

PDS4200HQ

### **4A HIGH VOLTAGE SCHOTTKY BARRIER RECTIFIER POWERDI**

## Product Summary (@T<sub>A</sub> = +25°C)

V <sub>RRM</sub> (V)	I <sub>O</sub> (A)	V <sub>F(MAX)</sub> (V)	I <sub>R(MAX)</sub> (μΑ)
200	4	0.84	1

### **Features and Benefits**

- Lower Forward Voltage Drop than Ultrafast Rectifiers
- Very Low Leakage Current
- Soft Recovery Characteristics: Softness Factor (t<sub>R</sub>/t<sub>A</sub>) ≥ 1 (See
- 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
- PPAP Capable (Note 4)

## **Applications**

- **SMPS**
- DC-DC Converter
- Freewheeling Diodes
- AC-DC

### **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 (3)
- Polarity: See Diagram
- Weight: 0.095 grams (Approximate)

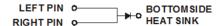
#### PowerDI5





Top View

**Bottom View** 



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

## Ordering Information (Note 5)

Part Number	Compliance	Case	Packaging
PDS4200HQ-13	Automotive	PowerDI5	5,000/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/quality/lead\_free.html 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. Automotive products are AEC-Q101 qualified and are PPAP capable. Refer to http://www.diodes.com/product\_compliance\_definitions.html.
- 5. For packaging details, go to our website at http://www.diodes.com/products/packages.html.

## Marking Information



S4200H = Product Type Marking Code );; = Manufacturers' Code Marking YYWW = Date Code Marking YY = Last Two Digits of Year (ex: 16 for 2016) WW = Week Code (01 to 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 capacitive load, derate current by 20%.

Characteristic	Symbol	Value	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	V <sub>RM</sub> V <sub>RWM</sub> V <sub>R</sub>	200	V
RMS Reverse Voltage	V <sub>R(RMS)</sub>	141	V
Average Rectified Output Current	Io	4	Α
Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-wave Superimposed on Rated Load	I <sub>FSM</sub>	100	A

## **Thermal Characteristics**

Characteristic	Symbol	Тур	Max	Unit
Thermal Resistance Junction to Soldering Point	$R_{\theta JS}$	_	3.0	°C/W
Thermal Resistance Junction to Ambient Air (Note 6)	$R_{ heta JA}$	80	_	°C/W
Thermal Resistance Junction to Ambient Air (Note 7)	$R_{ heta JA}$	65	_	°C/W
Thermal Resistance Junction to Ambient Air (Note 8)	$R_{ heta JA}$	45	_	°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	Тур	Max	Unit	Test Condition
Reverse Breakdown Voltage (Note 9)	$V_{(BR)R}$	200		_	V	$I_R = 5\mu A$
Forward Voltage	V <sub>F</sub>	  -  -  -  -	0.76 — 0.785 0.61 0.84 0.68	0.82 0.59 0.84 0.64 0.89 0.75		IF = 3A, Ts = +25°C IF = 3A, Ts = +150°C IF = 4A, Ts = +25°C IF = 4A, Ts = +150°C IF = 8A, Ts = +25°C IF = 8A, Ts = +150°C
Reverse Leakage Current (Note 9)	I <sub>R</sub>	_	0.2 0.8	1 4	μA mA	$T_S = +25$ °C, $V_R = 200$ V $T_S = +150$ °C, $V_R = 200$ V
Reverse Recovery Time	t <sub>RR</sub>	_	_	25	ns	$I_F = 0.5A, I_R = 1.0A$ $I_{RR} = 0.25A$ (See Figure 8)

Notes:

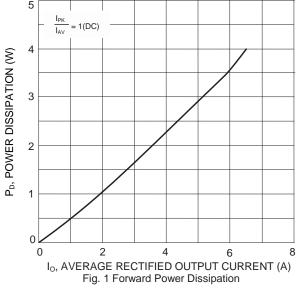
- 6. FR-4 PCB, 2 oz. Copper, minimum recommended pad layout per http://www.diodes.com/package-outlines.html.
- 8. Polymide PCB, 2 oz. Copper, minimum recommended pad layout per http://www.diodes.com/package-outlines.html.

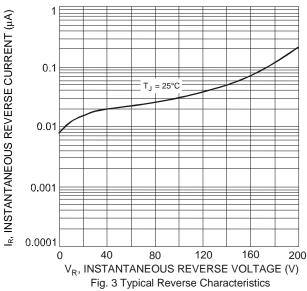
  8. Polymide PCB, 2 oz. Copper, minimum recommended pad layout per http://www.diodes.com/package-outlines.html.

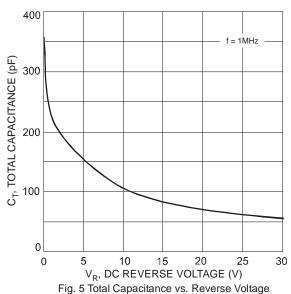
  9. Short duration test pulse used to minimize self-heating effect.

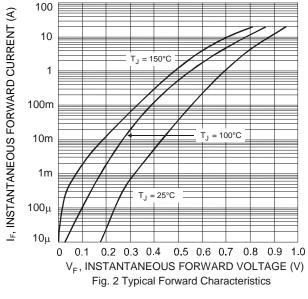


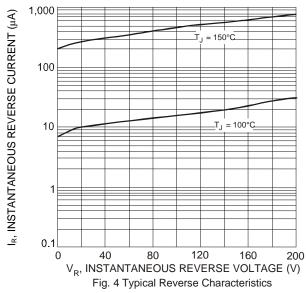


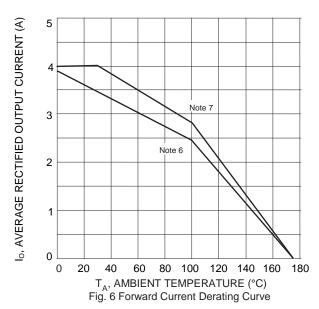




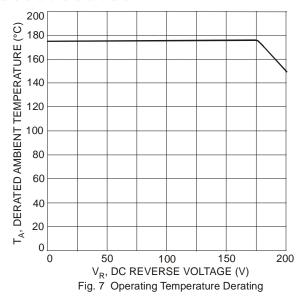


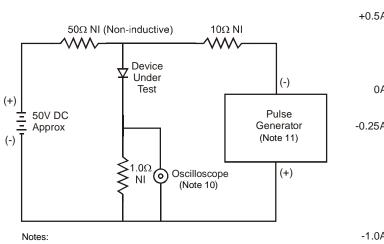


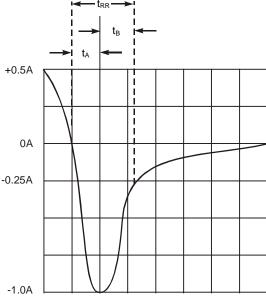












Set time base for 50/100 ns/cm

10. Rise Time = 7.0ns max. Input Impedance =  $1.0M\Omega$ , 22pF. 11. Rise Time = 10ns max. Input Impedance =  $50\Omega$ .

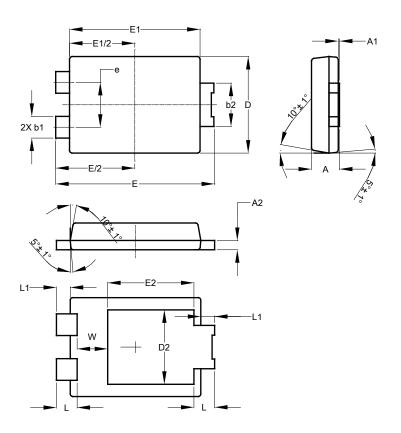
Fig. 8 Reverse Recovery Time Characteristic and Test Circuit



## **Package Outline Dimensions**

Please see http://www.diodes.com/package-outlines.html for the latest version.

#### PowerDI5

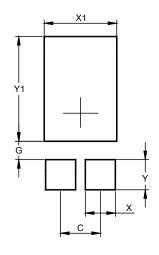


PowerDI5				
Dim	Min	Max	Тур	
Α	1.05	1.15	1.10	
A1	0.00	0.05		
A2	0.33	0.43	0.381	
b1	0.80	0.99	0.89	
b2	1.70	1.88	1.78	
D	3.90	4.05	3.966	
D2			3.054	
Е	6.40	6.60	6.504	
е			1.84	
E1	5.30	5.45	5.37	
E2			3.549	
L	0.75	0.95	0.85	
L1	0.50	0.65	0.57	
W	1.10	1.41	1.255	
All Dimensions in mm				

## **Suggested Pad Layout**

Please see http://www.diodes.com/package-outlines.html for the latest version.

### PowerDI5



Dimensions	Value (in mm)
С	1.840
G	0.852
X	1.390
X1	3.360
Y	1.400
Y1	4.860



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## Офис по работе с юридическими лицами:

105318, г. Москва, ул. Щербаковская д. 3, офис 1107, 1118, ДЦ «Щербаковский»

Телефон: +7 495 668-12-70 (многоканальный)

Факс: +7 495 668-12-70 (доб.304)

E-mail: info@moschip.ru

Skype отдела продаж:

moschip.ru moschip.ru\_6 moschip.ru 4 moschip.ru 9