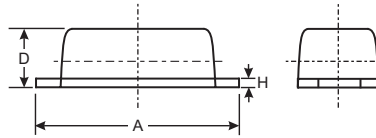


## 1.0A SURFACE MOUNT SUPER-FAST RECTIFIER PowerDI™ 123

### Features

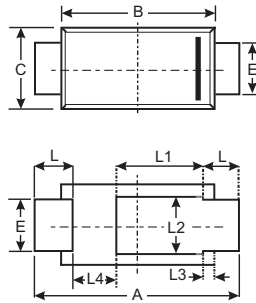
- Glass Passivated Die Construction
- Super-Fast Recovery Time for High Efficiency
- Patented Interlocking Clip Design for High Surge Current Capacity
- **Lead Free Finish, RoHS Compliant (Note 2)**
- **"Green" Molding Compound (No Br, Sb)**
- **Qualified to AEC-Q101 Standards for High Reliability**



PowerDI™123			
Dim	Min	Max	Typ
A	3.50	3.90	3.70
B	2.60	3.00	2.80
C	1.63	1.93	1.78
D	0.93	1.00	0.98
E	0.85	1.25	1.00
H	0.15	0.25	0.20
L	0.45	0.85	0.65
L1	—	—	1.35
L2	—	—	1.10
L3	—	—	0.20
L4	0.90	1.30	1.05
All Dimensions in mm			

### 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-020C
- Terminal Connections: Cathode Band
- Terminals: Finish – Matte Tin annealed over Copper leadframe. Solderable per MIL-STD-202, Method 208 (e3)
- Marking & Type Code Information: See Last Page
- Ordering Information: See Last Page
- Weight: 0.01 grams (approximate)



### Maximum Ratings and Electrical Characteristics $T_A = 25^\circ\text{C}$ 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 Working Peak Reverse Voltage DC Blocking Voltage (Note 5)	$V_{RRM}$ $V_{RWM}$ $V_R$	200	V
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
Forward Voltage Drop @ $I_F = 0.6\text{A}$ @ $I_F = 1.0\text{A}$	$V_{FM}$	0.90 0.98	V
Peak Reverse Current at Rated DC Blocking Voltage (Note 5) @ $T_A = 25^\circ\text{C}$ @ $T_A = 100^\circ\text{C}$	$I_{RM}$	5.0 200	$\mu\text{A}$
Reverse Recovery Time (Note 4)	$t_{rr}$	25	ns
Typical Total Capacitance ( $f = 1\text{MHz}$ , $V_R = 4\text{VDC}$ )	$C_T$	27	pF

### Thermal Characteristics

Characteristic	Symbol	Typ	Max	Unit
Power Dissipation (Note 1) @ $T_A = 25^\circ\text{C}$	$P_D$	—	1.0	W
Thermal Resistance Junction to Soldering Point (Note 3)	$R_{\theta JS}$	—	6	$^\circ\text{C/W}$
Thermal Resistance Junction to Ambient (Note 1) @ $T_A = 25^\circ\text{C}$	$R_{\theta JA}$	116	—	$^\circ\text{C/W}$
Thermal Resistance Junction to Ambient (Note 6) @ $T_A = 25^\circ\text{C}$	$R_{\theta JA}$	182	—	$^\circ\text{C/W}$
Operating and Storage Temperature Range	$T_j, T_{STG}$	-65 to +150		$^\circ\text{C}$

- Notes:
1. Device mounted on 1" x 1", Polyimide PCB; 2 oz. Cu pad layout as shown on Diodes Inc. suggested pad layout document AP02001.pdf.
  2. RoHS revision 13.2.2003. Glass and high temperature solder exemptions applied, see *EU Directive Annex Notes 5 and 7*.
  3. Theoretical  $R_{\theta JS}$  calculated from the top center of the die straight down to the PCB cathode tab solder junction.
  4. Measured with  $I_F = 0.5\text{A}$ ,  $I_R = 1.0\text{A}$ ,  $I_{rr} = 0.25\text{A}$ . See figure 7.
  5. Short duration pulse test to minimize self-heating effect.
  6. Device mounted on FR-4 PCB, 2 oz. Copper, minimum recommended pad layout pattern per <http://www.diodes.com/datasheets/ap02001.pdf>

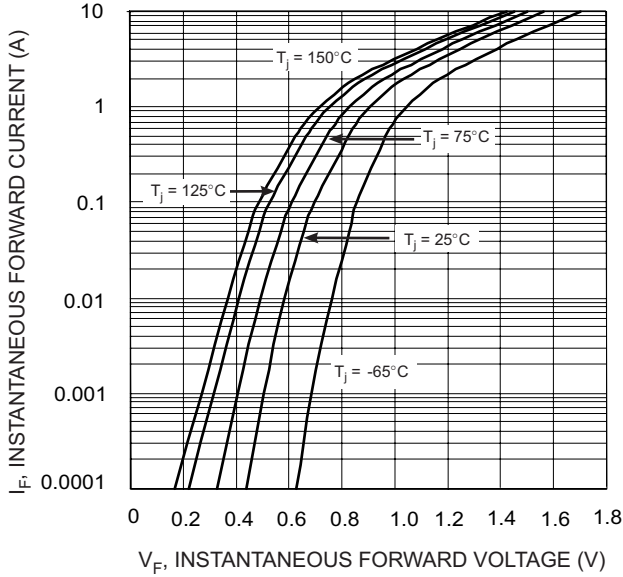


Fig. 1 Typical Forward Characteristics

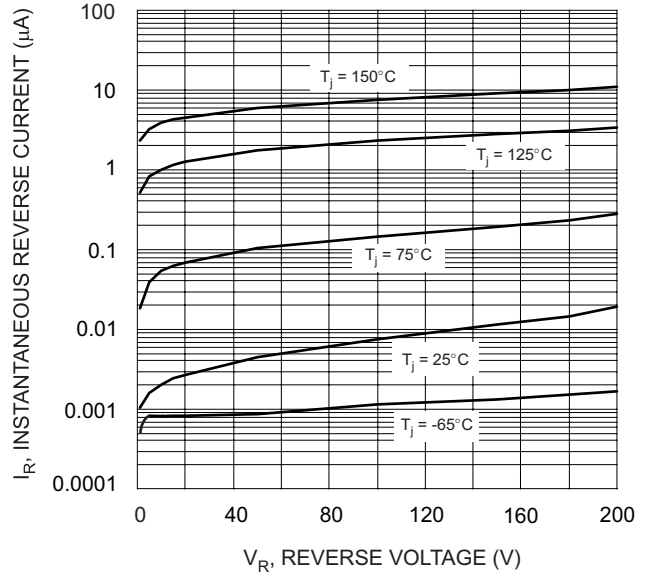


Fig. 2 Typical Reverse Characteristics

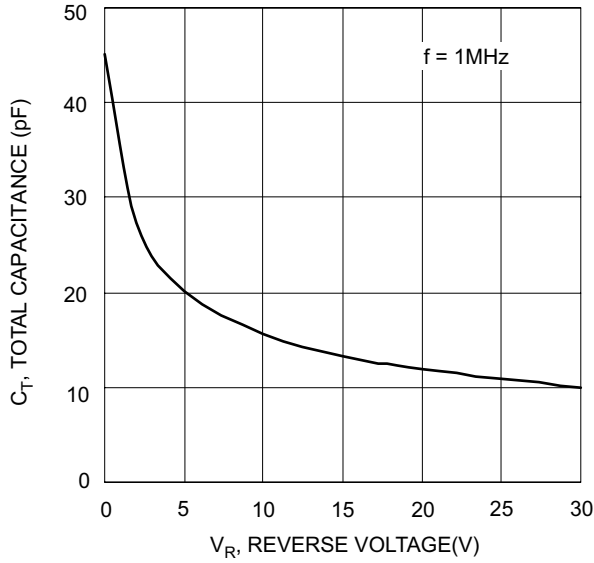


Fig. 3 Typical Total Capacitance

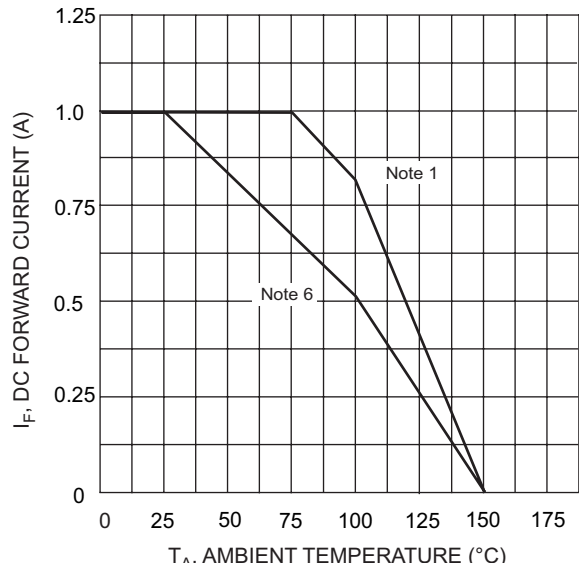


Fig. 4 DC Forward Current Derating

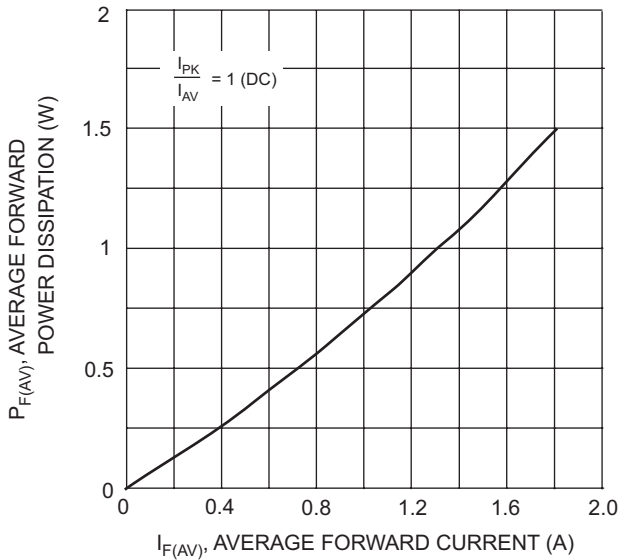


Fig. 5 Forward Power Dissipation

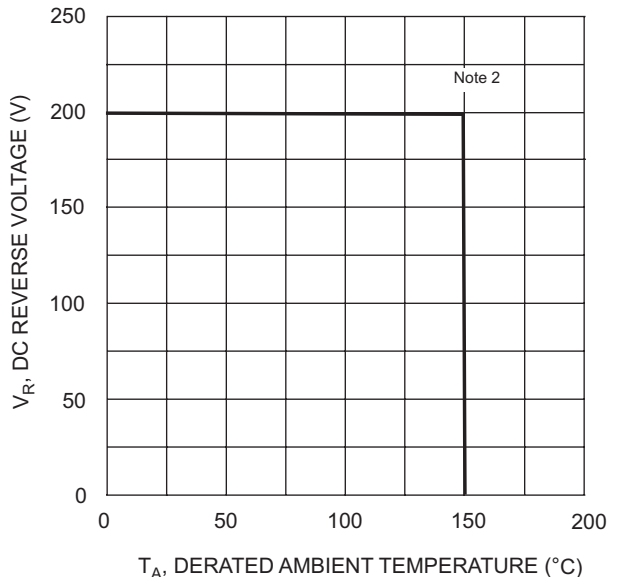
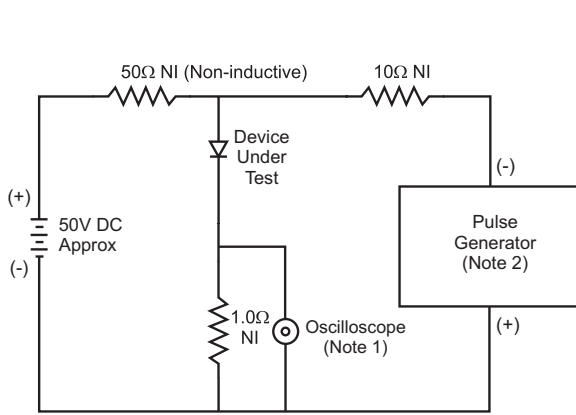


Fig. 6 Operating Temperature Derating



- Notes:
1. Rise Time = 7.0ns max. Input Impedance = 1.0MΩ, 22pF.
  2. Rise Time = 10ns max. Input Impedance = 50Ω.

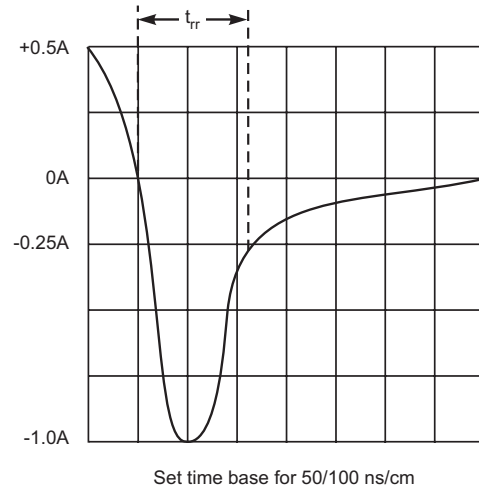


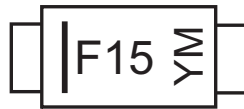
Fig. 7 Reverse Recovery Time Characteristic and Test Circuit

## Ordering Information (Note 7)

Device	Marking Code	Packaging	Shipping
DFLU1200-7	F15	PowerDI™ 123	3000/Tape & Reel

Notes: 7. For Packaging Details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

## Marking Information



F15 = Product Type Marking Code (See Table Above)  
 YM = Date Code Marking  
 Y = Year (ex: S = 2005)  
 M = Month (ex: 9 = September)

### Date Code Key

Year	2005	2006	2007	2008	2009	2010	2011	2012
Code	S	T	U	V	W	X	Y	Z

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

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