1.0A SURFACE MOUNT SUPER-FAST RECTIFIER
PowerDI®123

Features and Benefits

- Glass Passivated Die Construction
- Super-Fast Recovery Time for High Efficiency
- Patented Interlocking Clip Design for High Surge Current Capacity
- ±2kV ESD Protection (IEC61000-4-2, Contact Discharge)
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **"Green" Molding Compound (No Br, Sb)**
- **Qualified to AEC-Q101 Standards for High Reliability**

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 e3
- Weight: 0.01 grams (approximate)

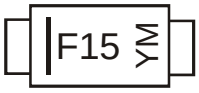
Top View

Ordering Information (Note 3)

Device	Packaging	Shipping
DFLU1200-7	PowerDI®123	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. For packaging details, visit our website at http:// www.diodes.com/products/packages.html

Marking Information



F15 = Product Type Marking Code
YM = Date Code Marking
Y = Year (ex: A = 2013)
M = Month (ex: 9 = September)

Date Code Key

Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Code	S	T	U	V	W	X	Y	Z	A	B	C	D	E	F

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°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 3)	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

Thermal Characteristics

Characteristic		Symbol	Typ	Max	Unit
Power Dissipation (Note 5)	@ T_A = +25°C	P_D	—	1.0	W
Thermal Resistance Junction to Soldering Point (Note 6)		$R_{\theta JS}$	—	6	°C/W
Thermal Resistance Junction to Ambient (Note 5)	@T_A = +25°C	$R_{\theta JA}$	116	—	°C/W
Thermal Resistance Junction to Ambient (Note 7)	@T_A = +25°C	$R_{\theta JA}$	182	—	°C/W
Operating and Storage Temperature Range		T_J, T_{STG}	-65 to +150		°C

Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic		Symbol	Value	Unit
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 = 0.6A @ I_F = 1.0A	V_{FM}	0.90 0.98	V
Peak Reverse Current at Rated DC Blocking Voltage (Note 4)	@ T_A = +25°C @ T_A = +100°C	I_{RM}	5.0 200	µA
Reverse Recovery Time (Note 8)		t_{rr}	25	ns
Typical Total Capacitance (f = 1MHz, V_R = 4VDC)		C_T	27	pF

Notes:
4. Short duration pulse test used to minimize self-heating effect.
5. Device mounted on 1" x 1", Polymide PCB; 2 oz. Cu pad layout as shown on Diodes Inc. suggested pad layout document AP02001.pdf.
6. Theoretical $R_{\theta JS}$ calculated from the top center of the die straight down to the PCB cathode tab solder junction.
7. Device mounted on FR-4 PCB, 2 oz. Copper, minimum recommended pad layout pattern per http://www.diodes.com/datasheets/ap02001.pdf
8. Measured with I_F = 0.5A, I_R = 1.0A, I_{rr} = 0.25A. See figure 7.

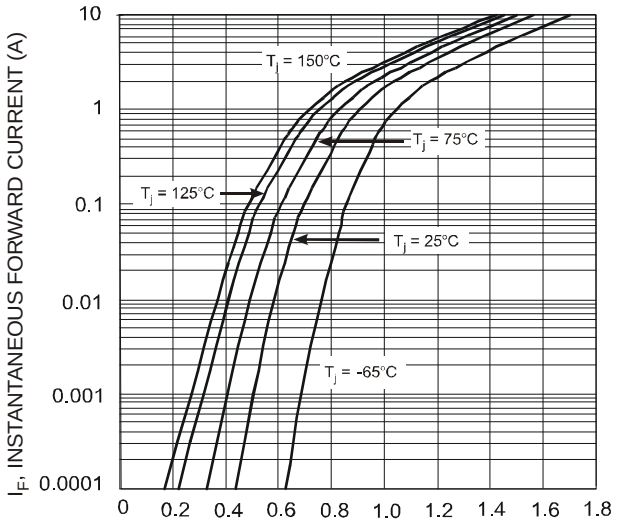


Fig. 1 Typical Forward Characteristics

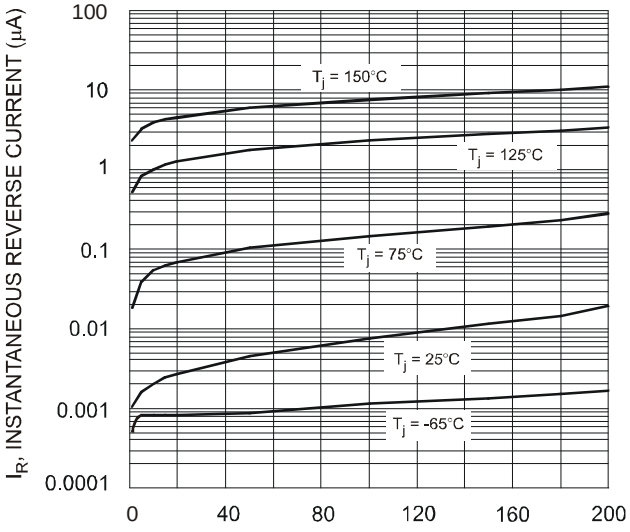


Fig. 2 Typical Reverse Characteristics

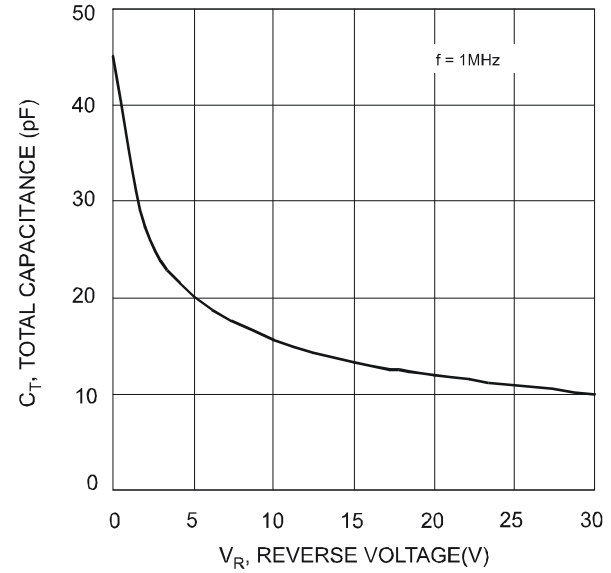


Fig. 3 Typical Total Capacitance

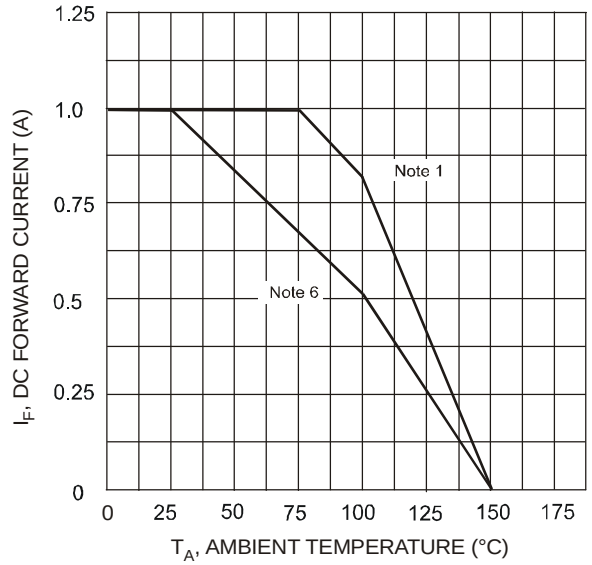


Fig. 4 DC Forward Current Derating

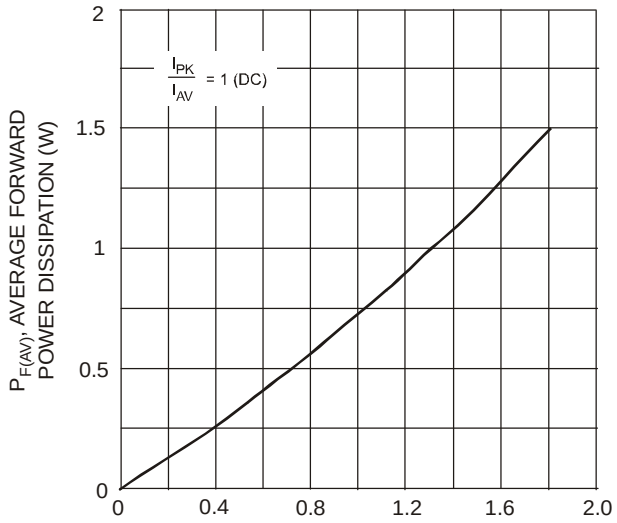


Fig. 5 Forward Power Dissipation

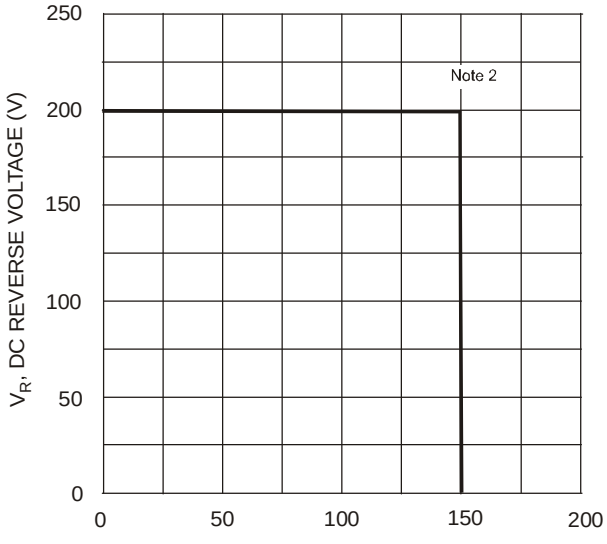
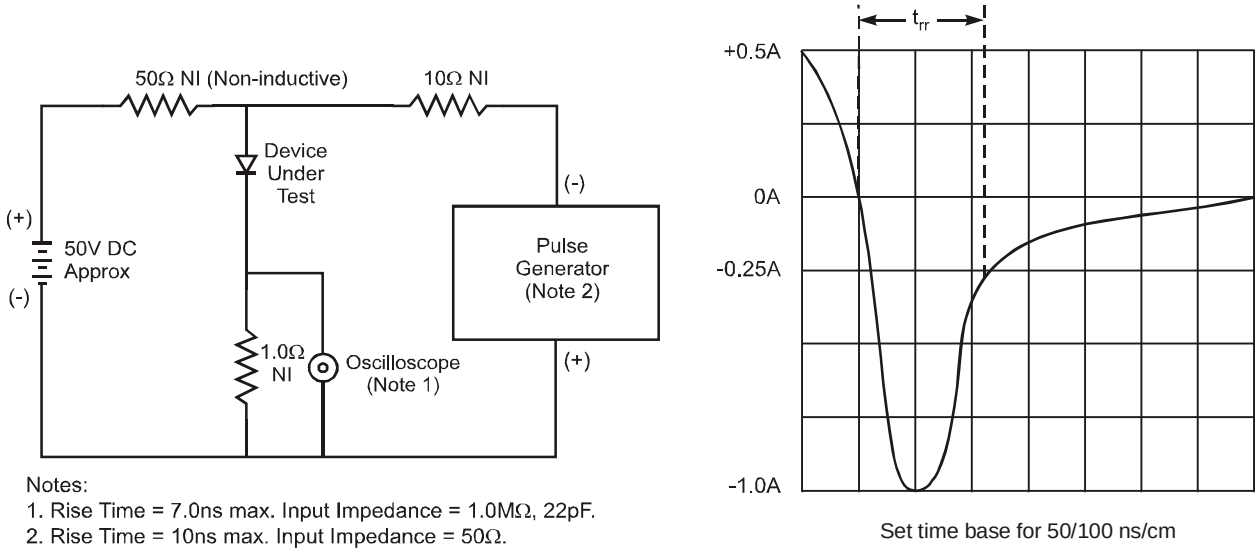


Fig. 6 Operating Temperature Derating

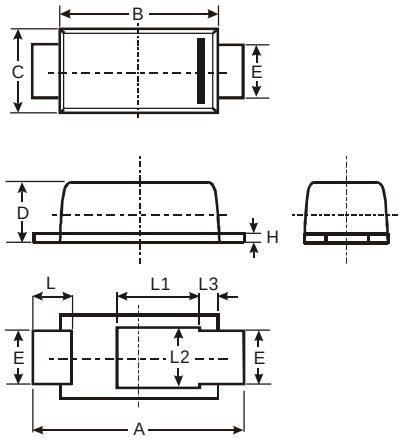


Notes:
1. Rise Time = 7.0ns max. Input Impedance = 1.0MΩ, 22pF.
2. Rise Time = 10ns max. Input Impedance = 50Ω.

Fig. 7 Reverse Recovery Time Characteristic and Test Circuit

Package Outline Dimensions

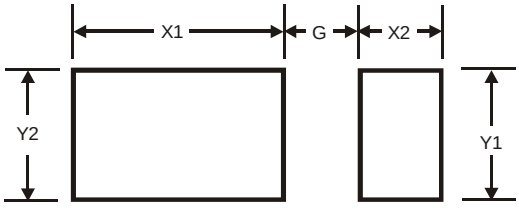
Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for latest version.



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	0.40	0.50	0.45
L1	-	-	1.35
L2	-	-	1.10
L3	-	-	0.20
All Dimensions in mm			

Suggested Pad Layout

Please see AP02001 at http://www.diodes.com/datasheets/ap02001.pdf for the latest version.



Dimensions	Value (in mm)
G	1.0
X1	2.2
X2	0.9
Y1	1.4
Y2	1.4

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