

# 3A HIGH VOLTAGE SCHOTTKY BARRIER RECTIFIER

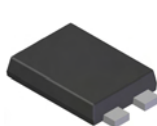
PowerDI®5

## Features

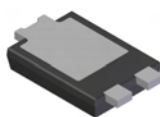
- Guard Ring Die Construction for Transient Protection
- Low Forward Voltage Drop
- Very Low Leakage Current
- Highly Stable Oxide Passivated Junction
- High Forward Surge Current Capability
- **Lead Free Finish, RoHS Compliant (Note 1)**
- **"Green" Molding Compound (No Br, Sb)**
- **Qualified to AEC-Q101 Standards for High Reliability**

## Mechanical Data

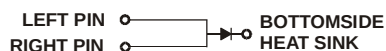
- Case: PowerDI®5
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish – Matte Tin annealed over Copper leadframe. Solderable per MIL-STD-202, Method 208 **(e3)**
- Polarity: See Diagram
- Weight: 0.096 grams (approximate)



Top View



Bottom View



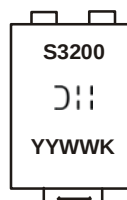
**Note:** Pins Left & Right must be electrically connected at the printed circuit board.

## Ordering Information (Note 2)

| Part Number | Case      | Packaging        |
|-------------|-----------|------------------|
| PDS3200-13  | 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



S3200 = Product type marking code  
011 = Manufacturers' code marking  
YYWW = Date code marking  
YY = Last digit of year (ex: 04 for 2004)  
WW = Week code (01 – 53)  
K = Factory Designator

## 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>    | 200   | V    |
| Working Peak Reverse Voltage                                                                        | V <sub>RWM</sub>    |       |      |
| DC Blocking Voltage                                                                                 | V <sub>R</sub>      |       |      |
| RMS Reverse Voltage                                                                                 | V <sub>R(RMS)</sub> | 141   | V    |
| Average Rectified Output Current (See also figure 5)                                                | I <sub>O</sub>      | 3     | A    |
| Non-Repetitive Peak Forward Surge Current<br>8.3ms Single half sine-wave Superimposed on Rated Load | I <sub>FSM</sub>    | 180   | A    |

## Thermal Characteristics

| Characteristic                                                            | Symbol           | Typ         | Max | Unit |
|---------------------------------------------------------------------------|------------------|-------------|-----|------|
| Thermal Resistance Junction to Soldering Point                            | R <sub>θJS</sub> | —           | 2.0 | °C/W |
| Thermal Resistance Junction to Ambient Air (Note 3) T <sub>A</sub> = 25°C | R <sub>θJA</sub> | 75          | —   | °C/W |
| Thermal Resistance Junction to Ambient Air (Note 4) T <sub>A</sub> = 25°C | R <sub>θJA</sub> | 60          | —   | °C/W |
| Thermal Resistance Junction to Ambient Air (Note 5) T <sub>A</sub> = 25°C | R <sub>θJA</sub> | 45          | —   | °C/W |
| Operating Temperature Range                                               | T <sub>J</sub>   | -65 to +150 |     | °C   |
| 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 6) | V <sub>(BR)R</sub> | 200 | —    | —    | V    | I <sub>R</sub> = 10μA                         |
| Forward Voltage                    | V <sub>F</sub>     | —   | 0.75 | 0.78 | V    | I <sub>F</sub> = 3A, T <sub>S</sub> = 25°C    |
|                                    |                    | —   | 0.59 | 0.64 |      | I <sub>F</sub> = 3A, T <sub>S</sub> = 125°C   |
|                                    |                    | —   | 0.82 | 0.88 |      | I <sub>F</sub> = 6A, T <sub>S</sub> = 25°C    |
|                                    |                    | —   | 0.66 | 0.71 |      | I <sub>F</sub> = 6A, T <sub>S</sub> = 125°C   |
| Reverse Leakage Current (Note 6)   | I <sub>R</sub>     | —   | 1    | 10   | μA   | T <sub>S</sub> = 25°C, V <sub>R</sub> = 200V  |
|                                    |                    | —   | 0.8  | 4.5  |      | T <sub>S</sub> = 125°C, V <sub>R</sub> = 200V |

- Notes:
- FR-4 PCB, 2 oz. Copper, minimum recommended pad layout per <http://www.diodes.com>.
  - Polymide PCB, 2 oz. Copper, minimum recommended pad layout per <http://www.diodes.com>.
  - Polymide PCB, 2 oz. Copper. Cathode pad dimensions 9.4mm x 7.2mm. Anode pad dimensions 2.7mm x 1.6mm.
  - Short duration pulse test used to minimize self-heating effect.

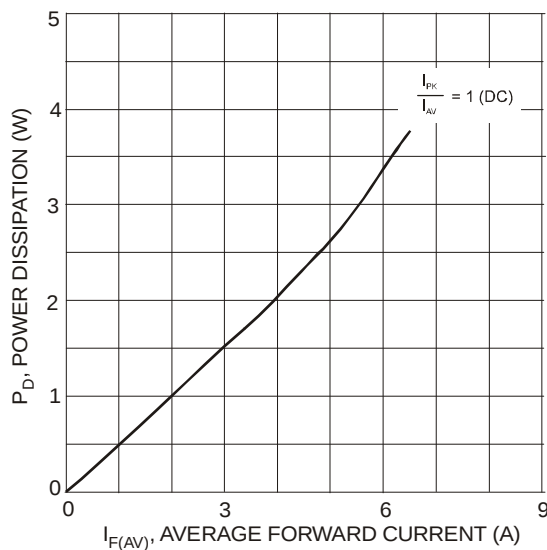


Fig. 1 Forward Power Dissipation

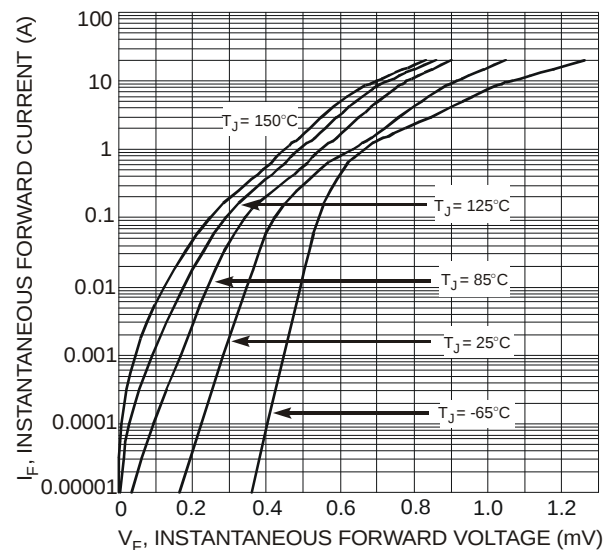


Fig. 2 Typical Forward Characteristics

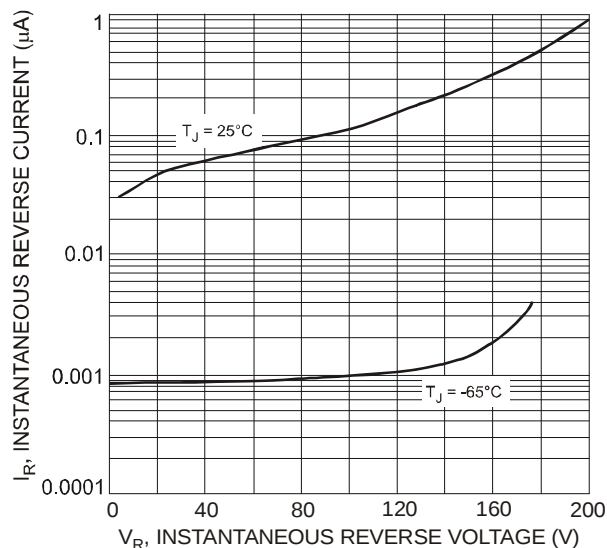


Fig. 3 Typical Reverse Characteristics

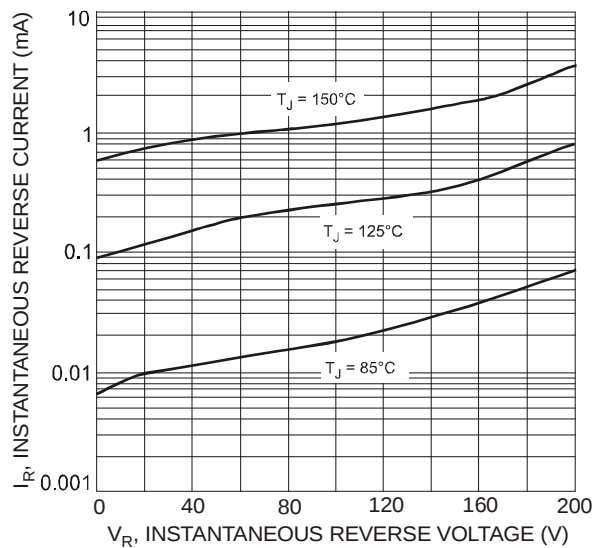


Fig. 4 Typical Reverse Characteristics

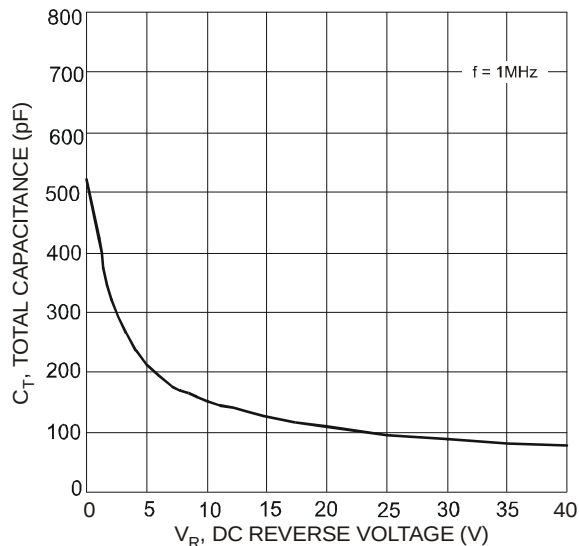


Fig. 5 Typical Capacitance vs. Reverse Voltage

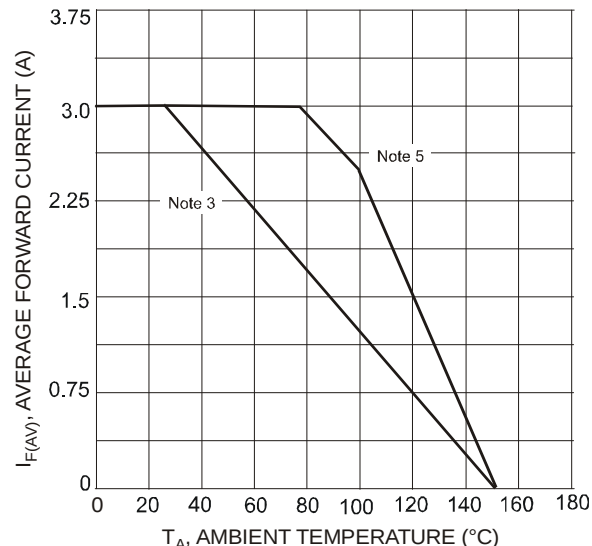


Fig. 6 Forward Current Derating Curve

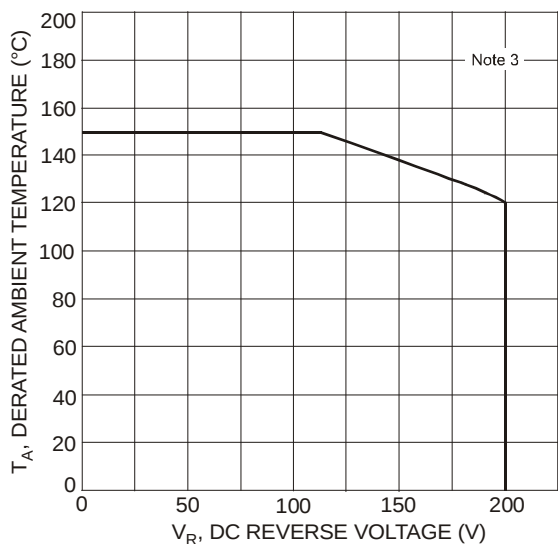


Fig. 7 Operating Temperature Derating

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PDS3200

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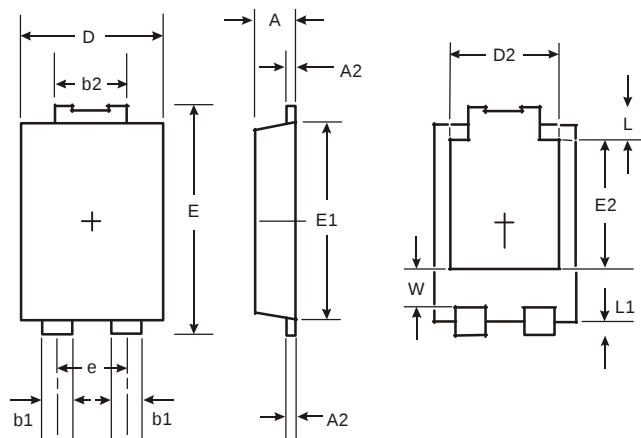
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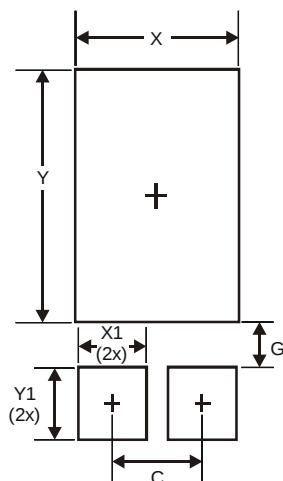
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## Package Outline Dimensions



| 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 |
| 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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