

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

V <sub>RRM</sub> (V)	I <sub>O(MAX)</sub> (A)	V <sub>F(MAX)</sub> (V)	I <sub>R(MAX)</sub> (μA)
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>B</sub>/t<sub>A</sub>) ≥ 1 (See Figure 9)
- 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)**
- **The PDS4200HQ is suitable for automotive applications requiring specific change control; this part is AEC-Q101 qualified, PPAP capable, and manufactured in IATF 16949 certified facilities.**

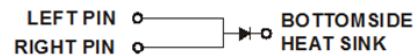
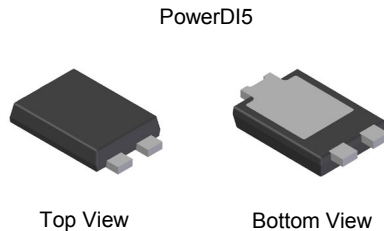
<https://www.diodes.com/quality/product-definitions/>

**Applications**

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

**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 Lead-Frame. Solderable per MIL-STD-202, Method 208 **Ⓜ3**
- Polarity: See Diagram
- Weight: 0.095 grams (Approximate)

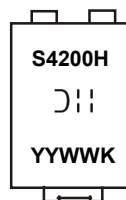


**Note:** Pins Left & Right must be electrically connected at the printed circuit board.

**Ordering Information (Note 4)**

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) & 2015/863/EU (RoHS 3) compliant. All applicable RoHS exemptions applied.
  2. See [http://www.diodes.com/quality/lead\\_free/](http://www.diodes.com/quality/lead_free/) 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 <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

**Marking Information**


S4200H = Product Type Marking Code  
 Ⓜ;Ⓜ = Manufacturer's Code Marking  
 YYWW = Date Code Marking  
 YY = Last Two Digits of Year (ex: 19 for 2019)  
 WW = Week Code (01 to 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 capacitive load, derate current by 20%.

Characteristic	Symbol	Value	Unit
Peak Repetitive Reverse Voltage	$V_{RRM}$	200	V
Working Peak Reverse Voltage	$V_{RWM}$		
DC Blocking Voltage	$V_R$		
RMS Reverse Voltage	$V_{R(RMS)}$	141	V
Average Rectified Output Current	$I_O$	4	A
Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-wave Superimposed on Rated Load	$I_{FSM}$	100	A
Electrostatic Discharge	HBM	4	kV
Electrostatic Discharge	CDM	1	kV

**Thermal Characteristics** (Note 5)

Characteristic	Symbol	Typ	Max	Unit
Thermal Resistance Junction to Soldering Point	$R_{\theta JS}$	—	3.0	$^\circ\text{C/W}$
Thermal Resistance Junction to Ambient Air (Note 6)	$R_{\theta JA}$	80	—	$^\circ\text{C/W}$
Thermal Resistance Junction to Ambient Air (Note 7)	$R_{\theta JA}$	65	—	$^\circ\text{C/W}$
Thermal Resistance Junction to Ambient Air (Note 8)	$R_{\theta JA}$	45	—	$^\circ\text{C/W}$
Operating and Storage Temperature Range	$T_J, T_{STG}$	-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 9)	$V_{(BR)R}$	200	—	—	V	$I_R = 5\mu\text{A}$
Forward Voltage	$V_F$	—	0.76	0.82	V	$I_F = 3\text{A}, T_S = +25^\circ\text{C}$
		—	—	0.59		$I_F = 3\text{A}, T_S = +150^\circ\text{C}$
		—	0.785	0.84		$I_F = 4\text{A}, T_S = +25^\circ\text{C}$
		—	0.61	0.64		$I_F = 4\text{A}, T_S = +150^\circ\text{C}$
		—	0.84	0.89		$I_F = 8\text{A}, T_S = +25^\circ\text{C}$
		—	0.68	0.75		$I_F = 8\text{A}, T_S = +150^\circ\text{C}$
Reverse Leakage Current (Note 9)	$I_R$	—	0.2	1	$\mu\text{A}$ mA	$T_S = +25^\circ\text{C}, V_R = 200\text{V}$
		—	0.8	4		$T_S = +150^\circ\text{C}, V_R = 200\text{V}$
Reverse Recovery Time	$t_{RR}$	—	13	25	ns	$I_F = 0.5\text{A}, I_R = 1.0\text{A}$ $I_{RR} = 0.25\text{A}$ (See Figure 9)

- Notes:
- The heat generated must be less than thermal conductivity from junction-to-ambient:  $dPD/DTJ < 1/R_{thJA}$
  - FR-4 PCB, 2 oz. Copper, minimum recommended pad layout per <http://www.diodes.com/package-outlines.html>.
  - Polymide PCB, 2 oz. Copper, minimum recommended pad layout per <http://www.diodes.com/package-outlines.html>.
  - Polymide PCB, 2 oz. Copper. Cathode pad dimensions 9.4mm x 7.2mm. Anode pad dimensions 2.7mm x 1.6mm.
  - Short duration test pulse used to minimize self-heating effect.

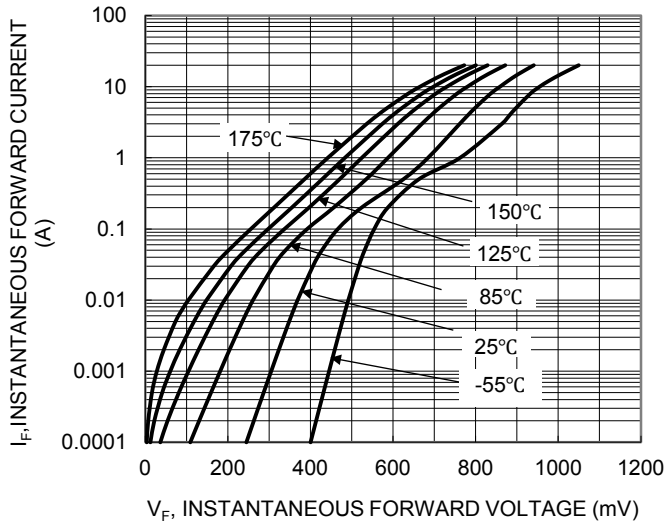


Figure 1. Typical Forward Characteristics

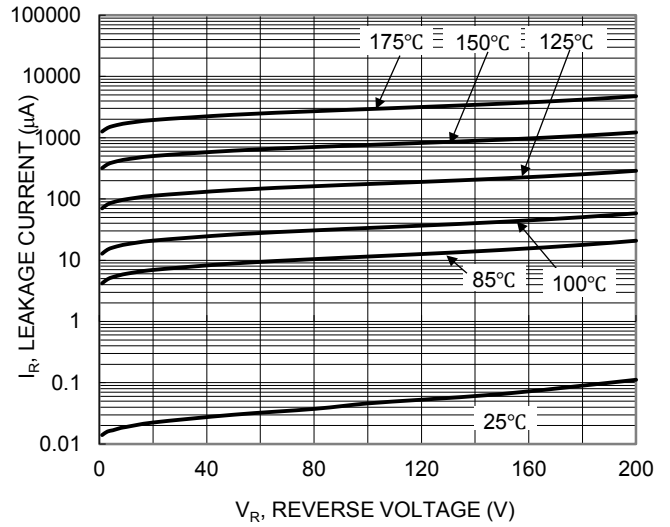


Figure 2. Typical Reverse Characteristics

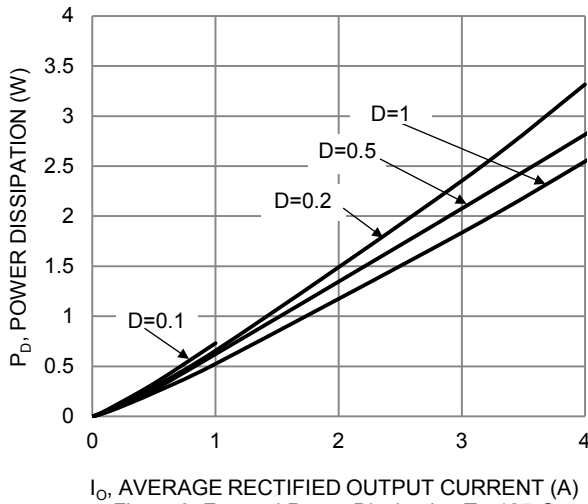


Figure 3. Forward Power Dissipation  $T_J=125^\circ\text{C}$

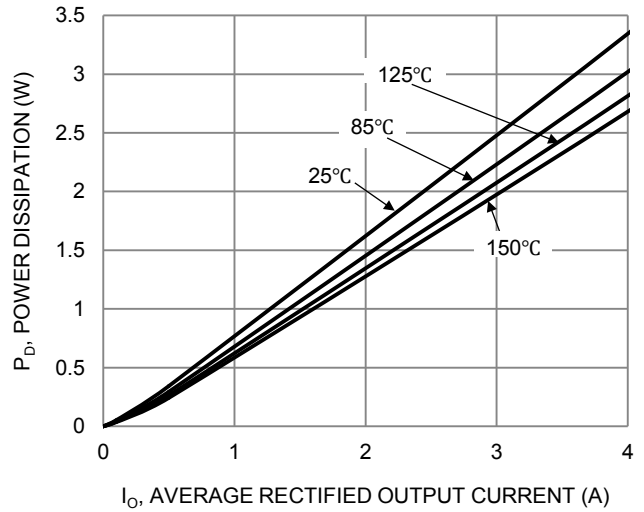


Figure 4. Forward Power Dissipation  $D=0.5$

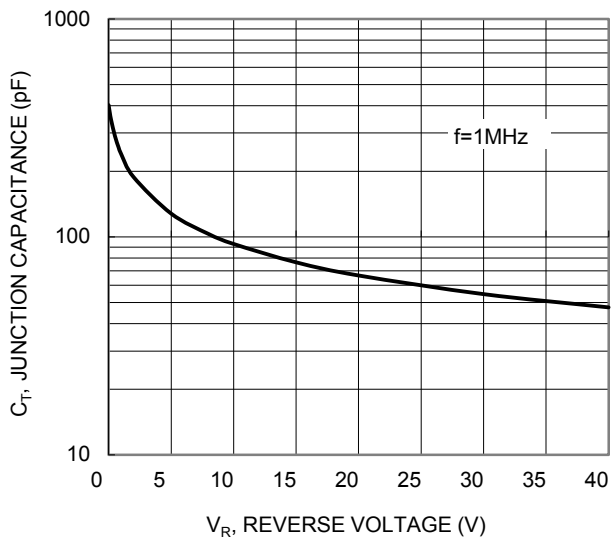


Figure 5. Typical Junction Capacitance

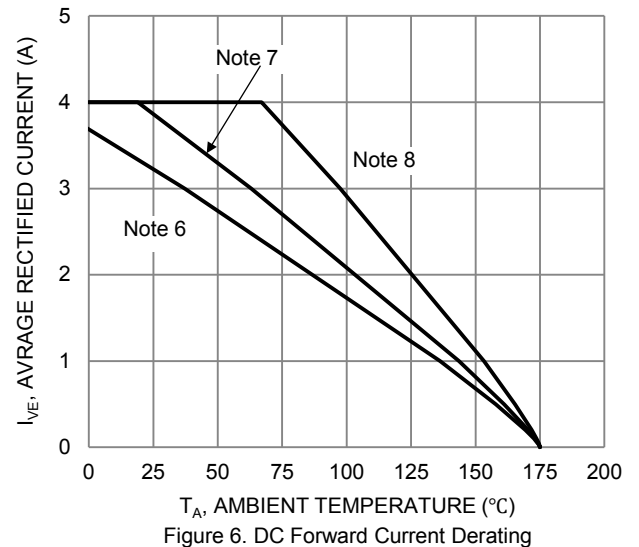


Figure 6. DC Forward Current Derating

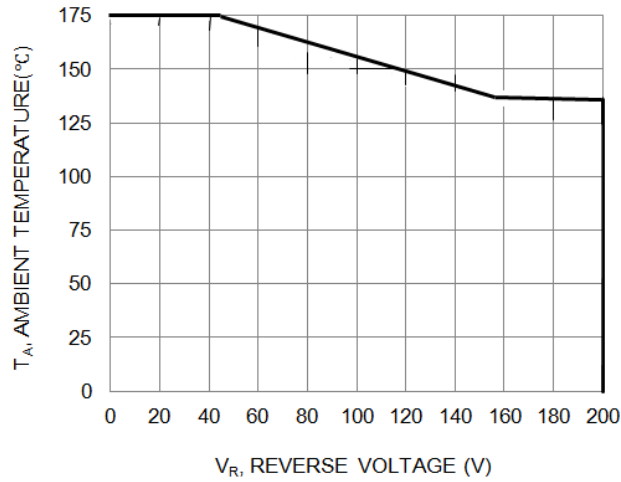


Figure 7. Operating Temperature Derating

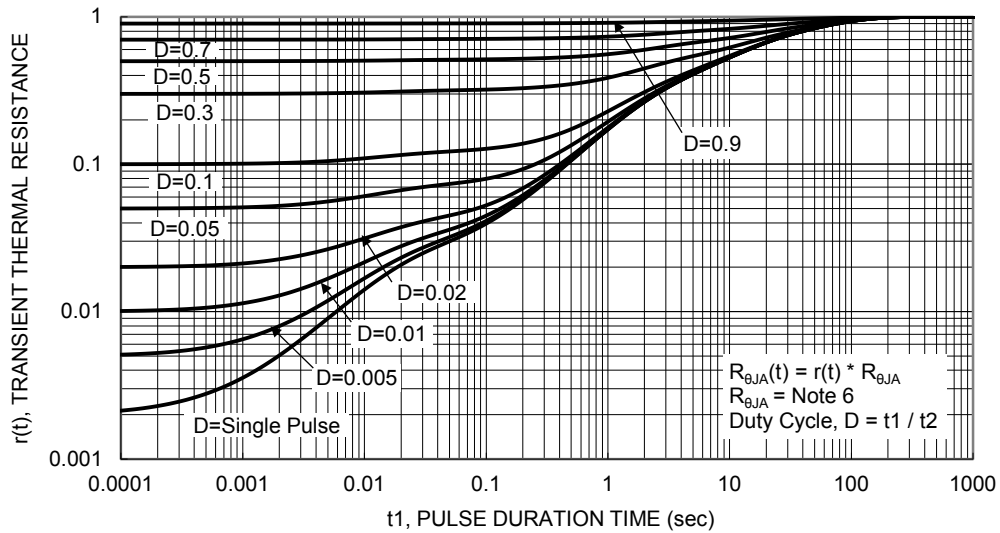


Figure 8. Transient Thermal Resistance

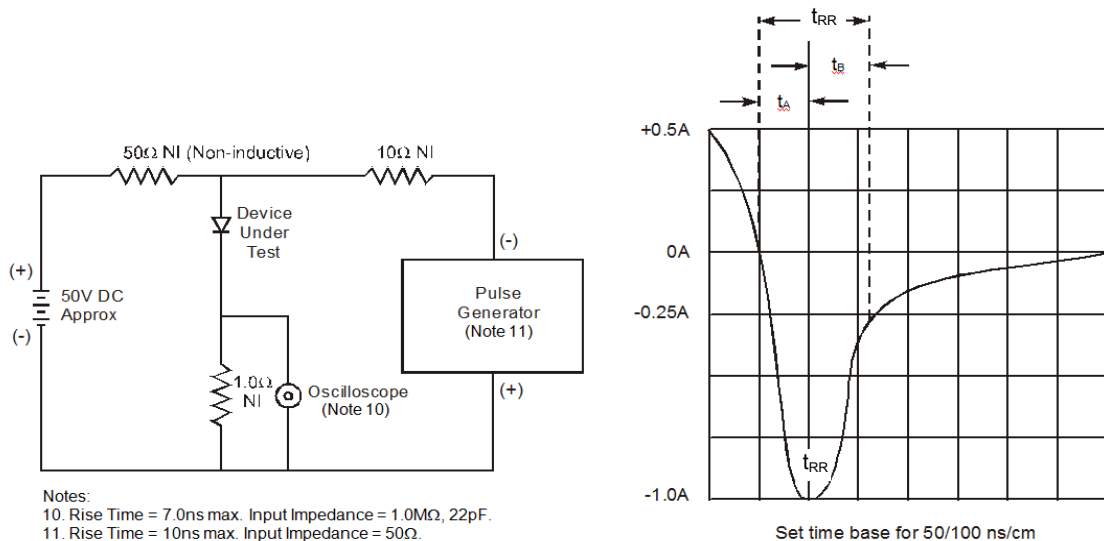
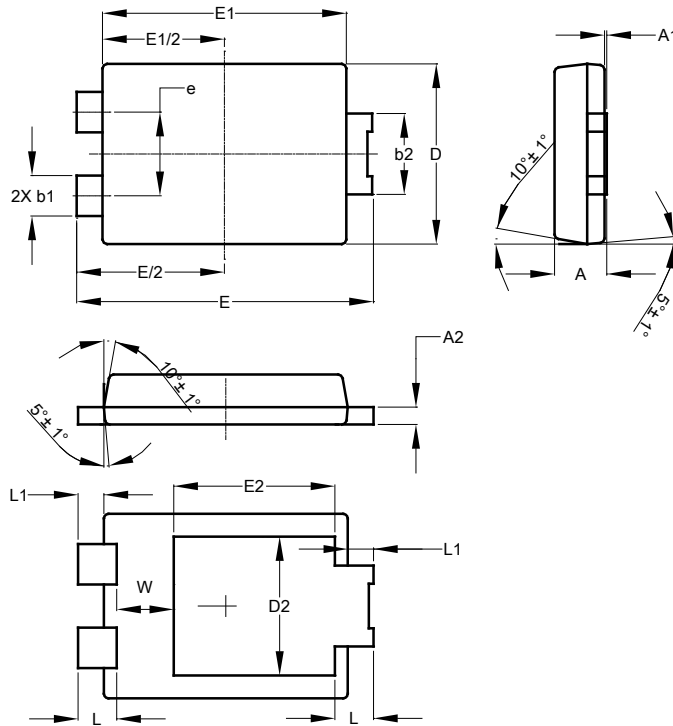


Figure 9. Reverse Recovery Time Characteristic and Test Circuit

**Package Outline Dimensions**

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

**PowerDI5**

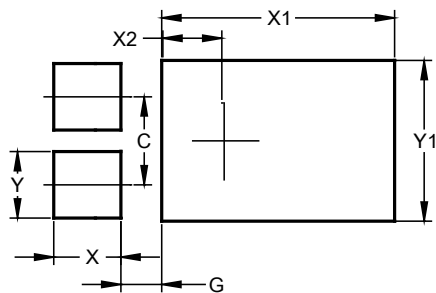


PowerDI5			
Dim	Min	Max	Typ
A	1.05	1.15	1.10
A1	0.00	0.05	--
A2	0.33	0.43	0.381
b1	0.80	0.99	0.89
b2	1.70	1.88	1.78
D	3.90	4.05	3.966
D2	--	--	3.054
E	6.40	6.60	6.51
e	--	--	1.84
E1	5.30	5.45	5.37
E2	--	--	3.549
L	0.75	0.95	0.85
L1	0.50	0.65	0.57
W	1.10	1.41	1.255
All Dimensions in mm			

**Suggested Pad Layout**

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

**PowerDI5**



Dimensions	Value (in mm)
C	1.840
G	0.852
X	1.400
X1	4.860
X2	1.310
Y	1.390
Y1	3.360

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