

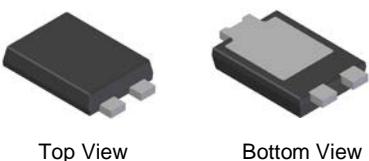
## Product Summary

$V_{RRM}$ (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

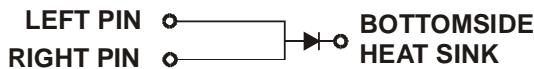
POWERDI<sup>®</sup>5

Top View

Bottom View

## 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.

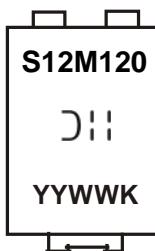
## Ordering Information (Note 4)

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** (@ $T_A = +25^\circ\text{C}$ , unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Peak Repetitive Reverse Voltage			
Working Peak Reverse Voltage	$V_{RRM}$	120	V
DC Blocking Voltage			
Average Rectified Output Current	$I_o$	12	A
Non-Repetitive Peak Forward Surge Current 8.3mS	$I_{FSM}$	300	A

**Thermal Characteristics**

Characteristic	Symbol	Value	Unit
Typical Thermal Resistance Junction to Ambient (Note 6)	$R_{\theta JA}$	18	°C/W
Operating and Storage Temperature Range	$T_J, T_{STG}$	-55 to +150	°C

**Electrical Characteristics** (@ $T_A = +25^\circ\text{C}$ , unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Forward Voltage Drop	$V_F$	—	0.75	0.83	V	$I_F = 12\text{A}, T_A = +25^\circ\text{C}$ $I_F = 12\text{A}, T_A = +125^\circ\text{C}$
Leakage Current (Note 7)	$I_R$	—	0.01	0.2	mA	$V_R = 120\text{V}, T_A = +25^\circ\text{C}$ $V_R = 120\text{V}, T_A = +125^\circ\text{C}$

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

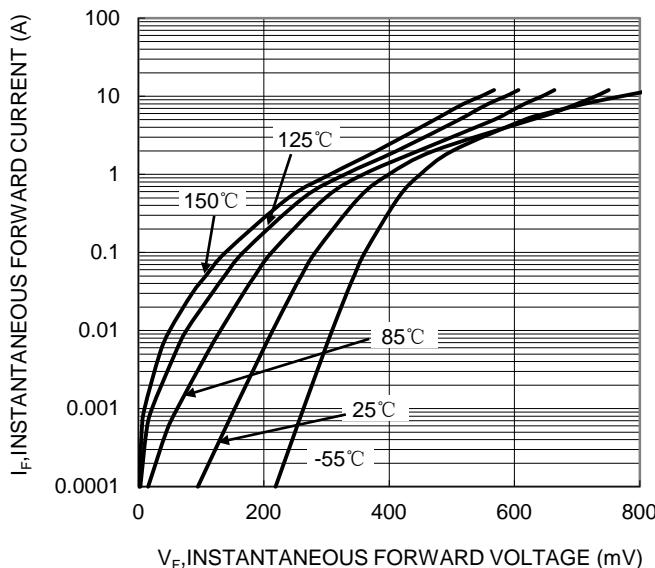

 V<sub>F</sub>,INSTANTANEOUS FORWARD VOLTAGE (mV)

Figure 1. Typical Forward Characteristics

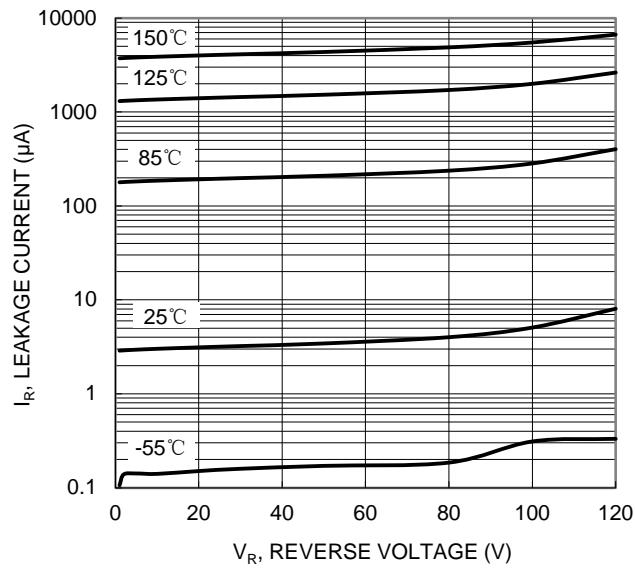

 V<sub>R</sub>, REVERSE VOLTAGE (V)

Figure 2. Typical Reverse Characteristics

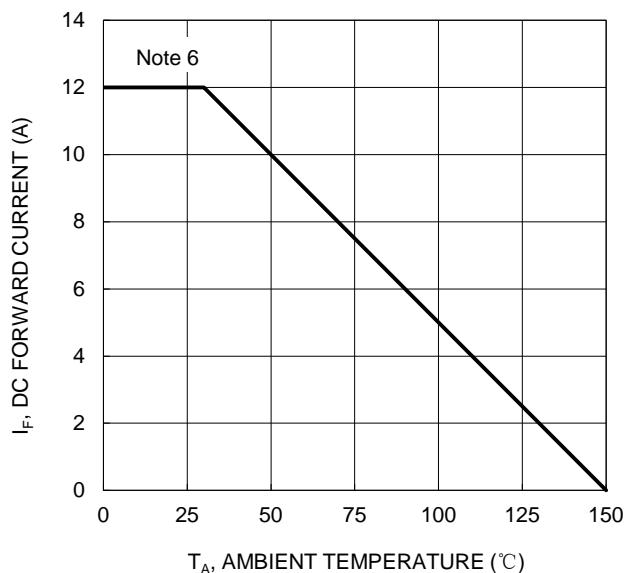


Figure 3. DC Forward Current Derating

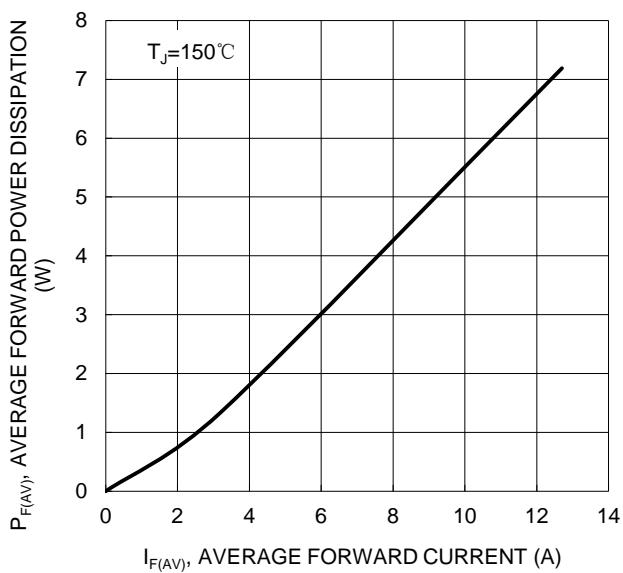


Figure 4. Forward Power Dissipation

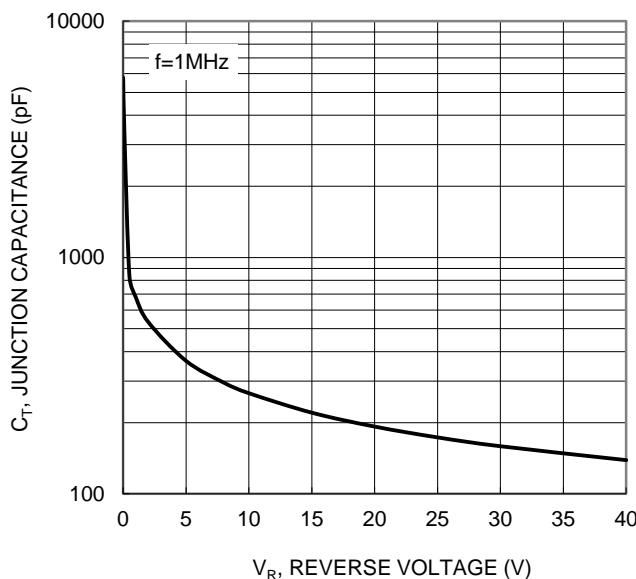
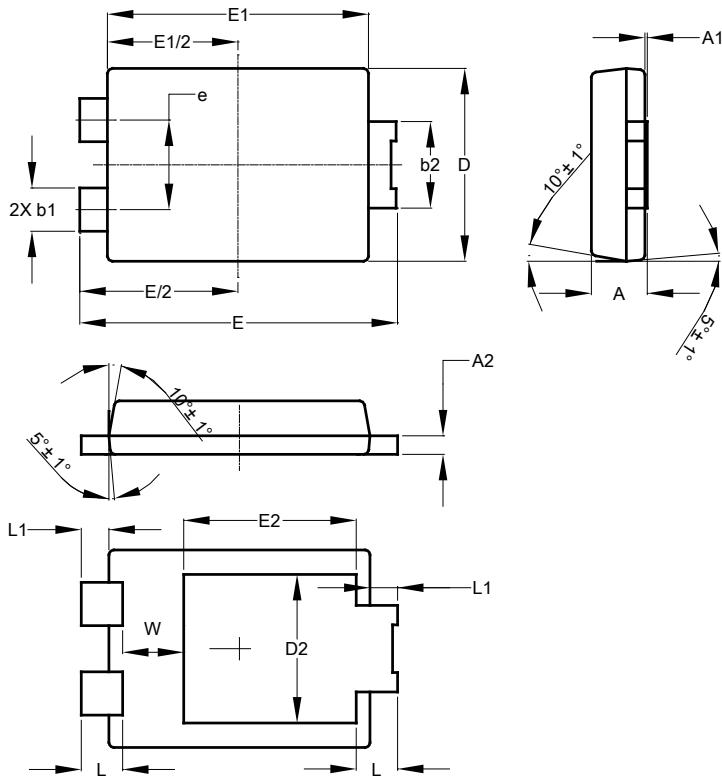


Figure 5. Typical Junction Capacitance

## Package Outline Dimensions

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

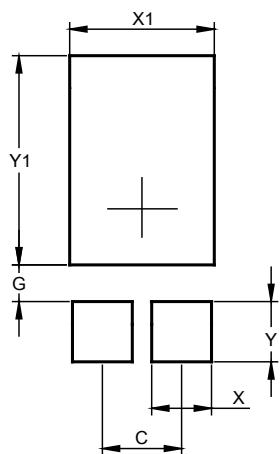


POWERDI <sup>®</sup> 5			
Dim	Min	Max	Typ
<b>A</b>	1.05	1.15	1.10
<b>A1</b>	0.00	0.05	--
<b>A2</b>	0.33	0.43	0.381
<b>b1</b>	0.80	0.99	0.89
<b>b2</b>	1.70	1.88	1.78
<b>D</b>	3.90	4.05	3.966
<b>D2</b>	--	--	3.054
<b>E</b>	6.40	6.60	6.504
<b>e</b>	--	--	1.84
<b>E1</b>	5.30	5.45	5.37
<b>E2</b>	--	--	3.549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

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)
<b>C</b>	1.840
<b>G</b>	0.852
<b>X</b>	1.390
<b>X1</b>	3.360
<b>Y</b>	1.400
<b>Y1</b>	4.860

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