

## Features

- 225W Peak Pulse Power Dissipation (10µs x 1000µs 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 (3)
- Weight: 0.01 grams (Approximate)

PowerDI123



Top View

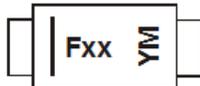
## Ordering Information (Note 5)

Product	Compliance	Marking	Reel Size (inches)	Tape Width (mm)	Quantity per Reel
DFLTxxAQ-7*	Automotive	Fxx	7	8	3,000/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) compliant. All applicable RoHS exemptions applied.
  2. See [http://www.diodes.com/quality/lead\\_free.html](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. Automotive products are AEC-Q101 qualified and are PPAP capable. Refer to [http://www.diodes.com/quality/product\\_compliance\\_definitions/](http://www.diodes.com/quality/product_compliance_definitions/).
  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: D = 2016)  
 M = Month (ex: 9 = September)

### Date Code Key

Year	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Code	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R

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 (Note 7) 8/20µs	P <sub>PK</sub>	225 1,125	W
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
DFLT18AQ	18	20.0	22.1	1.0	1.0	29.2	7.71	FBT
DFLT40AQ	40	44.4	49.1	1.0	1.0	64.5	3.49	FCR

- Notes:
6. Non-Replicative current pulse as shown in Figure 2 and derated above T<sub>A</sub> = +25°C as per Figure 1.
  7. Non-Replicative 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 1"x1", FR-4 PCB; 2 oz. Cu pad layout. Cathode pad dimensions 5.5mm x 3.5mm. Anode pad dimensions 2.25mm x 3.5mm.
  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 t<sub>p</sub> ≤ 5.0ms at T<sub>A</sub> = +25°C.

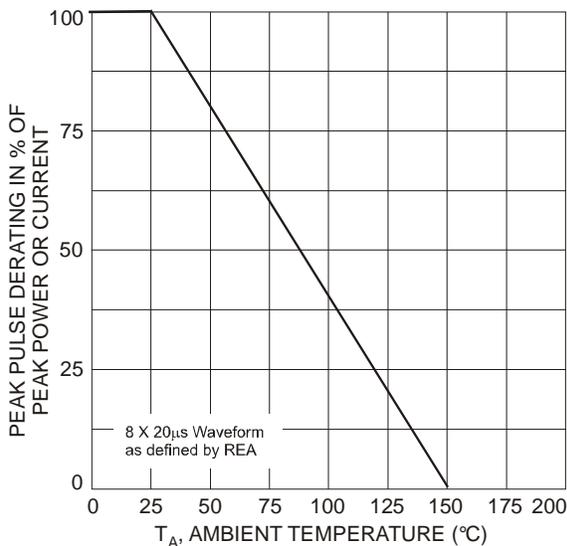


Fig. 1 Pulse Derating Curve

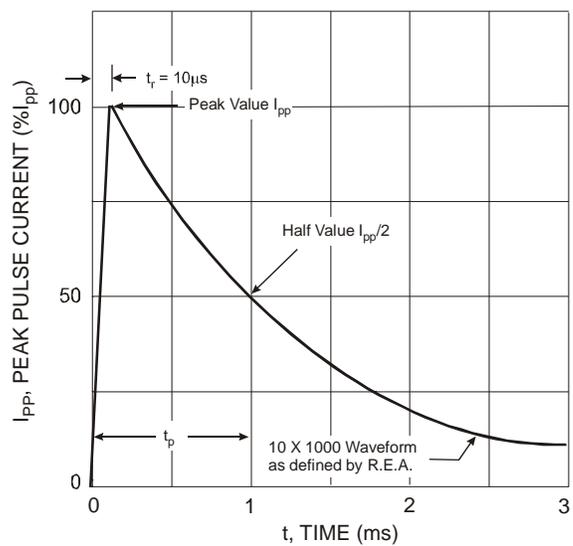
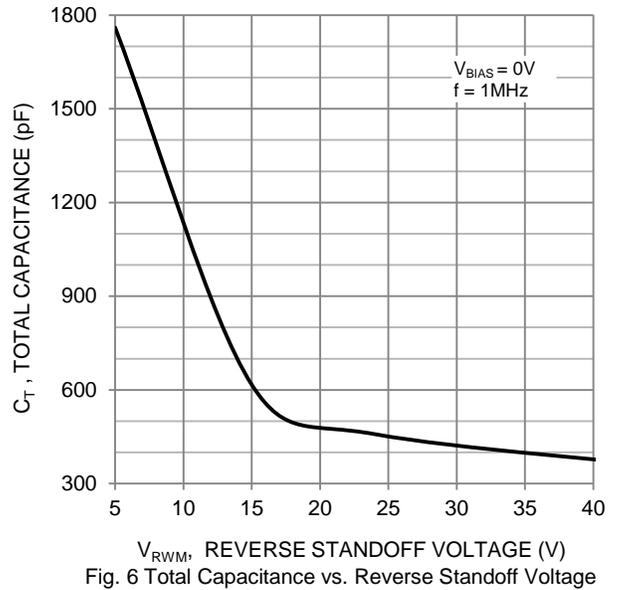
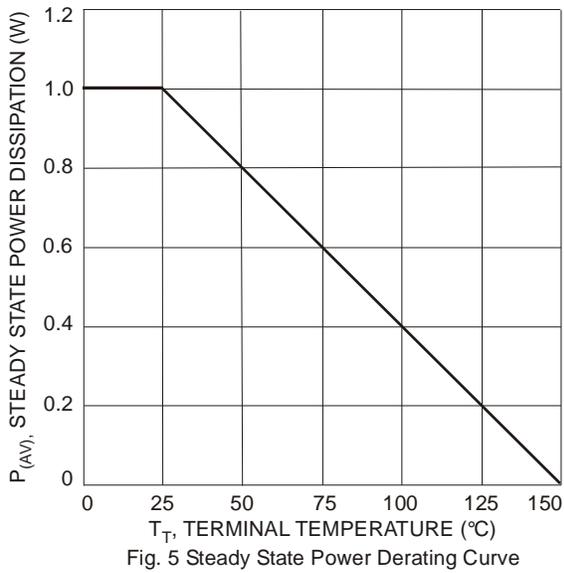
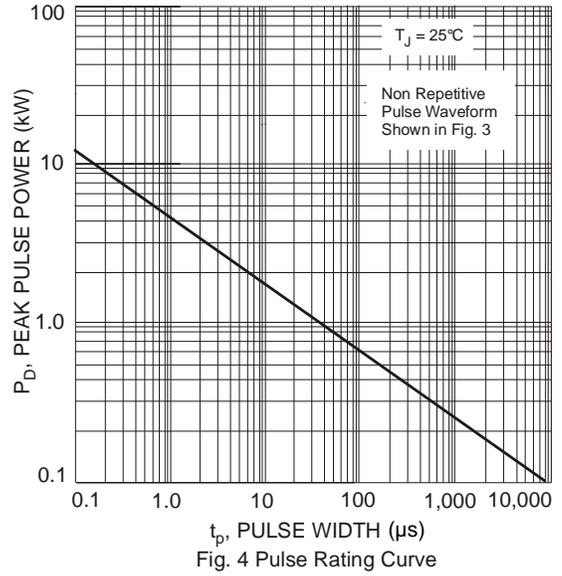
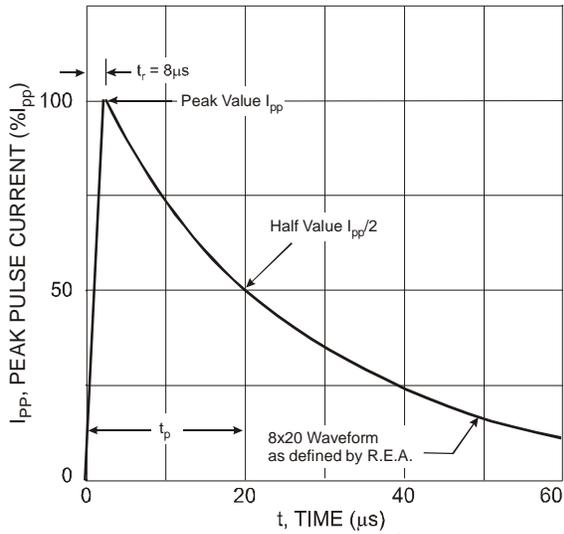


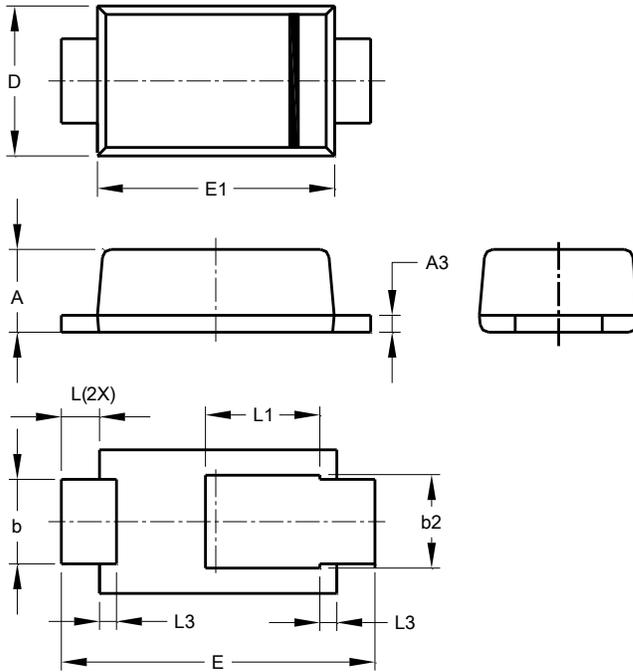
Fig. 2 Pulse Waveform



**Package Outline Dimensions**

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

**PowerDI123**

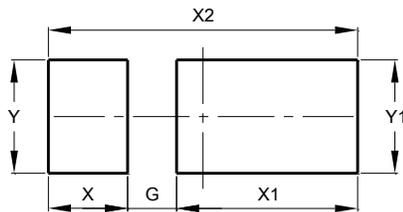


PowerDI123			
Dim	Min	Max	Typ
A	0.93	1.00	0.98
A3	0.15	0.25	0.20
b	0.85	1.25	1.00
b2	1.025	1.125	1.10
D	1.63	1.93	1.78
E	3.50	3.90	3.70
E1	2.60	3.00	2.80
L	0.40	0.50	0.45
L1	1.25	1.40	1.35
L3	0.125	0.275	0.20
All Dimensions in mm			

**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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