

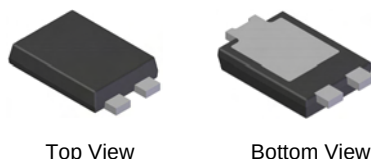
## Features

- 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)**
- **Qualified to AEC-Q101 Standards for High Reliability**

## 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
- Terminals: Finish – Matte Tin annealed over Copper leadframe. Solderable per MIL-STD-202, Method 208 
- Weight: 0.093 grams (approximate)

POWERDI5



LEFT PIN  RIGHT PIN   BOTTOMSIDE HEAT SINK

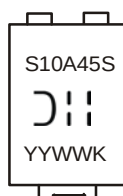
Note: Pins Left & Right must be electrically connected at the printed circuit board.

## Ordering Information (Note 4)

| Part Number     | Case     | Packaging        |
|-----------------|----------|------------------|
| SBR10A45SP5-13  | POWERDI5 | 5000/Tape & Reel |
| SBR10A45SP5-7   | POWERDI5 | 1500/Tape & Reel |
| SBR10A45SP5Q-13 | POWERDI5 | 5000/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> 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>.

## Marking Information



S10A45S = Product Type Marking Code  
 = 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<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> | 45    | V    |
| Working Peak Reverse Voltage                     | V <sub>RWM</sub> |       |      |
| DC Blocking Voltage                              | V <sub>RM</sub>  |       |      |
| Average Rectified Output Current                 | I <sub>O</sub>   | 10    | A    |
| Non-Repetitive Peak Forward Surge Current 8.3ms  | I <sub>FSM</sub> | 180   | A    |
| Single Half Sine-Wave Superimposed on Rated Load |                  |       |      |

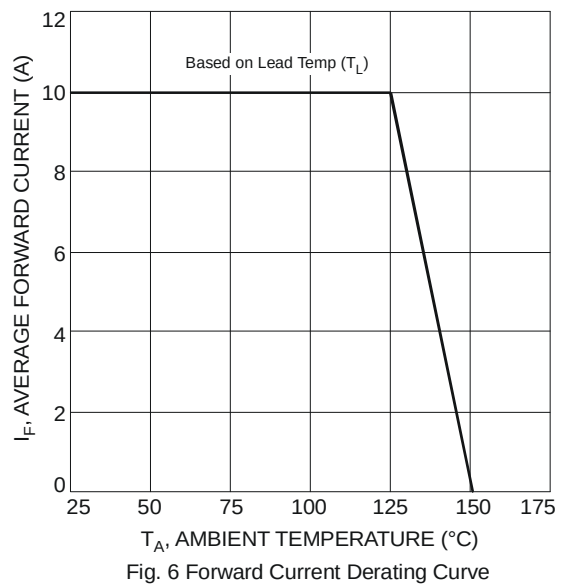
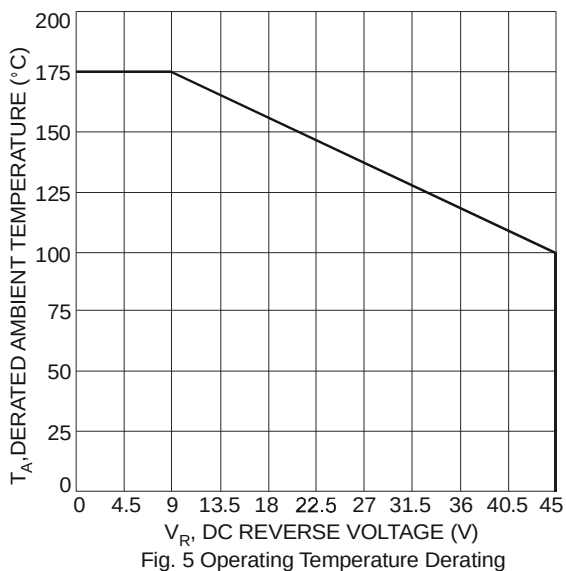
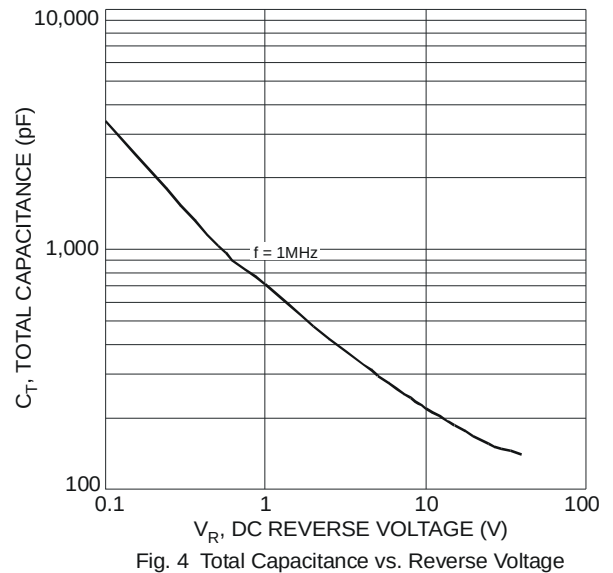
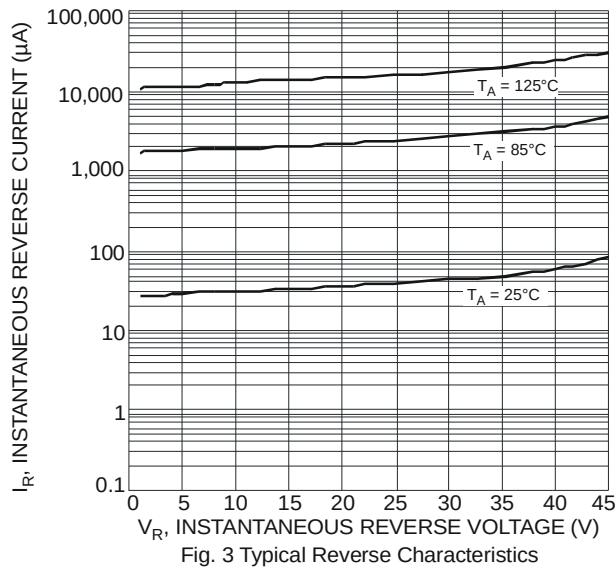
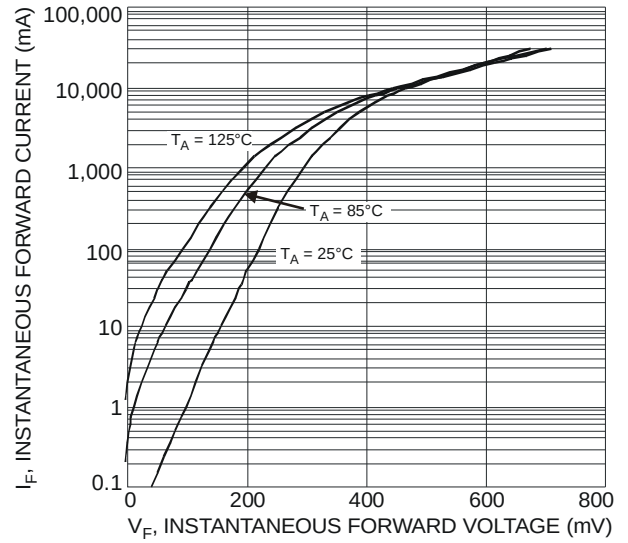
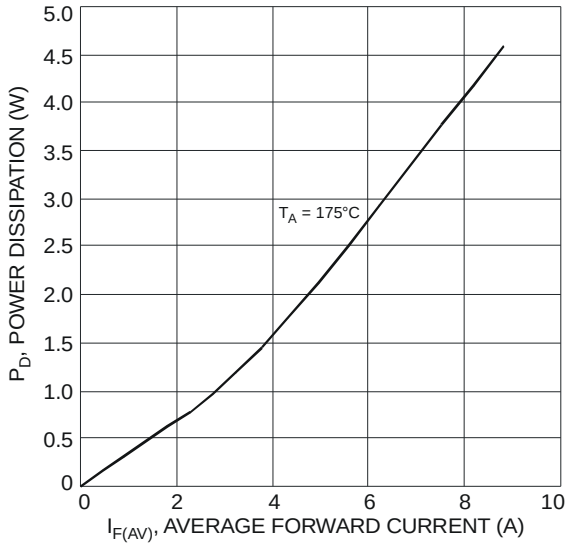
## Thermal Characteristics

| Characteristic                                  | Symbol           | Value                                 | Unit        |
|-------------------------------------------------|------------------|---------------------------------------|-------------|
| Typical Thermal Resistance                      | R <sub>θJA</sub> | 102                                   | °C/W        |
| Thermal Resistance Junction to Ambient (Note 5) |                  | 60                                    |             |
| Thermal Resistance Junction to Ambient (Note 6) | R <sub>θJA</sub> | 60                                    | °C/W        |
| Operating Temperature Range                     | T <sub>J</sub>   | V <sub>R</sub> ≤ 80% V <sub>RRM</sub> | -65 to +150 |
|                                                 |                  | V <sub>R</sub> ≤ 50% V <sub>RRM</sub> | ≤180        |
|                                                 |                  | DC Forward Mode                       | ≤200        |
| Storage Temperature Range                       | T <sub>STG</sub> | -65 to +175                           | °C          |

## Electrical Characteristics (@T<sub>A</sub> = +25°C, unless otherwise specified.)

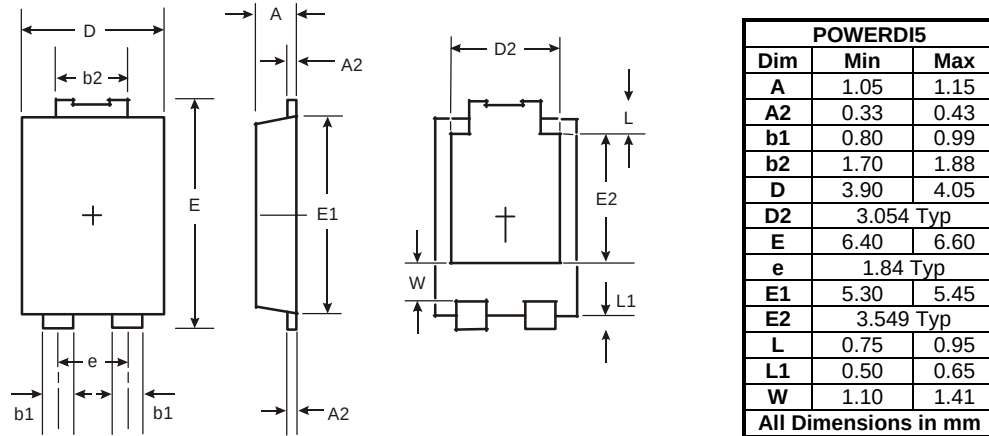
| Characteristic                     | Symbol             | Min | Typ  | Max  | Unit | Test Condition                               |
|------------------------------------|--------------------|-----|------|------|------|----------------------------------------------|
| Reverse Breakdown Voltage (Note 7) | V <sub>(BR)R</sub> | 45  | -    | -    | V    | I <sub>R</sub> = 0.5mA                       |
| Forward Voltage Drop               | V <sub>F</sub>     | -   | 0.39 | -    | V    | I <sub>F</sub> = 5A, T <sub>J</sub> = +25°C  |
|                                    |                    | -   | 0.46 | 0.53 |      | I <sub>F</sub> = 10A, T <sub>J</sub> = +25°C |
| Leakage Current (Note 7)           | I <sub>R</sub>     | -   | -    | 400  | μA   | V <sub>R</sub> = 45V, T <sub>J</sub> = +25°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.



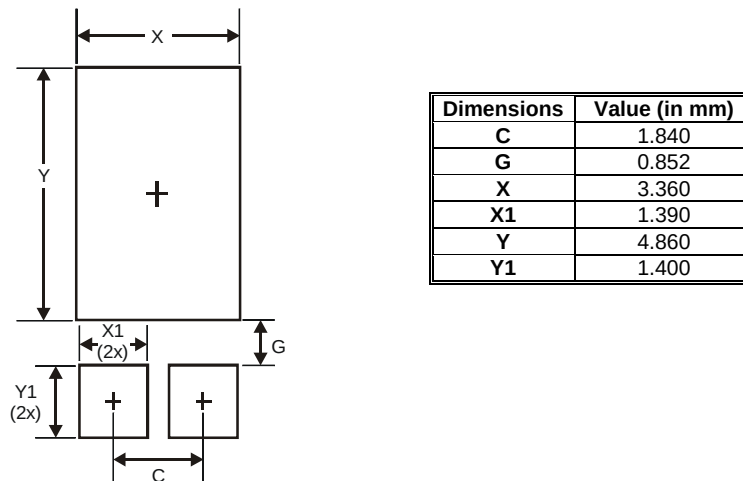
## Package Outline Dimensions

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



## Suggested Pad Layout

Please see AP02001 at <http://www.diodes.com/datasheets/ap02001.pdf> for the latest version.



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