

**Features**

- Guard Ring Die Construction for Transient Protection
- High Surge Capability
- **Lead Free Finish, RoHS Compliant (Note 1)**
- **"Green" Molding Compound (No Br, Sb)**
- **Ultra-Small Surface Mount Package**
- **Qualified to AEC-Q101 Standards for High Reliability**

**Mechanical Data**

- Case: PowerDI®323
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020D
- Polarity: Cathode Band
- Terminals: Finish - Matte Tin annealed over Copper leadframe. Solderable per MIL-STD-202, Method 208
- Marking Information: See Page 3
- Ordering Information: See Page 3
- Weight: 0.006 grams (approximate)



Top View



Bottom View

**Maximum Ratings** @T<sub>A</sub> = 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	V <sub>RRM</sub>	20	V
Working Peak Reverse Voltage	V <sub>RWM</sub>		
DC Blocking Voltage	V <sub>R</sub>		
Average Forward Current (See also figure 4)	I <sub>F(AV)</sub>	2.0	A
Non-Repetitive Peak Forward Surge Current 8.3ms single half sine-wave superimposed on rated load	I <sub>FSM</sub>	33	A

**Thermal Characteristics**

Characteristic	Symbol	Typ	Max	Unit
Thermal Resistance Junction to Soldering Point	R <sub>θJS</sub>	—	6	°C/W
Thermal Resistance Junction to Ambient Air (Note 2)	R <sub>θJA</sub>	170	—	°C/W
Thermal Resistance Junction to Ambient Air (Note 3)	R <sub>θJA</sub>	144	—	°C/W
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-65 to +125		°C

**Electrical Characteristics** @T<sub>A</sub> = 25°C unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Forward Voltage	V <sub>F</sub>	—	—	0.44	V	I <sub>F</sub> = 1.0A, T <sub>A</sub> = 25°C
		—	0.42	0.49		I <sub>F</sub> = 2.0A, T <sub>A</sub> = 25°C
		—	—	0.36		I <sub>F</sub> = 1.0A, T <sub>A</sub> = 125°C
		—	0.35	0.47		I <sub>F</sub> = 2.0A, T <sub>A</sub> = 125°C
Leakage Current (Note 4)	I <sub>R</sub>	—	30	160	μA mA	V <sub>R</sub> = 20V, T <sub>A</sub> = 25°C
		—	11	30		V <sub>R</sub> = 20V, T <sub>A</sub> = 125°C
Total Capacitance	C <sub>T</sub>	—	46	—	pF	V <sub>R</sub> = 10V, f = 1.0MHz

- Notes:
1. EU Directive 2002/95/EC (RoHS). All applicable RoHS exemptions applied, see *EU Directive 2002/95/EC Annex Notes*.
  2. FR-4 PCB, 2 oz. Copper, minimum recommended pad layout per <http://www.diodes.com/datasheets/ap02001.pdf>.
  3. Polyimide PCB, 2 oz. Copper, minimum recommended pad layout per <http://www.diodes.com/datasheets/ap02001.pdf>.
  4. Short duration pulse test to minimize self-heating effect.

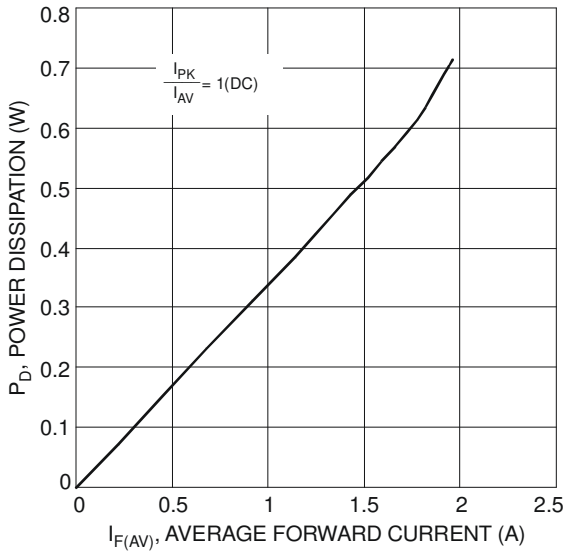


Fig. 1 Forward Power Dissipation

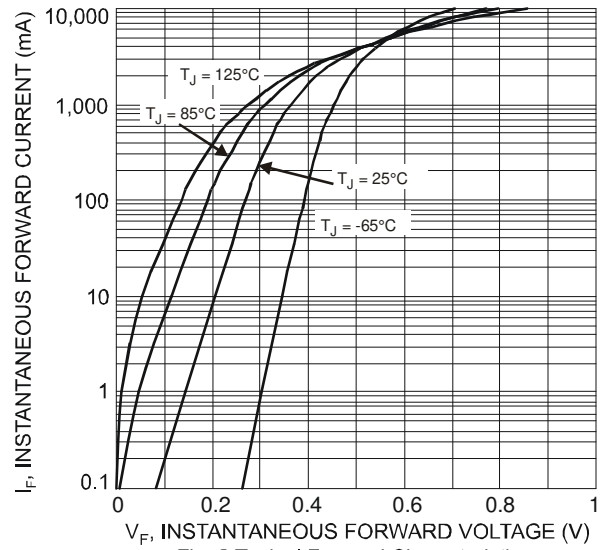


Fig. 2 Typical Forward Characteristics

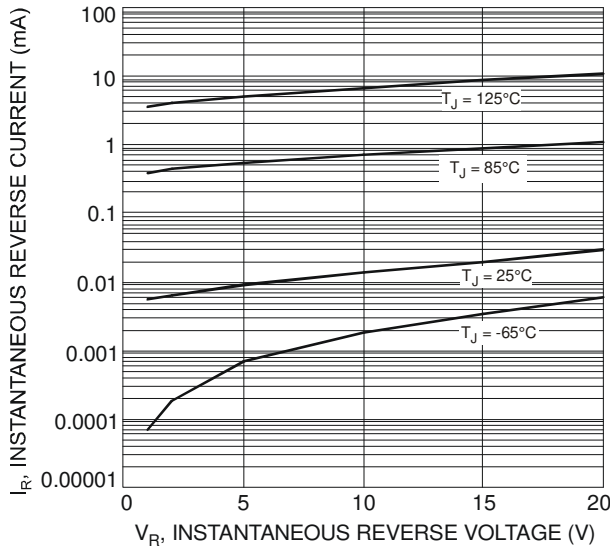


Fig. 3 Typical Reverse Characteristics

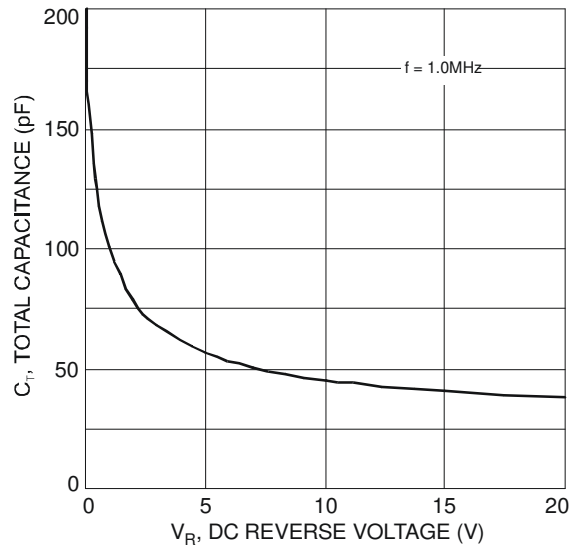


Fig. 4 Total Capacitance vs. Reverse Voltage

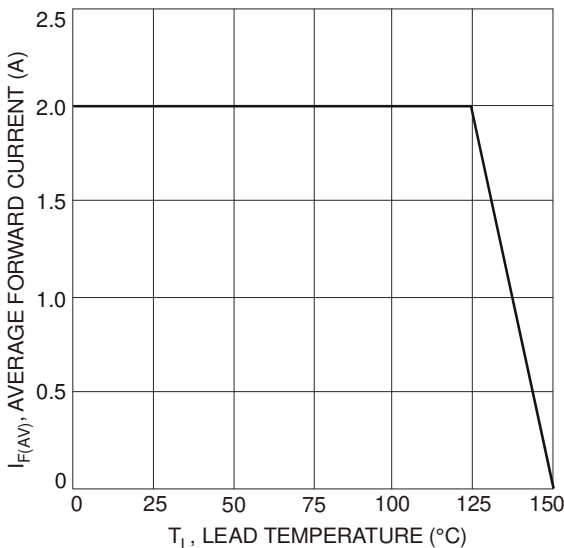


Fig. 5 Forward Current Derating Curve

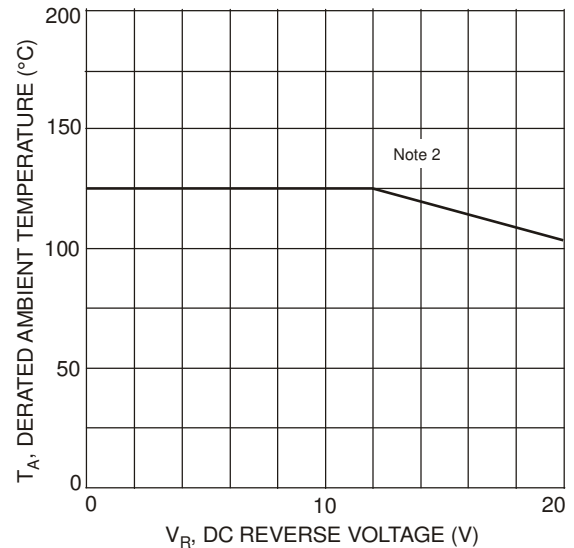
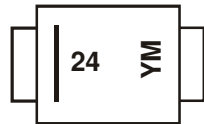


Fig. 6 Operating Temperature Derating

**Ordering Information** (Note 5)

Part Number	Case	Packaging
PD3S220L-7	PowerDI <sup>®</sup> 323	3000/Tape & Reel

Notes: 5. For packaging details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

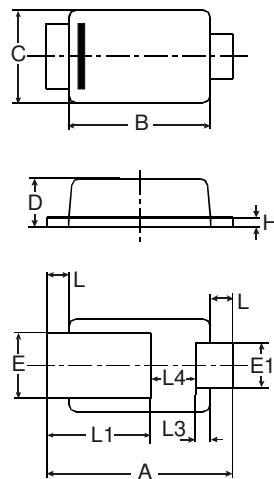
**Marking Information**


24 = Product Type Marking Code  
 YM = Date Code Marking  
 Y = Year (ex: W = 2009)  
 M = Month (ex: 9 = September)

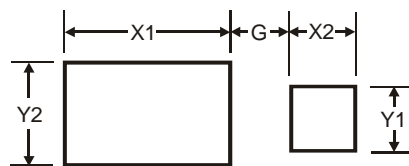
## Date Code Key

Year	2009	2010	2011	2012	2013	2014	2015
Code	W	X	Y	Z	A	B	C

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	O	N	D

**Package Outline Dimensions**


PowerDI <sup>®</sup> 323			
Dim	Min	Max	Typ
A	2.40	2.60	2.50
B	1.85	1.95	1.90
C	1.20	1.30	1.25
D	0.60	0.70	0.65
E	0.78	0.98	0.88
E1	0.50	0.70	0.60
H	0.08	0.18	0.13
L	0.20	0.40	0.30
L1	—	—	1.40
L3	—	—	0.20
L4	0.40	0.80	0.60
All Dimensions in mm			

**Suggested Pad Layout**


Dimensions	Value (in mm)
G	0.5
X1	2.0
X2	0.8
Y1	0.8
Y2	1.1

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