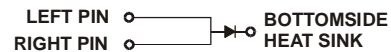
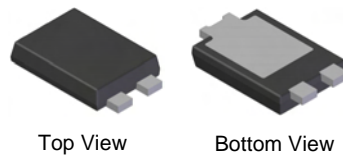


## Features

- Ultra Low Forward Voltage Drop
- Excellent High Temperature Stability
- Patented Super Barrier Rectifier Technology
- Soft, Fast Switching Capability
- 150°C Operating Junction Temperature
- **Lead Free Finish, RoHS Compliant (Note 1)**
- **“Green” Molding Compound (No Br, Sb)**

## Mechanical Data

- Case: PowerDI<sup>®</sup>5
- Case Material: Molded Plastic, “Green” Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Matte Tin Finish annealed over Copper leadframe. Solderable per MIL-STD-202, Method 208
- Polarity: See Diagram
- Weight: 0.093 grams (approximate)



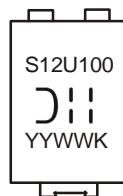
**Note:** Pins Left & Right must be electrically connected at the printed circuit board.

## Ordering Information (Note 2)

| Part Number    | Case                   | Packaging        |
|----------------|------------------------|------------------|
| SBR12U100P5-13 | PowerDI <sup>®</sup> 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



S12U100 = Product Type Marking Code  
 D11 = Manufacturers' Code Marking  
 YYWW = Date Code Marking  
 YY = Last Two Digits of Year (ex: 08 for 2008)  
 WW = Week Code (01 - 53)  
 K = Factory Designator

**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  | $V_{RRM}$ | 100   | V    |
| Working Peak Reverse Voltage   | $V_{RWM}$ |       |      |
| DC Blocking Voltage  | $V_{RM}$  |       |      |
| Average Rectified Output Current (See Figure 1)  | $I_O$     | 12    | A    |
| Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load | $I_{FSM}$ | 250   | A    |

**Thermal Characteristics**

| Characteristic   | Symbol          | Value       | Unit               |
|--|-----------------|-------------|--------------------|
| Typical Thermal Resistance Junction to Ambient (Note 3) $T_A = 25^\circ\text{C}$ | $R_{\theta JA}$ | 27          | $^\circ\text{C/W}$ |
| Typical Thermal Resistance Junction to Lead                                      | $R_{\theta JL}$ | 3           | $^\circ\text{C/W}$ |
| Operating and Storage Temperature Range  | $T_J, T_{STG}$  | -65 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     | $V_F$  | -   | 0.49 | -          | V    | $I_F = 5\text{A}, T_J = 25^\circ\text{C}$   |
|                          |        |     | -    | 0.51       |      | $I_F = 5\text{A}, T_J = 125^\circ\text{C}$  |
|                          |        |     | -    | 0.71       |      | $I_F = 12\text{A}, T_J = 25^\circ\text{C}$  |
| Leakage Current (Note 4) | $I_R$  | -   | 11   | 0.25<br>40 | mA   | $V_R = 100\text{V}, T_J = 25^\circ\text{C}$<br>$V_R = 100\text{V}, T_J = 125^\circ\text{C}$ |

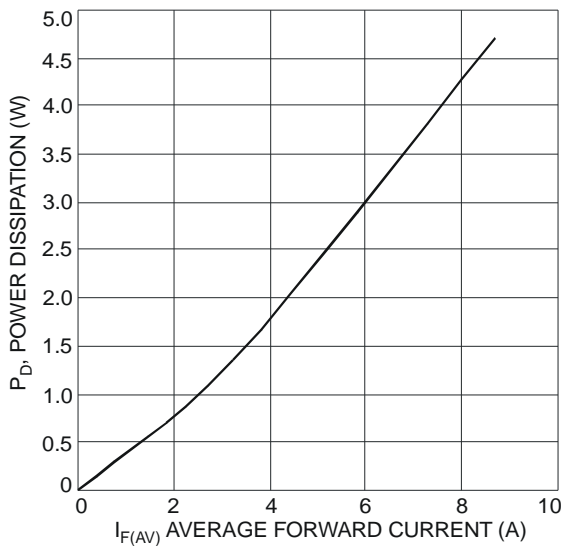
 Notes: 3. Device mounted on Polyimide PCB with 16x recommended pad layout.  
 4. Short duration pulse test used to minimize self-heating effect.


Fig. 1 Forward Power Dissipation

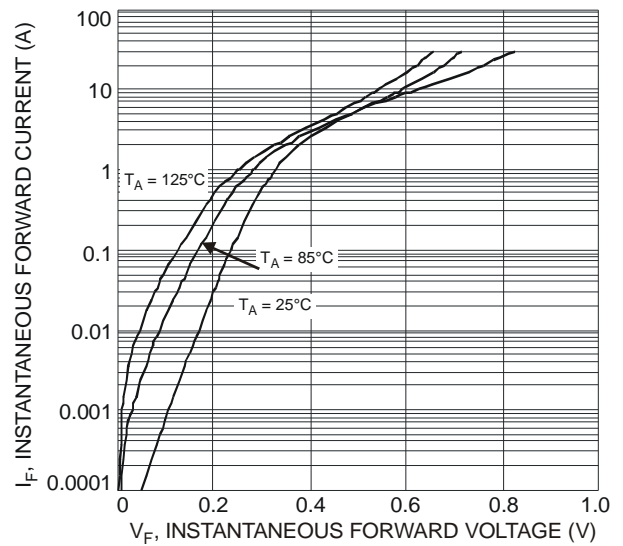


Fig. 2 Typical Forward Characteristics

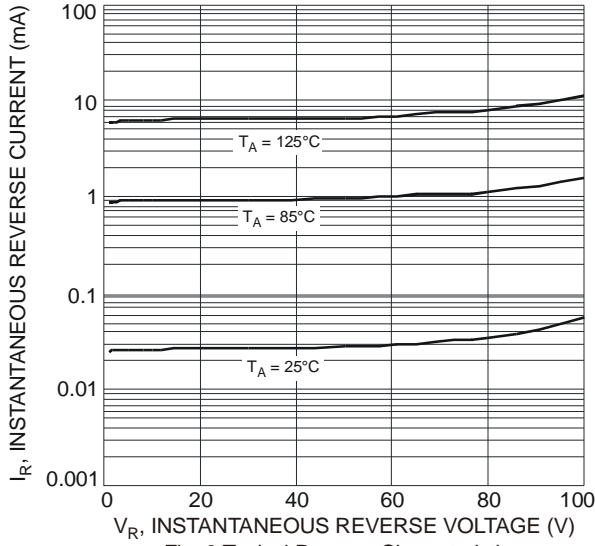


Fig. 3 Typical Reverse Characteristics

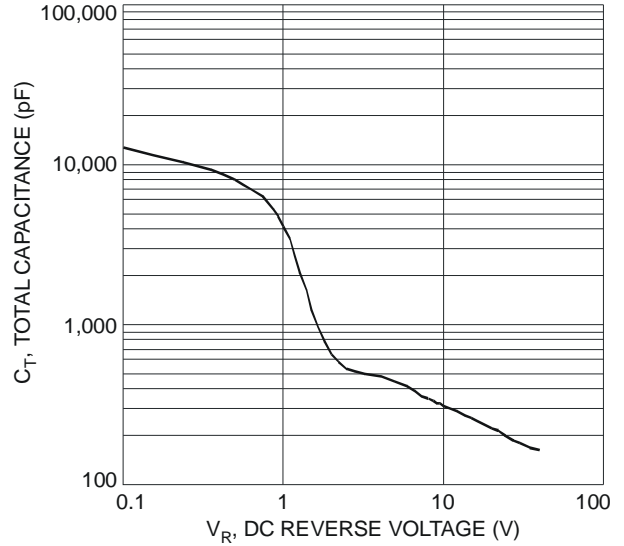


Fig. 4 Total Capacitance vs. Reverse Voltage

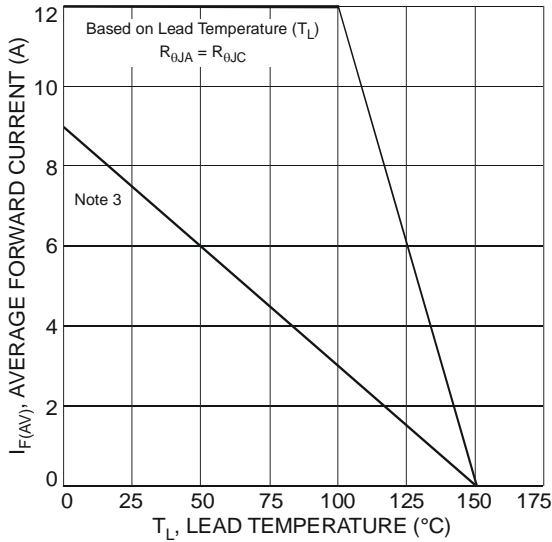


Fig. 5 Forward Current Derating Curve

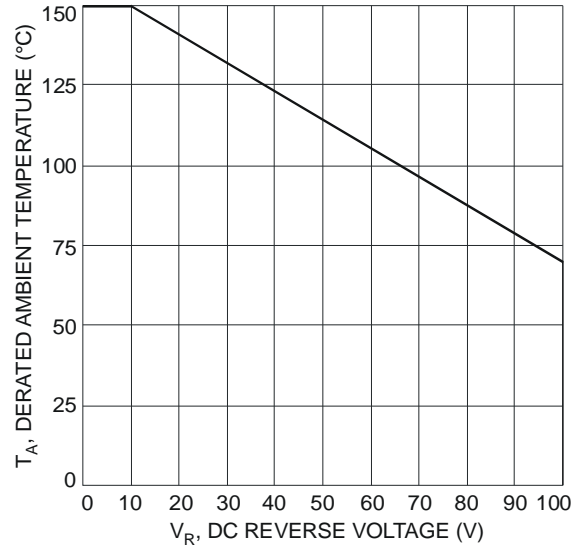
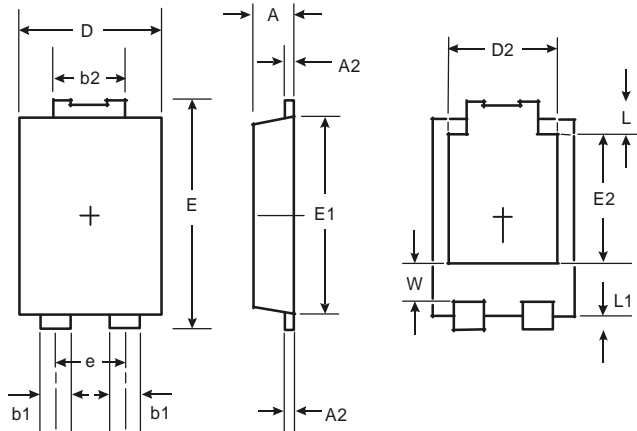


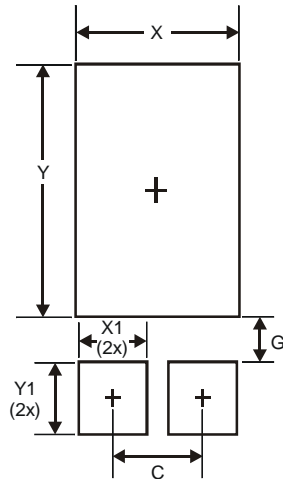
Fig. 6 Operating Temperature Derating

**Package Outline Dimensions**



| PowerDI <sup>®</sup> 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 |
| <b>All Dimensions in mm</b> |           |      |

**Suggested Pad Layout**



| Dimensions | Value (in mm) |
|------------|---------------|
| <b>C</b>   | 1.840         |
| <b>G</b>   | 0.852         |
| <b>X</b>   | 3.360         |
| <b>X1</b>  | 1.390         |
| <b>Y</b>   | 4.860         |
| <b>Y1</b>  | 1.400         |

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