

## Product Summary

| $V_{RRM}$ (V) | $I_o$ (A) | $V_F(MAX)$ (V)<br>@ +25°C | $I_R(MAX)$ (mA)<br>@ +25°C |
|---------------|-----------|---------------------------|----------------------------|
| 80            | 20        | 0.61                      | 0.16                       |

## Description and Applications

Packaged in the compact thermally efficient POWERDI5060-8 package, the SBRT20M80SLP provides very low  $V_F$  and excellent reverse leakage stability at high temperatures. It is ideal for use as a rectifier, freewheel diode or blocking diode in:

- DC-DC Converters
- AC-DC Adaptors

## Features and Benefits

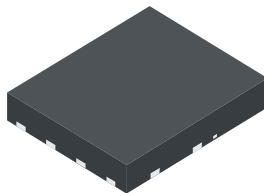
- Reduced ultra-low forward voltage drop ( $V_F$ ); Better efficiency and cooler operation.
- Reduced high temperature reverse leakage; Increased reliability against thermal runaway failure in high temperature operation.
- Less than 1.1mm package profile – ideal for thin applications.
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free “Green” Device (Note 3)**

## Mechanical Data

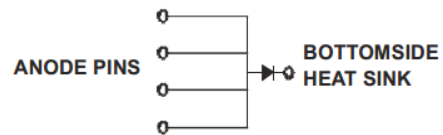
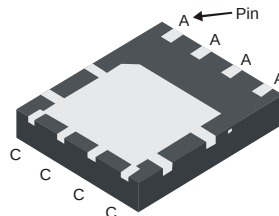
- Case: POWERDI5060-8
- Case Material: Molded Plastic, “Green” Molding Compound; UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish - Matte Tin Annealed over Copper Leadframe; Solderable per MIL-STD-202, Method 208 Ⓔ
- Polarity: See Below
- Weight: 0.097 grams (Approximate)

POWERDI5060-8

Top View



Bottom View



**Note:** All four anode pins must be electrically connected at the printed circuit board.

## Ordering Information (Note 4)

| Part Number     | Case          | Packaging         |
|-----------------|---------------|-------------------|
| SBRT20M80SLP-13 | POWERDI5060-8 | 2,500/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>.

## Marking Information

POWERDI5060-8



SBRT20M80 = Product Type Marking Code  
YYWW = Date Code Marking  
YY = Last Two Digits of Year (ex: 15 = 2015)  
WW = Week (01-53)

## 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                                                                     | V <sub>RRM</sub> | 80    | V    |
| Working Peak Reverse Voltage                                                                        | V <sub>RWM</sub> |       |      |
| DC Blocking Voltage                                                                                 | V <sub>RM</sub>  |       |      |
| Average Rectified Output Current                                                                    | I <sub>O</sub>   | 20    | A    |
| Non-Repetitive Peak Forward Surge Current 8.3ms<br>Single Half Sine-Wave Superimposed on Rated Load | I <sub>FSM</sub> | 210   | A    |

## Thermal Characteristics

| Characteristic                                          | Symbol                            | Value       | Unit |
|---------------------------------------------------------|-----------------------------------|-------------|------|
| Typical Thermal Resistance Junction to Ambient (Note 5) | R <sub>θJA</sub>                  | 12          | °C/W |
| Typical Thermal Resistance Junction to Case (Note 5)    | R <sub>θJC</sub>                  | 1           | °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 (Note 6) | V <sub>F</sub> | —   | —    | 0.52 | V    | I <sub>F</sub> = 10A, T <sub>J</sub> = +25°C  |
|                               |                | —   | 0.55 | 0.61 |      | I <sub>F</sub> = 20A, T <sub>J</sub> = +25°C  |
|                               |                | —   | —    | 0.59 |      | I <sub>F</sub> = 20A, T <sub>J</sub> = +125°C |
| Leakage Current (Note 6)      | I <sub>R</sub> | —   | 60   | 160  | μA   | V <sub>R</sub> = 80V, T <sub>J</sub> = +25°C  |
|                               |                | —   | —    | 45   | mA   | V <sub>R</sub> = 80V, T <sub>J</sub> = +125°C |

Notes: 5. Test with Aluminum substrate 2oz, 2-inch sq. copper pad + additional Aluminum heatsink 50mm\*50mm\*23mm.  
6. Short duration pulse test used to minimize self-heating effect.

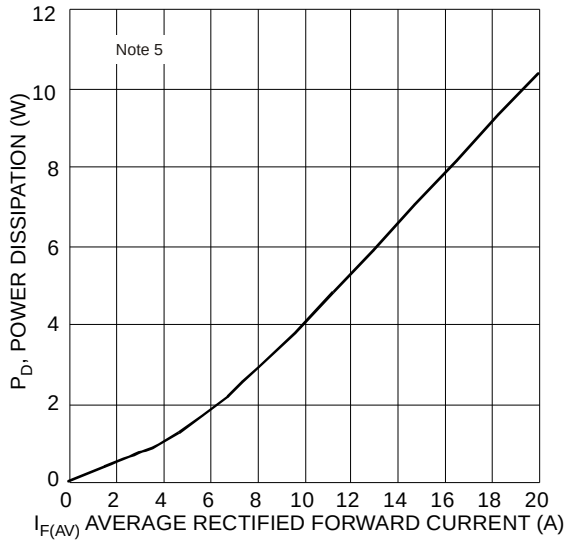


Figure 1 Forward Power Dissipation

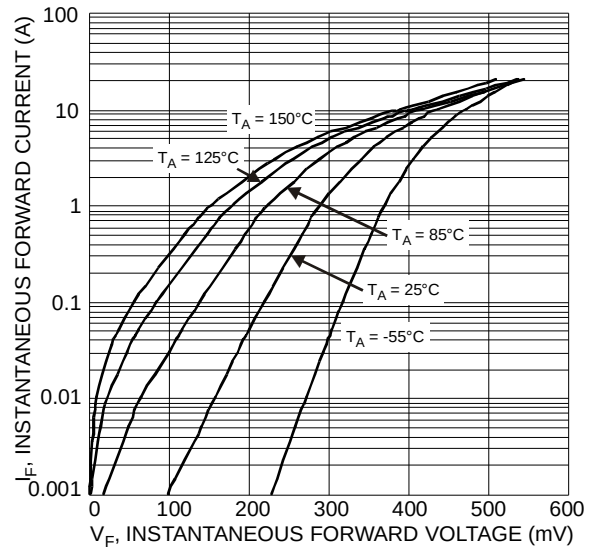


Figure 2 Typical Forward Characteristics

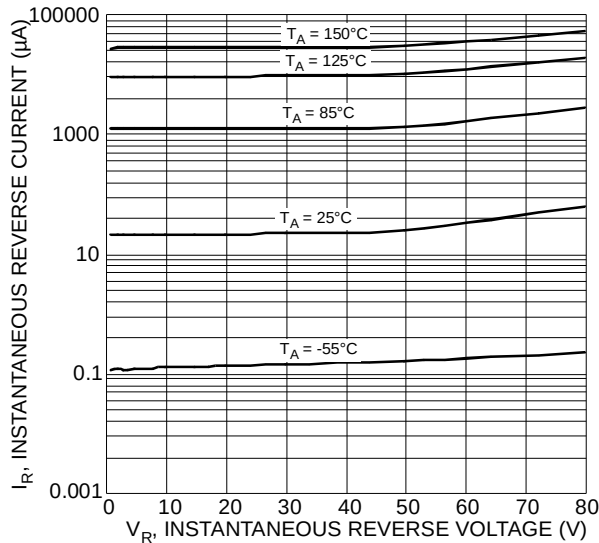


Figure 3 Typical Reverse Characteristics

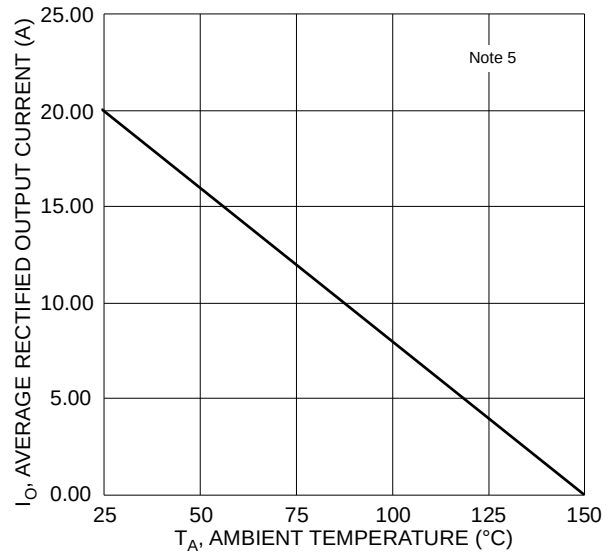


Figure 4 DC Forward Current Derating Curve

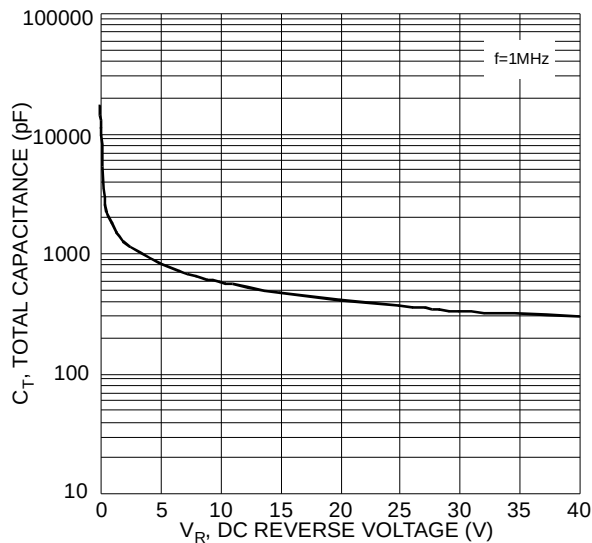
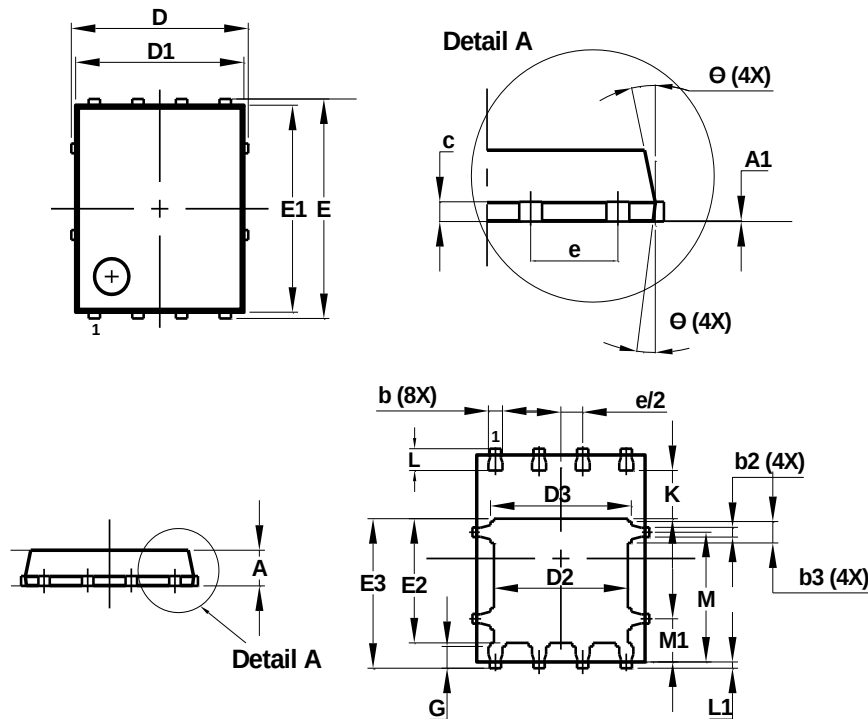


Figure 5 Total Capacitance vs. Reverse Voltage

## Package Outline Dimensions

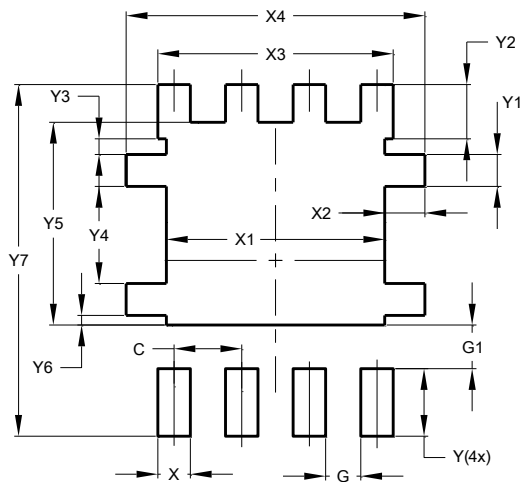
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for the latest version.



| POWERDI5060-8        |          |       |       |
|----------------------|----------|-------|-------|
| Dim                  | Min      | Max   | Typ   |
| A                    | 0.90     | 1.10  | 1.00  |
| A1                   | 0.00     | 0.05  | —     |
| b                    | 0.33     | 0.51  | 0.41  |
| b2                   | 0.200    | 0.350 | 0.273 |
| b3                   | 0.40     | 0.80  | 0.60  |
| c                    | 0.230    | 0.330 | 0.277 |
| D                    | 5.15 BSC |       |       |
| D1                   | 4.70     | 5.10  | 4.90  |
| D2                   | 3.70     | 4.10  | 3.90  |
| D3                   | 3.90     | 4.30  | 4.10  |
| E                    | 6.15 BSC |       |       |
| E1                   | 5.60     | 6.00  | 5.80  |
| E2                   | 3.28     | 3.68  | 3.48  |
| E3                   | 3.99     | 4.39  | 4.19  |
| e                    | 1.27 BSC |       |       |
| G                    | 0.51     | 0.71  | 0.61  |
| K                    | 0.51     | —     | —     |
| L                    | 0.51     | 0.71  | 0.61  |
| L1                   | 0.100    | 0.20  | 0.175 |
| M                    | 3.235    | 4.035 | 3.635 |
| M1                   | 1.00     | 1.40  | 1.21  |
| Θ                    | 10°      | 12°   | 11°   |
| Θ1                   | 6°       | 8°    | 7°    |
| 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          | 1.270         |
| G          | 0.660         |
| G1         | 0.820         |
| X          | 0.610         |
| X1         | 4.100         |
| X2         | 0.755         |
| X3         | 4.420         |
| X4         | 5.610         |
| Y          | 1.270         |
| Y1         | 0.600         |
| Y2         | 1.020         |
| Y3         | 0.295         |
| Y4         | 1.825         |
| Y5         | 3.810         |
| Y6         | 0.180         |
| Y7         | 6.610         |

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