


## Features

- 225W Peak Pulse Power Dissipation (10 $\mu$ s  $\times$  1000 $\mu$ s Waveform)
- Excellent Clamping Capability
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**
- **PPAP Capable (Note 4)**

## Mechanical Data

- Case: PowerDI<sup>®</sup> 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 
- Weight: 0.01 grams (Approximate)

PowerDI123



Top View

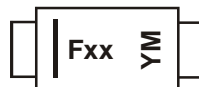
## Ordering Information (Note 5)

Product	Compliance	Marking	Reel Size(inches)	Tape Width(mm)	Quantity per Reel
DFLTxxAQ-7*	Automotive	Fxx	7	8	3000/Tape & Reel

\* Add "-7" to the appropriate type number in Electrical Characteristics Table on Page 2. Example: 18V reverse standoff device = DFLT18AQ-7.

- 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. Automotive products are AEC-Q101 qualified and are PPAP capable. Refer to <https://www.diodes.com/quality/>.
  5. For packaging details, go to our website at <http://www.diodes.com/products/packages.html>.

## Marking Information



Fxx = Product Type Marking Code  
See Electrical Characteristics Table on Page 2  
YM = Date Code Marking  
Y = Year (ex: E = 2018)  
M = Month (ex: 9 = September)

Date Code Key

Year	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Code	D	E	F	G	H	I	J	K	L	M	N

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<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Peak Pulse Power Dissipation (Note 6) 10/1000µs	P <sub>PK</sub>	225	W
(Note 7) 8/20µs		1125	
Peak Forward Surge Current, 8.3ms Single Half Sine Wave	I <sub>FSM</sub>	50	A
Instantaneous Forward Voltage @ I <sub>PP</sub> = 12A (Note 8)	V <sub>F</sub>	3.5	V

**Thermal Characteristics**

Characteristic	Symbol	Value	Unit
DC Steady-State Power Dissipation (Note 9)	P <sub>D</sub>	1.0	W
Thermal Resistance, Junction to Ambient (Note 9)	R <sub>θJA</sub>	120	°C/W
Thermal Resistance, Junction to Soldering Point (Note 10)	R <sub>θJS</sub>	6	°C/W
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-65 to +150	°C

**Electrical Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Part Number	Reverse Standoff Voltage	Breakdown Voltage V <sub>BR</sub> @ I <sub>T</sub> (Note 11)		Test Current	Max. Reverse Leakage @ V <sub>RWM</sub>	Max. Clamping Voltage @ I <sub>PP</sub>	Max. Peak Pulse Current I <sub>PP</sub>	Marking Code
	V <sub>RWM</sub> (V)	Min (V)	Max (V)	I <sub>T</sub> (mA)	I <sub>R</sub> (µA)	V <sub>C</sub> (V)	(A)	
DFLT5V0AQ	5.0	6.40	7.0	10	400	9.2	24.5	FAE
DFLT16AQ	16	17.8	19.7	1.0	1.0	26.0	8.65	FBP
DFLT18AQ	18	20.0	22.1	1.0	1.0	29.2	7.71	FBT
DFLT20AQ	20	22.2	24.5	1.0	1.0	32.4	6.94	FBV
DFLT22AQ	22	24.4	26.9	1.0	1.0	35.5	6.34	FBX
DFLT26AQ	26	28.9	31.9	1.0	1.0	42.1	5.35	FCE
DFLT28AQ	28	31.1	34.4	1.0	1.0	45.4	4.96	FCG
DFLT33AQ	33	36.7	40.6	1.0	1.0	53.3	4.22	FCM
DFLT36AQ	36	40.0	44.2	1.0	1.0	58.1	3.87	FCP
DFLT40AQ	40	44.4	49.1	1.0	1.0	64.5	3.49	FCR

- Notes:
6. Non-Repetitive current pulse as shown in Figure 2 and derated above T<sub>A</sub> = +25°C as per Figure 1.
  7. Non-Repetitive current pulse as shown in Figure 3 and derated above T<sub>A</sub> = +25°C as per Figure 1.
  8. 1/2 sine wave (or equivalent square wave), pulse width = 8.3ms, duty cycle = 4 pulses/minute maximum.
  9. Device mounted on FR-4 substrate printed circuit board with 1 inch square 2oz copper pad area.
  10. Theoretical R<sub>θJS</sub> calculated from the top center of the die straight down to the PCB/cathode tab solder junction.
  11. V<sub>BR</sub> measured at pulse test current I<sub>T</sub> with tp ≤ 5.0ms at T<sub>A</sub> = +25°C.

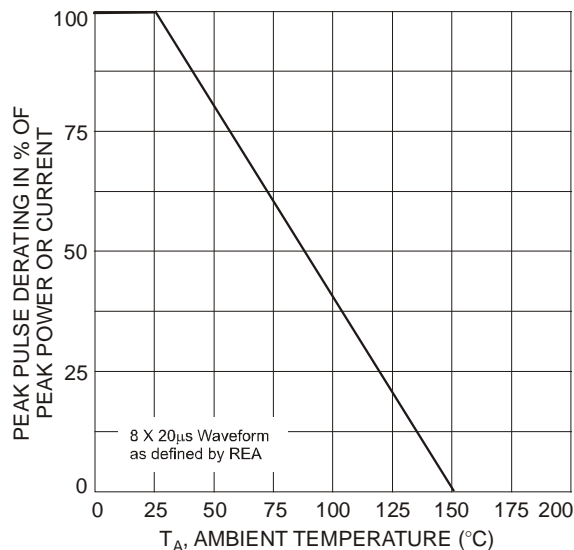


Fig. 1 Pulse Derating Curve

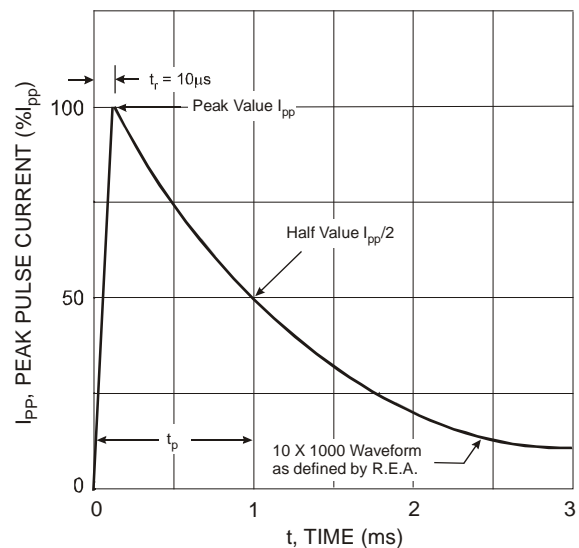
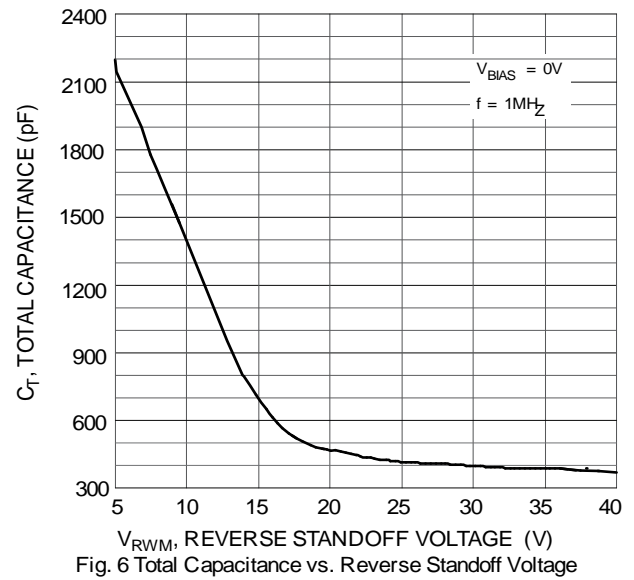
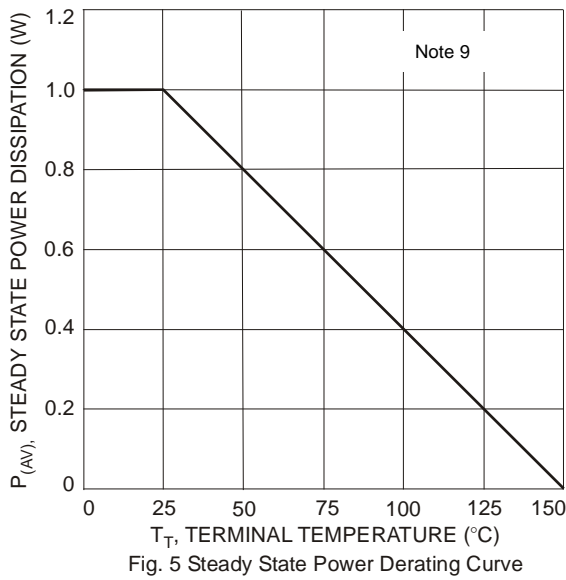
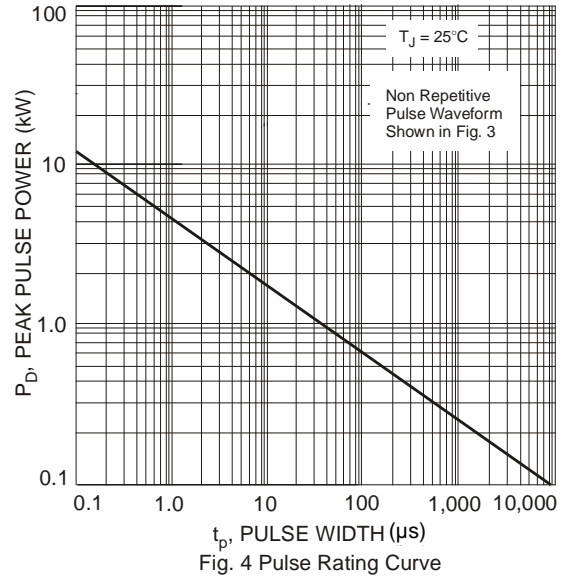
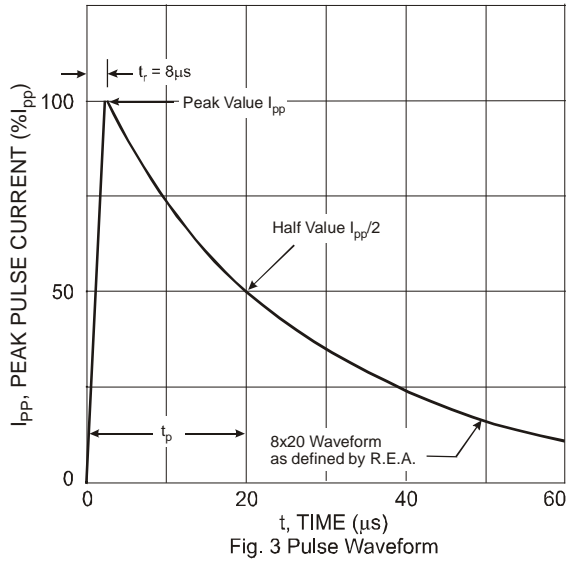


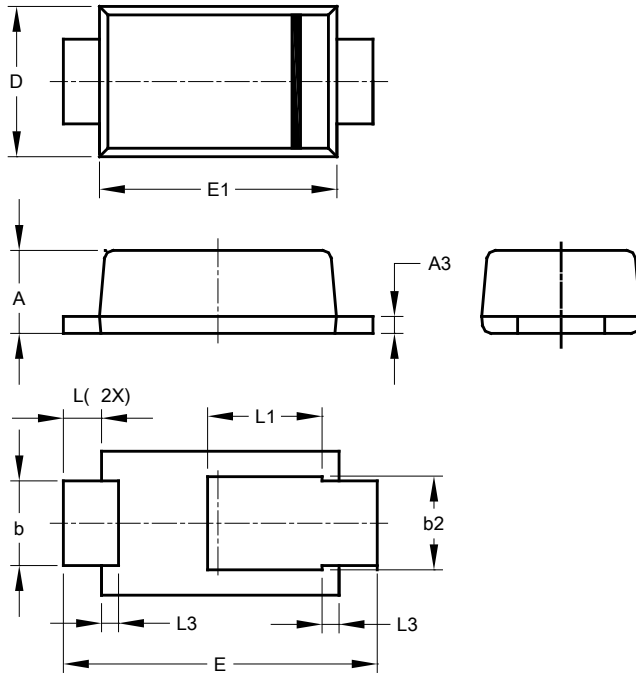
Fig. 2 Pulse Waveform



## Package Outline Dimensions

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

**PowerDI123**

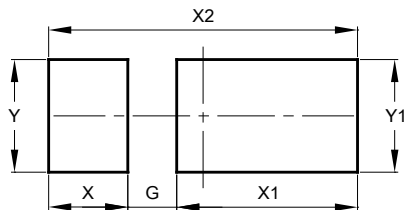


PowerDI123			
Dim	Min	Max	Typ
A	0.93	1.00	0.98
A3	0.15	0.25	0.20
b	0.85	1.25	1.00
b2	1.025	1.125	1.10
D	1.63	1.93	1.78
E	3.50	3.90	3.70
E1	2.60	3.00	2.80
L	0.40	0.50	0.45
L1	1.25	1.40	1.35
L3	0.125	0.275	0.20
All Dimensions in mm			

## 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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