

## Product Summary

$V_{RRM}$ (V)	$I_o$ (A)	$V_{F(MAX)}$ (V) @+25°C	$I_{R(MAX)}$ (mA) @+25°C
60	20	0.57	0.18

## Features and Benefits

- Low forward voltage drop ( $V_F$ ) helps – minimizes power losses
- Excellent 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)**
- **Qualified to AEC-Q101 Standards for High Reliability**

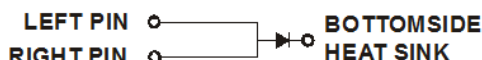
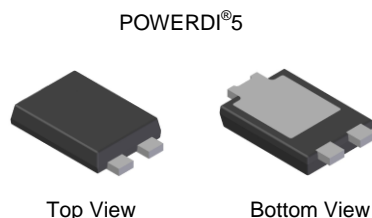
## Description and Applications

Packaged in the compact thermally efficient POWERDI<sup>®</sup>5 package, the TrenchSBR SBRT20M60SP5 provides low forward voltage drop ( $V_F$ ) and provides excellent low reverse leakage stability at high temperatures. 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

## 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)



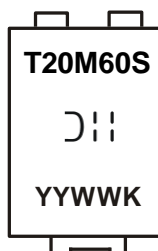
**Note: Pins Left & Right must be electrically connected at the printed circuit board.**

## Ordering Information (Note 4)

Part Number	Case	Packaging
SBRT20M60SP5-13	POWERDI <sup>®</sup> 5	5,000/Tape & Reel
SBRT20M60SP5-13D (Note 5)	POWERDI <sup>®</sup> 5	5,000/Tape & Reel
SBRT20M60SP5-7	POWERDI <sup>®</sup> 5	1,500/Tape & Reel
SBRT20M60SP5-7D (Note 5)	POWERDI <sup>®</sup> 5	1,500/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"; 1.5K quantity on 7inch reel also, part number suffix "7". Diodes also provides 12mm tape with 7-inch reel, part number suffix "7D".

## Marking Information



T20M60S = Product Type Marking Code  
YYWW = Date Code Marking  
YY = Last Two Digits of Year (ex: 14 = 2014)  
K = Factory Designator

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

Characteristic	Symbol	Value	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	$V_{RRM}$	60	V
Average Rectified Output Current	$I_o$	20	A
Non-Repetitive Peak Forward Surge Current 8.3mS	$I_{FSM}$	320	A

**Thermal Characteristics**

Characteristic	Symbol	Value	Unit
Typical Thermal Resistance Junction to Ambient (Note 6)	$R_{\theta JA}$	10	$^\circ\text{C/W}$
Typical Thermal Resistance Junction to Case (Note 6)	$R_{\theta JC}$	2	$^\circ\text{C/W}$
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	$V_F$	—	0.43	—	V	$I_F = 10\text{A}, T_A = +25^\circ\text{C}$
		—	0.52	0.57		$I_F = 20\text{A}, T_A = +25^\circ\text{C}$
		—	0.38	0.43		$I_F = 10\text{A}, T_A = +125^\circ\text{C}$
Leakage Current (Note 7)	$I_R$	—	0.04	0.18	mA	$V_R = 60\text{V}, T_A = +25^\circ\text{C}$
		—	—	45		$V_R = 60\text{V}, T_A = +125^\circ\text{C}$

Notes: 6. Device mounted on 2 oz. PCB with heatsink 50mm\*50mm\*23mm.  
7. Short duration pulse test used to minimize self-heating effect.

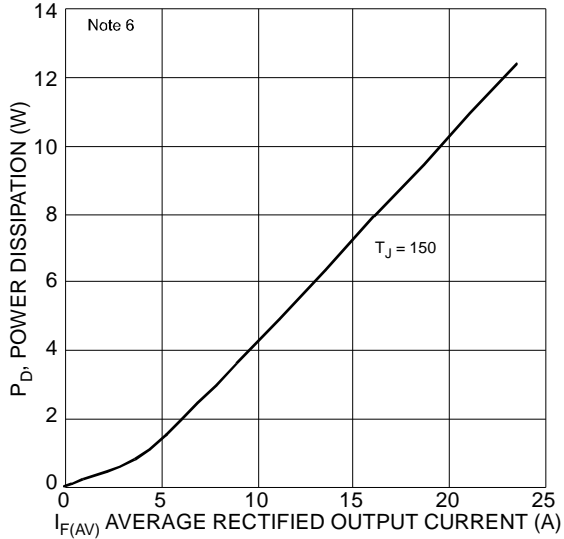


Figure 1 Forward Power Dissipation

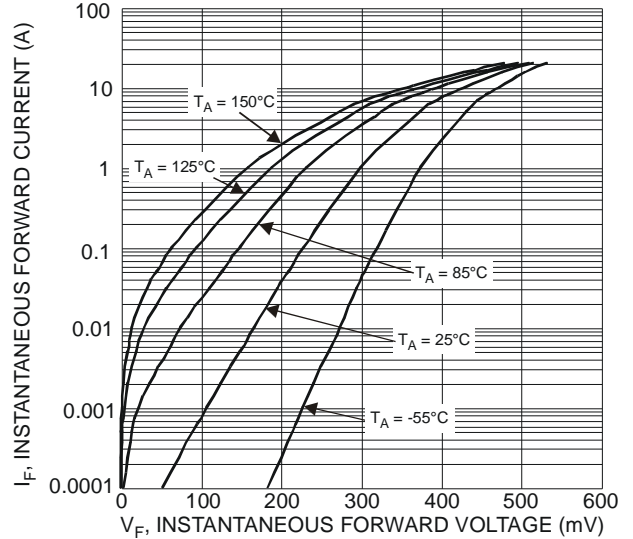


Figure 2 Typical Forward Characteristics

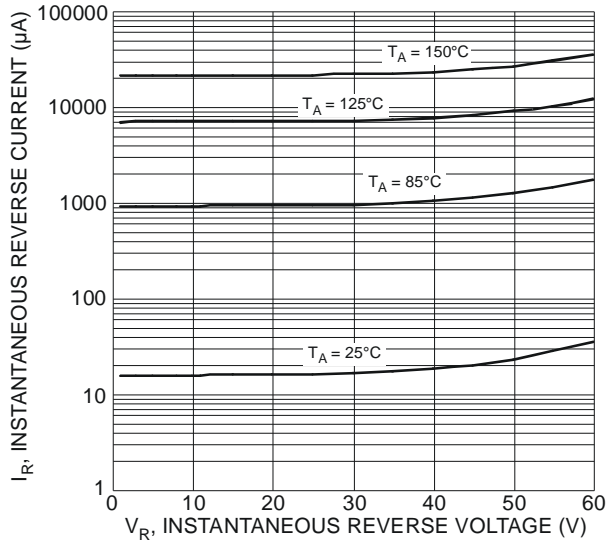


Figure 3 Typical Reverse Characteristics

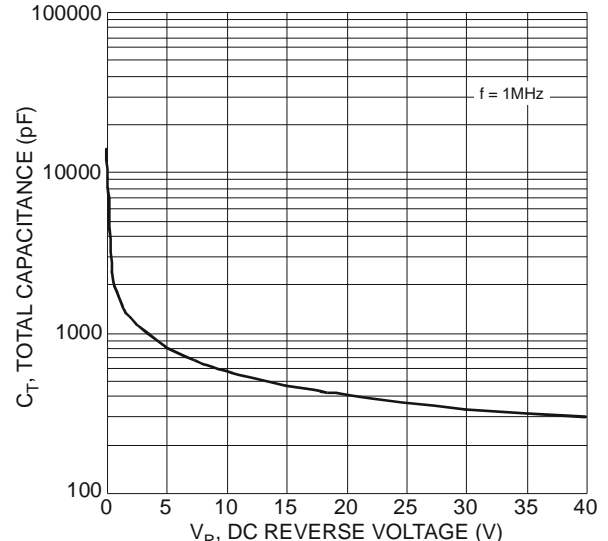


Figure 4 Total Capacitance vs. Reverse Voltage

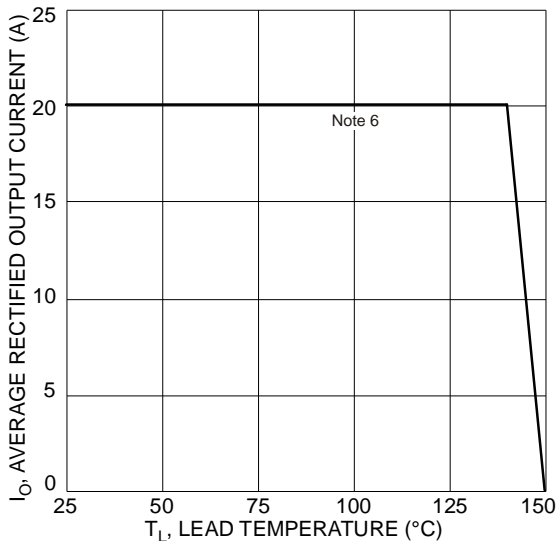
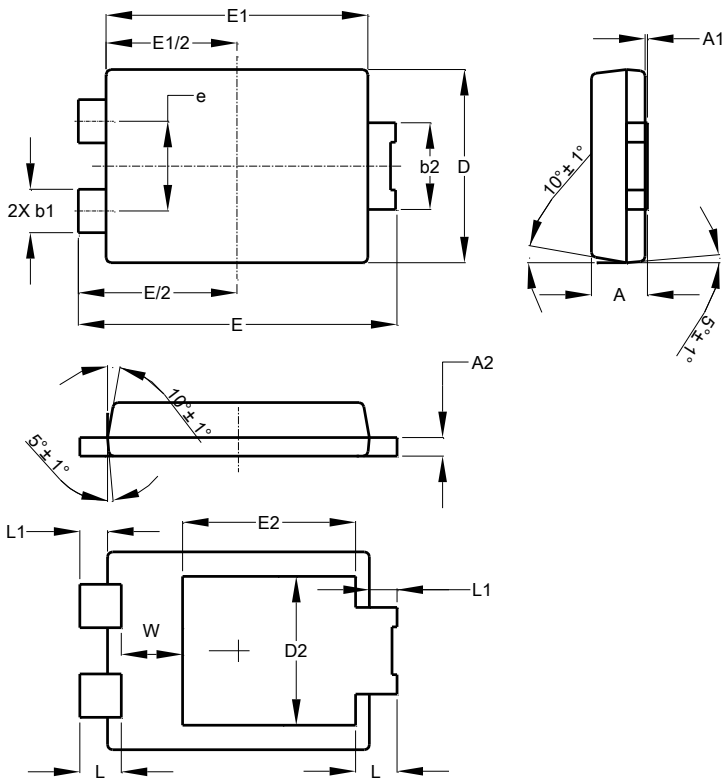


Figure 5 DC Forward Current Derating Curve

## Package Outline Dimensions

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

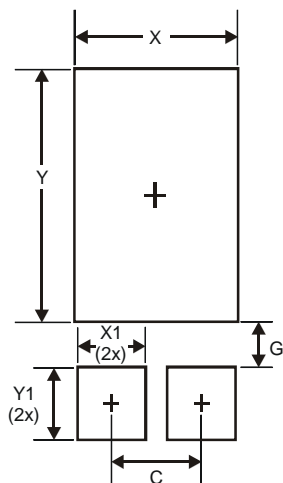


POWERDI <sup>®</sup> 5			
Dim	Min	Max	Typ
A	1.05	1.15	1.10
A2	0.33	0.43	0.381
b1	0.80	0.99	0.89
b2	1.70	1.88	1.78
D	3.90	4.05	3.966
D2	-	-	3.054
E	6.40	6.60	6.504
e	-	-	1.84
E1	5.30	5.45	5.37
E2	-	-	3.549
L	0.75	0.95	0.85
L1	0.50	0.65	0.57
W	1.10	1.41	1.255

All Dimensions in mm

## Suggested Pad Layout

Please see AP02001 at <http://www.diodes.com/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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