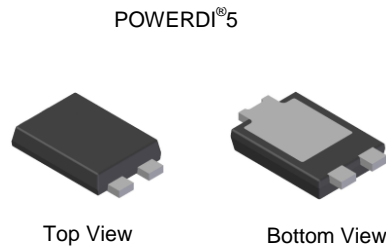


## Product Summary

$V_{RRM}$ (V)	$I_o$ (A)	$V_F$ (MAX) (V) @+25°C	$I_R$ (MAX) (mA) @+25°C
80	20	0.66	0.2

## Description and Applications

Packaged in the compact thermally efficient POWERDI<sup>®</sup>5 package, the SBRT20M80SP5 provides very low  $V_F$  and provides excellent reverse leakage stability at high temperatures. It is ideal for use as a rectification, freewheeling or polarity protection diode.

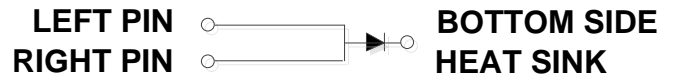


## Features and Benefits

- Ultra Low Forward Voltage Drop ( $V_F$ ) Helps – Minimizes Power Losses
- Reduced High Temperature Reverse Leakage; Increased Reliability Against Thermal Runaway Failure in High Temperature Operation
- Patented Trench Super Barrier Rectifier SBR<sup>®</sup> Technology
- 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: 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)



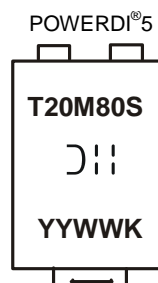
**Note: Pins Left & Right must be electrically connected at the printed circuit board.**

## Ordering Information (Note 4)

Part Number	Case	Packaging
SBRT20M80SP5-13	POWERDI <sup>®</sup> 5	5,000/Tape & Reel
SBRT20M80SP5-13D(Note 5)	POWERDI <sup>®</sup> 5	5,000/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 13-inch reel & 12mm tape, part number suffix "13D".

## Marking Information



T20M80S = Product Type Marking Code  
 YYWW = Date Code Marking  
 YY = Last Two Digits of Year (ex: 16 = 2016)  
 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 DC Blocking Voltage	$V_{RRM}$	80	V
Average Rectified Output Current	$I_O$	20	A
Non-Repetitive Peak Forward Surge Current 8.3ms	$I_{FSM}$	350	A

**Thermal Characteristics**

Characteristic	Symbol	Value	Unit
Typical Thermal Resistance Junction to Ambient (Note 6)	$R_{\theta JA}$	41	$^\circ\text{C/W}$
Typical Thermal Resistance Junction to Lead (Note 6)	$R_{\theta JL}$	9	$^\circ\text{C/W}$
Operating and Storage Temperature Range	$T_J, T_{STG}$	-55 to +150	$^\circ\text{C}$

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Forward Voltage Drop	$V_F$	—	—	0.53	V	$I_F = 5\text{A}, T_J = +25^\circ\text{C}$
		—	—	0.60		$I_F = 10\text{A}, T_J = +25^\circ\text{C}$
		—	—	0.66		$I_F = 20\text{A}, T_J = +25^\circ\text{C}$
		—	—	0.62		$I_F = 20\text{A}, T_J = +125^\circ\text{C}$
Leakage Current (Note 7)	$I_R$	—	—	200	$\mu\text{A}$	$V_R = 80\text{V}, T_J = +25^\circ\text{C}$
		—	—	60	$\text{mA}$	$V_R = 80\text{V}, T_J = +125^\circ\text{C}$

Notes: 6. Device mounted on FR-4 substrate, single-sided, PC boards, with 1 inch square pad size.  
7. Short duration pulse test used to minimize self-heating effect.

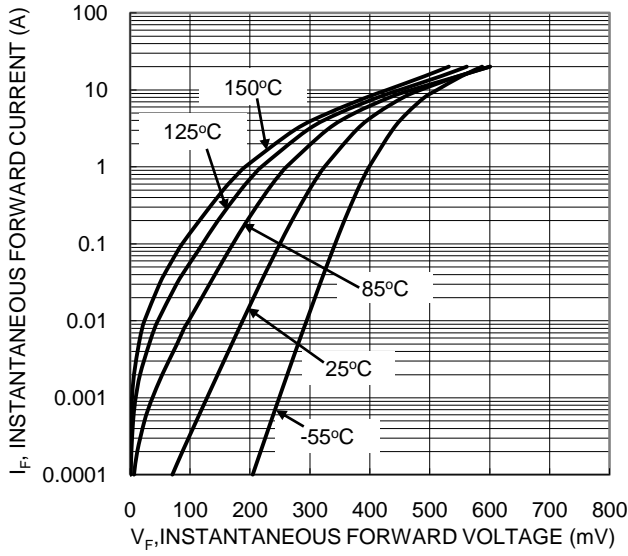


Figure 1. Typical Forward Characteristics

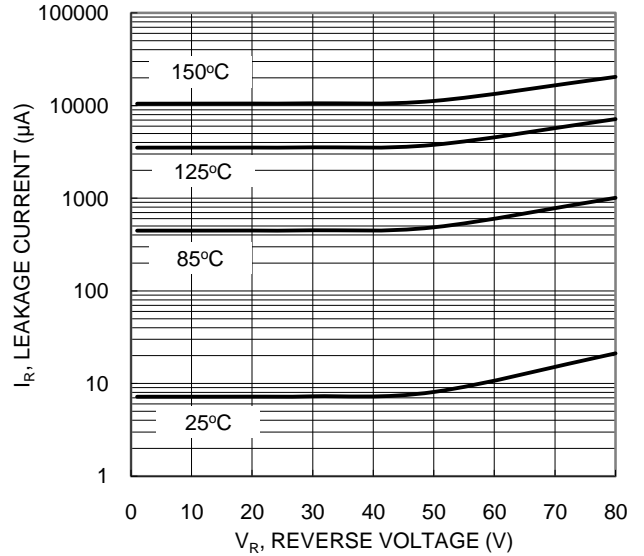


Figure 2. Typical Reverse Characteristics

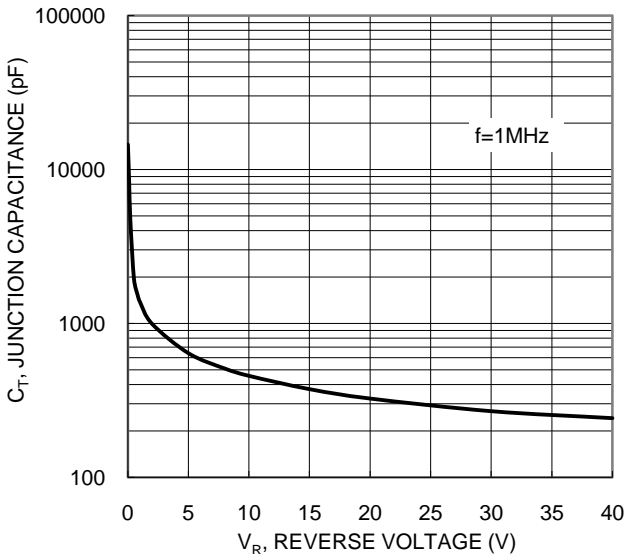


Figure 3. Typical Junction Capacitance

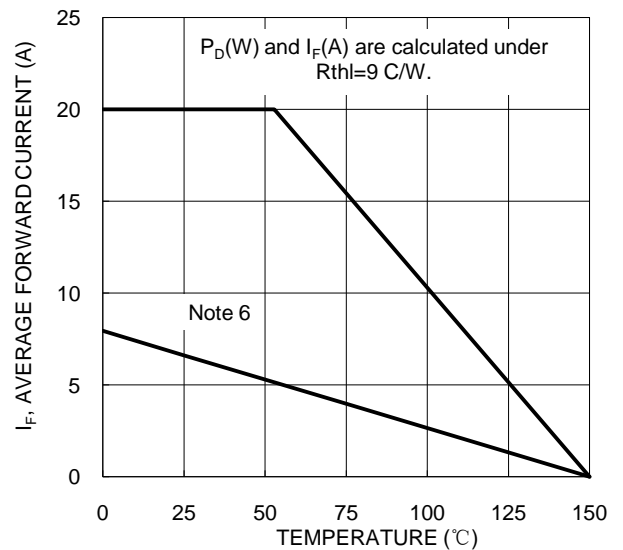


Figure 4. Forward Current Derating

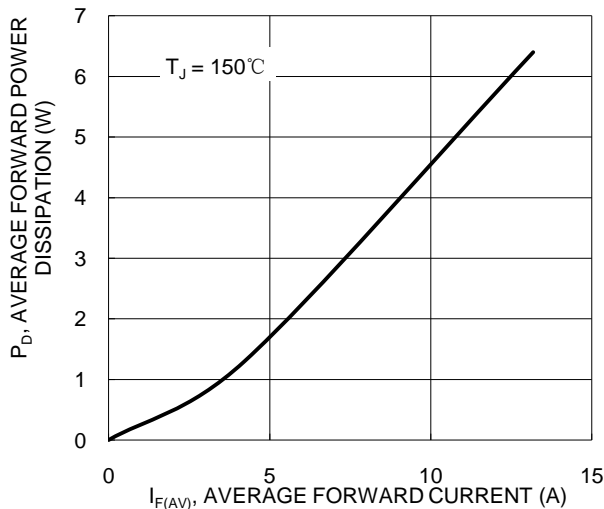
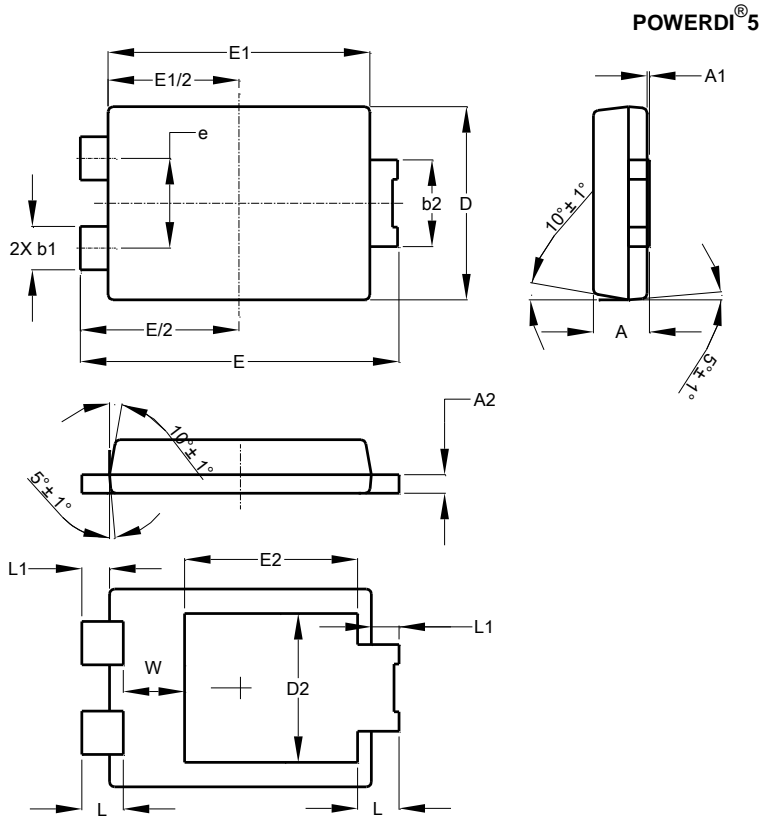


Figure 5. Forward Power Dissipation

**Package Outline Dimensions**

Please see AP02001 at [http://www.diodes.com/\\_files/datasheets/ap02001.pdf](http://www.diodes.com/_files/datasheets/ap02001.pdf) for the latest version.



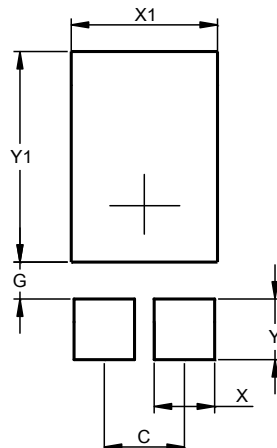
POWERDI <sup>®</sup> 5			
Dim	Min	Max	Typ
A	1.05	1.15	1.10
A1	0.00	0.05	--
A2	0.33	0.43	0.381
b1	0.80	0.99	0.89
b2	1.70	1.88	1.78
D	3.90	4.05	3.966
D2	--	--	3.054
E	6.40	6.60	6.504
e	--	--	1.84
E1	5.30	5.45	5.37
E2	--	--	3.549
L	0.75	0.95	0.85
L1	0.50	0.65	0.57
W	1.10	1.41	1.255

**All Dimensions in mm**

**Suggested Pad Layout**

Please see AP02001 at [http://www.diodes.com/\\_files/datasheets/ap02001.pdf](http://www.diodes.com/_files/datasheets/ap02001.pdf) for the latest version.

**POWERDI<sup>®</sup>5**



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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**Телефон:** +7 812 627 14 35

**Электронная почта:** [sales@st-electron.ru](mailto:sales@st-electron.ru)

**Адрес:** 198099, Санкт-Петербург,  
Промышленная ул, дом № 19, литера Н,  
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