

1.0A SURFACE MOUNT SUPER-FAST RECTIFIER PowerDI[®]123

Features

- Glass Passivated Die Construction
- Super-Fast Recovery Time for High Efficiency
- Low Forward Voltage Drop and High Current Capability
- Patented Interlocking Clip Design for High Surge Current Capacity
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **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-020C
- Terminal Connections: Cathode Band
- Terminals: Finish – Matte Tin annealed over Copper leadframe. Solderable per MIL-STD-202, Method 208 ^(e3)
- Weight: 0.011 grams (approximate)



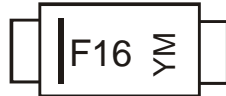
Top View

Ordering Information (Note 4)

Device	Packaging	Shipping
DFLU1400-7	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. 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



F16 = 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	V _{RRM}	400	V
Working Peak Reverse Voltage	V _{RWM}		
DC Blocking Voltage (Note 9)	V _R		
RMS Reverse Voltage	V _{R(RMS)}	280	V
Average Rectified Output Current	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 5) @T _A = +25°C	P _D	—	1.0	W
Thermal Resistance Junction to Ambient (Note 5) @T _A = +25°C	R _{θJA}	117	—	°C/W
Thermal Resistance Junction to Soldering Point (Note 7)	R _{θJS}	—	6	°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
Maximum Forward Voltage Drop @I _F = 1.0A	V _{FM}	1.25	V
Peak Reverse Current @T _A = +25°C	I _{RM}	5.0	μA
at Rated DC Blocking Voltage (Note 9) @T _A = +100°C		200	
Maximum Reverse Recovery Time (Note 8)	t _{rr}	25	ns
Typical Total Capacitance (f = 1MHz, V _R = 4VDC)	C _T	14	pF

- Notes:
- Device mounted on 1" x 1", Polyimide PCB; 2 oz. Cu pad layout as shown on Diodes Inc. suggested pad layout document AP02001.pdf.
 - RoHS revision 13.2.2003. Glass and high temperature solder exemptions applied, see *EU Directive Annex Notes 5 and 7*.
 - Theoretical R_{θJS} calculated from the top center of the die straight down to the PCB cathode tab solder junction.
 - Measured with I_F = 0.5A, I_R = 1.0A, I_r = 0.25A. See figure 5.
 - Short duration pulse test used to minimize self-heating effect.
 - Device mounted on FR-4 PCB, 2oz. Cu pad layout as shown on Diodes Inc. suggested pad layout document AP02001.pdf. (see page 2)

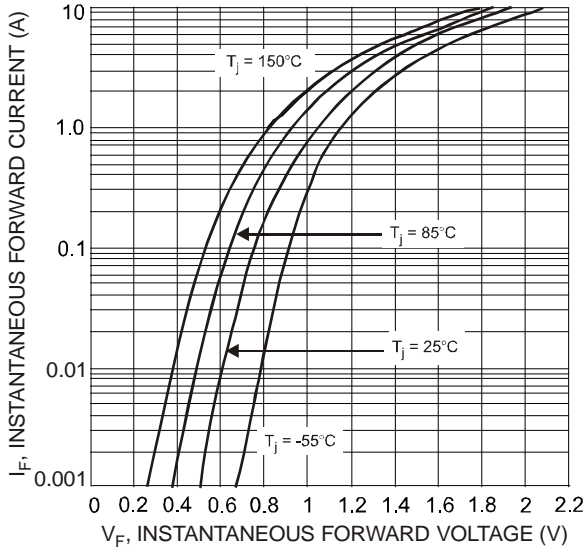


Fig. 1 Typical Forward Characteristics

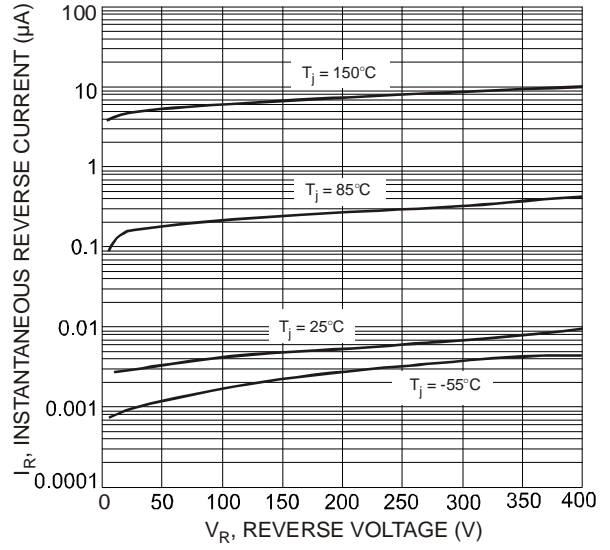


Fig. 2 Typical Reverse Characteristics

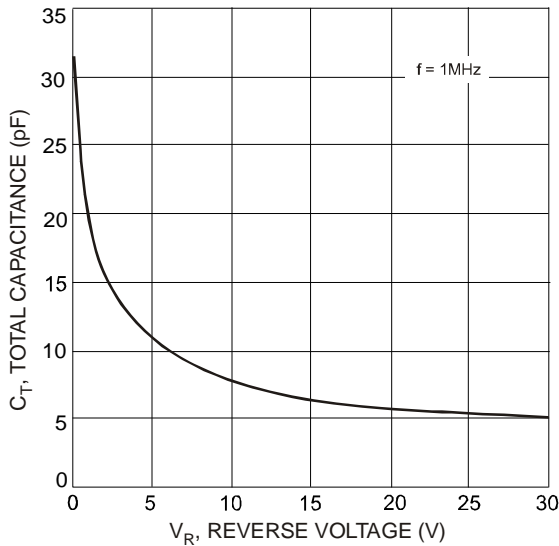


Fig. 3 Typical Total Capacitance

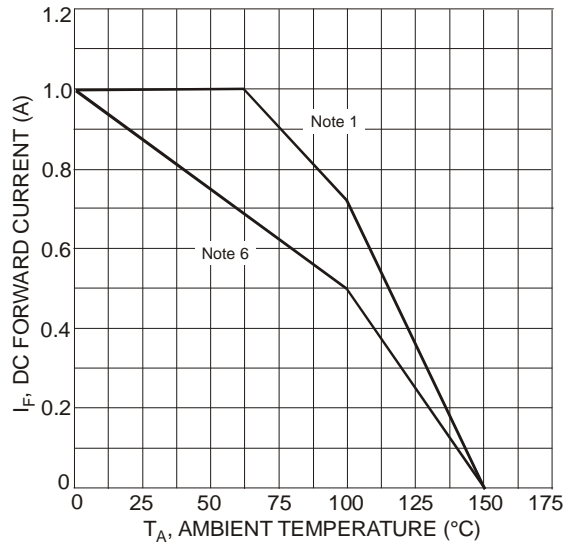


Fig. 4 DC Forward Current Derating

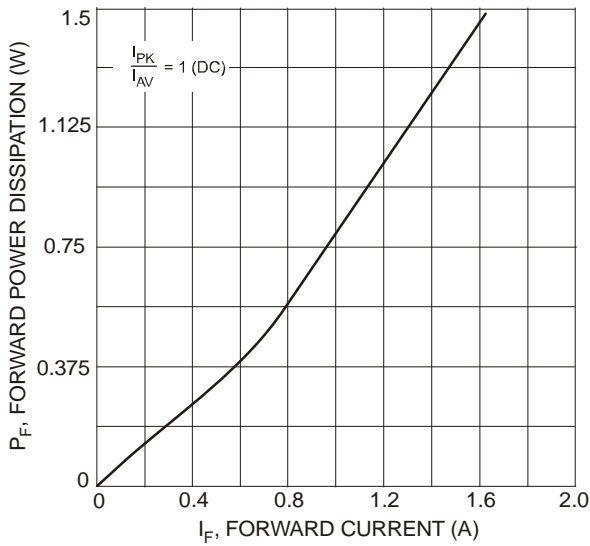


Fig. 5 Forward Power Dissipation

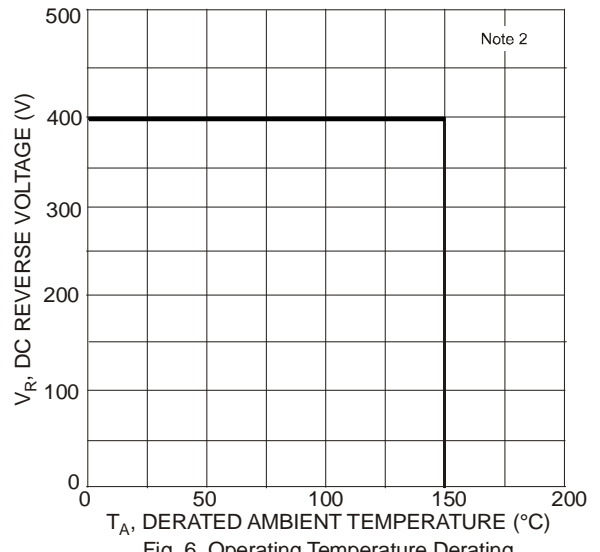
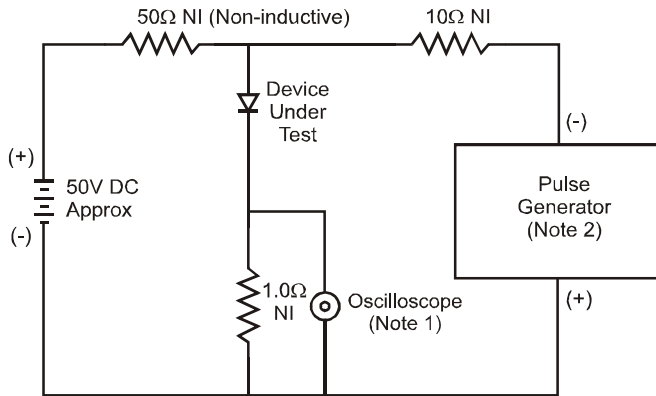


Fig. 6 Operating Temperature Derating



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

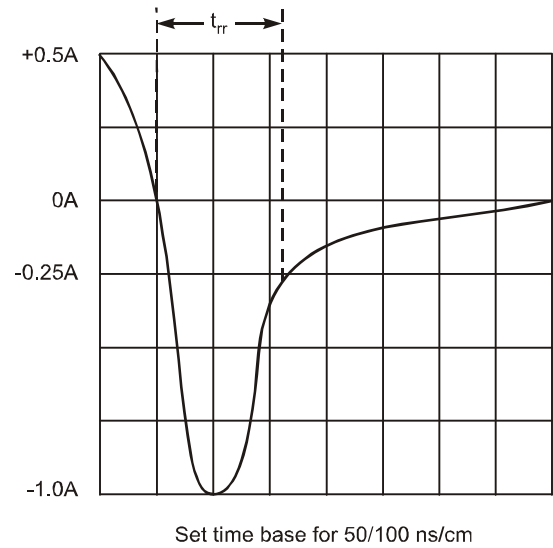
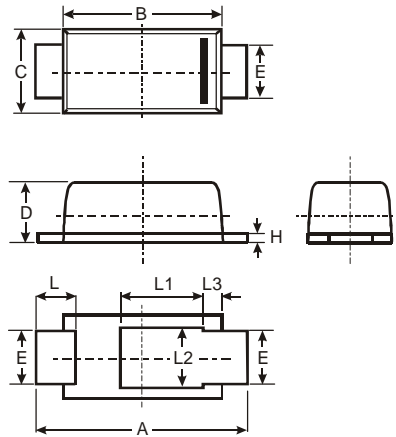


Fig. 7 Reverse Recovery Time Characteristic and Test Circuit

Package Outline Dimensions

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

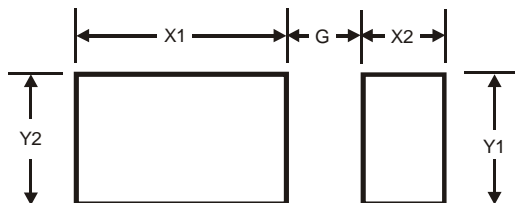


POWERDI [®] 123			
Dim	Min	Max	Typ
A	3.50	3.90	3.70
B	2.60	3.00	2.80
C	1.63	1.93	1.78
D	0.93	1.00	0.98
E	0.85	1.25	1.00
H	0.15	0.25	0.20
L	0.40	0.50	0.45
L1	-	-	1.35
L2	-	-	1.10
L3	-	-	0.20

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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