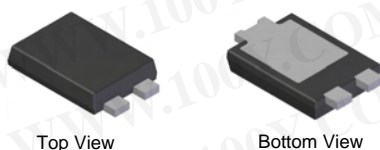


## Features

- Guard Ring Die Construction for Transient Protection
- Low Power Loss, High Efficiency
- Low Forward Voltage Drop
- For Use in Low Voltage, High Frequency Inverters, Free Wheeling, and Polarity Protection Applications
- 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<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 (E3)
- Polarity: See Diagram
- Weight: 0.093 grams (approximate)



LEFT PIN ○      BOTTOMSIDE  
 RIGHT PIN ○      HEAT SINK

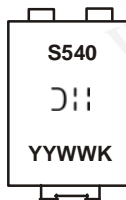
Note: Pins Left & Right must be electrically connected at the printed circuit board.

## Ordering Information (Note 2)

Part Number	Case	Packaging
PDS540-13	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



S540 = Product type marking code  
 J|| = Manufacturers' code marking  
 YYWW = Date code marking  
 YY = Last digit of year (ex: 04 for 2004)  
 WW = Week code (01 – 53)  
 K = Factory Designator

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### 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>	5	A
Non-Repetitive Peak Forward Surge Current 8.3ms Single half sine-wave Superimposed on Rated Load	I <sub>FSM</sub>	150	A

### Thermal Characteristics

Characteristic	Symbol	Typ	Max	Unit
Thermal Resistance Junction to Soldering Point	R <sub>θJS</sub>	—	4.0	°C/W
Thermal Resistance Junction to Ambient Air (Note 3)	R <sub>θJA</sub>	90	—	°C/W
Thermal Resistance Junction to Ambient Air (Note 4)	R <sub>θJA</sub>	65	—	°C/W
Thermal Resistance Junction to Ambient Air (Note 5)	R <sub>θJA</sub>	50	—	°C/W
Operating and Storage Temperature Range	T <sub>J</sub> , 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 6)	V <sub>(BR)R</sub>	40	—	—	V	I <sub>R</sub> = 0.5mA
Forward Voltage	V <sub>F</sub>	—	0.48	0.52	V	I <sub>F</sub> = 5A, T <sub>S</sub> = 25°C
		—	0.43	0.47		I <sub>F</sub> = 5A, T <sub>S</sub> = 125°C
		—	0.57	0.65		I <sub>F</sub> = 10A, T <sub>S</sub> = 25°C
		—	0.55	0.59		I <sub>F</sub> = 10A, T <sub>S</sub> = 125°C
Reverse Leakage Current (Note 6)	I <sub>R</sub>	—	0.015	0.25	mA	T <sub>S</sub> = 25°C, V <sub>R</sub> = 40V
		—	3	15		T <sub>S</sub> = 100°C, V <sub>R</sub> = 40V
		—	10	40		T <sub>S</sub> = 125°C, V <sub>R</sub> = 40V

- Notes:
- FR-4 PCB, 2 oz. Copper, minimum recommended pad layout per <http://www.diodes.com>.
  - Polyimide PCB, 2 oz. Copper, minimum recommended pad layout per <http://www.diodes.com>.
  - Polyimide 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.

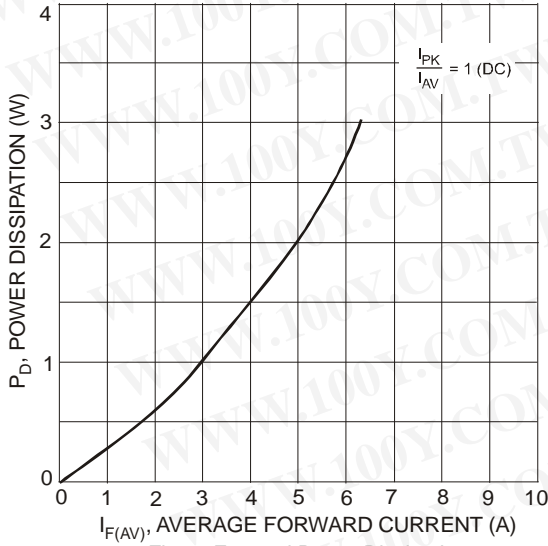


Fig. 1 Forward Power Dissipation

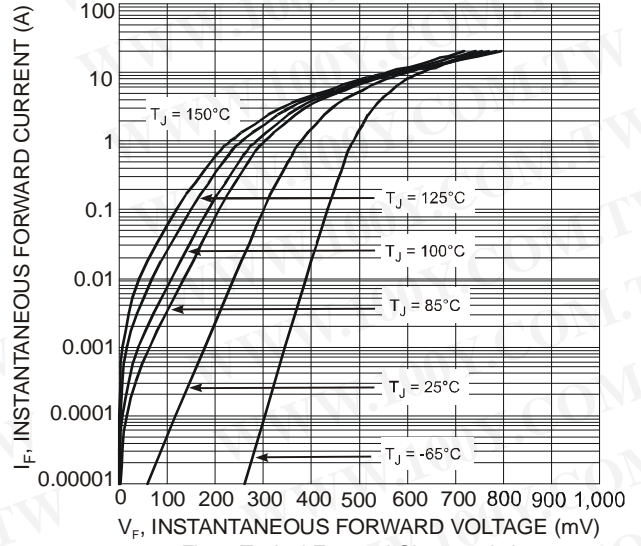


Fig. 2 Typical Forward Characteristics

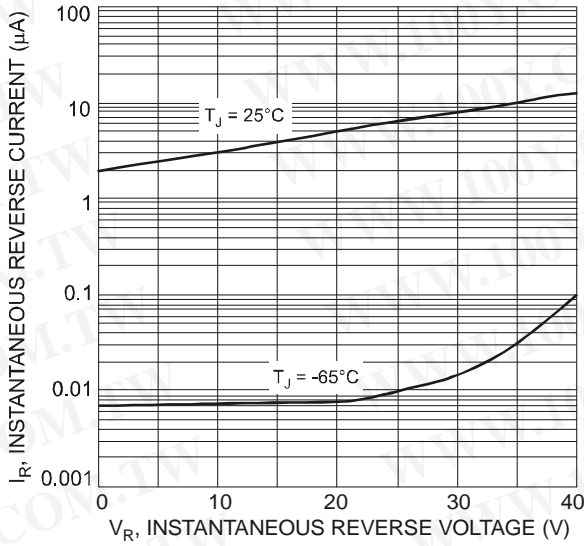


Fig. 3 Typical Reverse Characteristics

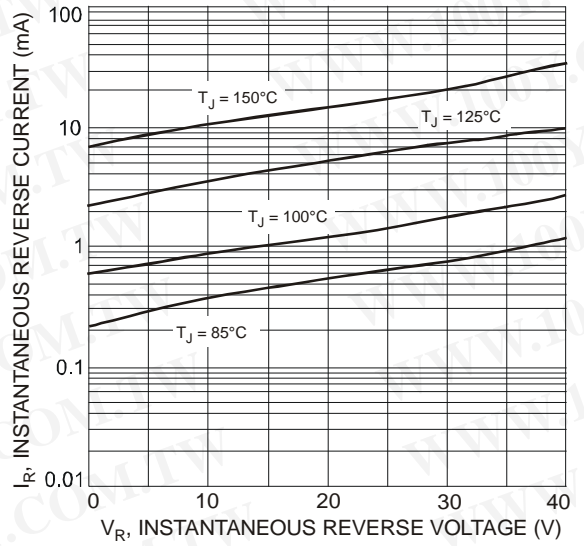


Fig. 4 Typical Reverse Characteristics

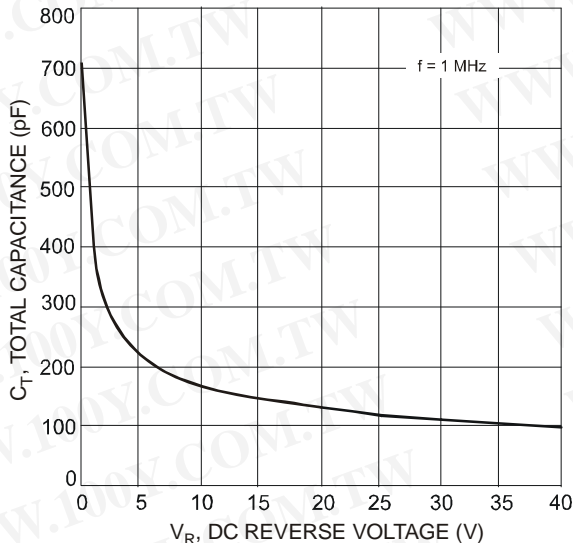


Fig. 5 Total Capacitance vs. Reverse Voltage

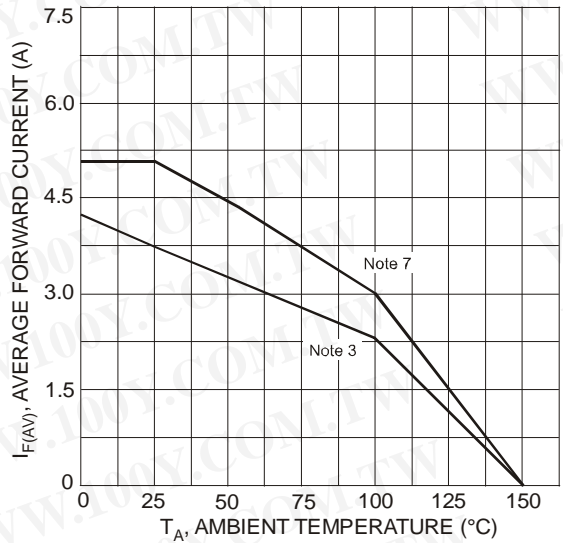


Fig. 6 Forward Current Derating Curve

Notes: 7. Polyimide PCB, 2 oz. Copper. Cathode pad dimensions 6.5mm x 5.0mm. Anode pad dimensions 1.8mm x 1.1mm.

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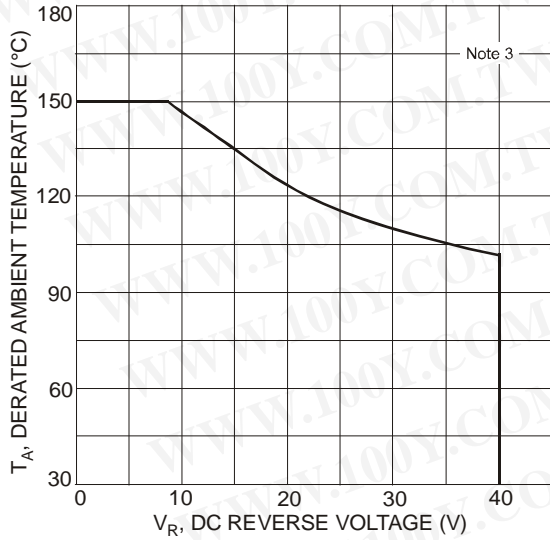
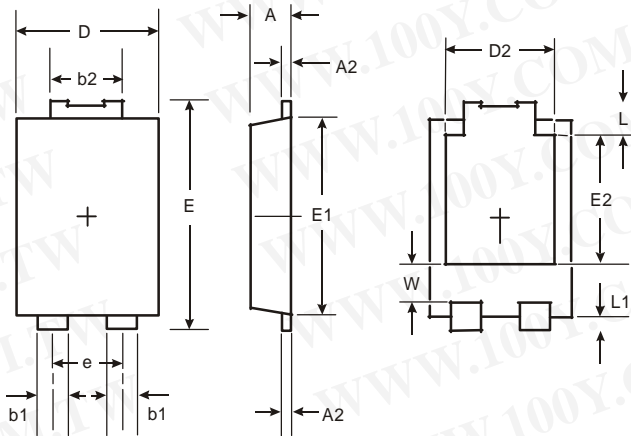


Fig. 7. Operating Temperature Derating

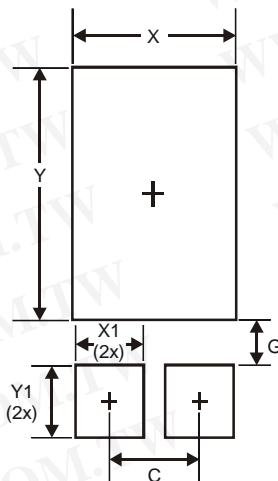
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### Package Outline Dimensions



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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