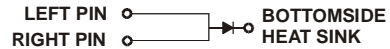
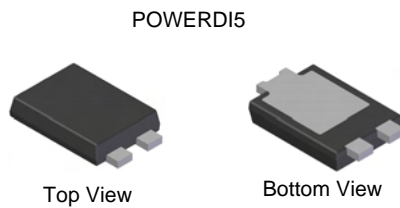


## Features

- 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, Free Wheeling, 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: 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
- Polarity: See Diagram
- Weight: 0.096 grams (approximate)



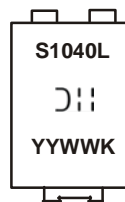
**Note:** Pins Left & Right must be electrically connected at the printed circuit board.

## Ordering Information (Note 4)

Part Number	Case	Packaging
PDS1040L-13	POWERDI5	5000/Tape & Reel
PDS1040L-7	POWERDI5	1500/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



S1040L = Product type marking code  
 = Manufacturers' code marking  
 YYWW = Date code marking  
 YY = Last two digits 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>	40	V
Working Peak Reverse Voltage	V <sub>RWM</sub>		
DC Blocking Voltage	V <sub>R</sub>		
RMS Reverse Voltage	V <sub>R(RMS)</sub>	28	V
Average Rectified Output Current (see also Figure 5)	I <sub>O</sub>	10	A
Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load	I <sub>FSM</sub>	275	A

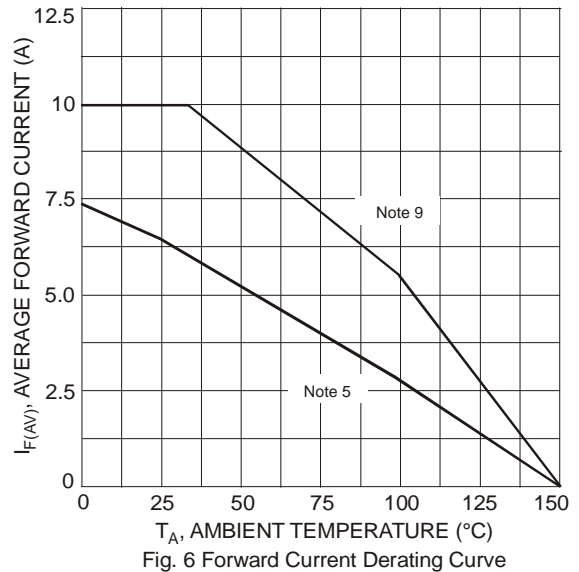
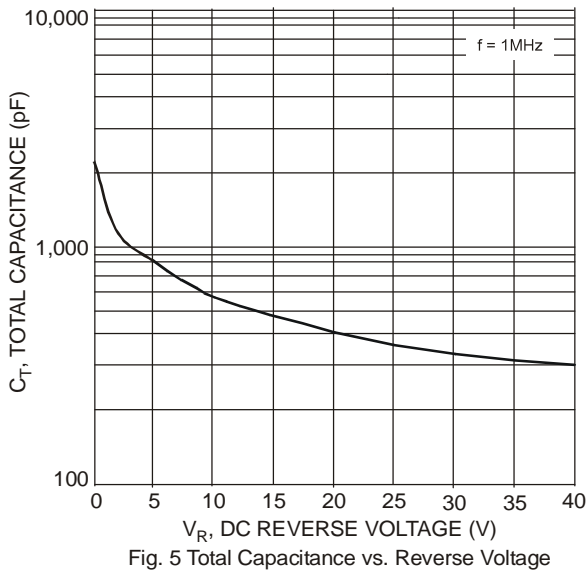
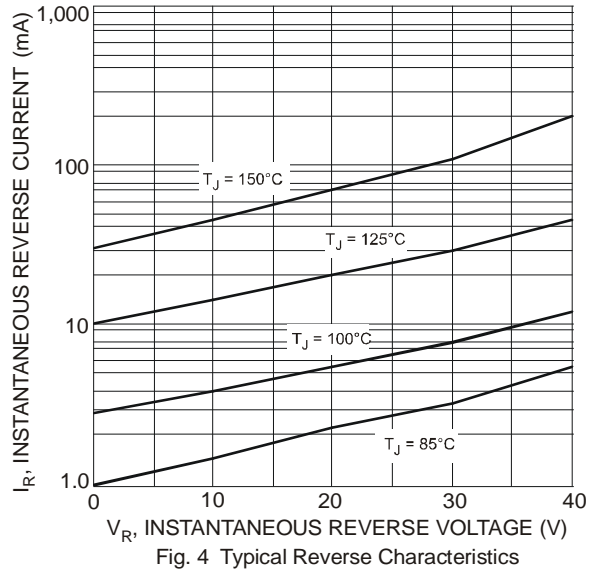
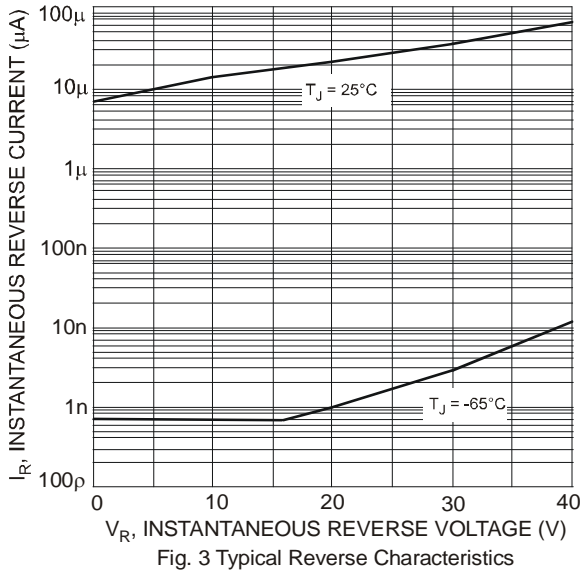
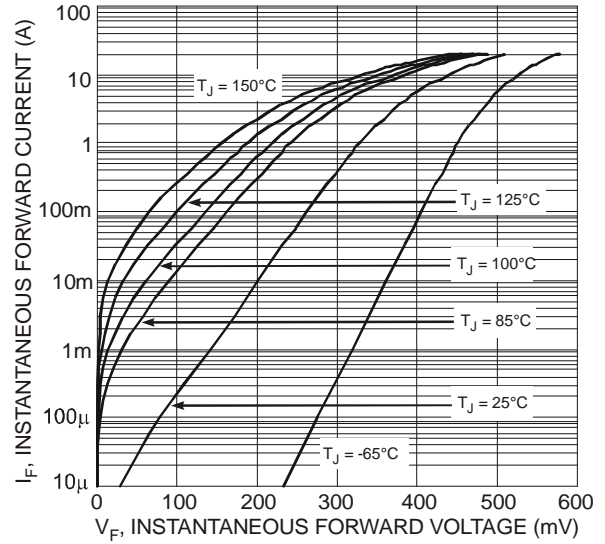
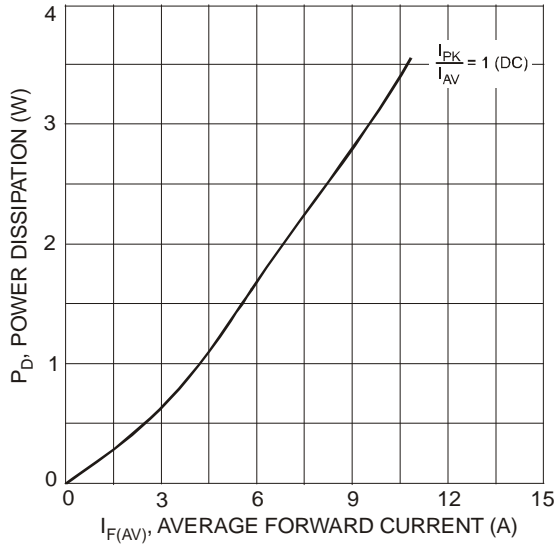
### Thermal Characteristics

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

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Breakdown Voltage (Note 8)	V <sub>(BR)R</sub>	40	—	—	V	I <sub>R</sub> = 600μA
Forward Voltage	V <sub>F</sub>	—	0.41	0.46	V	I <sub>F</sub> = 6A, T <sub>S</sub> = +25°C
		—	0.30	0.35		I <sub>F</sub> = 6A, T <sub>S</sub> = +125°C
		—	0.42	0.47		I <sub>F</sub> = 8A, T <sub>S</sub> = +25°C
		—	0.32	0.41		I <sub>F</sub> = 8A, T <sub>S</sub> = +125°C
		—	0.44	0.49		I <sub>F</sub> = 10A, T <sub>S</sub> = +25°C
		—	0.35	0.43		I <sub>F</sub> = 10A, T <sub>S</sub> = +125°C
Reverse Current (Note 8)	I <sub>R</sub>	—	0.07	0.6	mA	T <sub>S</sub> = +25°C, V <sub>R</sub> = 40V
		—	12.5	25		T <sub>S</sub> = +100°C, V <sub>R</sub> = 40V

- Notes:
5. R-4 PCB, 2 oz. Copper, minimum recommended pad layout per <http://www.diodes.com>.
  6. Polyimide PCB, 2 oz. Copper, minimum recommended pad layout per <http://www.diodes.com>.
  7. Polyimide PCB, 2 oz. 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, 2 oz. Copper. Cathode pad dimensions 18.8mm x 14.4mm. Anode pad dimensions 5.6mm x 3.0mm.
  10. Devices mounted such that R<sub>θJA</sub> ≅ 19°C/W.



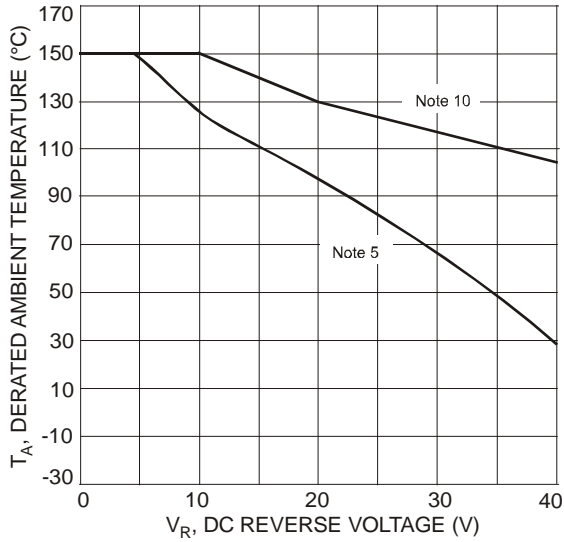
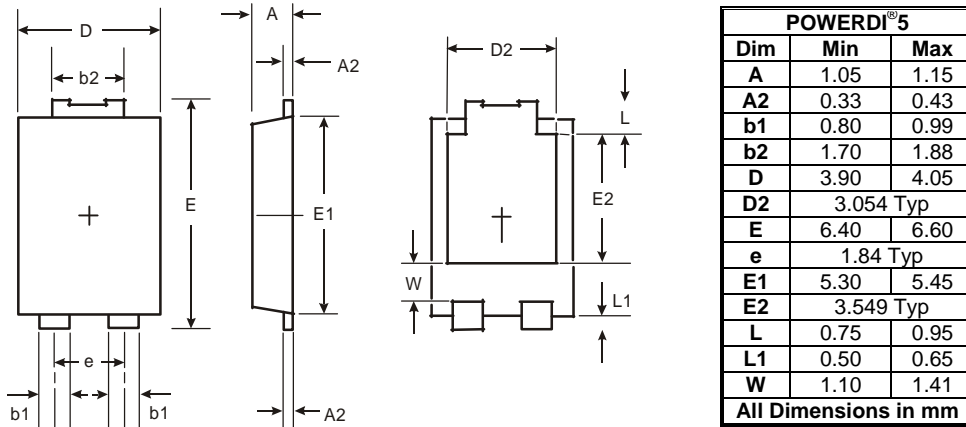


Fig. 7 Operating Temperature Derating

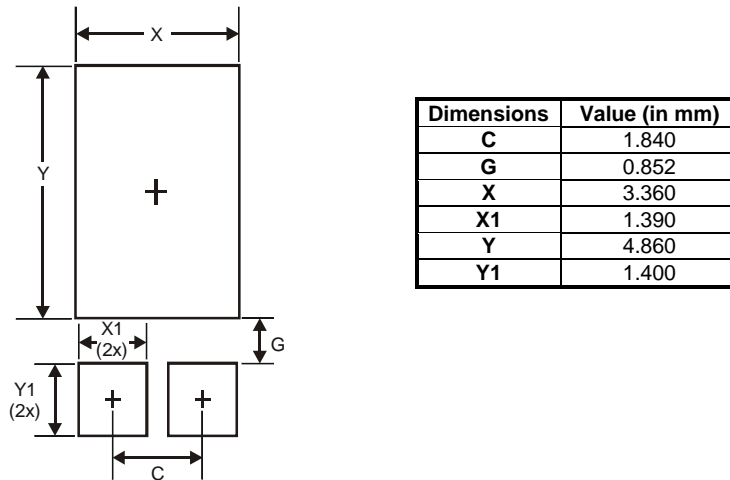
**Package Outline Dimensions**

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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2. support or sustain life and whose failure to perform when properly used in accordance with instructions for use provided in the labeling can be reasonably expected to result in significant injury to the user.

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