



**THE DATASHEET OF
SBR8A45SP5-13**

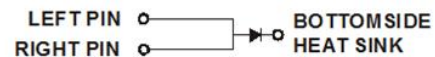
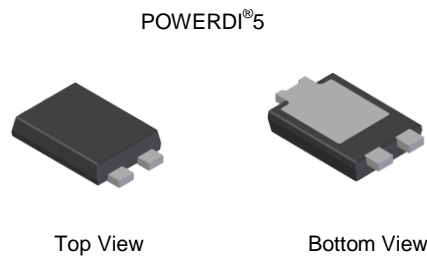


Features

- Designed as Bypass Diodes for Solar Panels
- Selectively Rated for +200°C Maximum Junction Temperature for High Thermal Reliability
- Patented Super Barrier Rectifier Technology
- Low Forward Voltage Drop
- Excellent High Temperature Stability
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**

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.

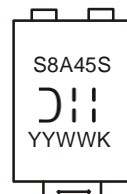
Ordering Information (Note 4)

| Part Number | Case | Packaging |
|---------------|------------------------|-------------------|
| SBR8A45SP5-13 | POWERDI [®] 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 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

POWERDI[®]5



S8A45S = Product Type Marking Code
 D||| = Manufacturers' Code Marking
 K = Factory Designator
 YYWW = Date Code Marking
 YY = Last Two Digits of Year (ex: 15 for 2015)
 WW = Week Code (01 ~ 53)

Maximum Ratings (@T_A = +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 _{RRM} | 45 | 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 |
|---|------------------|---------------------------------------|-------------|
| Typical Thermal Resistance Junction to Lead | R _{θJL} | 3 | °C/W |
| Typical Thermal Resistance Junction to Case (Note 5) | R _{θJC} | 8 | °C/W |
| Typical Thermal Resistance Junction to Ambient (Note 5) | R _{θJA} | 102 | °C/W |
| Typical Thermal Resistance Junction to Ambient (Note 6) | R _{θJA} | 60 | °C/W |
| Operating Temperature Range | T _J | V _R ≤ 80% V _{RRM} | -65 to +150 |
| | | V _R ≤ 50% V _{RRM} | ≤180 |
| | | DC Forward Mode | ≤200 |
| Storage Temperature Range | T _{STG} | -65 to +175 | °C |

Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

| Characteristic | Symbol | Min | Typ | Max | Unit | Test Condition |
|--------------------------|----------------|-----|------|------|------|---|
| Forward Voltage Drop | V _F | - | - | 0.60 | V | I _F = 8A, T _J = +25°C |
| | | - | 0.52 | 0.57 | | I _F = 8A, T _J = +125°C |
| Leakage Current (Note 7) | I _R | - | 0.03 | 0.30 | mA | V _R = 45V, T _J = +25°C |
| | | - | 10 | 75 | | V _R = 45V, T _J = +125°C |

- Notes:
5. FR-4 PCB, 2oz. Copper, minimum recommended pad layout per <http://www.diodes.com>.
 6. Polyimide PCB, 2oz. Copper, minimum recommended pad layout per <http://www.diodes.com>.
 7. Short duration pulse test used to minimize self-heating effect.

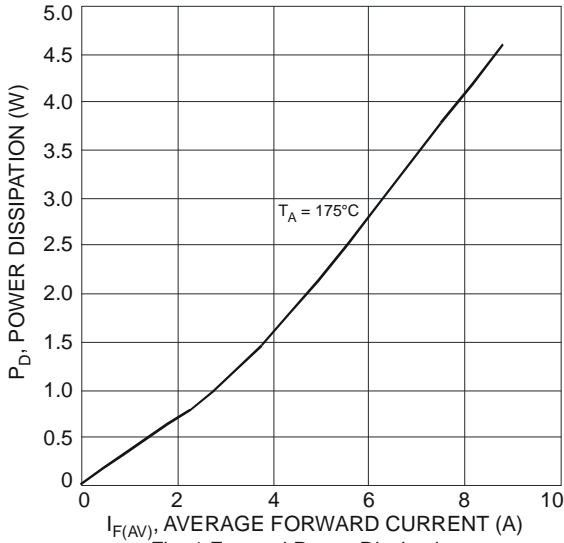


Fig. 1 Forward Power Dissipation

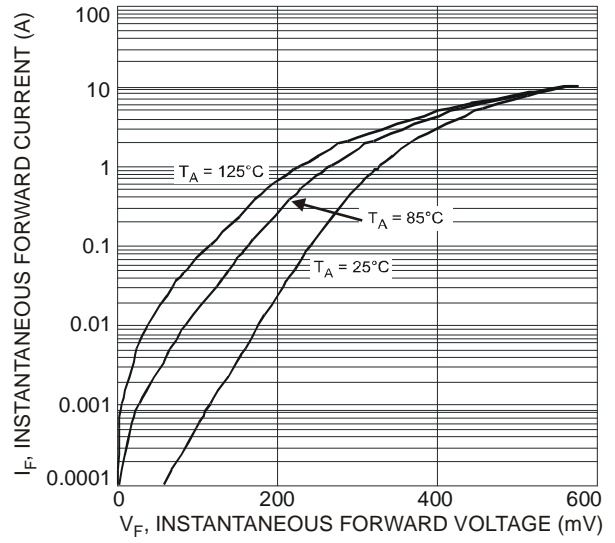


Fig. 2 Typical Forward Characteristics

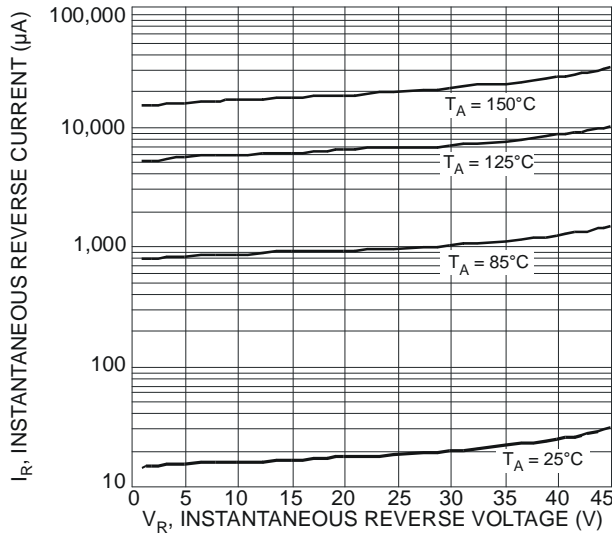


Fig. 3 Typical Reverse Characteristics

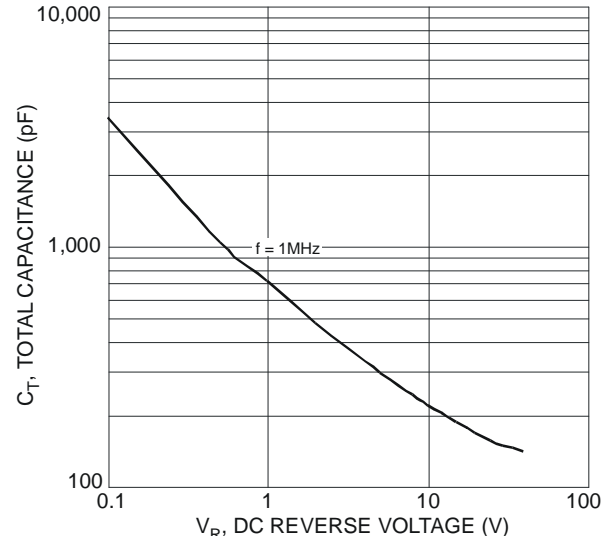


Fig. 4 Total Capacitance vs. Reverse Voltage

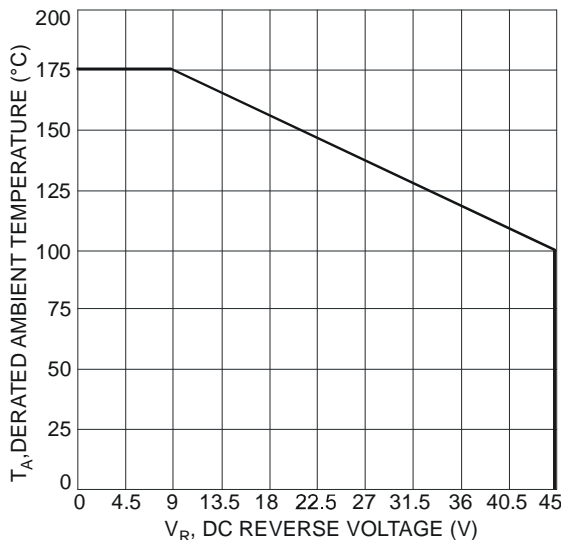


Fig. 5 Operating Temperature Derating

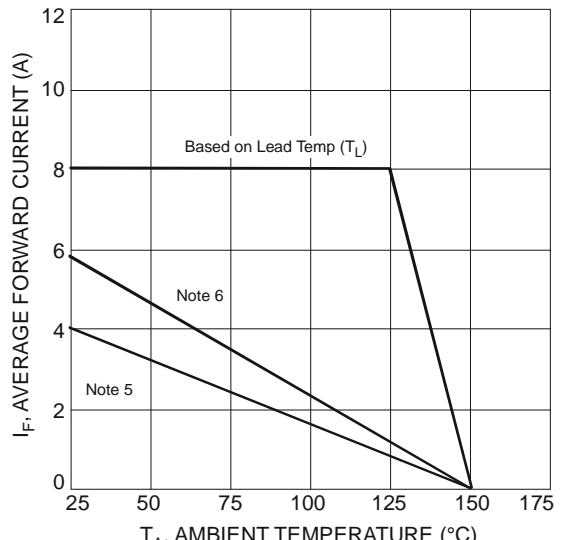
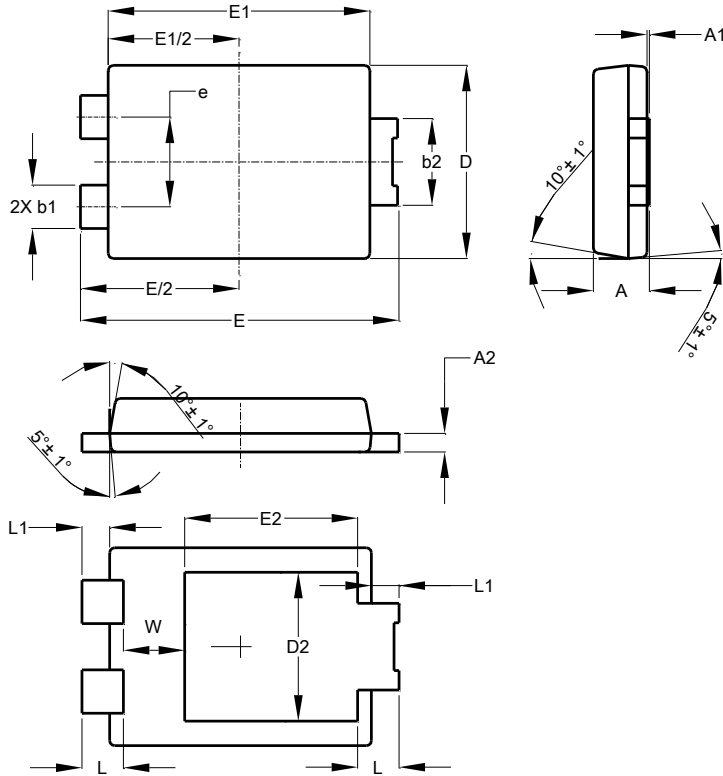


Fig. 6 Forward Current Derating Curve

Package Outline Dimensions

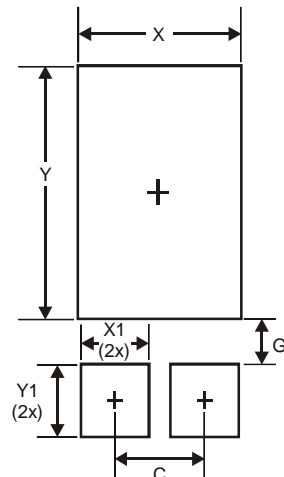
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for the latest version.



| POWERDI [®] 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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