4A HIGH VOLTAGE SCHOTTKY BARRIER RECTIFIER
POWERDI®

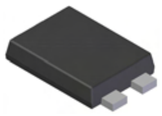
Features

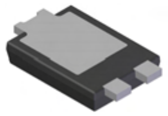
- Lower Forward Voltage Drop than Ultrafast Rectifiers
- Very Low Leakage Current
- Soft Recovery Characteristics: Softness Factor (t_b/t_a) ≥ 1 (see figure 8)
- Highly Stable Oxide Passivated Junction
- High Forward Surge Current Capability
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**

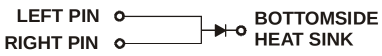
Mechanical Data

- Case: POWERDI5
- 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: 0.095 grams (approximate)

POWERDI5


Top View


Bottom View



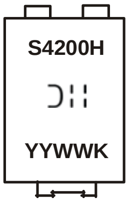
Note: Pins Left & Right must be electrically connected at the printed circuit board.

Ordering Information (Note 4)

Part Number	Case	Packaging
PDS4200H-13	POWERDI5	5000/Tape & Reel
PDS4200H-7	POWERDI5	1500/Tape & Reel

Notes:
1. EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant. All applicable RoHS exemptions applied.
2. See http://www.diodes.com for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
4. For packaging details, go to our website at http://www.diodes.com.

Marking Information



S4200H = Product type marking code
Ↄ¦¦ = Manufacturers' code marking
YYWW = Date code marking
YY = Last two digits of year (ex: 06 for 2006)
WW = Week code (01 - 53)
K = Factory Designator

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Maximum Ratings (@T_A = +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 Working Peak Reverse Voltage DC Blocking Voltage	V_{RRM} V_{RWM} V_R	200	V
RMS Reverse Voltage	$V_{R(RMS)}$	141	V
Average Rectified Output Current (See also figure 5)	I_O	4	A
Non-Repetitive Peak Forward Surge Current 8.3ms Single half sine-wave Superimposed on Rated Load	I_{FSM}	100	A

Thermal Characteristics

Characteristic	Symbol	Typ	Max	Unit
Thermal Resistance Junction to Soldering Point	$R_{\theta JS}$	—	3.0	°C/W
Thermal Resistance Junction to Ambient Air (Note 5)	$R_{\theta JA}$	80	—	°C/W
Thermal Resistance Junction to Ambient Air (Note 6)	$R_{\theta JA}$	65	—	°C/W
Thermal Resistance Junction to Ambient Air (Note 7)	$R_{\theta JA}$	45	—	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-65 to +175		°C

Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Breakdown Voltage (Note 8)	$V_{(BR)R}$	200	—	—	V	I_R = 5μA
Forward Voltage	V_F	— — — — — —	0.76 — 0.785 0.61 0.84 0.68	0.82 0.59 0.84 0.64 0.89 0.75	V	I_F = 3A, T_S = +25°C I_F = 3A, T_S = +150°C I_F = 4A, T_S = +25°C I_F = 4A, T_S = +150°C I_F = 8A, T_S = +25°C I_F = 8A, T_S = +150°C
Reverse Leakage Current (Note 8)	I_R	— —	0.2 0.8	1 4	μA mA	T_S = +25°C, V_R = 200V T_S = +150°C, V_R = 200V
Reverse Recovery Time	t_{rr}	—	—	25	ns	I_F = 0.5A, I_R = 1.0A I_{RR} = 0.25A (see Figure 8)

Notes:
5. FR-4 PCB, 2 oz. Copper, minimum recommended pad layout per http://www.diodes.com.
6. Polymide PCB, 2 oz. Copper, minimum recommended pad layout per http://www.diodes.com.
7. Polymide PCB, 2 oz. Copper. Cathode pad dimensions 9.4mm x 7.2mm. Anode pad dimensions 2.7mm x 1.6mm.
8. Short duration test pulse used to minimize self-heating effect.

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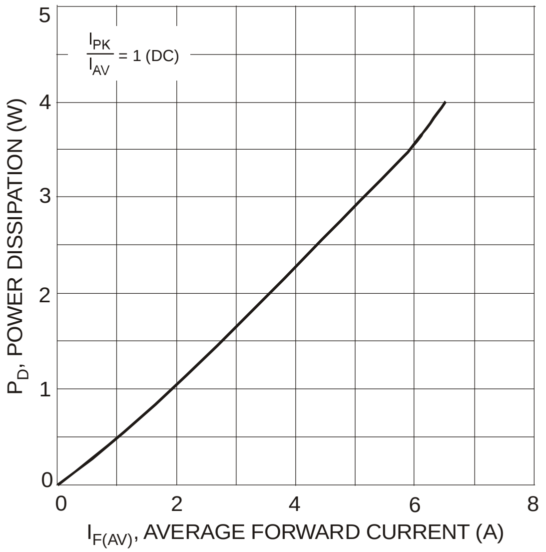

Fig. 1 Forward Power Dissipation

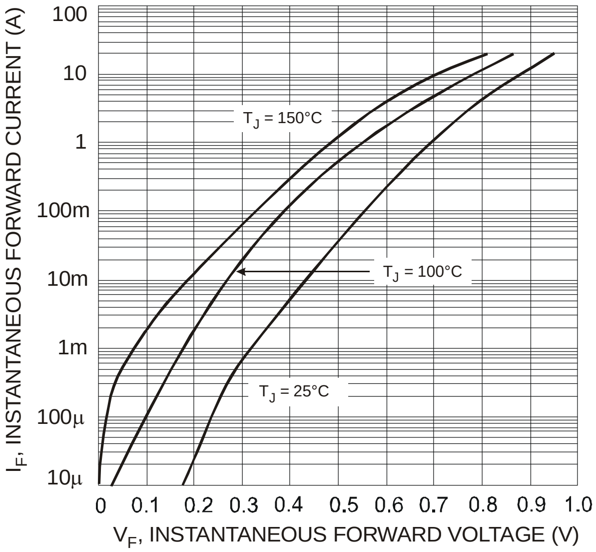

Fig. 2 Typical Forward Characteristics

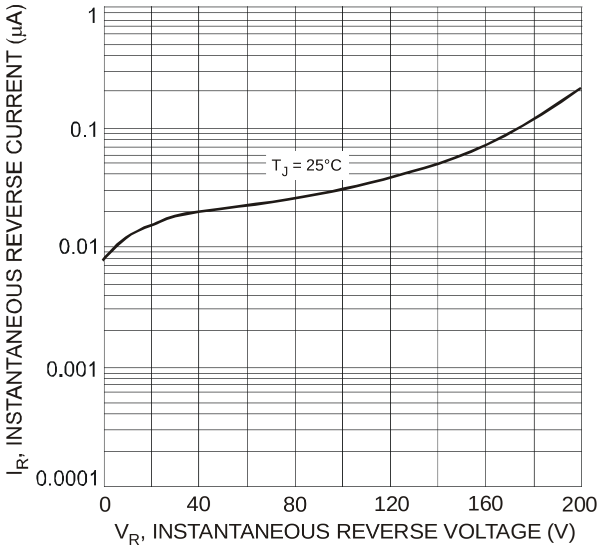

Fig. 3 Typical Reverse Characteristics

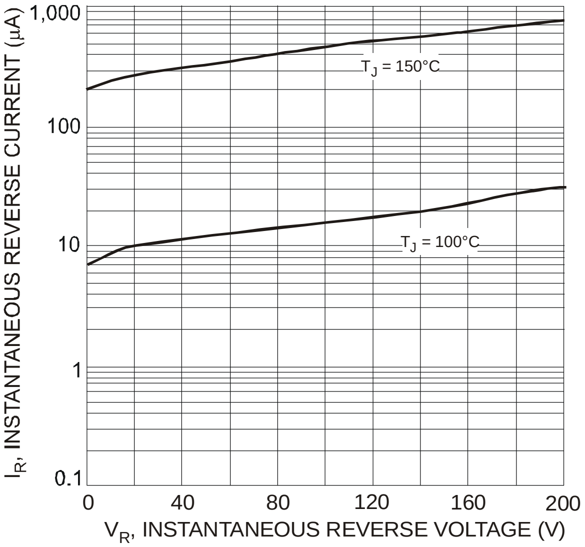

Fig. 4 Typical Reverse Characteristics

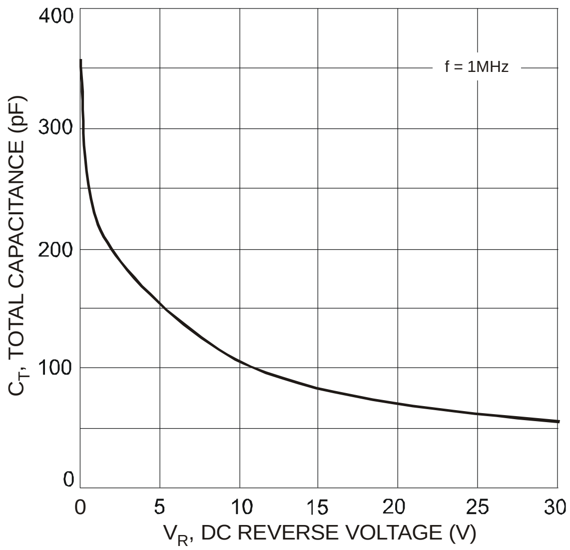

Fig. 5 Total Capacitance vs. Reverse Voltage

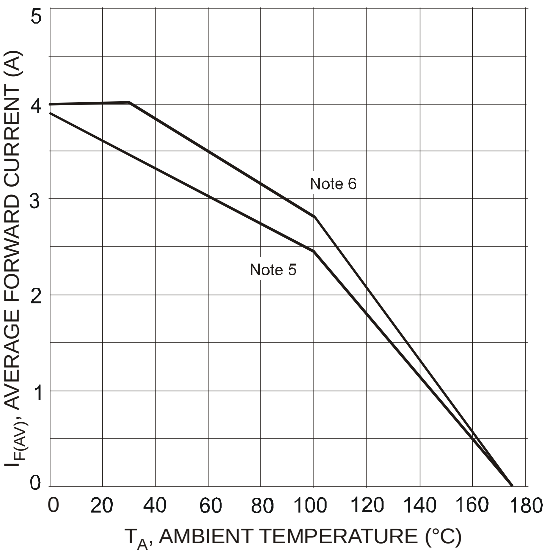

Fig. 6 Forward Current Derating Curve

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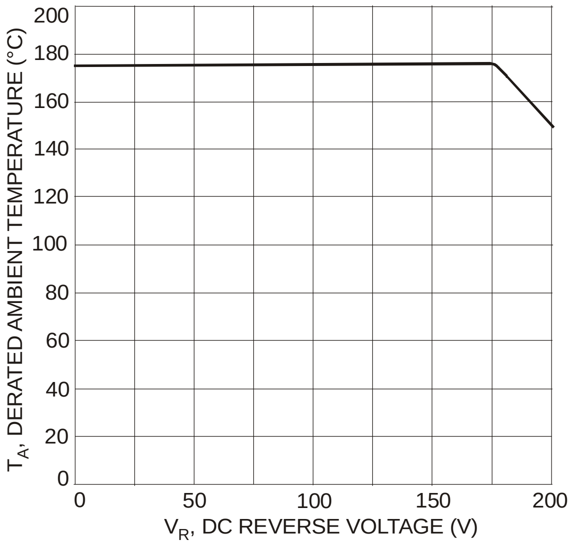
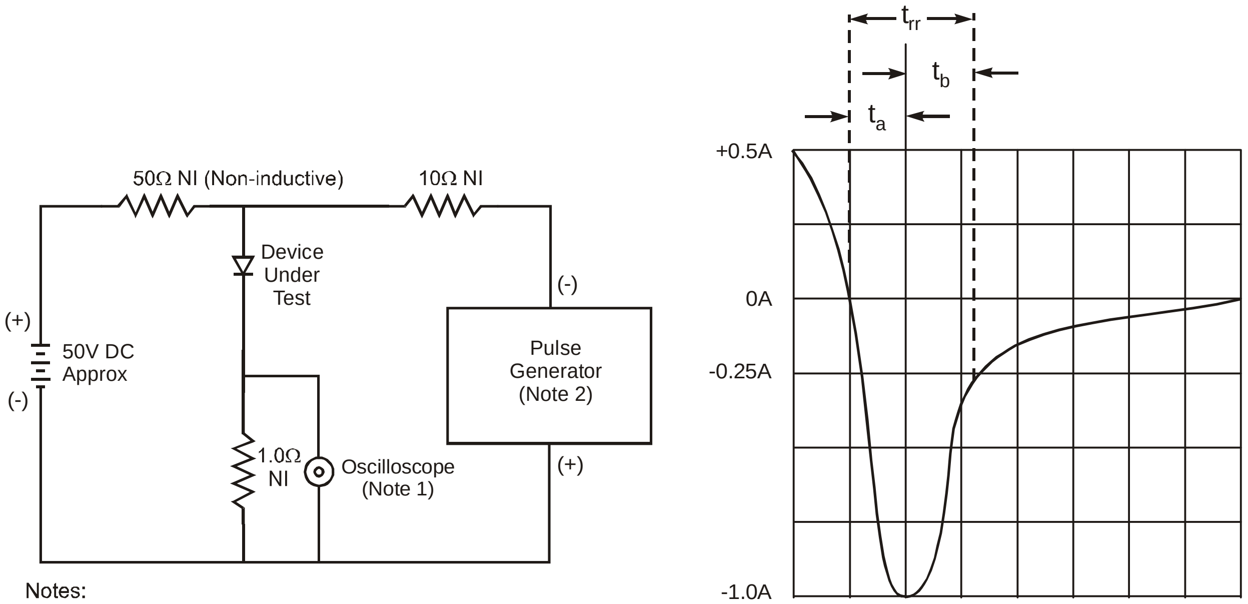


Fig. 7 Operating Temperature Derating



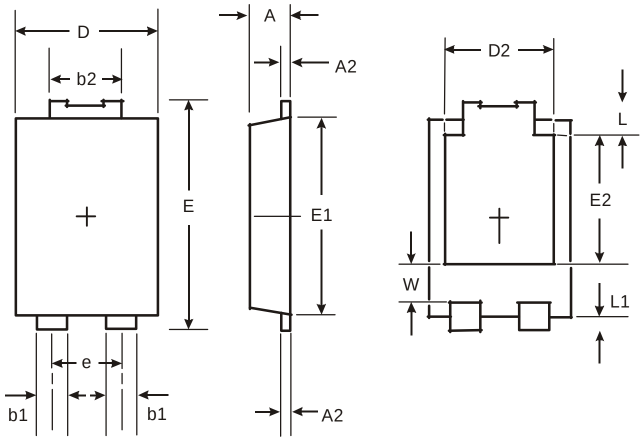
Notes:
1. Rise Time = 7.0ns max. Input Impedance = 1.0MΩ, 22pF.
2. Rise Time = 10ns max. Input Impedance = 50Ω.

Set time base for 50/100 ns/cm

Fig. 8 Reverse Recovery Time Characteristic and Test Circuit

Package Outline Dimensions

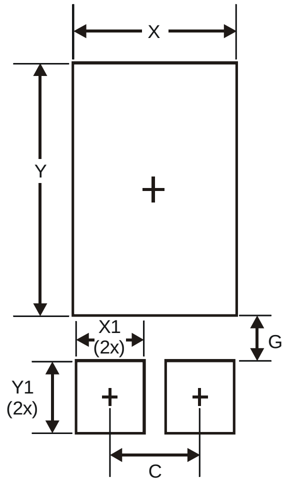
Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for latest version.



POWERDI5		
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

Please see AP02001 at http://www.diodes.com/datasheets/ap02001.pdf for the latest version.



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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