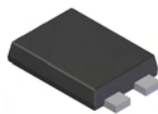


Features

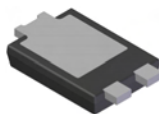
- Guard Ring Die Construction for Transient Protection
- Very Low Forward Voltage Drop
- High Forward Surge Current Capability
- For Use in Low Voltage, High Frequency Inverters, Free Wheeling, and Polarity Protection Applications
- **Lead Free Finish, RoHS Compliant (Note 1)**
- **"Green" Molding Compound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

Mechanical Data

- Case: PowerDI^{®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

LEFT PIN ○ ○ RIGHT PIN ○ ○
 BOTTOMSIDE HEAT SINK

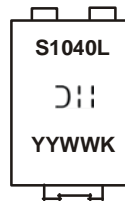
Note: Pins Left & Right must be electrically connected at the printed circuit board.

Ordering Information (Note 2)

Part Number	Case	Packaging
PDS1040L-13	PowerDI ^{®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
 D11 = 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 @ $T_A = 25^\circ\text{C}$ 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 (see also Figure 5)	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	$R_{\theta JS}$	—	1.5	$^\circ\text{C/W}$
Thermal Resistance Junction to Ambient Air (Note 3) $T_A = 25^\circ\text{C}$	$R_{\theta JA}$	85	—	$^\circ\text{C/W}$
Thermal Resistance Junction to Ambient Air (Note 4) $T_A = 25^\circ\text{C}$	$R_{\theta JA}$	65	—	$^\circ\text{C/W}$
Thermal Resistance Junction to Ambient Air (Note 5) $T_A = 25^\circ\text{C}$	$R_{\theta JA}$	50	—	$^\circ\text{C/W}$
Operating Junction Temperature Range $V_R \leq 80\% V_{RRM}$ $V_R \leq 50\% V_{RRM}$	T_J	-65 to +130 -65 to +150		$^\circ\text{C}$
Storage Temperature Range	T_{STG}	-65 to +150		$^\circ\text{C}$

Electrical Characteristics @ $T_A = 25^\circ\text{C}$ unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Breakdown Voltage (Note 6)	$V_{(BR)R}$	40	—	—	V	$I_R = 600\mu\text{A}$
Forward Voltage	V_F	—	0.41	0.46	V	$I_F = 6\text{A}, T_S = 25^\circ\text{C}$
		—	0.30	0.35		$I_F = 6\text{A}, T_S = 125^\circ\text{C}$
		—	0.42	0.47		$I_F = 8\text{A}, T_S = 25^\circ\text{C}$
		—	0.32	0.41		$I_F = 8\text{A}, T_S = 125^\circ\text{C}$
		—	0.44	0.49		$I_F = 10\text{A}, T_S = 25^\circ\text{C}$
		—	0.35	0.43		$I_F = 10\text{A}, T_S = 125^\circ\text{C}$
Reverse Current (Note 6)	I_R	—	0.07	0.6	mA	$T_S = 25^\circ\text{C}, V_R = 40\text{V}$ $T_S = 100^\circ\text{C}, V_R = 40\text{V}$

- Notes:
- R-4 PCB, 2 oz. Copper, minimum recommended pad layout per <http://www.diodes.com>.
 - Polymide PCB, 2 oz. Copper, minimum recommended pad layout per <http://www.diodes.com>.
 - Polymide 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.
 - Polymide PCB, 2 oz. Copper. Cathode pad dimensions 18.8mm x 14.4mm. Anode pad dimensions 5.6mm x 3.0mm.
 - Devices mounted such that $R_{\theta JA} \cong 19^\circ\text{C/W}$.

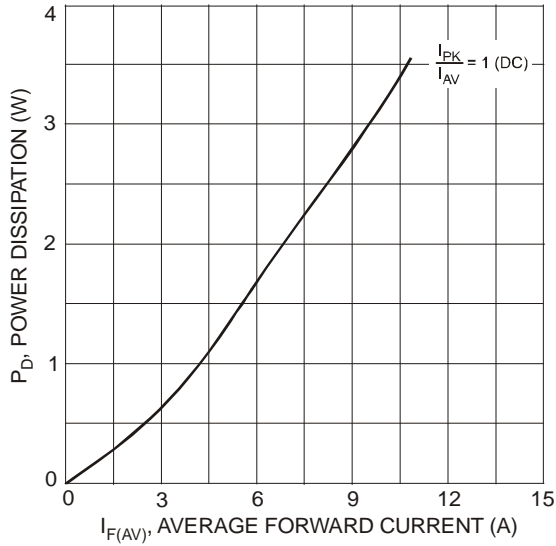


Fig. 1 Forward Power Dissipation

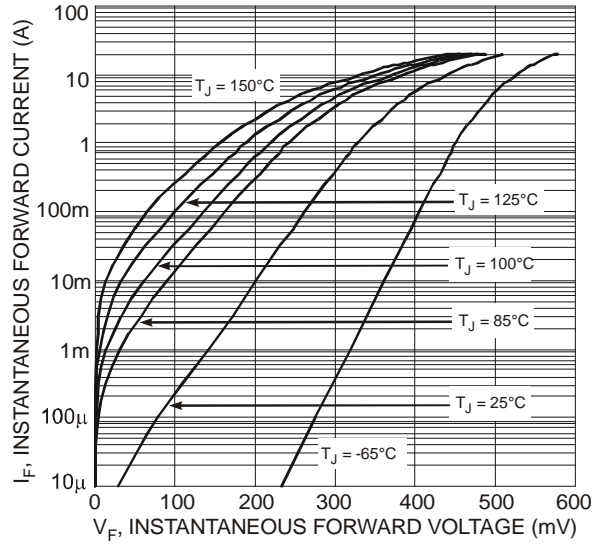


Fig. 2 Typical Forward Characteristics

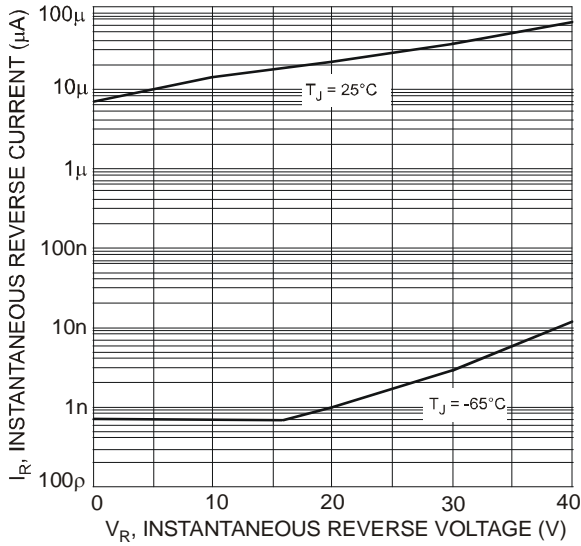


Fig. 3 Typical Reverse Characteristics

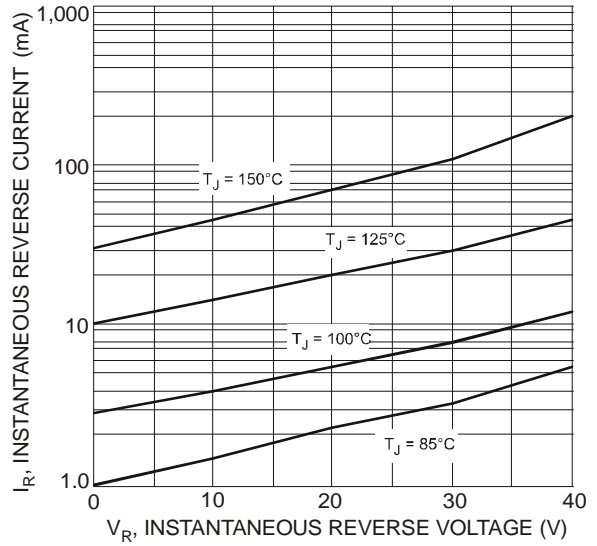


Fig. 4 Typical Reverse Characteristics

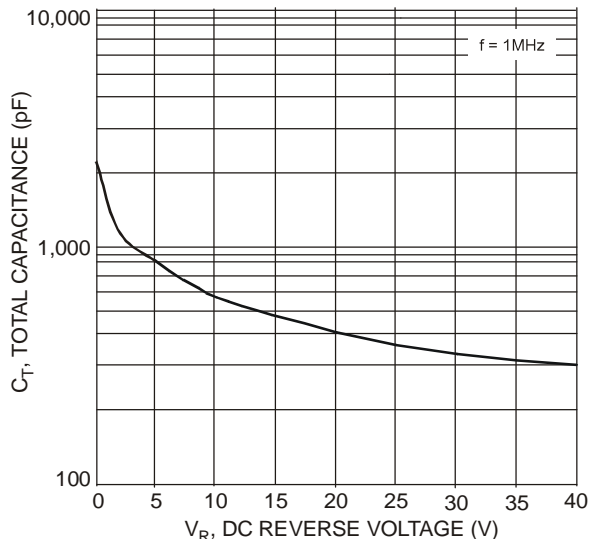


Fig. 5 Total Capacitance vs. Reverse Voltage

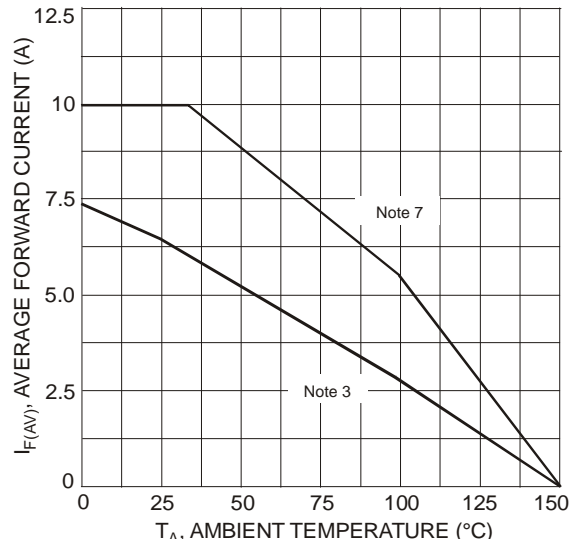


Fig. 6 Forward Current Derating Curve

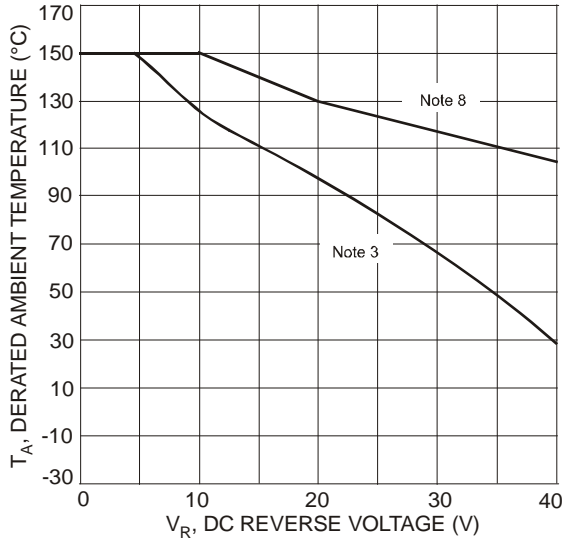
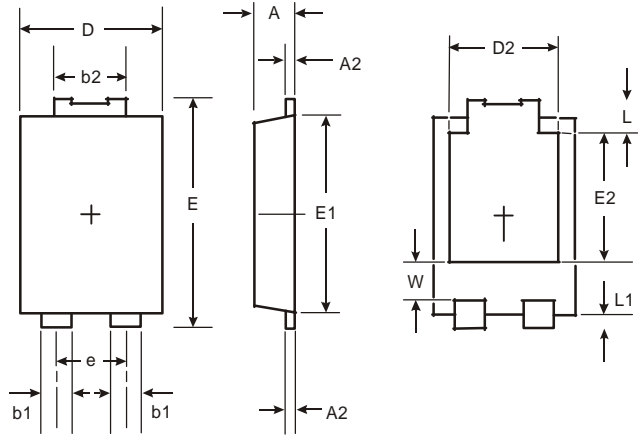


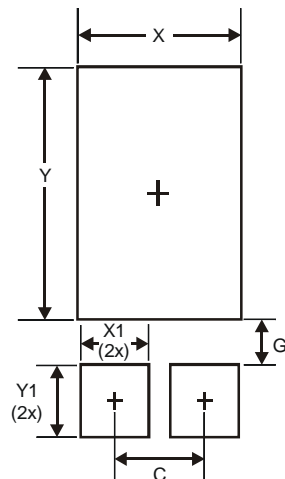
Fig. 7 Operating Temperature Derating

Package Outline Dimensions



PowerDI [®] 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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PDS1040L

Document number: DS30486 Rev. 11 - 2

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November 2010
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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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