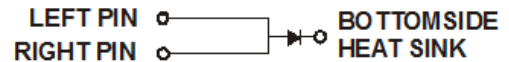
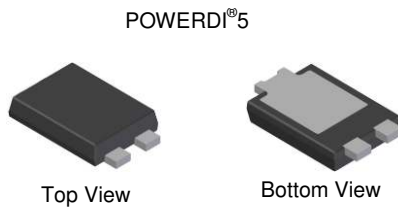


Features

- Guard Ring Die Construction for Transient Protection
- Very Low Forward Voltage Drop
- High Forward Surge Current Capability
- For use in low voltage, high frequency inverters, freewheeling and polarity protection applications
- **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: 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)
- Polarity: See Diagram
- Weight: 0.096 grams (Approximate)



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

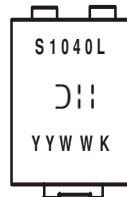
Ordering Information (Note 4)

| Part Number | Case | Packaging |
|-------------|-----------|-------------------|
| PDS1040L-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



- S1040L = Product Type Marking Code
- = Manufacturer's Code Marking
- YYWW = Date Code Marking
- YY = Last Two Digits of Year (ex: 15 for 2015)
- WW = Week Code (01 - 53)
- K = Factory Designator

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} | 40 | V |
| Working Peak Reverse Voltage | V _{RWM} | | |
| DC Blocking Voltage | V _R | | |
| RMS Reverse Voltage | V _{R(RMS)} | 28 | V |
| Average Rectified Output Current | I _O | 10 | A |
| Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load | I _{FSM} | 275 | A |

Thermal Characteristics

| Characteristic | Symbol | Typ | Max | Unit |
|--|------------------|----------------------------|-----|------|
| Thermal Resistance Junction to Soldering Point | R _{θJS} | — | 1.5 | °C/W |
| Thermal Resistance Junction to Ambient Air (Note 5) T _A = +25°C | R _{θJA} | 85 | — | °C/W |
| Thermal Resistance Junction to Ambient Air (Note 6) T _A = +25°C | R _{θJA} | 65 | — | °C/W |
| Thermal Resistance Junction to Ambient Air (Note 7) T _A = +25°C | R _{θJA} | 50 | — | °C/W |
| Operating Junction Temperature Range V _R ≤ 80% V _{RRM} V _R ≤ 50% V _{RRM} | T _J | -65 to +130 -65 to +150 | | °C |
| Storage Temperature Range | T _{STG} | -65 to +150 | | °C |

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

| Characteristic | Symbol | Min | Typ | Max | Unit | Test Condition |
|------------------------------------|--------------------|------|---|-----------|------|---|
| Reverse Breakdown Voltage (Note 8) | V _{(BR)R} | 40 | — | — | V | I _R = 600μA |
| Forward Voltage | V _F | — | 0.41 | 0.46 | V | I _F = 6A, T _S = +25°C |
| | | — | 0.30 | 0.35 | | I _F = 6A, T _S = +125°C |
| | | — | 0.42 | 0.47 | | I _F = 8A, T _S = +25°C |
| | | — | 0.32 | 0.41 | | I _F = 8A, T _S = +125°C |
| | | — | 0.44 | 0.49 | | I _F = 10A, T _S = +25°C |
| — | 0.35 | 0.43 | I _F = 10A, T _S = +125°C | | | |
| Reverse Current (Note 8) | I _R | — | 0.07 12.5 | 0.6 25 | mA | T _S = +25°C, V _R = 40V T _S = +100°C, V _R = 40V |

- Notes:
5. R-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. Polyimide PCB, 2oz. Copper. Cathode pad dimensions 9.4mm x 7.2mm. Anode pad dimensions 2.7mm x 1.6mm.
 8. Short duration pulse test used to minimize self-heating effect.
 9. Polyimide PCB, 2oz. Copper. Cathode pad dimensions 18.8mm x 14.4mm. Anode pad dimensions 5.6mm x 3.0mm.
 10. Devices mounted such that R_{θJA} ≅ 19°C/W.

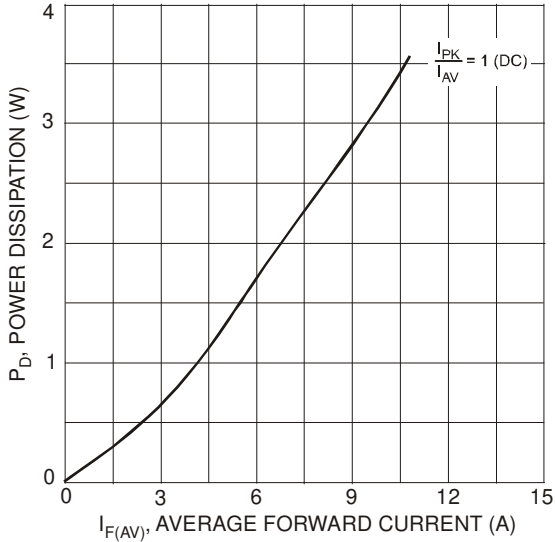


Fig. 1 Forward Power Dissipation

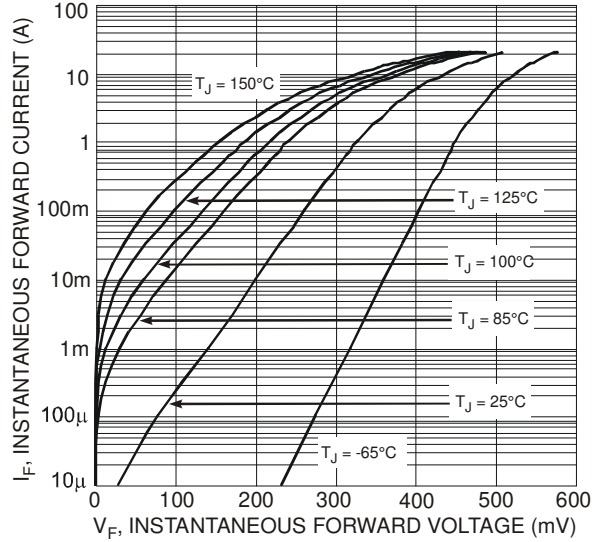


Fig. 2 Typical Forward Characteristics

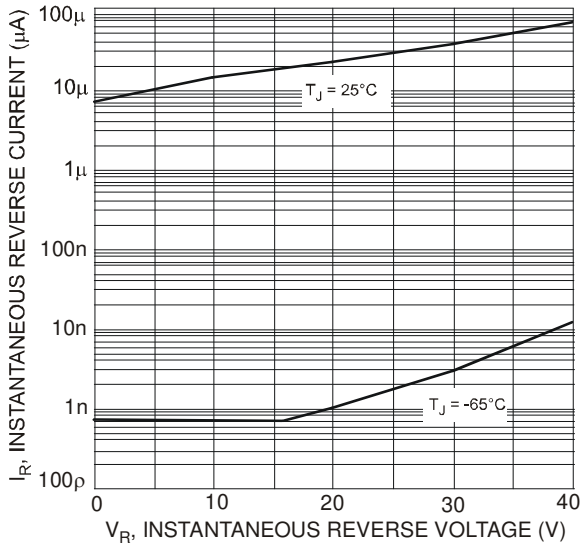


Fig. 3 Typical Reverse Characteristics

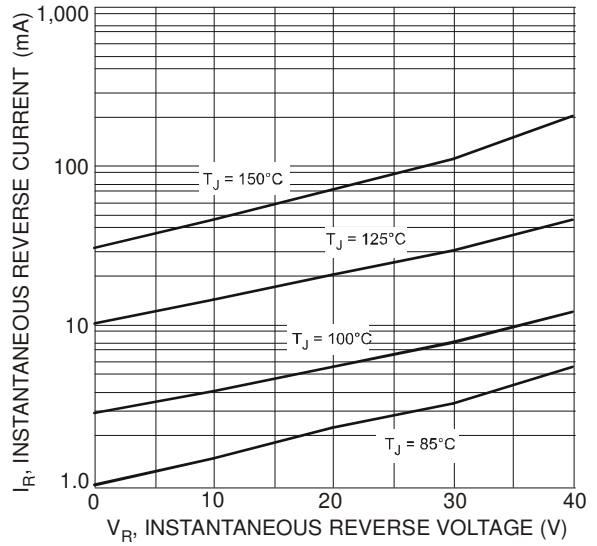


Fig. 4 Typical Reverse Characteristics

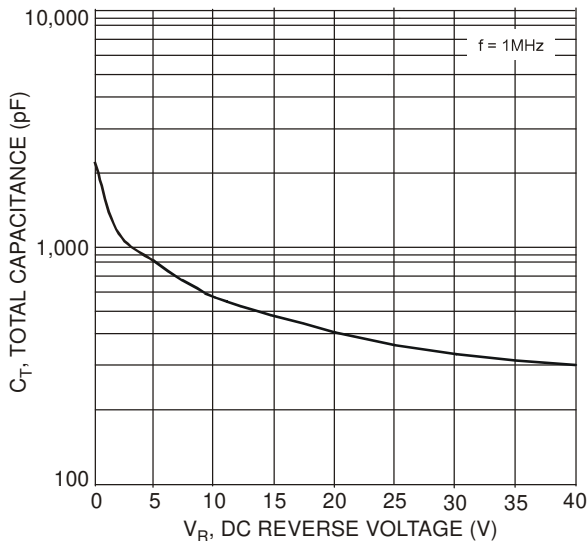


Fig. 5 Total Capacitance vs. Reverse Voltage

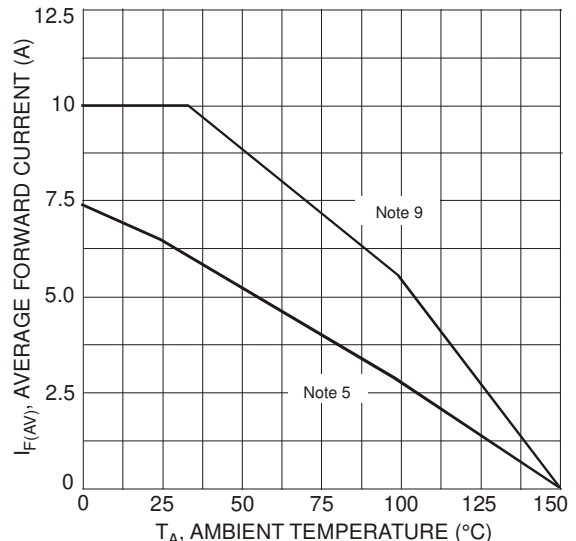


Fig. 6 Forward Current Derating Curve

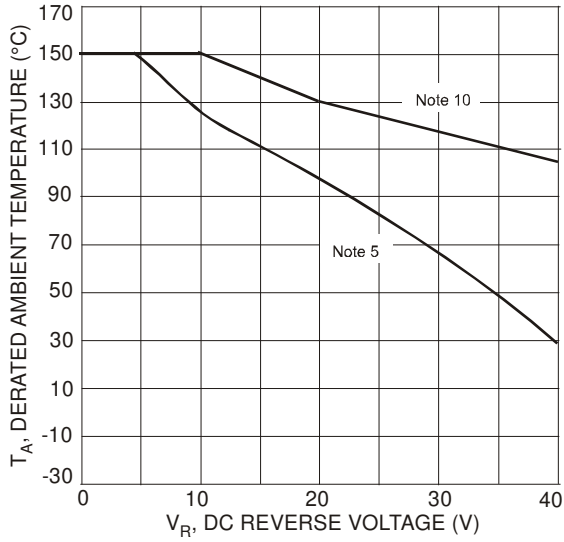
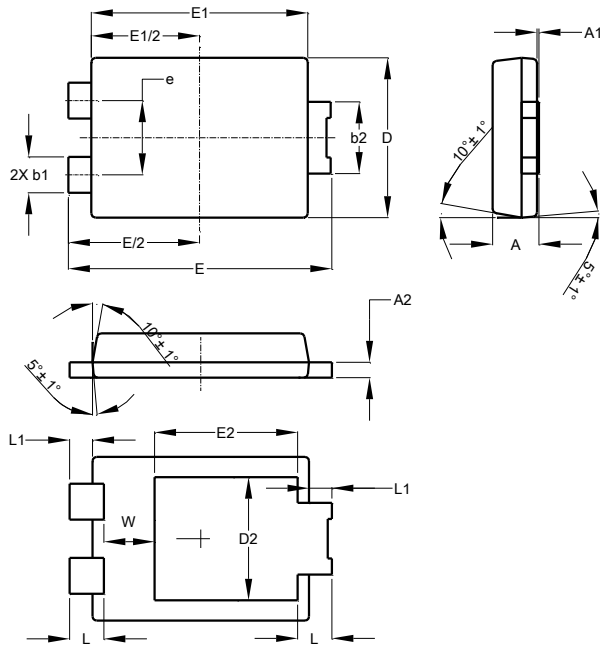


Fig. 7 Operating Temperature Derating

Package Outline Dimensions

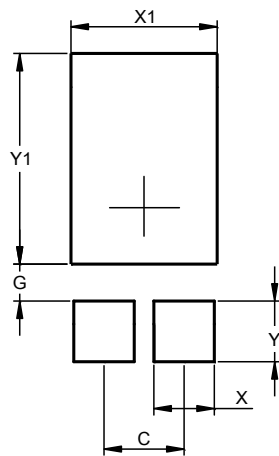
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for the latest version.



| POWERDI [®] 5 | | | |
|------------------------|------|------|-------|
| Dim | Min | Max | Typ |
| A | 1.05 | 1.15 | 1.10 |
| A1 | 0.00 | 0.05 | -- |
| 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 | 1.390 |
| X1 | 3.360 |
| Y | 1.400 |
| Y1 | 4.860 |

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