

## Product Summary

$V_{RRM}$ (V)	$I_o$ (A)	$V_{F(MAX)}$ (V) @+25°C	$I_{R(MAX)}$ (mA) @+25°C
120	12	0.83	0.2

## Description and Applications

Packaged in the compact thermally efficient POWERDI<sup>®</sup>5 package, SBR12M120P5 provides ultra-low reverse leakage stability at high temperatures and provides low forward voltage drop ( $V_F$ ). It is ideal for use as a rectification, freewheeling or polarity protection diode in applications such as:

- >10W AC/DC Adaptors/Chargers
- DC/DC Converters

POWERDI<sup>®</sup>5



Top View



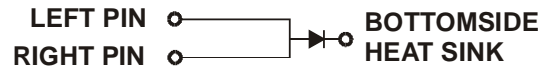
Bottom View

## Features and Benefits

- Low Forward Voltage Drop ( $V_F$ ) Helps – Minimizes Power Losses
- Ultra Low Reverse Leakage ( $I_R$ ) 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)**

## 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)



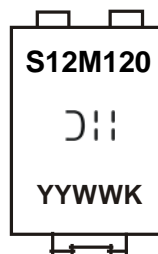
**Note: Pins Left & Right must be electrically connected at the printed circuit board.**

## Ordering Information (Note 4)

Part Number	Case	Packaging
SBR12M120P5-13	POWERDI <sup>®</sup> 5	5000/Tape & Reel
SBR12M120P5-13D (Note 5)	POWERDI <sup>®</sup> 5	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.
  4. For packaging details, go to our website at <http://www.diodes.com/products/packages.html>.
  5. POWERDI<sup>®</sup>5 available in 5K quantity on 13inch reel & 12mm tape, part number suffix "13D".

## Marking Information



S12M120 = Product Type Marking Code  
 YYWW = Date Code Marking  
 YY = Last Two Digits of Year (ex: 15 = 2015)  
 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>	120	V
Average Rectified Output Current	I <sub>O</sub>	12	A
Non-Repetitive Peak Forward Surge Current 8.3mS	I <sub>FSM</sub>	300	A

**Thermal Characteristics**

Characteristic	Symbol	Value	Unit
Typical Thermal Resistance Junction to Ambient (Note 6)	R <sub>θJA</sub>	18	°C/W
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 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>	—	0.75	0.83 0.71	V	I <sub>F</sub> = 12A, T <sub>A</sub> = +25°C I <sub>F</sub> = 12A, T <sub>A</sub> = +125°C
Leakage Current (Note 7)	I <sub>R</sub>	—	0.01	0.2 30	mA	V <sub>R</sub> = 120V, T <sub>A</sub> = +25°C V <sub>R</sub> = 120V, T <sub>A</sub> = +125°C

Notes: 6. Device mounted on FR-4 substrate PC board 16\*MRP.  
7. Short duration pulse test used to minimize self-heating effect.

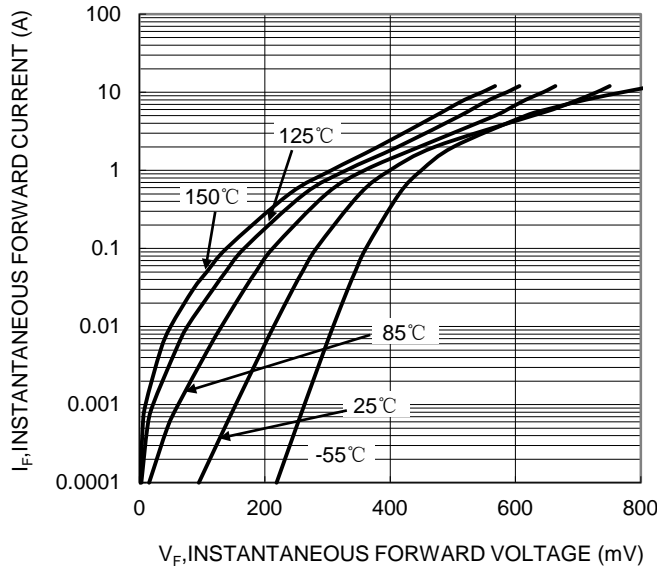


Figure 1. Typical Forward Characteristics

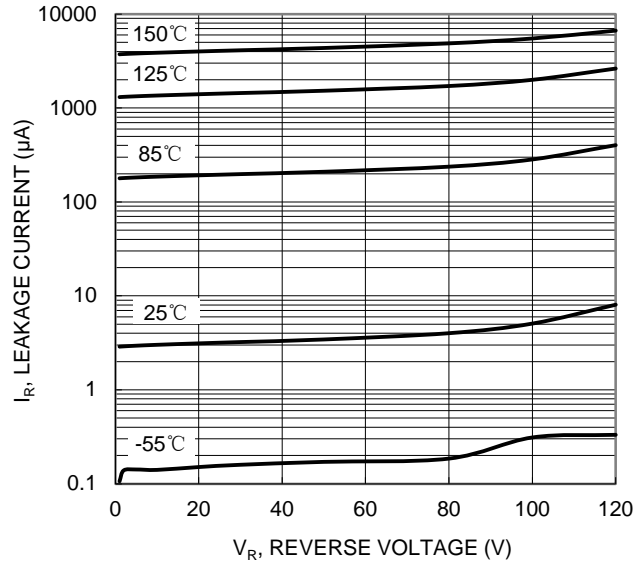


Figure 2. Typical Reverse Characteristics

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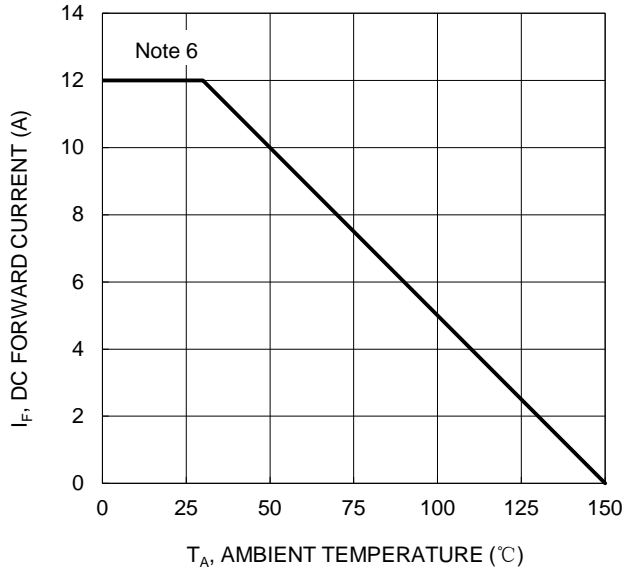


Figure 3. DC Forward Current Derating

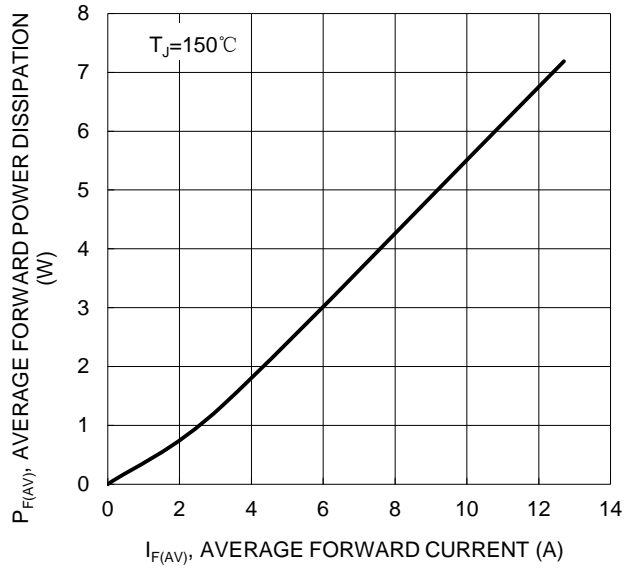


Figure 4. Forward Power Dissipation

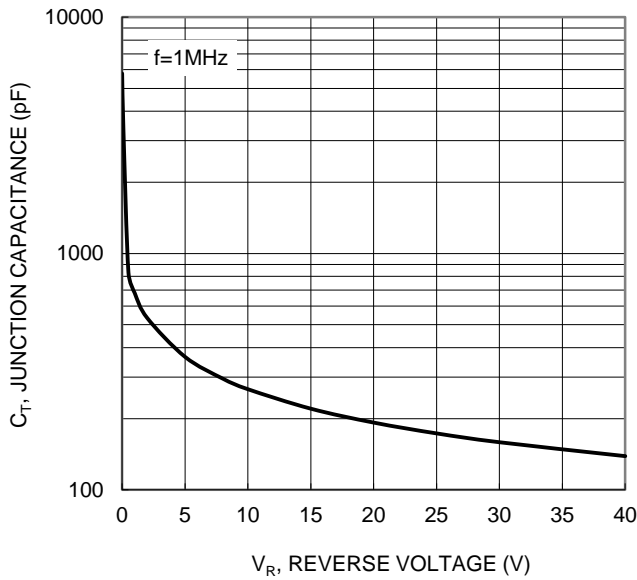
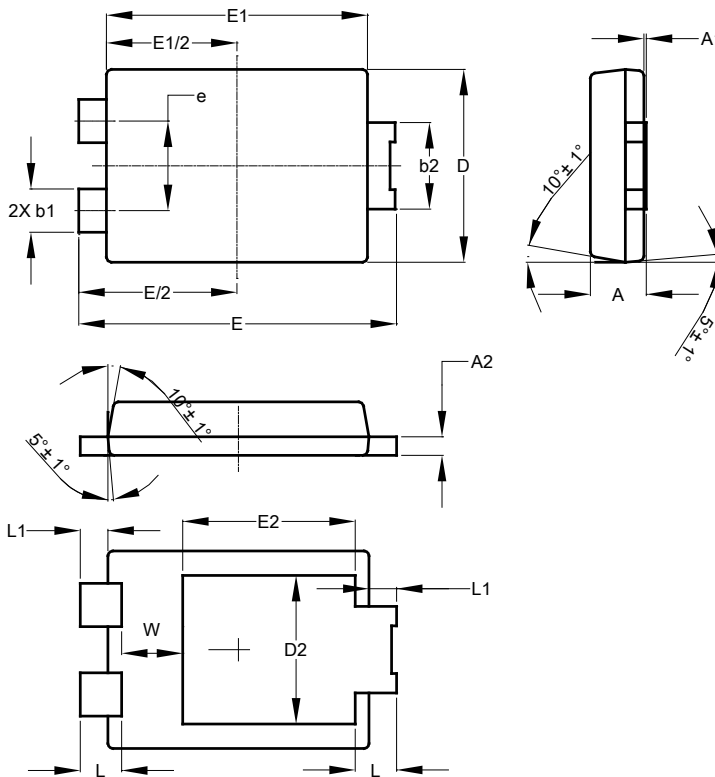


Figure 5. Typical Junction Capacitance

**Package Outline Dimensions**

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

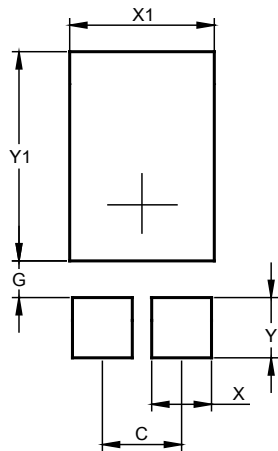


POWERDI <sup>®</sup> 5			
Dim	Min	Max	Typ
A	1.05	1.15	1.10
A1	0.00	0.05	--
A2	0.33	0.43	0.381
b1	0.80	0.99	0.89
b2	1.70	1.88	1.78
D	3.90	4.05	3.966
D2	--	--	3.054
E	6.40	6.60	6.504
e	--	--	1.84
E1	5.30	5.45	5.37
E2	--	--	3.549
L	0.75	0.95	0.85
L1	0.50	0.65	0.57
W	1.10	1.41	1.255
All Dimensions in mm			

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**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	1.390
X1	3.360
Y	1.400
Y1	4.860

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