
Leakage Current (Note 6)	I_R	— —	0.03 13	0.1 —	mA	V_R = 30V , T_J = +25°C V_R = 30V , T_J = +125°C
Junction Capacitance	C_T	—	300	—	pF	V_R = 15V , T_J = +25°C

Notes:
4. Device mounted on FR4 PCB with minimum recommended pad layout per http://www.diodes.com.
5. Device mounted on FR4 PCB with 1inch pad layout and additional HK2 (45mm x 20mm x12mm).
6. Short duration pulse test used to minimize self-heating effect.
7. Max junction temperature guaranteed for 2 hours.

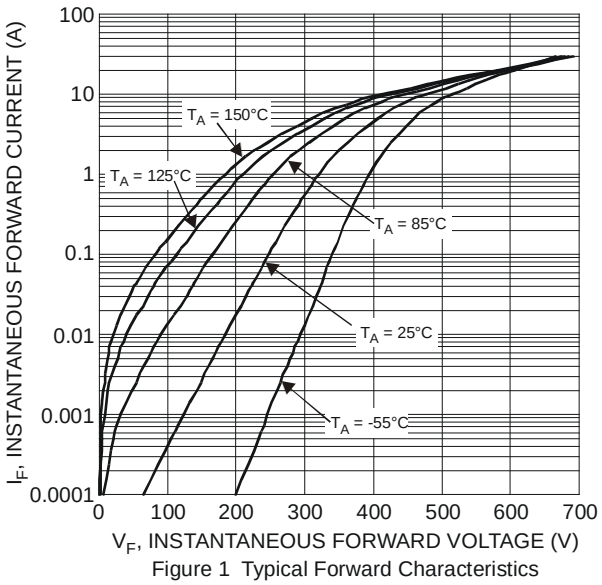


Figure 1 Typical Forward Characteristics

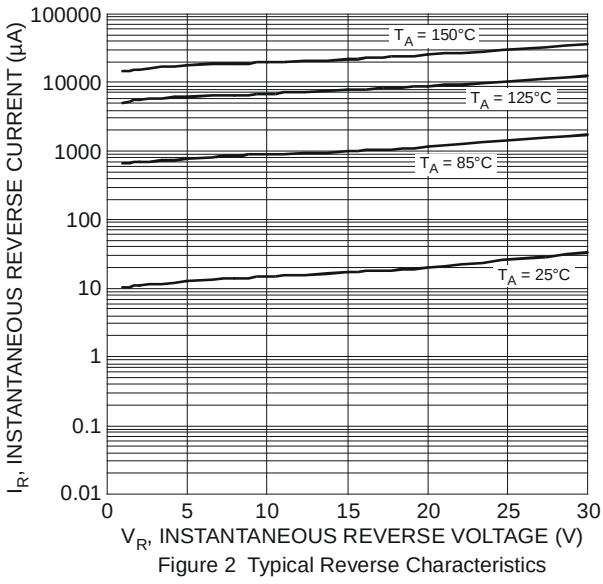


Figure 2 Typical Reverse Characteristics

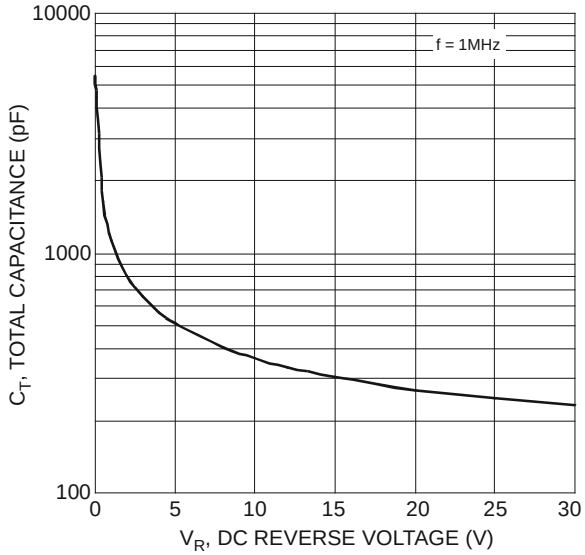


Figure 3 Total Capacitance vs. Reverse Voltage

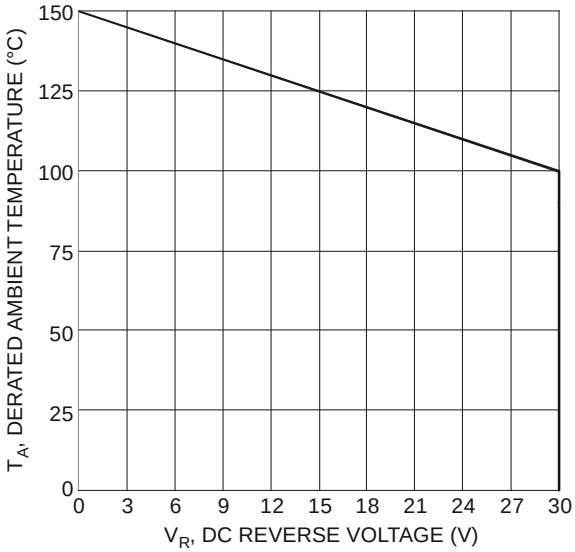


Figure 4 Operating Temperature Derating

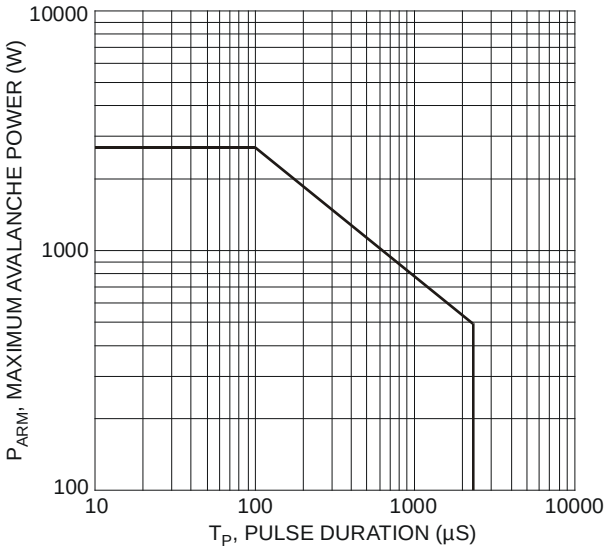


Figure 5 Maximum Avalanche Power Curve

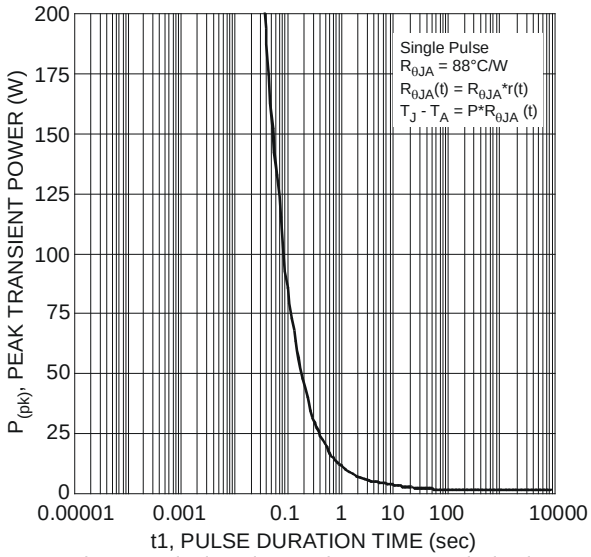


Figure 6 Single Pulse Maximum Power Dissipation

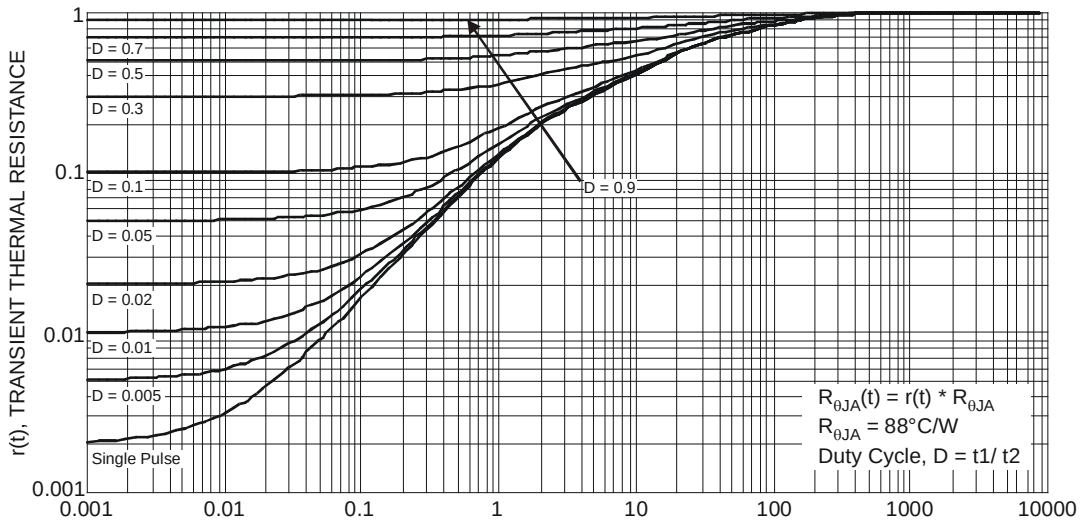
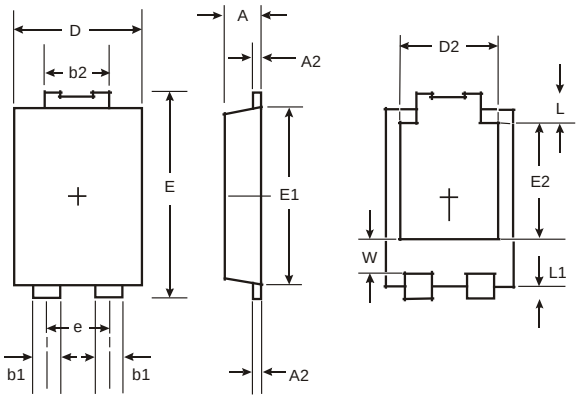


Figure 7 Transient Thermal Resistance

Package Outline Dimensions

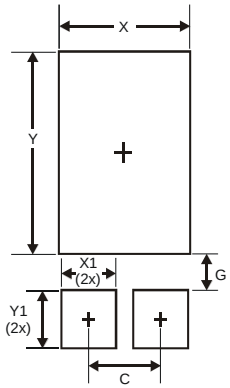
Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for latest version.



POWERDI®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

MPORTANT NOTICE

DIODES INCORPORATED MAKES NO WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, WITH REGARDS TO THIS DOCUMENT, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE (AND THEIR EQUIVALENTS UNDER THE LAWS OF ANY JURISDICTION).

Diodes Incorporated and its subsidiaries reserve the right to make modifications, enhancements, improvements, corrections or other changes without further notice to this document and any product described herein. Diodes Incorporated does not assume any liability arising out of the application or use of this document or any product described herein; neither does Diodes Incorporated convey any license under its patent or trademark rights, nor the rights of others. Any Customer or user of this document or products described herein in such applications shall assume all risks of such use and will agree to hold Diodes Incorporated and all the companies whose products are represented on Diodes Incorporated website, harmless against all damages.

Diodes Incorporated does not warrant or accept any liability whatsoever in respect of any products purchased through unauthorized sales channel. Should Customers purchase or use Diodes Incorporated products for any unintended or unauthorized application, Customers shall indemnify and hold Diodes Incorporated and its representatives harmless against all claims, damages, expenses, and attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized application.

Products described herein may be covered by one or more United States, international or foreign patents pending. Product names and markings noted herein may also be covered by one or more United States, international or foreign trademarks.

This document is written in English but may be translated into multiple languages for reference. Only the English version of this document is the final and determinative format released by Diodes Incorporated.

LIFE SUPPORT

Diodes Incorporated products are specifically not authorized for use as critical components in life support devices or systems without the express written approval of the Chief Executive Officer of Diodes Incorporated. As used herein:

A. Life support devices or systems are devices or systems which:

1. are intended to implant into the body, or

2. support or sustain life and whose failure to perform when properly used in accordance with instructions for use provided in the labeling can be reasonably expected to result in significant injury to the user.

B. A critical component is any component in a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or to affect its safety or effectiveness.

Customers represent that they have all necessary expertise in the safety and regulatory ramifications of their life support devices or systems, and acknowledge and agree that they are solely responsible for all legal, regulatory and safety-related requirements concerning their products and any use of Diodes Incorporated products in such safety-critical, life support devices or systems, notwithstanding any devices- or systems-related information or support that may be provided by Diodes Incorporated. Further, Customers must fully indemnify Diodes Incorporated and its representatives against any damages arising out of the use of Diodes Incorporated products in such safety-critical, life support devices or systems.

www.diodes.com