



**THE DATASHEET OF
SBR8E20P5-13D**



Product Summary (@T_A = +25°C)

| V _{RRM} (V) | I _O (A) | V _F Max (V) | I _R Max (mA) |
|----------------------|--------------------|------------------------|-------------------------|
| 20 | 8 | 0.45 | 0.5 |

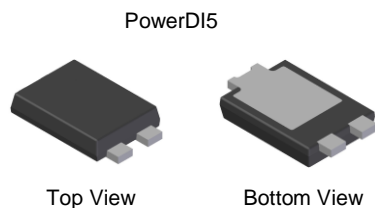
Features and Benefits

- Ultra-Low Forward Voltage Drop (V_F) Helps Minimize 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
- Patented SBR[®] (Super Barrier Rectifier) Technology
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**

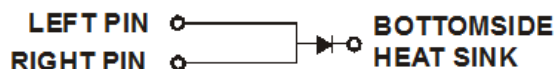
Description and Applications

Packaged in the compact thermally efficient PowerDI[®]5, the SBR8E20P5 provides ultra-low forward voltage drop (V_F) and 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)

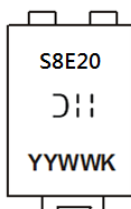


Note: Pins Left & Right must be electrically connected at the printed circuit board.

Ordering Information (Note 4)

| Part Number | Case | Packaging |
|------------------------|----------|-------------------|
| SBR8E20P5-13 | PowerDI5 | 5,000/Tape & Reel |
| SBR8E20P5-13D (Note 5) | PowerDI5 | 5,000/Tape & Reel |
| SBR8E20P5-7 | PowerDI5 | 1,500/Tape & Reel |
| SBR8E20P5-7D (Note 5) | PowerDI5 | 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 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. PowerDI5 available in 5K quantity on 13-inch reel & 12mm tape, part number suffix "13D"; 1.5K quantity on 7-inch reel, part number suffix "7". Diodes also provides 12mm tape with 7-inch reel, part number suffix "7D".

Marking Information


S8E20 = Product Type Marking Code
 YYWW = Date Code Marking
 YY = Last Two Digits of Year (ex: 16 = 2016)
 WW = Week (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 DC Blocking Voltage | V_{RRM} | 20 | V |
| Average Rectified Output Current | I_O | 8 | A |
| Non-Repetitive Peak Forward Surge Current 8.3ms | I_{FSM} | 180 | A |

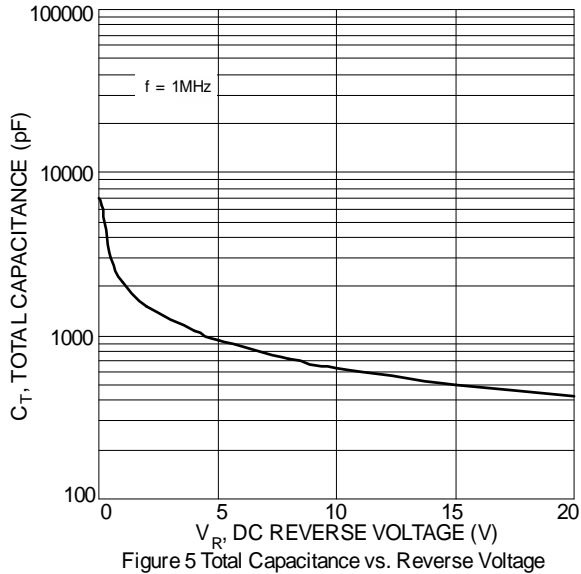
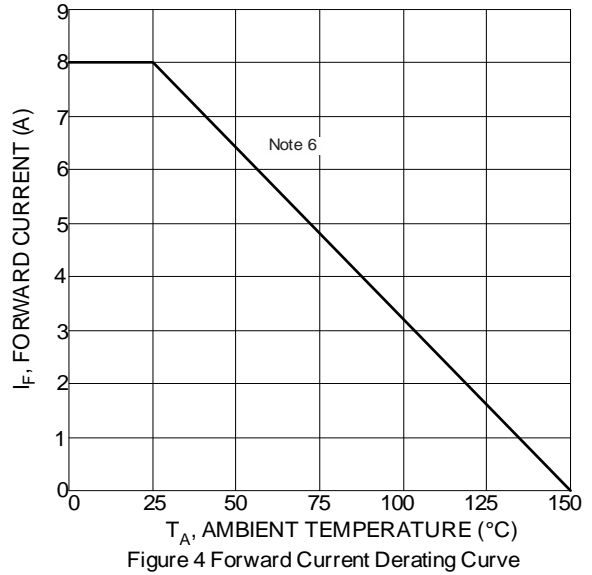
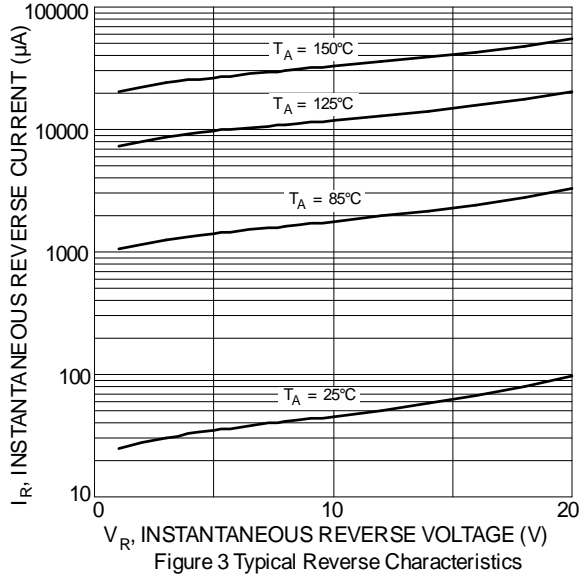
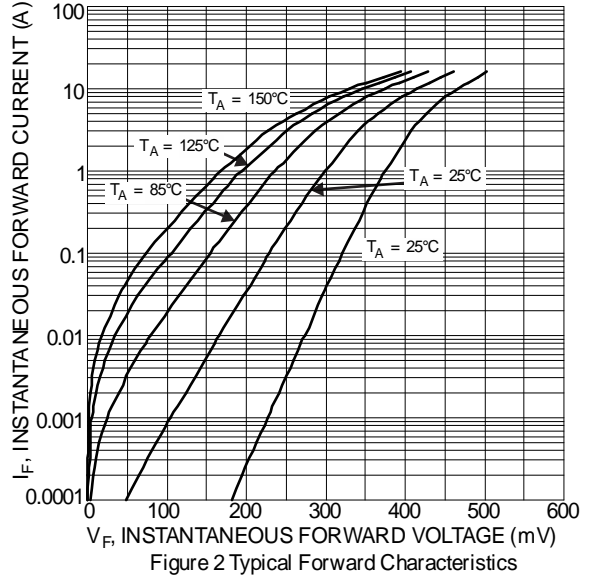
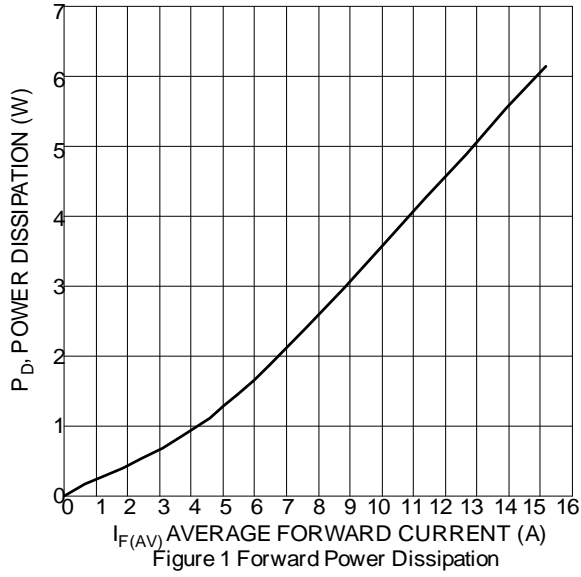
Thermal Characteristics

| Characteristic | Symbol | Value | Unit |
|---|-----------------|-------------|--------------------|
| Typical Thermal Resistance Junction to Ambient (Note 6) | $R_{\theta JA}$ | 20 | $^\circ\text{C/W}$ |
| Typical Thermal Resistance Junction to Case (Note 6) | $R_{\theta JC}$ | 3 | $^\circ\text{C/W}$ |
| 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.)

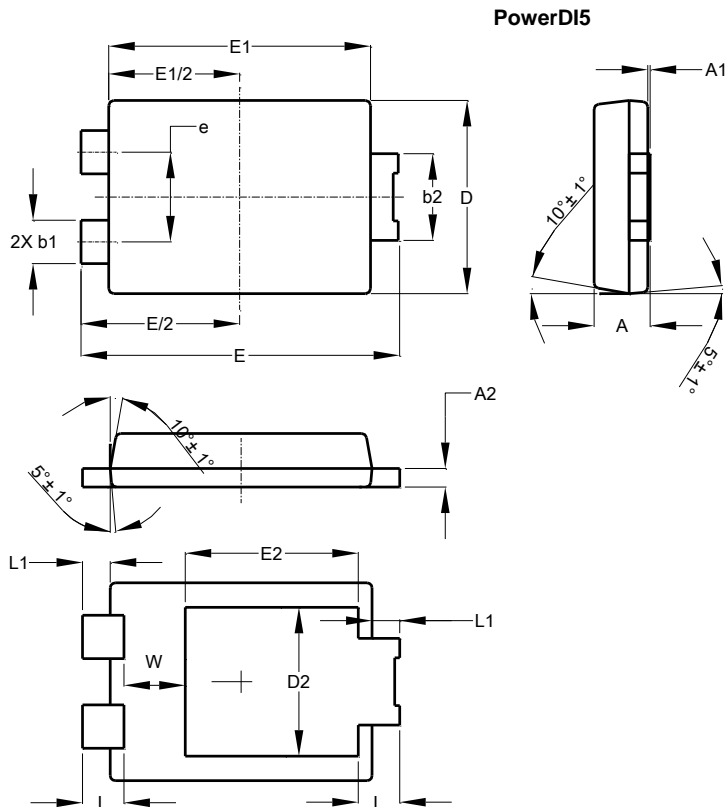
| Characteristic | Symbol | Min | Typ | Max | Unit | Test Condition |
|--------------------------|--------|-----|------|------|------|--|
| Forward Voltage Drop | V_F | — | 0.40 | 0.45 | V | $I_F = 8\text{A}, T_A = +25^\circ\text{C}$ |
| | | — | 0.32 | 0.37 | | $I_F = 8\text{A}, T_A = +125^\circ\text{C}$ |
| Leakage Current (Note 7) | I_R | — | — | 0.5 | mA | $V_R = 20\text{V}, T_A = +25^\circ\text{C}$ |
| | | — | — | 75 | | $V_R = 20\text{V}, T_A = +125^\circ\text{C}$ |

- Notes:
- 6. Device mounted on 2inch x 2inch Al board.
 - 7. Short duration pulse test used to minimize self-heating effect.



Package Outline Dimensions

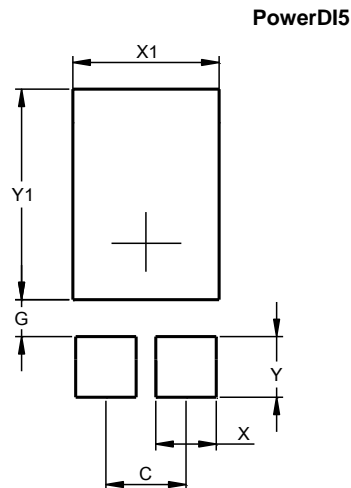
Please see <http://www.diodes.com/package-outlines.html> for the latest version.



| PowerDI5 | | | |
|----------------------|------|------|-------|
| 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 <http://www.diodes.com/package-outlines.html> 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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