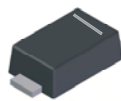


**1.0A SURFACE MOUNT SCHOTTKY BARRIER RECTIFIER**  
**PowerDI®323**
**Features**

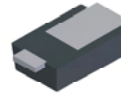
- Guard Ring Die Construction for Transient Protection
- High Surge Capability
- **Lead Free Finish, RoHS Compliant (Note 1)**
- **"Green" Molding Compound (No Br, Sb)**
- **Ultra-Small Surface Mount Package**
- **Qualified to AEC-Q101 Standards for High Reliability**

**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** @ $T_A = 25^\circ\text{C}$  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	$V_{RRM}$	20	V
Working Peak Reverse Voltage	$V_{RWM}$		
DC Blocking Voltage	$V_R$		
RMS Reverse Voltage	$V_{R(RMS)}$	14	V
Average Forward Current (See also figure 4)	$I_{F(AV)}$	1.0	A
Non-Repetitive Peak Forward Surge Current 8.3ms single half sine-wave superimposed on rated load	$I_{FSM}$	33	A

**Thermal Characteristics**

Characteristic	Symbol	Typ	Max	Unit
Thermal Resistance Junction to Soldering Point	$R_{\theta JS}$	—	6	$^\circ\text{C/W}$
Thermal Resistance Junction to Ambient Air (Note 2)	$R_{\theta JA}$	170	—	$^\circ\text{C/W}$
Thermal Resistance Junction to Ambient Air (Note 3)	$R_{\theta JA}$	144	—	$^\circ\text{C/W}$
Operating and Storage Temperature Range	$T_J, T_{STG}$	-65 to +125		$^\circ\text{C}$

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Breakdown Voltage (Note 4)	$V_{(BR)R}$	20	—	—	V	$I_R = 100\mu\text{A}$
Forward Voltage	$V_F$	—	0.27	0.31	V	$I_F = 0.1\text{A}, T_A = 25^\circ\text{C}$
		—	0.34	0.38		$I_F = 0.7\text{A}, T_A = 25^\circ\text{C}$
		—	0.36	0.42		$I_F = 1.0\text{A}, T_A = 25^\circ\text{C}$
		—	0.27	0.30		$I_F = 1.0\text{A}, T_A = 125^\circ\text{C}$
Leakage Current (Note 4)	$I_R$	—	10	50	$\mu\text{A}$	$V_R = 5\text{V}, T_A = 25^\circ\text{C}$
		—	13	60	$\mu\text{A}$	$V_R = 10\text{V}, T_A = 25^\circ\text{C}$
		—	30	160	$\mu\text{A}$	$V_R = 20\text{V}, T_A = 25^\circ\text{C}$
		—	11	30	mA	$V_R = 20\text{V}, T_A = 125^\circ\text{C}$
Total Capacitance	$C_T$	—	46	—	pF	$V_R = 10\text{V}, f = 1.0\text{MHz}$

- 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.

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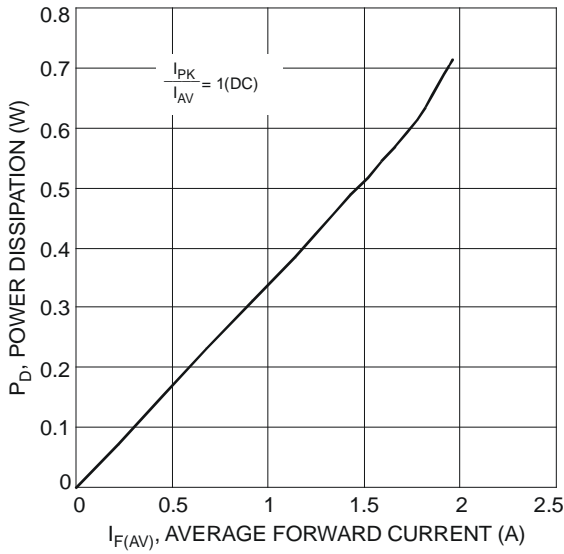


Fig. 1 Forward Power Dissipation

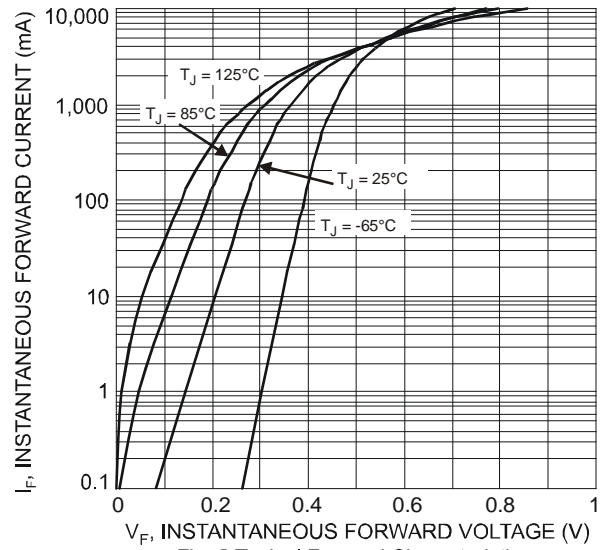


Fig. 2 Typical Forward Characteristics

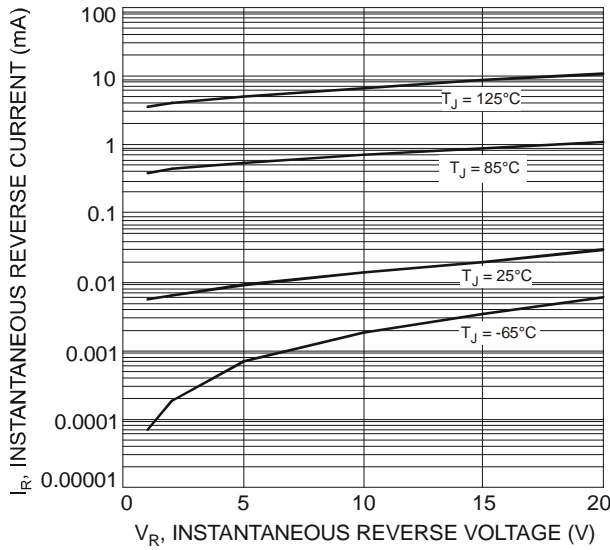


Fig. 3 Typical Reverse Characteristics

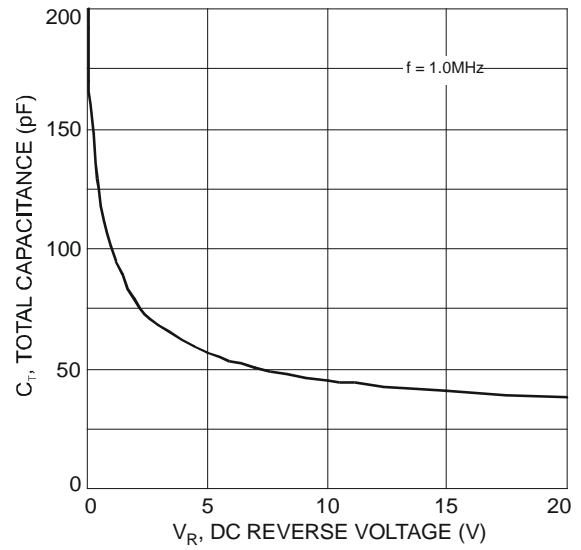


Fig. 4 Total Capacitance vs. Reverse Voltage

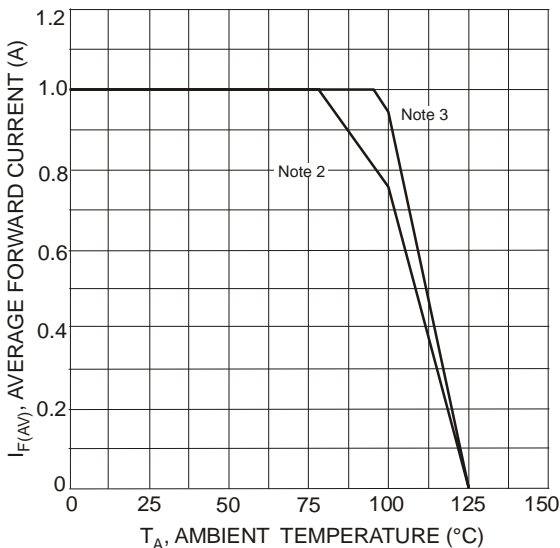


Fig. 5 Forward Current Derating Curve

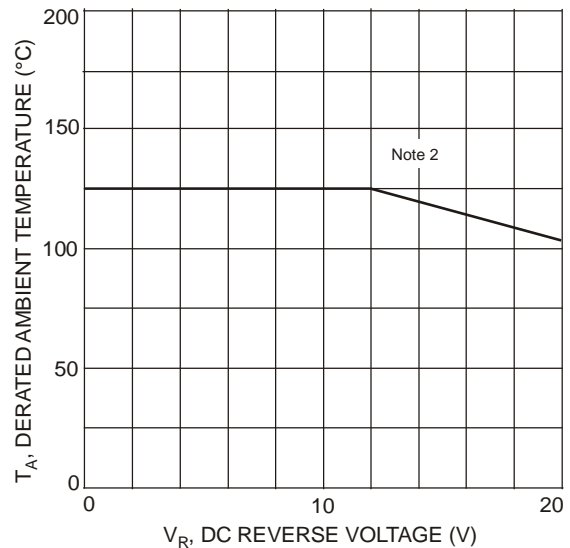


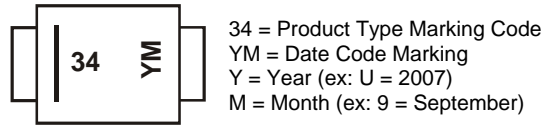
Fig. 6 Operating Temperature Derating

**Ordering Information** (Note 5)

Part Number	Case	Packaging
PD3S120L-7	PowerDI®323	3000/Tape & Reel

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

**Marking Information**



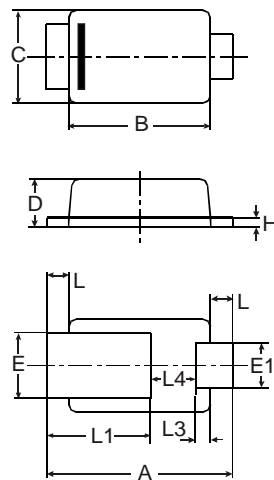
Date Code Key

Year	2006	2007	2008	2009	2010	2011	2012
Code	T	U	V	W	X	Y	Z

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

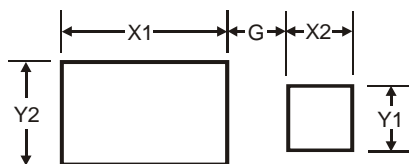
**Package Outline Dimensions**



PowerDI®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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