

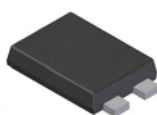
**10A LOW VF SCHOTTKY BARRIER RECTIFIER**  
*PowerDI<sup>®</sup>5*

## Features

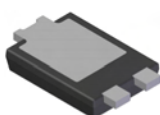
- Guard Ring Die Construction for Transient Protection
- Very Low Forward Voltage Drop
- High Forward Surge Current Capability
- For Use in Low Voltage, High Frequency Inverters, Free Wheeling, and Polarity Protection Applications
- **Lead Free Finish, RoHS Compliant (Note 1)**
- **"Green" Molding Compound (No Br, Sb)**
- **Qualified to AEC-Q101 Standards for High Reliability**

## Mechanical Data

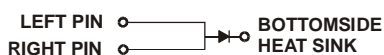
- Case: PowerDI<sup>®</sup>5
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish – Matte Tin annealed over Copper leadframe. Solderable per MIL-STD-202, Method 208 **(e3)**
- Polarity: See Diagram
- Weight: 0.096 grams (approximate)



Top View



Bottom View



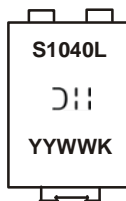
**Note:** Pins Left & Right must be electrically connected at the printed circuit board.

## Ordering Information (Note 2)

Part Number	Case	Packaging
PDS1040L-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



S1040L = Product type marking code  
D|| = 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 3) T <sub>A</sub> = 25°C	R <sub>θJA</sub>	85	—	°C/W
Thermal Resistance Junction to Ambient Air (Note 4) T <sub>A</sub> = 25°C	R <sub>θJA</sub>	65	—	°C/W
Thermal Resistance Junction to Ambient Air (Note 5) 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 6)	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 6)	I <sub>R</sub>	—	0.07 12.5	0.6 25	mA	T <sub>S</sub> = 25°C, V <sub>R</sub> = 40V T <sub>S</sub> = 100°C, V <sub>R</sub> = 40V

- Notes:
- 3 R-4 PCB, 2 oz. Copper, minimum recommended pad layout per <http://www.diodes.com>.
  4. Polyimide PCB, 2 oz. Copper, minimum recommended pad layout per <http://www.diodes.com>.
  5. Polyimide PCB, 2 oz. Copper. Cathode pad dimensions 9.4mm x 7.2mm. Anode pad dimensions 2.7mm x 1.6mm.
  6. Short duration pulse test used to minimize self-heating effect.
  7. Polyimide PCB, 2 oz. Copper. Cathode pad dimensions 18.8mm x 14.4mm. Anode pad dimensions 5.6mm x 3.0mm.
  8. Devices mounted such that R<sub>θJA</sub> ≅ 19°C/W.

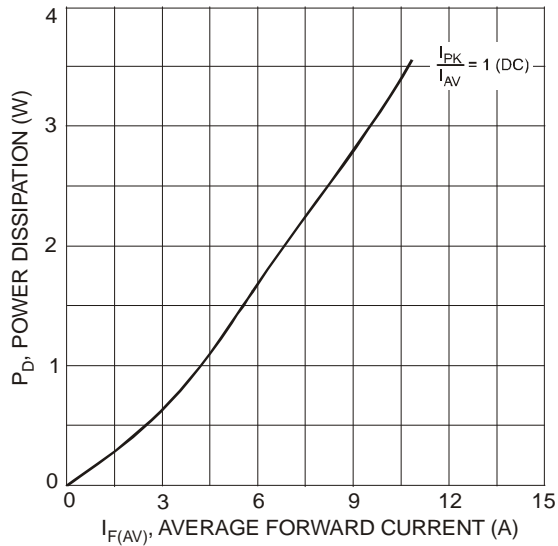


Fig. 1 Forward Power Dissipation

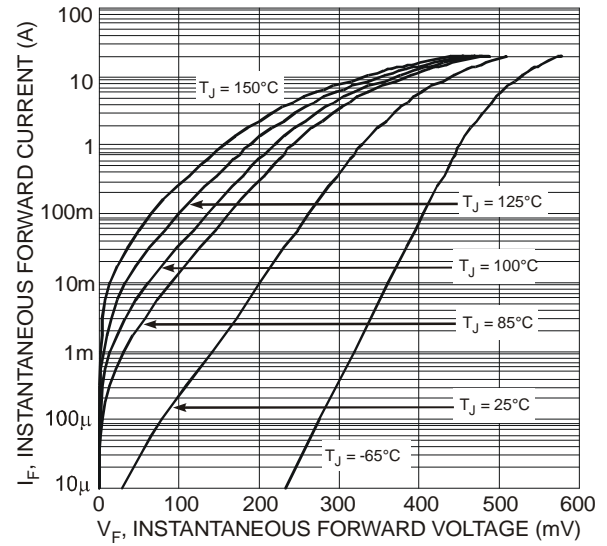


Fig. 2 Typical Forward Characteristics

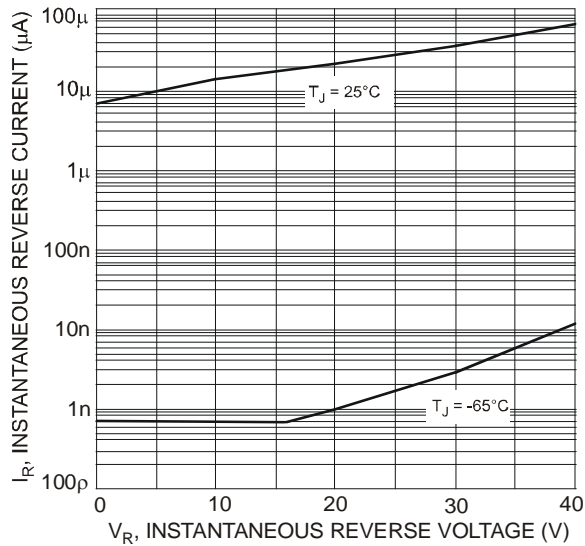


Fig. 3 Typical Reverse Characteristics

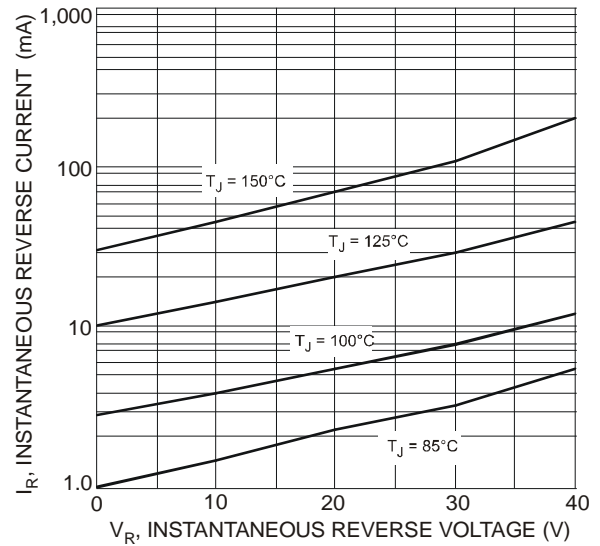


Fig. 4 Typical Reverse Characteristics

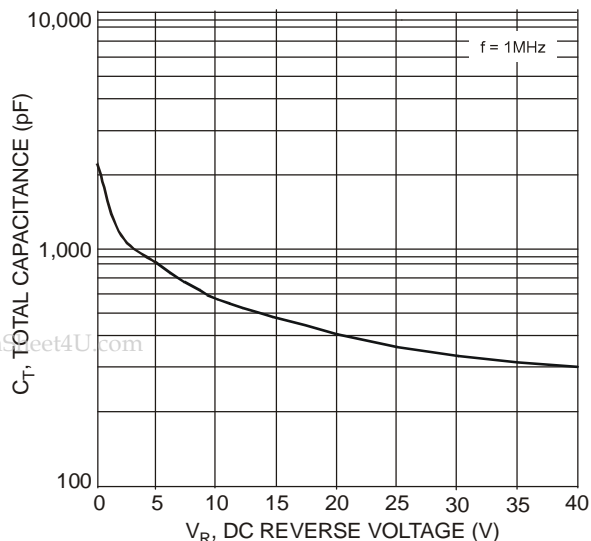


Fig. 5 Total Capacitance vs. Reverse Voltage

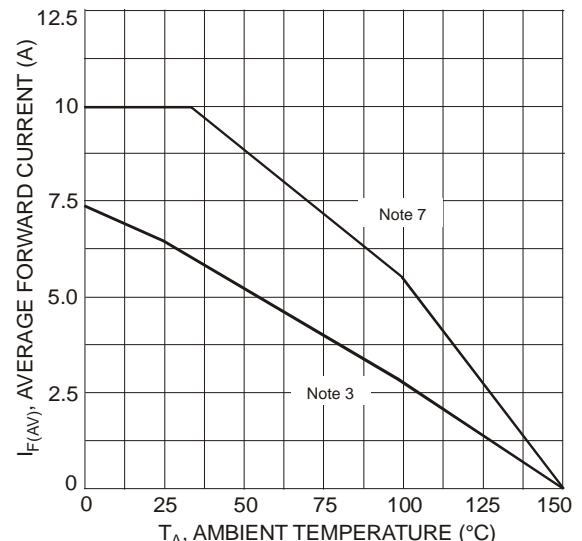


Fig. 6 Forward Current Derating Curve

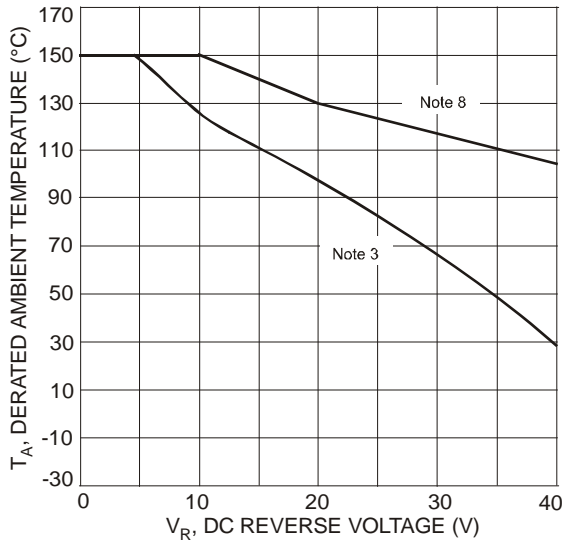
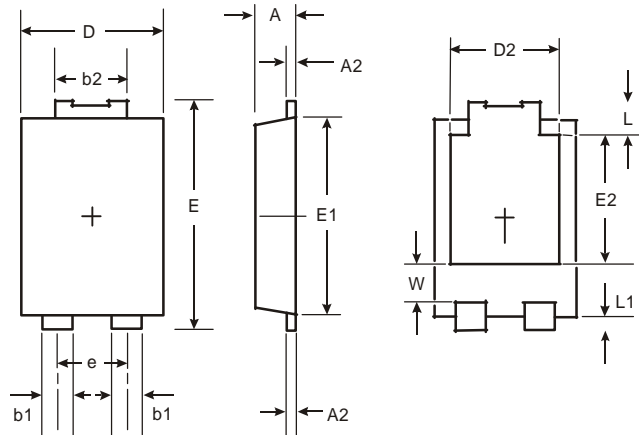


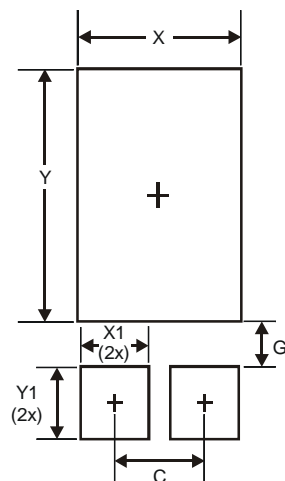
Fig. 7 Operating Temperature Derating

## Package Outline Dimensions



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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