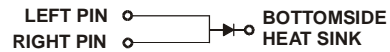
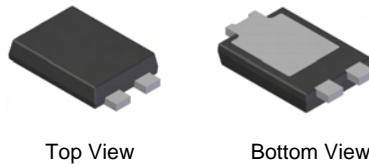


Features

- Designed as Bypass Diodes for Solar Panels
- Selectively Rated for 200°C Maximum Junction Temperature for High Thermal Reliability
- Patented Super Barrier Rectifier Technology
- High Forward Surge Capability
- Ultra Low Forward Voltage Drop
- Excellent High Temperature Stability
- **Lead Free Finish, RoHS Compliant (Note 1)**
- **“Green” Molding Compound (No Br, Sb)**

Mechanical Data

- Case: POWERDI^{®5}
- 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 ^{Ⓔ3}
- Weight: 0.093 grams (approximate)



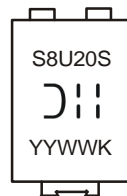
Note: Pins Left & Right must be electrically connected at the printed circuit board.

Ordering Information (Note 2)

| Part Number | Case | Packaging |
|---------------|-----------------------|------------------|
| SBR8U20SP5-13 | POWERDI ^{®5} | 5000/Tape & Reel |

Notes: 1. EU Directive 2002/95/EC (RoHS). All applicable RoHS exemptions applied, see *EU Directive 2002/95/EC Annex Notes*
 2. For packaging details, go to our website at <http://www.diodes.com>.

Marking Information



S8U20S = Product Type Marking Code
 JII = Manufacturers' Code Marking
 K = Factory Designator
 YYWW = Date Code Marking
 YY = Last Two Digits of Year (ex: 08 for 2008)
 WW = Week code (01 - 53)

Maximum Ratings @ $T_A = 25^\circ\text{C}$ 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_{RRM} | 20 | V |
| Working Peak Reverse Voltage | V_{RWM} | | |
| DC Blocking Voltage | V_{RM} | | |
| Average Rectified Output Current | I_O | 8 | A |
| Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load | I_{FSM} | 180 | A |

Thermal Characteristics

| Characteristic | Symbol | Value | Unit |
|---|-----------------|-------------------------|--------------------|
| Maximum Thermal Resistance | | | |
| Thermal Resistance Junction to Ambient (Note 3) | $R_{\theta JA}$ | 102 | $^\circ\text{C/W}$ |
| Thermal Resistance Junction to Ambient (Note 4) | $R_{\theta JA}$ | 60 | |
| Operating Temperature Range | T_J | $V_R \leq 80\% V_{RRM}$ | -65 to +150 |
| | | $V_R \leq 50\% V_{RRM}$ | ≤ 180 |
| | | DC Forward Mode | ≤ 200 |
| Storage Temperature Range | T_{STG} | -65 to +175 | $^\circ\text{C}$ |

Electrical Characteristics @ $T_A = 25^\circ\text{C}$ unless otherwise specified

| Characteristic | Symbol | Min | Typ | Max | Unit | Test Condition |
|--------------------------|--------|-----|--------------|--------------|------|---|
| Forward Voltage Drop | V_F | - | 0.41 0.33 | 0.51 0.43 | V | $I_F = 8\text{A}, T_J = 25^\circ\text{C}$ $I_F = 8\text{A}, T_J = 125^\circ\text{C}$ |
| Leakage Current (Note 5) | I_R | - | 0.08 0.2 | 0.2 0.5 | mA | $V_R = 4\text{V}, T_J = 25^\circ\text{C}$ $V_R = 20\text{V}, T_J = 25^\circ\text{C}$ |

- Notes:
- FR-4 PCB, 2oz. Copper, minimum recommended pad layout per <http://www.diodes.com>.
 - Polymide PCB, 2oz. Copper. Cathode pad dimensions 18.8mm x 14.4mm. Anode pad dimensions 5.6mm x 14.4mm.
 - Short duration pulse test used to minimize self-heating effect.

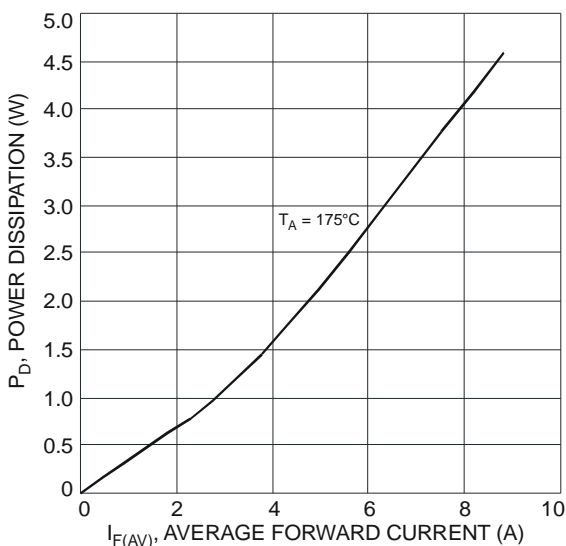


Fig. 1 Forward Power Dissipation

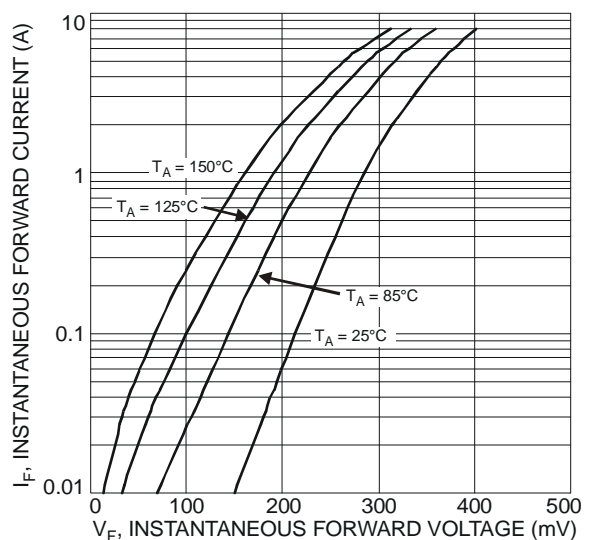


Fig. 2 Typical Forward Characteristics

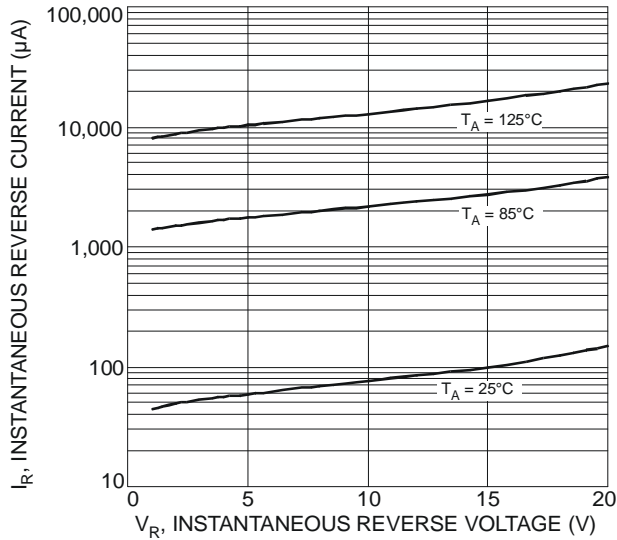


Fig. 3 Typical Reverse Characteristics

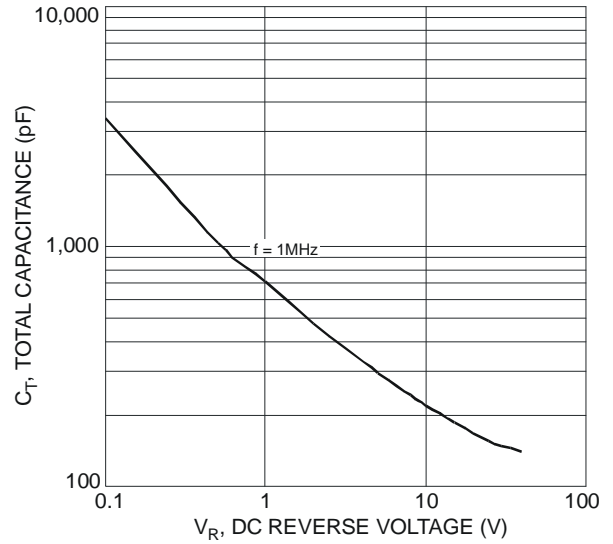


Fig. 4 Total Capacitance vs. Reverse Voltage

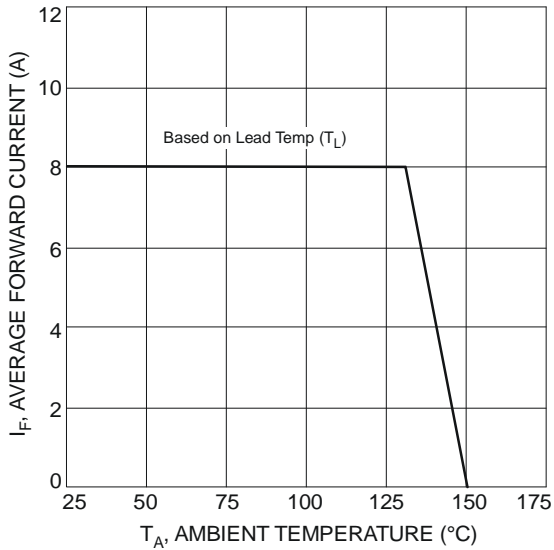
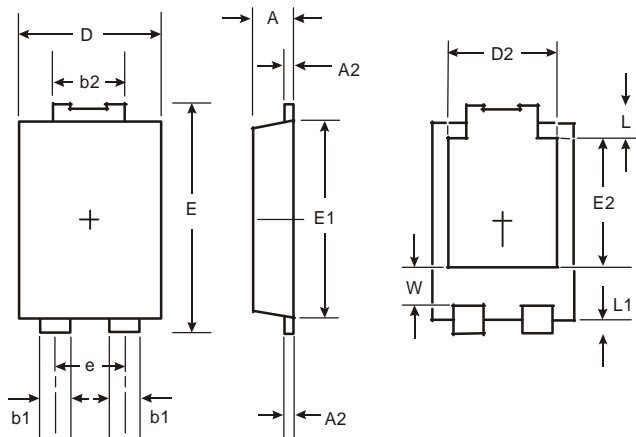


Fig. 5 Forward Current Derating Curve

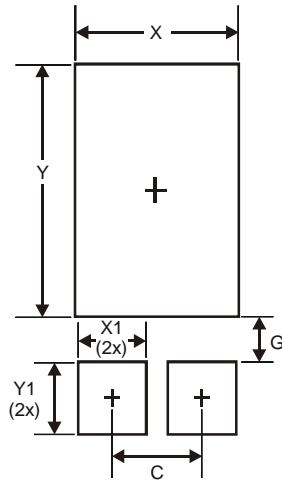
Package Outline Dimensions



| POWERDI [®] 5 | | |
|------------------------|-----------|------|
| Dim | Min | Max |
| A | 1.05 | 1.15 |
| A2 | 0.33 | 0.43 |
| b1 | 0.80 | 0.99 |
| b2 | 1.70 | 1.88 |
| D | 3.90 | 4.05 |
| D2 | 3.054 Typ | |
| E | 6.40 | 6.60 |
| e | 1.84 Typ | |
| E1 | 5.30 | 5.45 |
| E2 | 3.549 Typ | |
| L | 0.75 | 0.95 |
| L1 | 0.50 | 0.65 |
| W | 1.10 | 1.41 |

All Dimensions in mm

Suggested Pad Layout



| 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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