


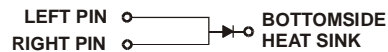
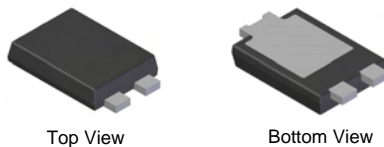
### 3A HIGH VOLTAGE SCHOTTKY BARRIER RECTIFIER PowerDI<sup>®</sup>5

#### Features

- Guard Ring Die Construction for Transient Protection
- Low Power Loss, High Efficiency
- Low Reverse Leakage Current
- Low Forward Voltage Drop
- 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 
- Polarity: See Diagram
- Weight: 0.093 grams (approximate)



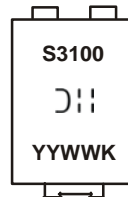
**Note:** Pins Left & Right must be electrically connected at the printed circuit board.

#### Ordering Information (Note 2)

Part Number	Case	Packaging
PDS3100-13	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



S3100 = Product type marking code  
DII = Manufacturers' code marking  
YYWW = Date code marking  
YY = Last digit 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	$V_{RRM}$	100	V
Working Peak Reverse Voltage	$V_{RWM}$		
DC Blocking Voltage	$V_R$		
RMS Reverse Voltage	$V_{R(RMS)}$	70	V
Average Rectified Output Current (see also Figure 5)	$I_O$	3	A
Non-Repetitive Peak Forward Surge Current 8.3ms Single half sine-wave Superimposed on Rated Load	$I_{FSM}$	90	A

**Thermal Characteristics**

Characteristic	Symbol	Typ	Max	Unit
Thermal Resistance Junction to Soldering Point	$R_{\theta JS}$	—	6.0	$^\circ\text{C/W}$
Thermal Resistance Junction to Ambient Air (Note 3) $T_A = 25^\circ\text{C}$	$R_{\theta JA}$	95	—	$^\circ\text{C/W}$
Thermal Resistance Junction to Ambient Air (Note 4) $T_A = 25^\circ\text{C}$	$R_{\theta JA}$	70	—	$^\circ\text{C/W}$
Thermal Resistance Junction to Ambient Air (Note 5) $T_A = 25^\circ\text{C}$	$R_{\theta JA}$	50	—	$^\circ\text{C/W}$
Operating Temperature Range	$T_J$	-65 to +150		$^\circ\text{C}$
Storage Temperature Range	$T_{STG}$	-65 to +175		$^\circ\text{C}$

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Breakdown Voltage (Note 6)	$V_{(BR)R}$	100	—	—	V	$I_R = 0.2\text{mA}$
Forward Voltage	$V_F$	—	0.71	0.76	V	$I_F = 3\text{A}, T_J = 25^\circ\text{C}$
		—	0.61	0.65		$I_F = 3\text{A}, T_J = 100^\circ\text{C}$
		—	0.57	0.61		$I_F = 3\text{A}, T_J = 125^\circ\text{C}$
		—	0.78	0.84		$I_F = 6\text{A}, T_J = 25^\circ\text{C}$
		—	0.68	0.75		$I_F = 6\text{A}, T_J = 100^\circ\text{C}$
		—	0.64	0.68		$I_F = 6\text{A}, T_J = 125^\circ\text{C}$
Reverse Current (Note 6)	$I_R$	—	2	100	$\mu\text{A}$	$T_J = 25^\circ\text{C}, V_R = 100\text{V}$
		—	0.4	5	mA	$T_J = 100^\circ\text{C}, V_R = 100\text{V}$
		—	2	20	mA	$T_J = 125^\circ\text{C}, V_R = 100\text{V}$

- Notes:
- FR-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.

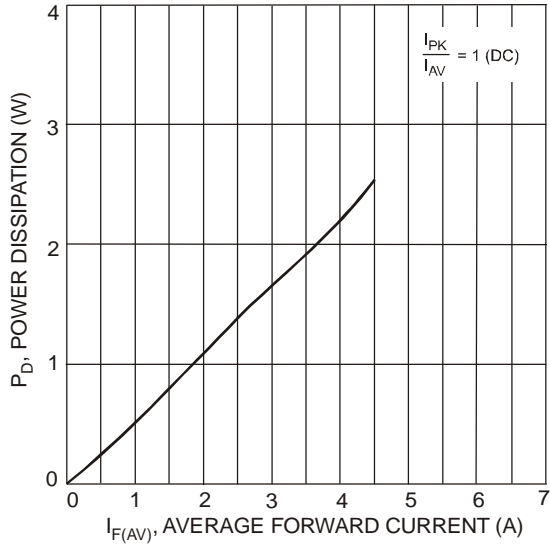


Fig. 1 Forward Power Dissipation

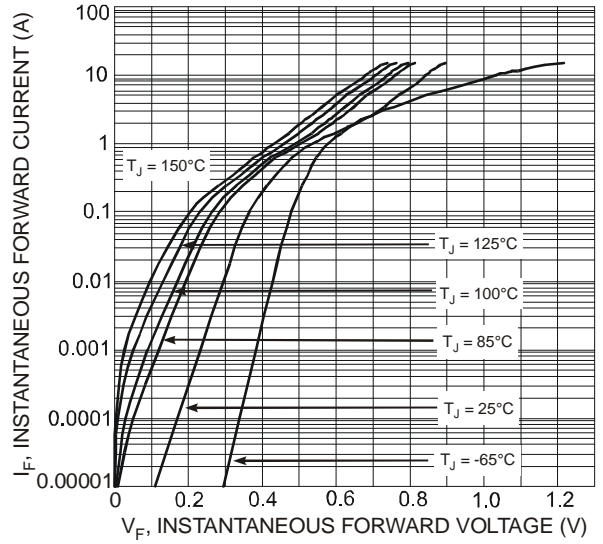


Fig. 2 Typical Forward Characteristics

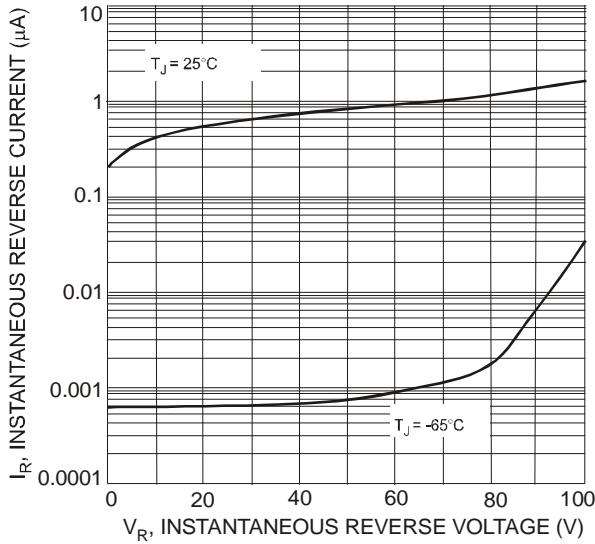


Fig. 3 Typical Reverse Characteristics

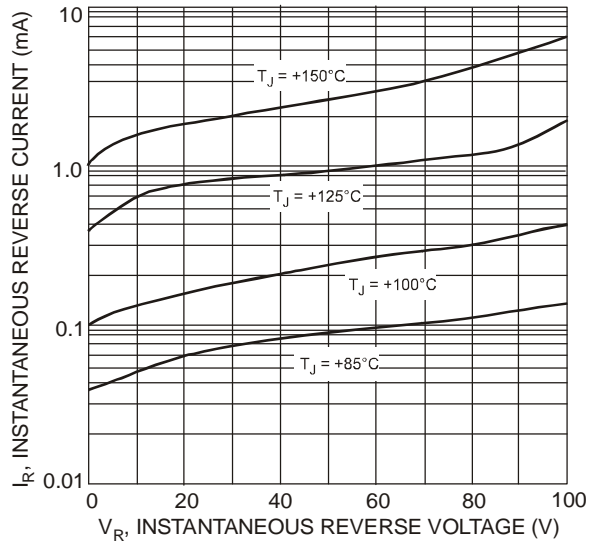


Fig. 4 Typical Reverse Characteristics

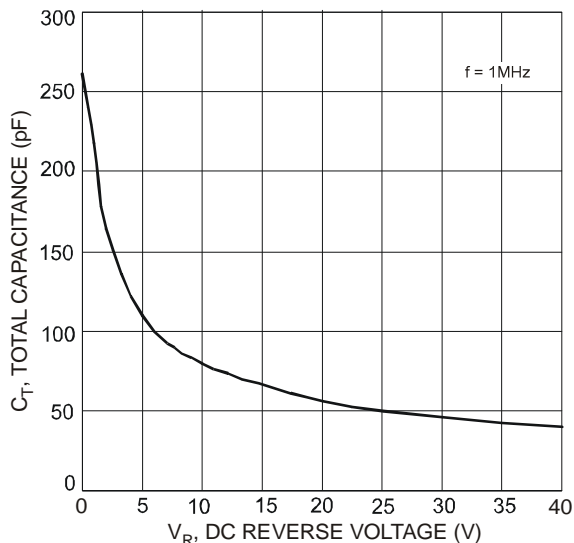


Fig. 5 Total Capacitance vs. Reverse Voltage

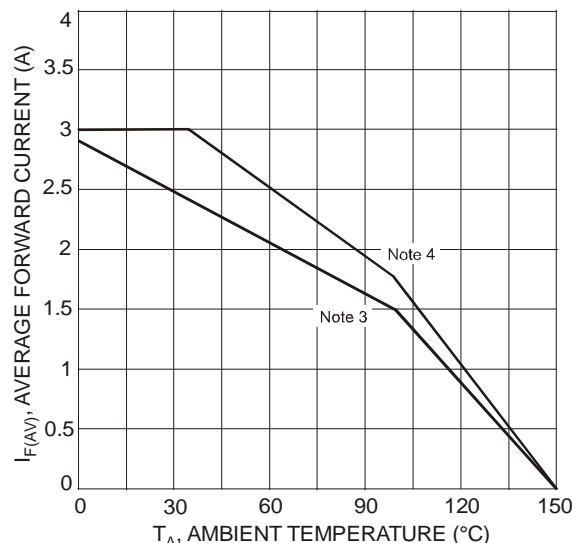


Fig. 6 Forward Current Derating Curve

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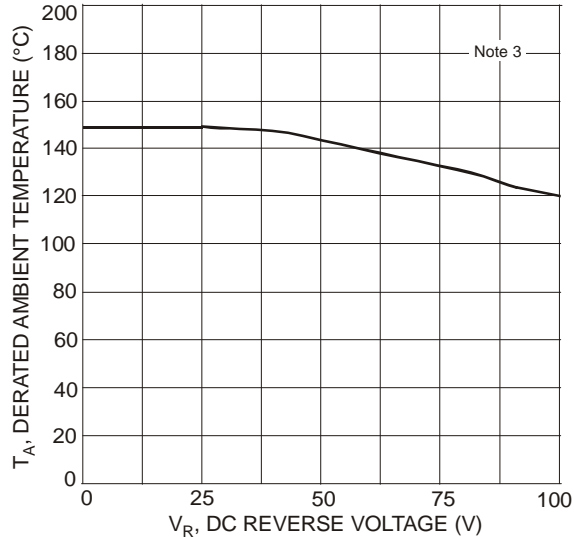
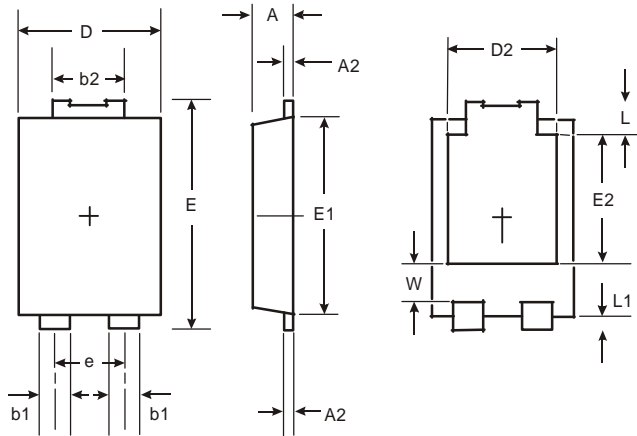


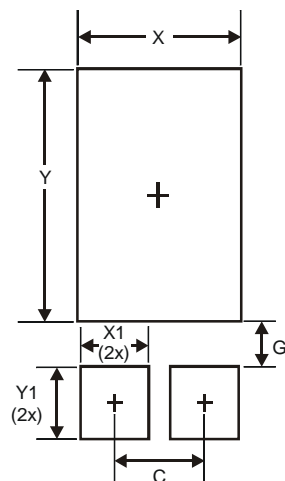
Fig. 7 Operating Temperature Derating

**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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