

**1.0A SURFACE MOUNT SUPER-FAST RECTIFIER
PowerDI123**

Features and Benefits

- Glass Passivated Die Construction
- Super-Fast Recovery Time for High Efficiency
- ±2kV ESD Protection (IEC61000-4-2, Contact Discharge)
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**

Mechanical Data

- Case: PowerDI[®]123
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminal Connections: Cathode Band
- Terminals: Finish – Matte Tin Annealed over Copper Leadframe. Solderable per MIL-STD-202, Method 208 ⁽³⁾
- Weight: 0.01 grams (Approximate)



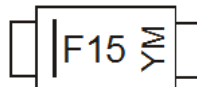
Top View

Ordering Information (Note 4)

Device	Packaging	Shipping
DFLU1200-7	PowerDI123	3000/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. For packaging details, go to our website at <http://www.diodes.com/products/packages.html>.

Marking Information



F15 = Product Type Marking Code
 YM = Date Code Marking
 Y = Year (ex: E = 2017)
 M = Month (ex: 9 = September)

Date Code Key

Year	2005	...	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Code	S	...	A	B	C	D	E	F	G	H	I	J

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

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	$V_{R(RMS)}$	140	V
Average Rectified Output Current (See Figure 4)	I_O	1.0	A
Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load	I_{FSM}	30	A

Thermal Characteristics

Characteristic	Symbol	Typ	Max	Unit
Power Dissipation (Note 6) @ $T_A = +25^\circ\text{C}$	P_D	—	1.0	W
Thermal Resistance Junction to Soldering Point (Note 7)	$R_{\theta JS}$	—	6	$^\circ\text{C/W}$
Thermal Resistance Junction to Ambient (Note 6) @ $T_A = +25^\circ\text{C}$	$R_{\theta JA}$	116	—	$^\circ\text{C/W}$
Thermal Resistance Junction to Ambient (Note 8) @ $T_A = +25^\circ\text{C}$	$R_{\theta JA}$	182	—	$^\circ\text{C/W}$
Operating and Storage Temperature Range	T_J, T_{STG}	-65 to +150		$^\circ\text{C}$

Electrical Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Minimum Reverse Breakdown Voltage @ $I_R = 5\mu\text{A}$	$V_{(BR)}$	200	V
Maximum Forward Voltage Drop @ $I_F = 0.6\text{A}$ @ $I_F = 1.0\text{A}$	V_{FM}	0.90	V
		0.98	
Peak Reverse Current at Rated DC Blocking Voltage (Note 5) @ $T_A = +25^\circ\text{C}$ @ $T_A = +100^\circ\text{C}$	I_{RM}	5.0	μA
		200	
Reverse Recovery Time (Note 9)	t_{RR}	25	ns
Typical Total Capacitance ($f = 1\text{MHz}$, $V_R = 4\text{VDC}$)	C_T	27	pF

- Notes:
- Short duration pulse test used to minimize self-heating effect.
 - Device mounted on 1" x 1", Polyimide PCB; 2 oz. Cu pad layout as shown on Diodes Incorporated's website <http://www.diodes.com/package-outlines.html>.
 - Theoretical $R_{\theta JS}$ calculated from the top center of the die straight down to the PCB cathode tab solder junction.
 - Device mounted on FR-4 PCB, 2 oz. Copper, minimum recommended pad layout per <http://www.diodes.com/package-outlines.html>.
 - Measured with $I_F = 0.5\text{A}$, $I_R = 1.0\text{A}$, $I_{RR} = 0.25\text{A}$. See figure 7.

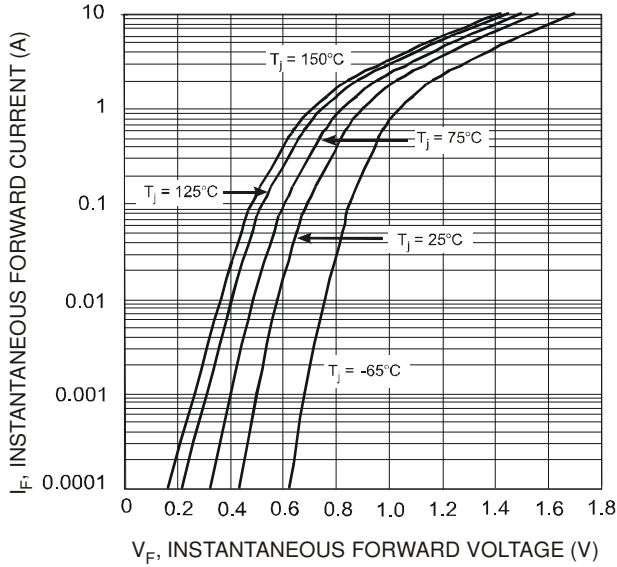


Fig. 1 Typical Forward Characteristics

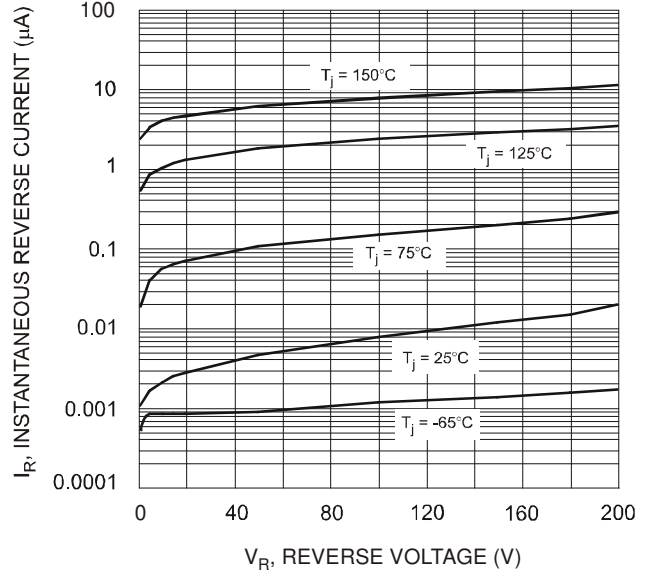


Fig. 2 Typical Reverse Characteristics

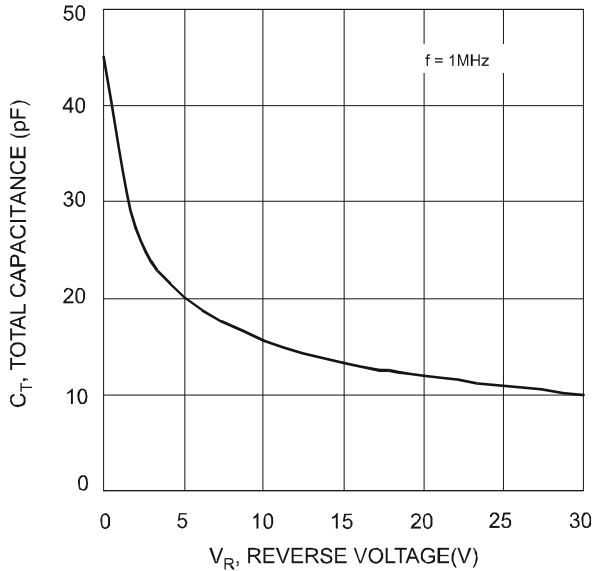


Fig. 3 Typical Total Capacitance

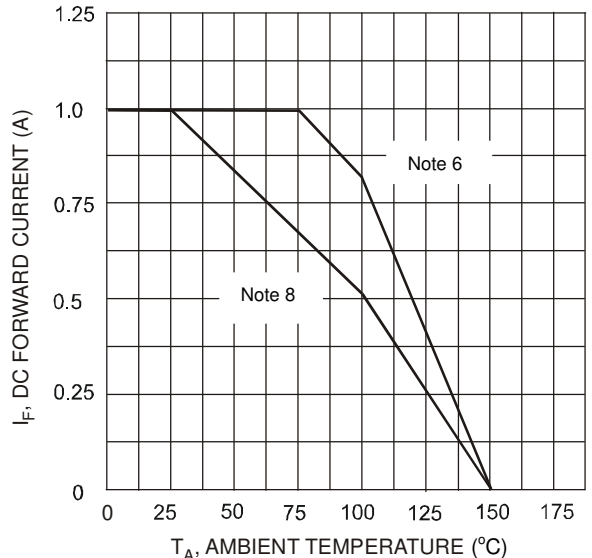


Fig. 4 DC Forward Current Derating

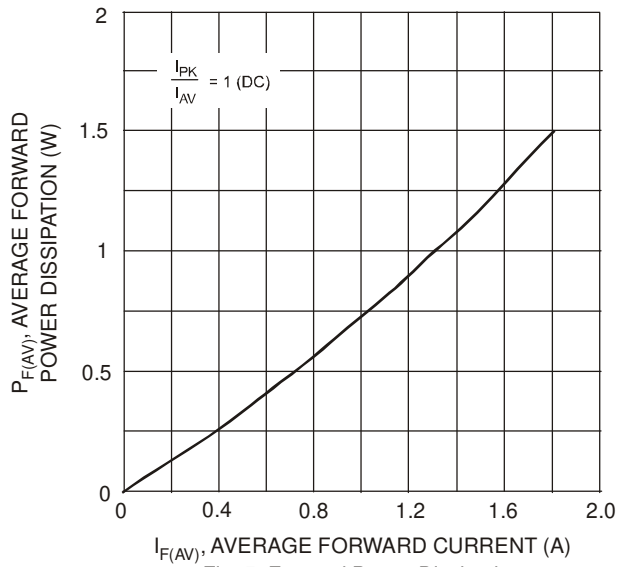


Fig. 5 Forward Power Dissipation

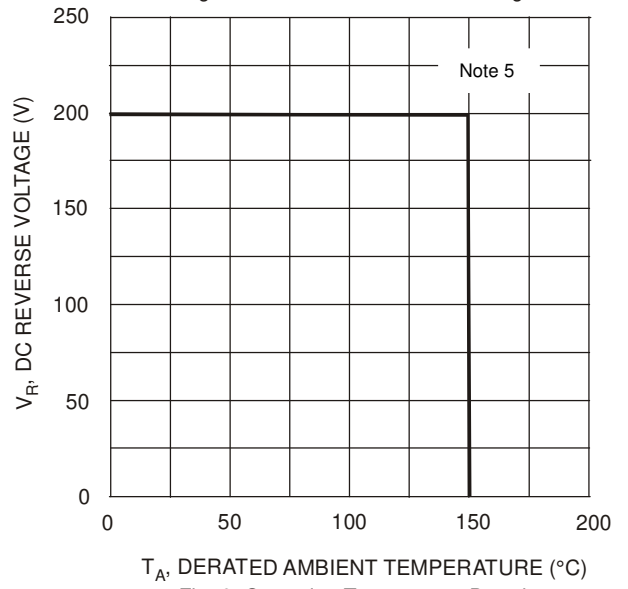
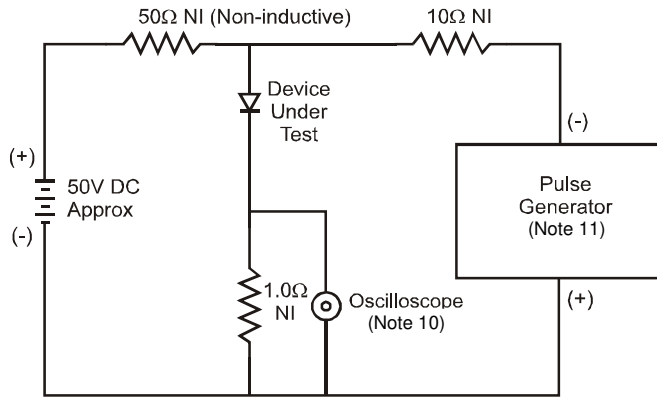
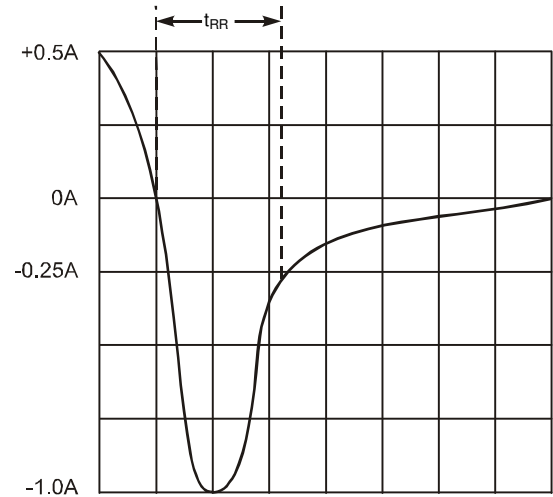


Fig. 6 Operating Temperature Derating



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



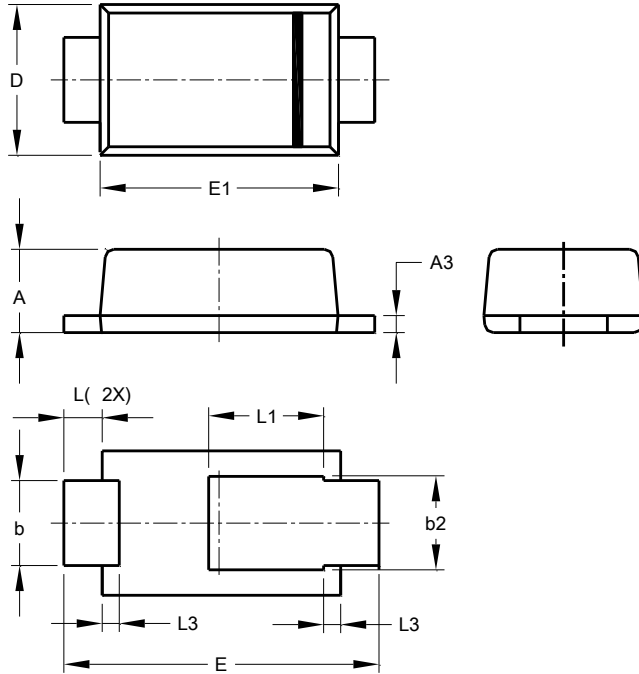
Set time base for 50/100 ns/cm

Fig. 7 Reverse Recovery Time Characteristic and Test Circuit

Package Outline Dimensions

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

PowerDI123

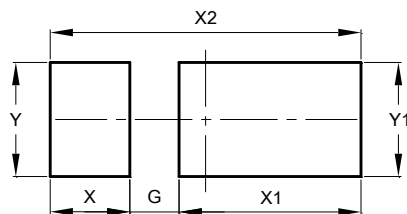


PowerDI123			
Dim	Min	Max	Typ
A	0.93	1.00	0.98
A3	0.15	0.25	0.20
b	0.85	1.25	1.00
b2	1.025	1.125	1.10
D	1.63	1.93	1.78
E	3.50	3.90	3.70
E1	2.60	3.00	2.80
L	0.40	0.50	0.45
L1	1.25	1.40	1.35
L3	0.125	0.275	0.20
All Dimensions in mm			

Suggested Pad Layout

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

PowerDI123



Dimensions	Value (in mm)
G	0.65
X	1.05
X1	2.40
X2	4.10
Y	1.50
Y1	1.50

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