



# THE DATASHEET OF PDR5K-13



**Product Summary @T<sub>A</sub> = +25°C**

| V <sub>RRM</sub> (V) | I <sub>o</sub> (A) | V <sub>Fmax</sub> (V) | I <sub>Rmax</sub> (μA) |
|----------------------|--------------------|-----------------------|------------------------|
| 800                  | 5                  | 0.99                  | 10                     |

**Description**

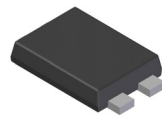
5.0 A Glass Passivated Rectifier in PowerDI<sup>®</sup>5 package, offers high surge current capability and low leakage current, lead free finish and RoHS compliant, "Green" device.

**Features and Benefits**

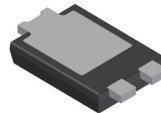
- Glass Passivated Die Construction
- Low Leakage Current
- **Lead Free Finish/RoHS Compliant (Note 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**

**Mechanical Data**

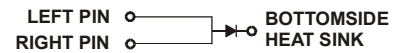
- Case: PowerDI<sup>®</sup>5
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish – Matte Tin annealed over Copper leadframe. Solderable per MIL-STD-202, Method 208<sup>Ⓐ</sup>
- Polarity: 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 4)**

| Part Number | Case                   | Packaging        |
|-------------|------------------------|------------------|
| PDR5K-13    | PowerDI <sup>®</sup> 5 | 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/quality/lead\\_free.html](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**



- R5K = Product Type Marking Code
- ⌋⌋⌋ = Manufacturers' code marking
- YYWW = Date code marking
- YY = Last two digits of year (ex: 13 for 2013)
- WW = Week code 01 to 52
- 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           | PDR5K | Unit |
|---|------------------|-------|------|
| Peak Repetitive Reverse Voltage   | V <sub>RRM</sub> | 800   | V    |
| Working Peak Reverse Voltage  | V <sub>RWM</sub> |       |      |
| DC Blocking Voltage   | V <sub>R</sub>   |       |      |
| Average Rectified Output Current  | I <sub>O</sub>   | 5     | A    |
| Non-Repetitive Peak Forward Surge Current<br>8.3ms Single Half Sine-Wave Superimposed on Rated Load | I <sub>FSM</sub> | 200   | A    |

### Thermal Characteristics

| Characteristic  | Symbol                            | Value       | Unit |
|---|-----------------------------------|-------------|------|
| Typical Thermal Resistance Junction to Lead             | R <sub>θJL</sub>                  | 3           | °C/W |
| Typical Thermal Resistance Junction to Ambient (Note 5) | R <sub>θJA</sub>                  | 28          | °C/W |
| Operating and Storage Temperature Range                 | T <sub>J</sub> , T <sub>STG</sub> | -65 to +155 | °C   |

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

| Characteristic                   | Symbol          | Min | Typ  | Max          | Unit     | Test Condition  |
|----------------------------------|-----------------|-----|------|--------------|----------|---|
| Forward Voltage                  | V <sub>F</sub>  | —   | 0.91 | 0.99<br>0.87 | V        | I <sub>F</sub> = 5A, T <sub>S</sub> = +25°C<br>I <sub>F</sub> = 5A, T <sub>S</sub> = +125°C     |
| Reverse Leakage Current (Note 6) | I <sub>R</sub>  | —   | —    | 10<br>0.3    | μA<br>mA | V <sub>R</sub> = 800V, T <sub>J</sub> = +25°C<br>V <sub>R</sub> = 800V, T <sub>J</sub> = +125°C |
| Typical Reverse Recovery Time    | t <sub>rr</sub> | —   | 3    | —            | μs       | I <sub>F</sub> = 0.5A, I <sub>R</sub> = 1.0A,<br>I <sub>rr</sub> = 0.25A                        |

Notes: 5. Device mounted on Polyimide PCB, with 16X recommended pad layout.  
 6. Short duration pulse test used to minimize self-heating effect.

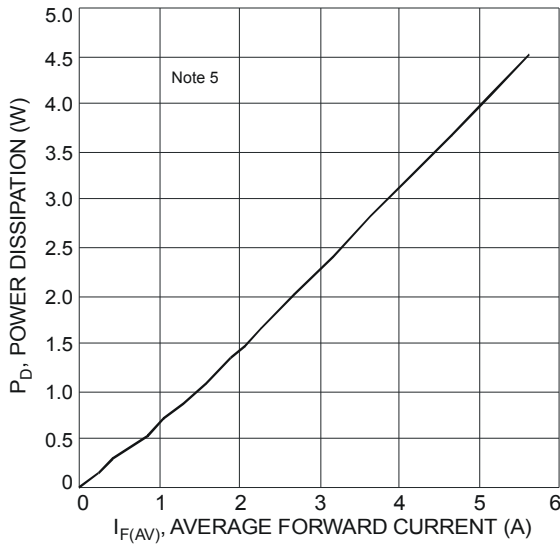


Fig. 1 Forward Power Dissipation

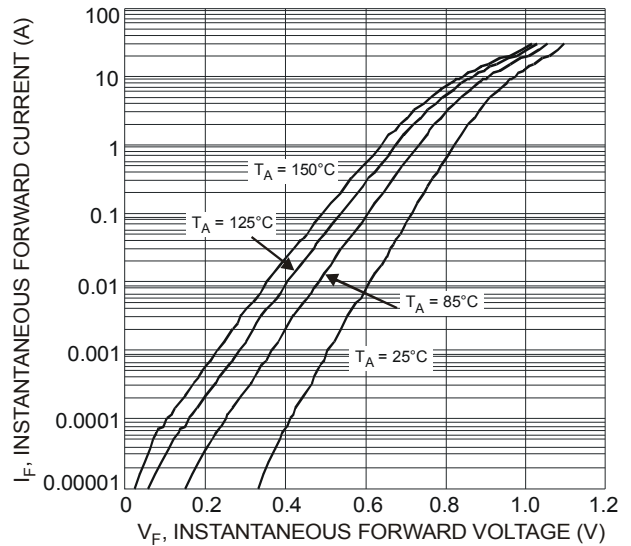


Fig. 2 Typical Forward Characteristics

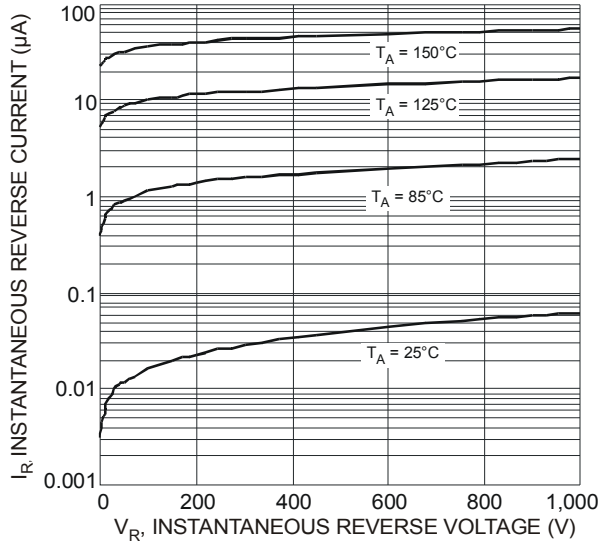


Fig. 3 Typical Reverse Characteristics

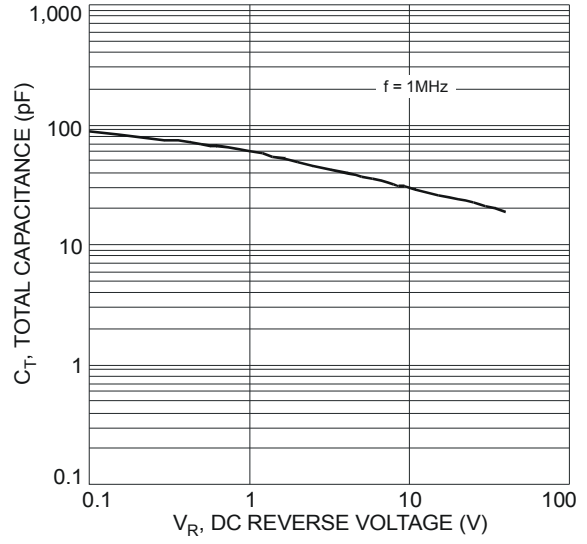


Fig. 4 Total Capacitance vs. Reverse Voltage

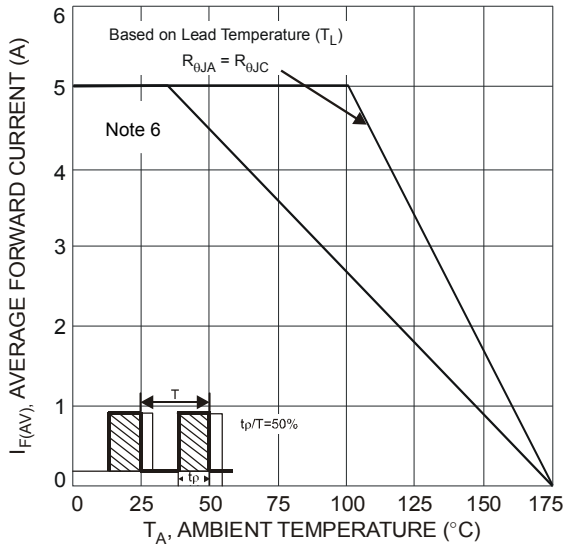


Fig. 5 Forward Current Derating Curve

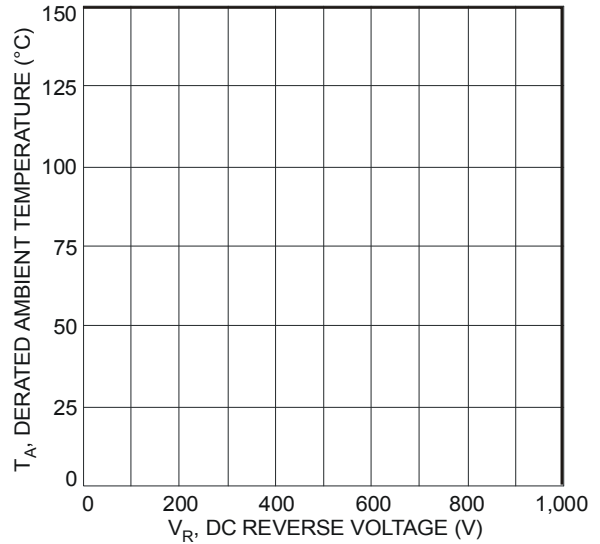
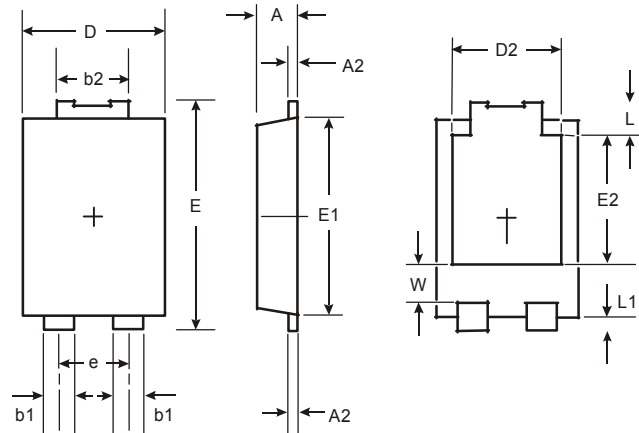


Fig. 6 Operating Temperature Derating

## Package Outline Dimensions

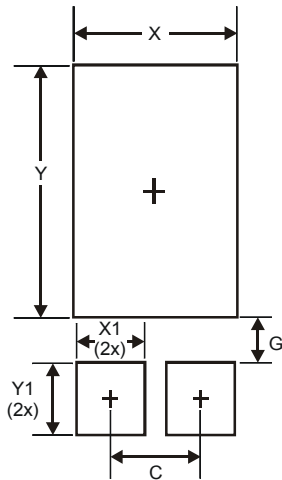
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for the latest version.



| 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

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



| 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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PDR5K

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