

1.0A SURFACE MOUNT FAST RECOVERY RECTIFIER
PowerDI123

Product Summary (@ $T_A = +25^\circ\text{C}$)

V_{RRM} (V)	I_O (A)	V_F Max (V)	I_R Max (μA)
800	1	1.35	10

Description

Packaged in the compact thermally efficient PowerDI[®]123 package, the DFLF1800 provides fast recovery time for high efficiency.

Applications

It is ideally suited to use in:

- AC-DC Adaptors/Chargers
- DC-DC Converters
- Power Supply

Features and Benefits

- Ideally Suited for Automated Assembly
- Fast Recovery Time for High Efficiency
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**
- **Patented Interlocking Clip Design for High-Surge Capacity, US Patent #7,095,113**

Mechanical Data

- Case: PowerDI123
- 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)

PowerDI[®]123

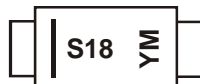


Ordering Information (Note 4)

Part Number	Compliance	Case	Packaging
DFLF1800-7	Commercial	PowerDI123	3,000/Tape & Reel
DFLF1800-13	Commercial	PowerDI123	10,000/Tape & Reel

- Notes:
1. EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3).compliant. All applicable RoHS exemptions applied.
 2. See <https://www.diodes.com/quality/lead-free/> 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



S18 = Product Type Marking Code
 YM = Date Code Marking
 Y = Year (ex: C = 2015)
 M = Month (ex: 9 = September)

Date Code Key

Year	2012	2013	2014	2015	2016	2017	2018	2019
Code	Z	A	B	C	D	E	F	G

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 capacitance load, derate current by 20%.

Characteristic	Symbol	Value	Unit
Peak Repetitive Reverse Voltage	V _{RRM}	800	V
Working Peak Reverse Voltage	V _{RWM}		
DC Blocking Voltage	V _R		
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}	25	A

Thermal Characteristics

Characteristic	Symbol	Typ	Max	Unit
Thermal Resistance, Junction to Ambient Air (Note 5)	R _{θJA}	134	—	°C/W
Thermal Resistance, Junction to Case (Note 5)	R _{θJC}	24	—	°C/W
Thermal Resistance, Junction to Soldering Point (Note 6)	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	Min	Typ	Max	Unit	Test Conditions
Reverse Breakdown Voltage (Note 7)	V _{(BR)R}	800	—	—	V	I _R = 10μA
Forward Voltage Drop	V _F	—	—	1.35	V	I _F = 1.0A, T _J = +25°C
Reverse Leakage Current (Note 7)	I _R	—	—	10 20	μA	V _R = 800V, T _J = +25°C V _R = 800V, T _J = +125°C
Total Capacitance	C _T	—	7	—	pF	V _R = 4.0V _{DC} , f = 1MHz
Reverse Recovery Time	t _{rr}	—	—	500	nS	I _F = 0.5A, I _R = 1A, I _{RR} = 0.25A

- Notes: 5. Device mounted on 1" x 1", FR-4 PCB; 2 oz. Cu pad layout as shown on Diodes Inc. suggested pad layout document at <http://www.diodes.com/package-outlines.html> T_A = +25°C.
6. Theoretical R_{θJS} calculated from the top center of the die straight down to the PCB/cathode tab solder junction.
7. Short duration test pulse used to minimize self-heating effect.

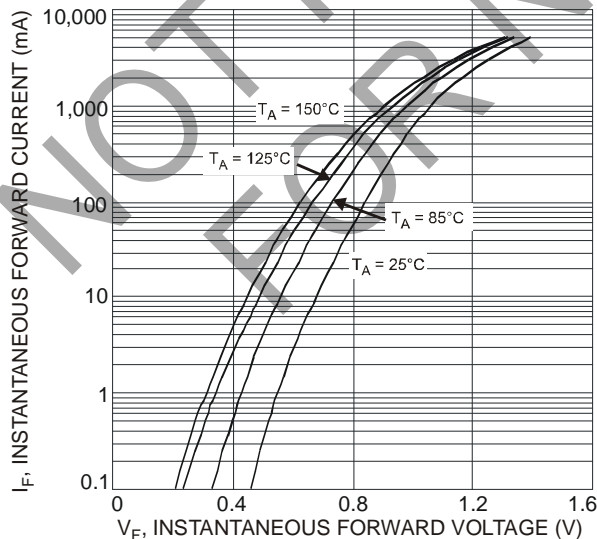


Figure 1 Typical Forward Characteristics

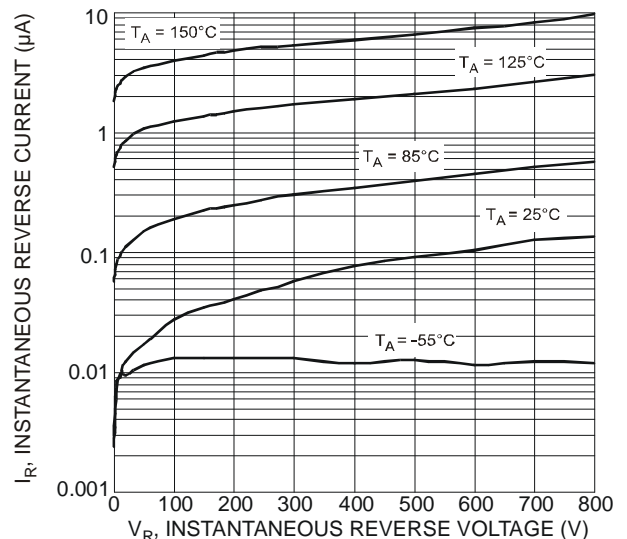


Figure 2 Typical Reverse Characteristics

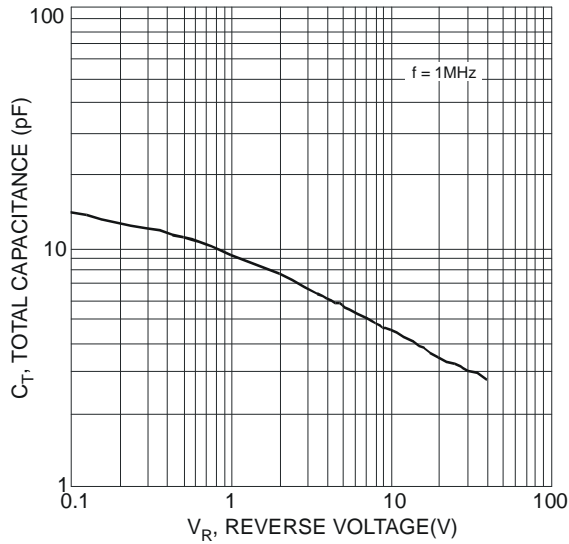


Figure 3 Typical Total Capacitance

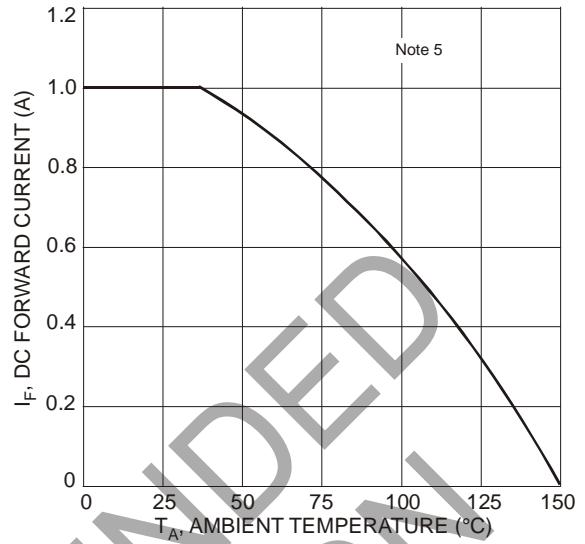


Figure 4 DC Forward Current Derating

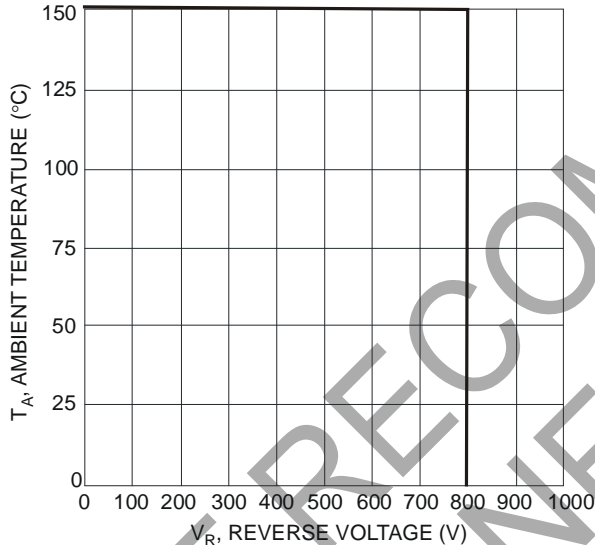


Figure 5 Operating Derating Temperature

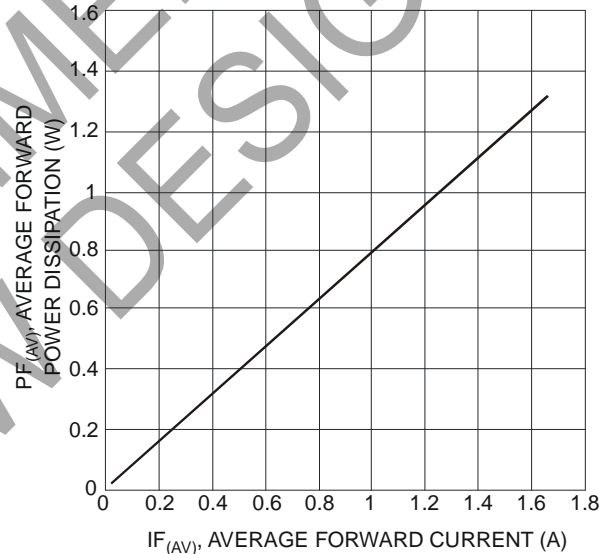
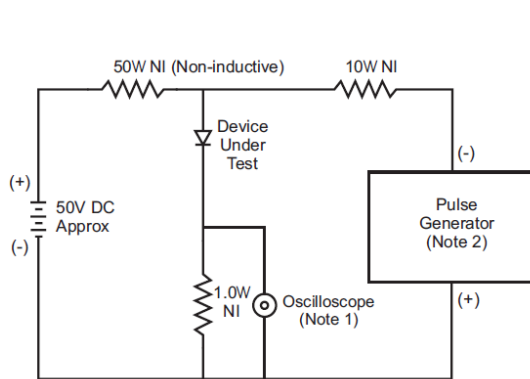
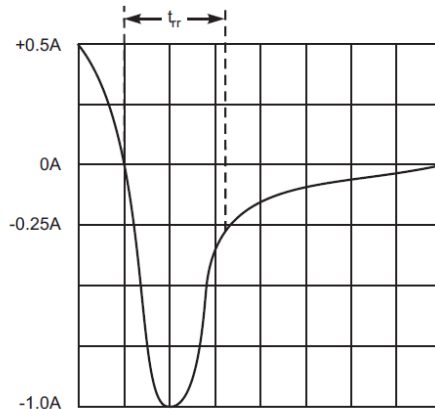


Figure 6 Forward Power Dissipation



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



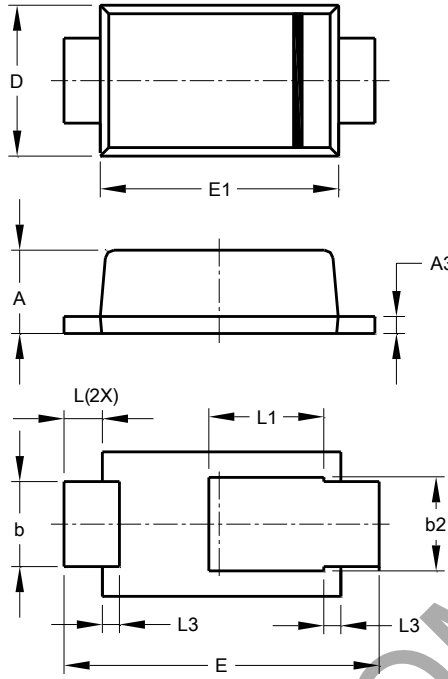
Set time base for 50/100 ns/cm

Figure 7 Reverse Recovery Time Characteristics and Test Circuit

Package Outline Dimensions

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

PowerDI123

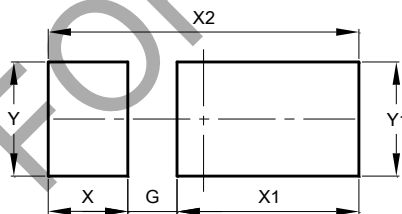


PowerDI123			
Dim	Min	Max	Typ
A	0.93	1.00	0.98
A3	0.15	0.25	0.20
b	0.85	1.25	1.00
b2	1.025	1.125	1.10
D	1.63	1.93	1.78
E	3.50	3.90	3.70
E1	2.60	3.00	2.80
L	0.40	0.50	0.45
L1	1.25	1.40	1.35
L3	0.125	0.275	0.20
All Dimensions in mm			

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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