


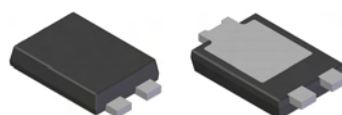
## Features

- Ultra Low Forward Voltage Drop
- Excellent High Temperature Stability
- Patented Super Barrier Rectifier Technology
- Soft, Fast Switching Capability
- 150°C Operating Junction Temperature
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**

## Mechanical Data

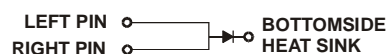
- Case: POWERDI5
- Case Material: Molded Plastic, "Green" Molding Compound.  
UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Matte Tin Finish annealed over Copper leadframe.  
Solderable per MIL-STD-202, Method 208 
- Polarity: See Diagram
- Weight: 0.093 grams (approximate)

POWERDI5



Top View

Bottom View



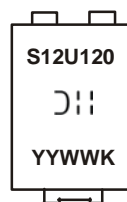
**Note:** Pins Left & Right must be electrically connected at the printed circuit board.


## Ordering Information (Note 4)

Part Number	Case	Packaging
SBR12U120P5-13	POWERDI5	5,000/Tape & Reel
SBR12U120P5-13D (Note 5)	POWERDI5	5,000/Tape & Reel
SBR12U120P5-7	POWERDI5	15,00/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> 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 <http://www.diodes.com>.
  5. Suffix -13D is designated for 12mm tape width.

## Marking Information



S12U120 = Product Type Marking Code  
 = Manufacturers' Code Marking  
 YYWW = Date Code Marking  
 YY = Last Two Digits of Year (ex: 10 for 2010)  
 WW = Week Code (01 - 53)  
 K = Factory Designator

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

Single phase, half wave, 60Hz, resistive or inductive load.

For capacitance load, derate current by 20%.

Characteristic	Symbol	Value	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	V <sub>RRM</sub> V <sub>RWM</sub> V <sub>RM</sub>	120	V
Average Rectified Output Current (See Figure 1)	I <sub>O</sub>	12	A
Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load	I <sub>FSM</sub>	250	A

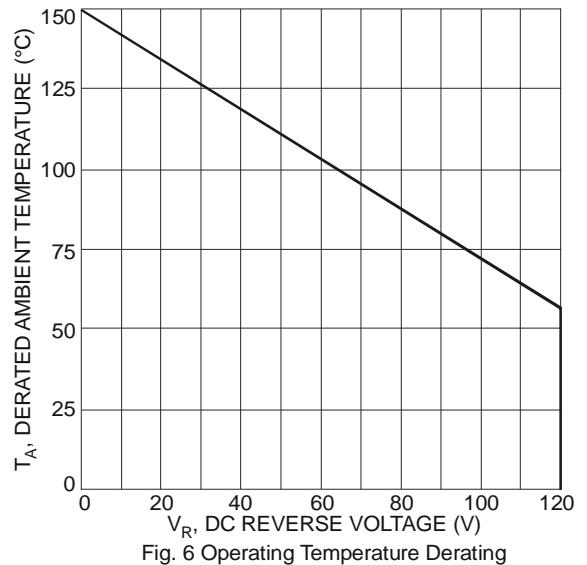
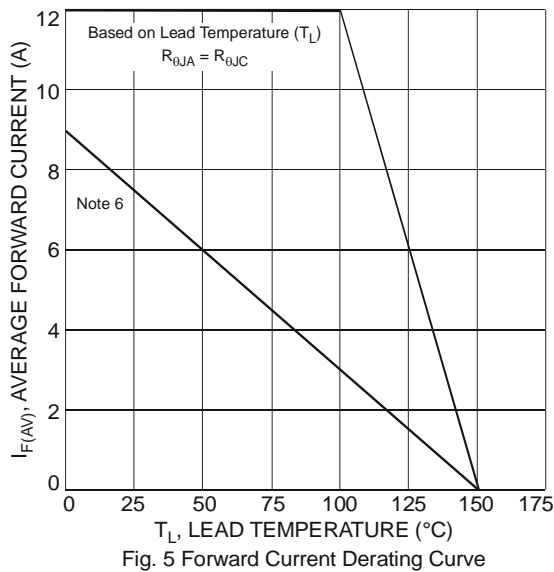
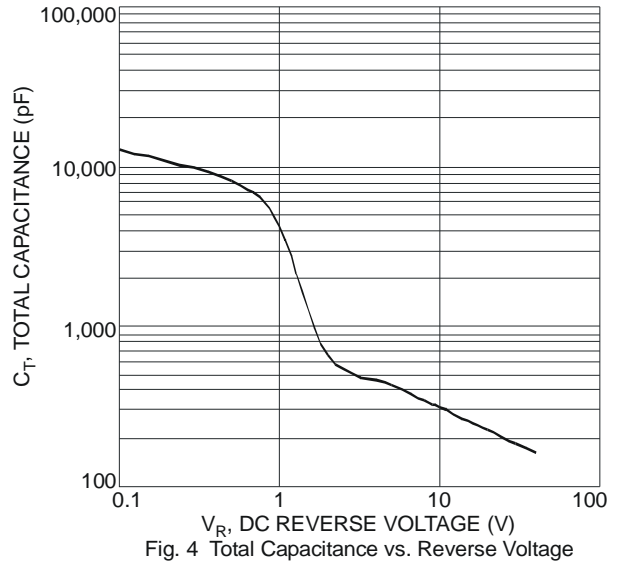
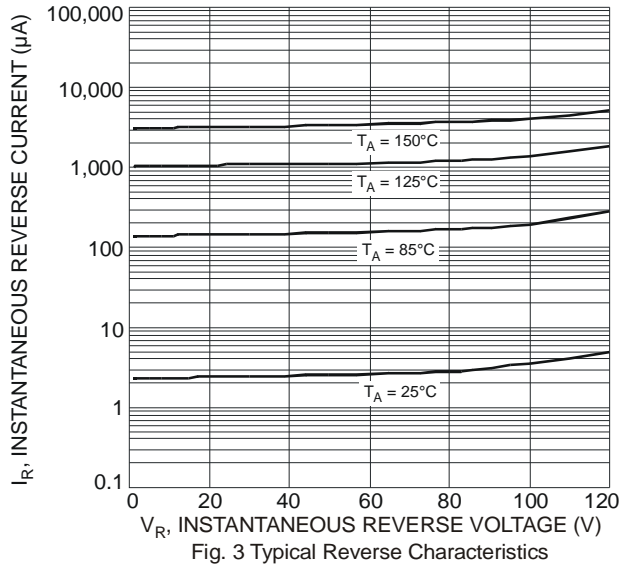
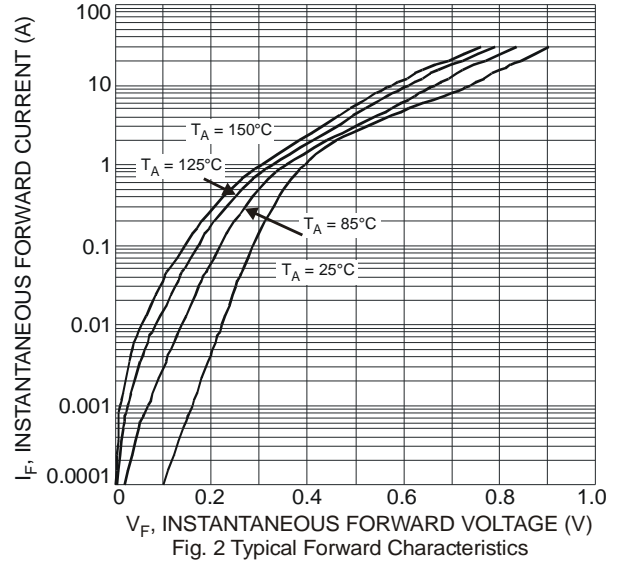
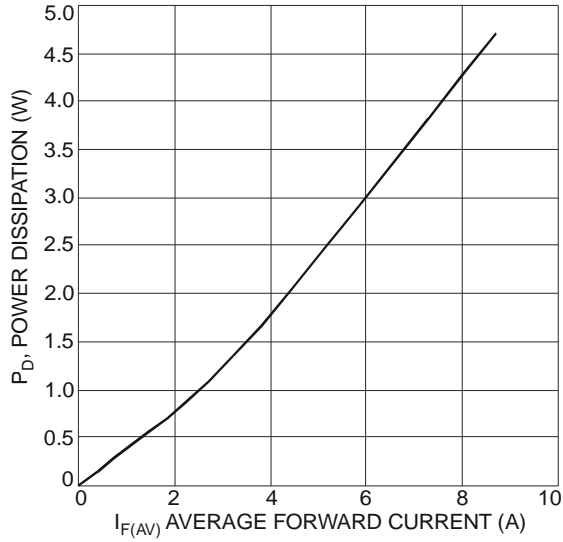
## Thermal Characteristics

Characteristic	Symbol	Value	Unit
Maximum Thermal Resistance Junction to Ambient (Note 6)	R <sub>θJA</sub>	27	°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.)

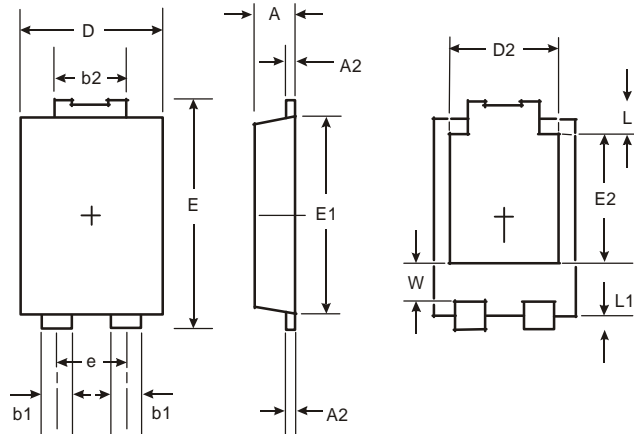
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Forward Voltage Drop	V <sub>F</sub>	-	- 0.63	0.80 0.68	V	I <sub>F</sub> = 12A, T <sub>J</sub> = +25°C I <sub>F</sub> = 12A, T <sub>J</sub> = +125°C
Leakage Current (Note 7)	I <sub>R</sub>	-	- 2	0.25 35	mA	V <sub>R</sub> = 120V, T <sub>J</sub> = +25°C V <sub>R</sub> = 120V, T <sub>J</sub> = +125°C

Notes: 6. Device mounted on Polyimide PCB with 16x recommended pad layout.  
7. Short duration pulse test used to minimize self-heating effect.



## Package Outline Dimensions

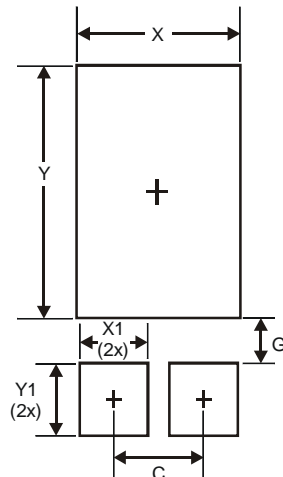
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for latest version.



POWERDI5		
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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