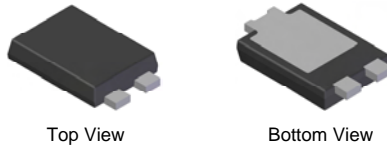




**4A HIGH VOLTAGE SCHOTTKY BARRIER RECTIFIER**  
*PowerDI<sup>®</sup>5*
**Features**

- Guard Ring Die Construction for Transient Protection
- Low Forward Voltage Drop
- Very Low Leakage Current
- High Maximum Junction Temperature Capability
- 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<sup>®</sup>5
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020D
- Terminals: Finish – Matte Tin annealed over Copper leadframe. Solderable per MIL-STD-202, Method 208 **(e3)**
- Polarity: See Diagram
- Marking Information: See Page 3
- Ordering Information: See Page 3
- Weight: 0.096 grams (approximate)

LEFT PIN  BOTTOMSIDE  
 RIGHT PIN  HEAT SINK

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

**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>	150	V
Working Peak Reverse Voltage	V <sub>RWM</sub>		
DC Blocking Voltage	V <sub>R</sub>		
RMS Reverse Voltage	V <sub>R(RMS)</sub>	106	V
Average Rectified Output Current (See also figure 4)	I <sub>O</sub>	4	A
Non-Repetitive Peak Forward Surge Current 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 2) T <sub>A</sub> = 25°C	R <sub>θJA</sub>	90	—	°C/W
Thermal Resistance Junction to Ambient Air (Note 3) T <sub>A</sub> = 25°C	R <sub>θJA</sub>	60	—	°C/W
Thermal Resistance Junction to Ambient Air (Note 4) T <sub>A</sub> = 25°C	R <sub>θJA</sub>	40	—	°C/W
Operating and Storage Temperature Range	T <sub>J</sub> , 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 5)	V <sub>(BR)R</sub>	150	—	—	V	I <sub>R</sub> = 10μA
Forward Voltage	V <sub>F</sub>	—	0.71	0.76	V	I <sub>F</sub> = 4A, T <sub>S</sub> = 25°C
		—	0.57	0.64		I <sub>F</sub> = 4A, T <sub>S</sub> = 125°C
		—	0.77	0.81		I <sub>F</sub> = 8A, T <sub>S</sub> = 25°C
		—	0.63	0.70		I <sub>F</sub> = 8A, T <sub>S</sub> = 125°C
Reverse Leakage Current (Note 5)	I <sub>R</sub>	—	0.3	10	μA	T <sub>S</sub> = 25°C, V <sub>R</sub> = 150V
		—	0.4	4.5	mA	T <sub>S</sub> = 125°C, V <sub>R</sub> = 150V

- Notes:
1. EU Directive 2002/95/EC (RoHS). All applicable RoHS exemptions applied, see *EU Directive 2002/95/EC Annex Notes*.
  2. FR-4 PCB, 2 oz. Copper, minimum recommended pad layout per <http://www.diodes.com/datasheets/ap02001.pdf>.
  3. Polyimide PCB, 2 oz. Copper, minimum recommended pad layout per <http://www.diodes.com/datasheets/ap02001.pdf>.
  4. Polyimide PCB, 2 oz. Copper. Cathode pad dimensions 9.4mm x 7.2mm. Anode pad dimensions 2.7mm x 1.6mm.
  5. Short duration pulse test used to minimize self-heating effect.

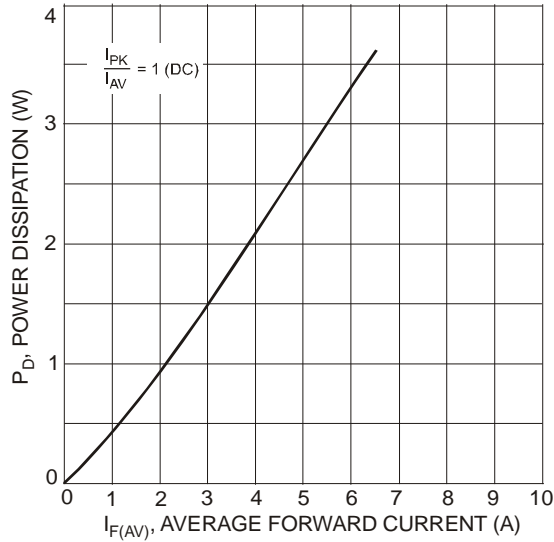


Fig. 1 Forward Power Dissipation

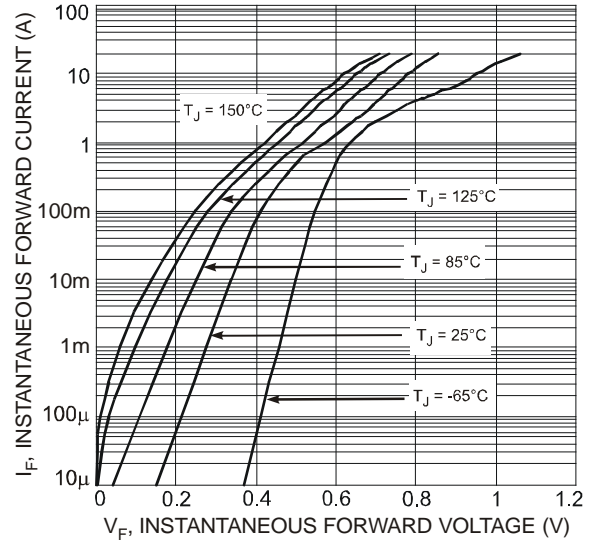


Fig. 2 Typical Forward Characteristics

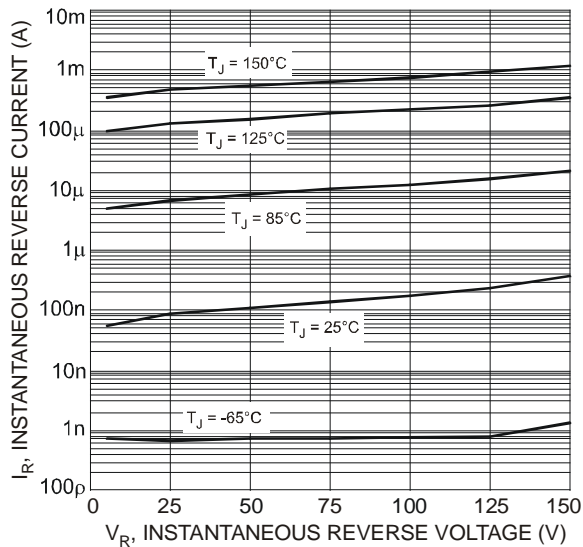


Fig. 3 Typical Reverse Characteristics

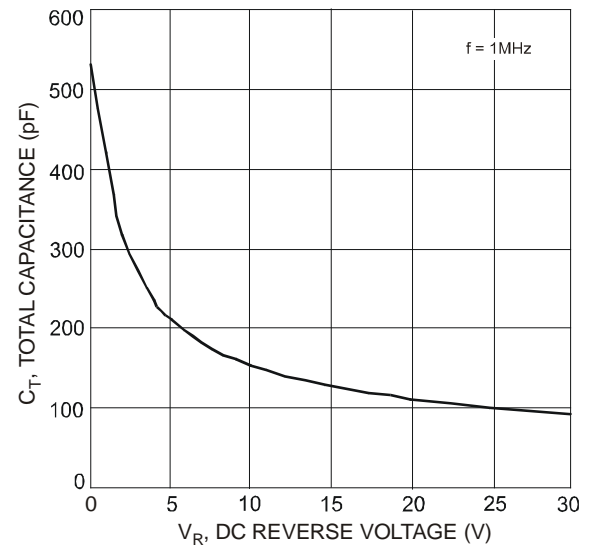


Fig. 4 Total Capacitance vs. Reverse Voltage

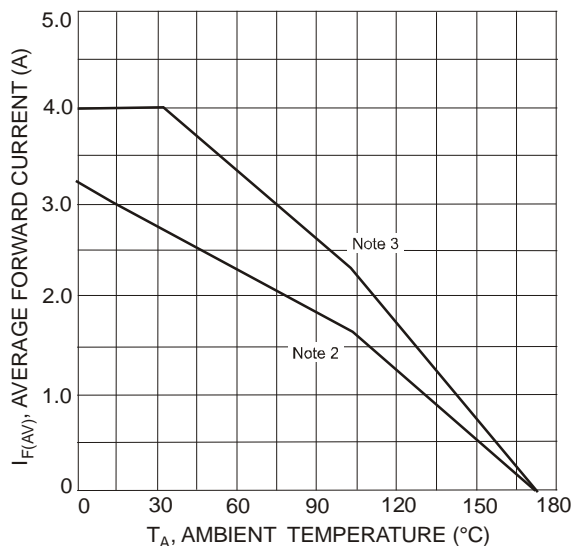


Fig. 5 Forward Current Derating Curve

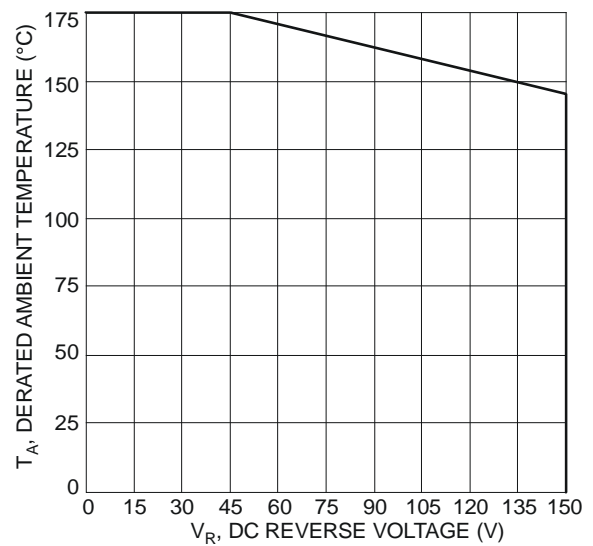


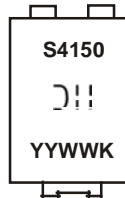
Fig. 6 Operating Temperature Derating

## Ordering Information (Note 6)

Part Number	Case	Packaging
PDS4150-13	PowerDI <sup>®</sup> 5	5000/Tape & Reel

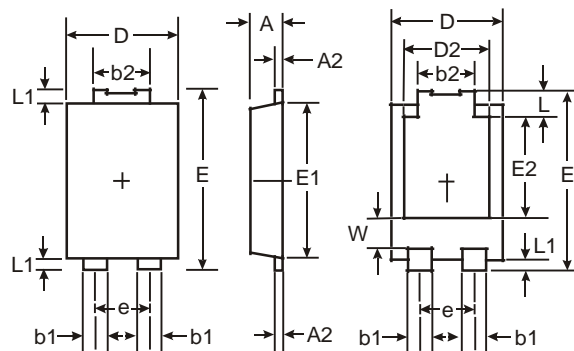
Notes: 6. For packaging details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

## Marking Information



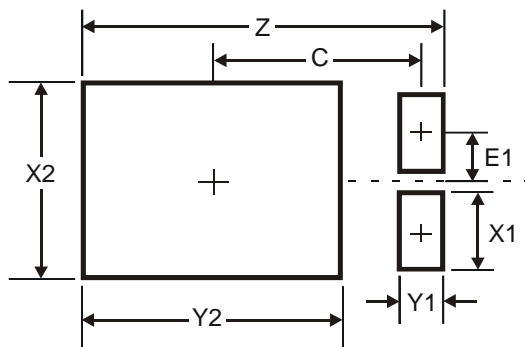
S4150 = Product type marking code  
 DII = Manufacturers' code marking  
 YYWW = Date code marking  
 YY = Last two digits of year ex: 05 for 2005  
 WW = Week code 01 to 52  
 K = Factory Designator

## 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	3.05 NOM	
E	6.40	6.60
e	1.84 NOM	
E1	5.30	5.45
E2	3.55 NOM	
L	0.75	0.95
L1	0.50	0.65
W	1.20	1.50
All Dimensions in mm		

## Suggested Pad Layout



Dimensions	Value (in mm)
Z	6.6
X1	1.4
X2	3.6
Y1	0.8
Y2	4.7
C	3.87
E1	0.9

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