THE DATASHEET OF

DFLT13A-7

225W SURFACE MOUNT TRANSIENT VOLTAGE SUPPRESSOR
POWERDI

Features

- 225W Peak Pulse Power Dissipation (10µs x 1000µs Waveform)
- 5.0V to 220V Standoff Voltages
- Excellent Clamping Capability
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **An Automotive-Compliant Part is Available Under Separate Datasheet (DFLTXXXAQ)**

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)

PowerDI®123



Top View

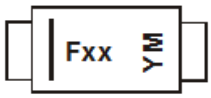
Ordering Information (Note 4)

Product	Compliance	Marking	Reel Size(inches)	Tape Width(mm)	Quantity Per Reel
DFLTxxxA-7*	Commercial	Fxx	7	8	3,000/Tape & Reel

* Add "-7" to the appropriate type number in Electrical Characteristics Table on page 2. Example: 10V reverse standoff device = DFLT10A-7.

Notes:
1. EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) 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



Fxx = Product Type Marking Code
See Electrical Characteristics Table on Page 2
YM = Date Code Marking
Y = Year (ex: E = 2017)
M = Month (ex: 9 = September)

Date Code Key

Year	2004	----	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Code	R	----	Z	A	B	C	D	E	F	G	H	I	J	K	L

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

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Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Peak Pulse Power Dissipation (Note 5) 10/1000µs (Note 6) 8/20µs	P_{PK}	225 1125	W
Peak Forward Surge Current, 8.3ms Single Half Sine Wave (Note 7)	I_{FSM}	50	A
Instantaneous Forward Voltage @ I_{PP} = 12A (Note 8)	V_F	3.5	V

Thermal Characteristics

Characteristic	Symbol	Value	Unit
DC Steady-State Power Dissipation (Note 9)	P_D	1.0	W
Thermal Resistance, Junction to Ambient (Note 9)	$R_{\theta JA}$	125	°C/W
Thermal Resistance, Junction to Soldering Point (Note 10)	$R_{\theta JS}$	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.)

Part Number	Reverse Standoff Voltage	Breakdown Voltage V_{BR} @ I_T (Note 11)		Test Current	Max. Reverse Leakage @ V_{RWM}	Max. Clamping Voltage @ I_{pp}	Max. Peak Pulse Current I_{pp}	Marking Code
	V_{RWM} (V)	Min (V)	Max (V)	I_T (mA)	I_R (µA)	V_C (V)	(A)	
DFLT5V0A	5.0	6.40	7.0	10	400	9.2	24.5	FAE
DFLT6V0A	6.0	6.67	7.37	10	400	10.3	21.8	FAG
DFLT6V5A	6.5	7.22	7.98	10	250	11.2	20.1	FAK
DFLT7V0A	7.0	7.78	8.60	10	100	12.0	18.8	FAM
DFLT7V5A	7.5	8.33	9.21	1.0	50	12.9	17.4	FAP
DFLT8V0A	8.0	8.89	9.83	1.0	25	13.6	16.5	FAR
DFLT8V5A	8.5	9.44	10.4	1.0	10	14.4	15.6	FAT
DFLT9V0A	9.0	10.0	11.1	1.0	5.0	15.4	14.6	FAV
DFLT10A	10	11.1	12.3	1.0	2.5	17.0	13.2	FAX
DFLT11A	11	12.2	13.5	1.0	2.5	18.2	12.4	FAZ
DFLT12A	12	13.3	14.7	1.0	2.5	19.9	11.3	FBE
DFLT13A	13	14.4	15.9	1.0	1.0	21.5	10.5	FBG
DFLT14A	14	15.6	17.2	1.0	1.0	23.2	9.7	FBK
DFLT15A	15	16.7	18.5	1.0	1.0	24.4	9.22	FBM
DFLT16A	16	17.8	19.7	1.0	1.0	26.0	8.65	FBP
DFLT17A	17	18.9	20.9	1.0	1.0	27.6	8.15	FBR
DFLT18A	18	20.0	22.1	1.0	1.0	29.2	7.71	FBT
DFLT20A	20	22.2	24.5	1.0	1.0	32.4	6.94	FBV
DFLT22A	22	24.4	26.9	1.0	1.0	35.5	6.34	FBX
DFLT24A	24	26.7	29.5	1.0	1.0	38.9	5.78	FBZ
DFLT26A	26	28.9	31.9	1.0	1.0	42.1	5.35	FCE
DFLT27A	27	30	33.15	1.0	1.0	43.7	5.15	FCF
DFLT28A	28	31.1	34.4	1.0	1.0	45.4	4.96	FCG
DFLT30A	30	33.3	36.8	1.0	1.0	48.4	4.65	FCK
DFLT33A	33	36.7	40.6	1.0	1.0	53.3	4.22	FCM
DFLT36A	36	40.0	44.2	1.0	1.0	58.1	3.87	FCP
DFLT40A	40	44.4	49.1	1.0	1.0	64.5	3.49	FCR
DFLT43A	43	47.8	52.8	1.0	1.0	69.4	3.24	FCT
DFLT45A	45	50.0	55.3	1.0	1.0	72.7	3.10	FCV
DFLT48A	48	53.3	58.9	1.0	1.0	77.4	2.91	FCX
DFLT51A	51	56.7	62.7	1.0	1.0	82.4	2.73	FCZ
DFLT170A	170	189	209	1.0	5.0	281	0.81	FDZ
DFLT220A	220	242	276	1.0	5.0	375	0.60	FEZ

Notes:
5. Non-Repetitive current pulse as shown in figure 2 and derated above T_A = +25°C as per figure 1.
6. Non-Repetitive current pulse as shown in figure 3 and derated above T_A = +25°C as per figure 1.
7. I_{FSM} = 40A for DFLT170A and DFLT220A; I_{FSM} = 50A for all other voltages.
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 $R_{\theta JS}$ calculated from the top center of the die straight down to the PCB/cathode tab solder junction.
11. V_{BR} measured at pulse test current I_T with tp ≤5.0ms at T_A = +25°C.

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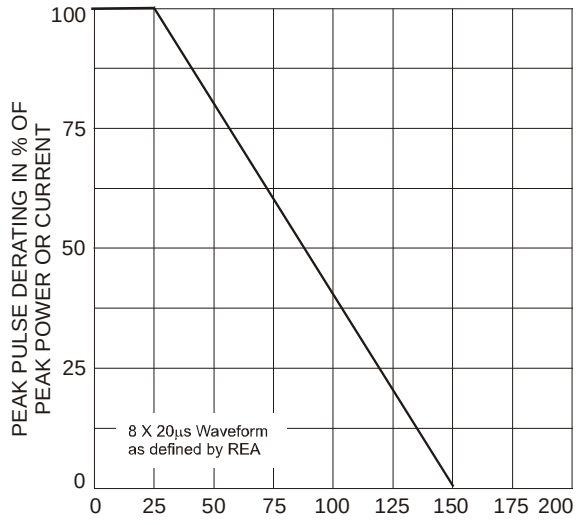


Fig. 1 Pulse Derating Curve

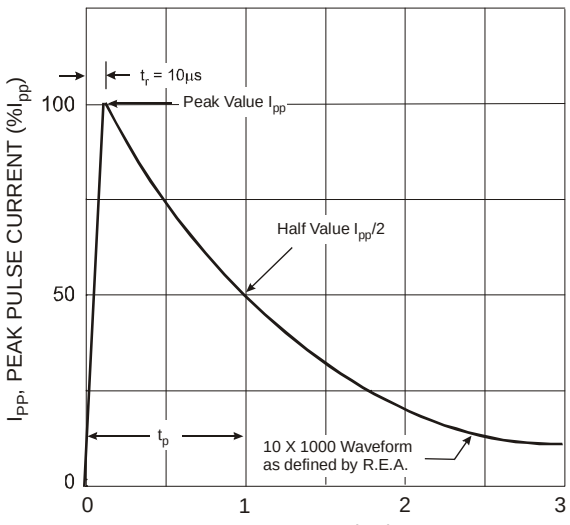


Fig. 2 Pulse Waveform

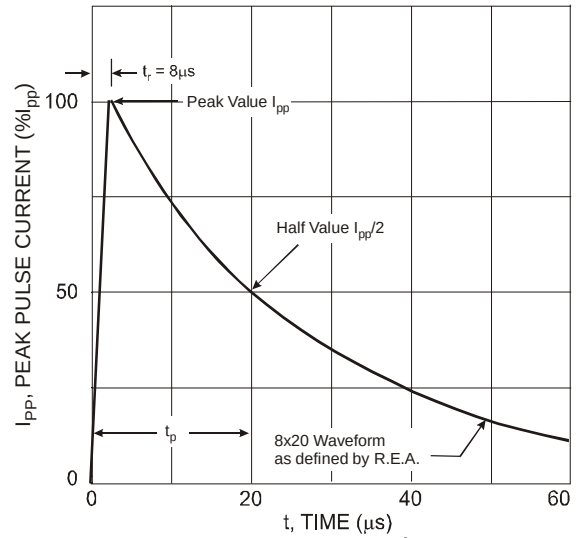


Fig. 3 Pulse Waveform

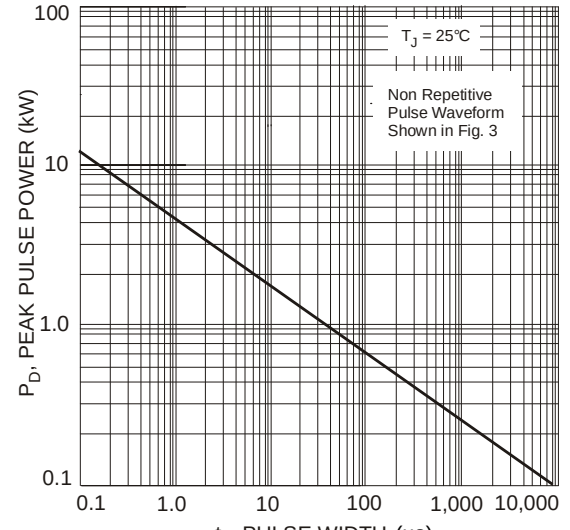


Fig. 4 Pulse Rating Curve

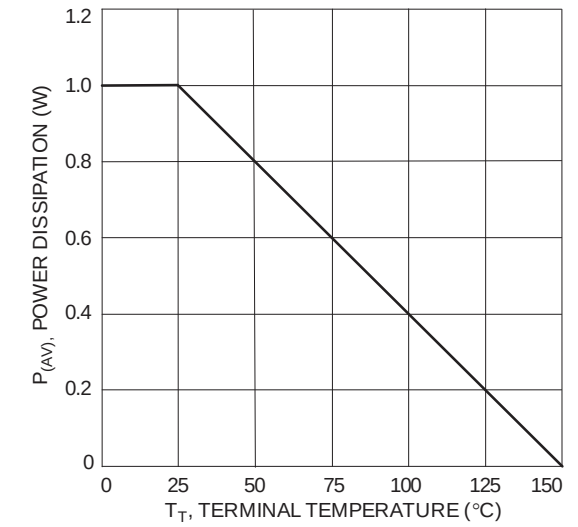


Fig. 5 Power Derating Curve

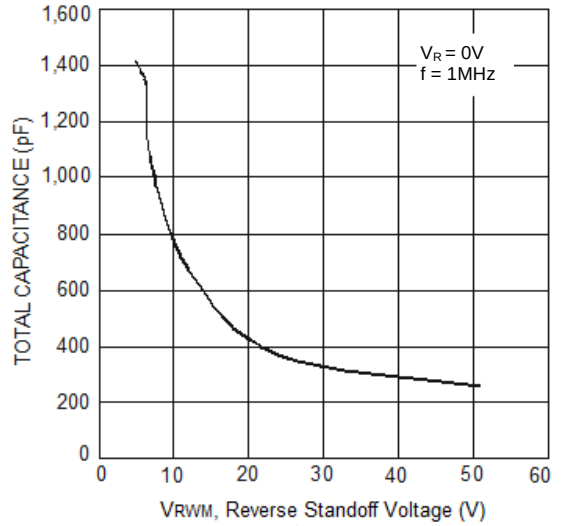


Fig.6 Total Capacitance vs Reverse Standoff Voltage

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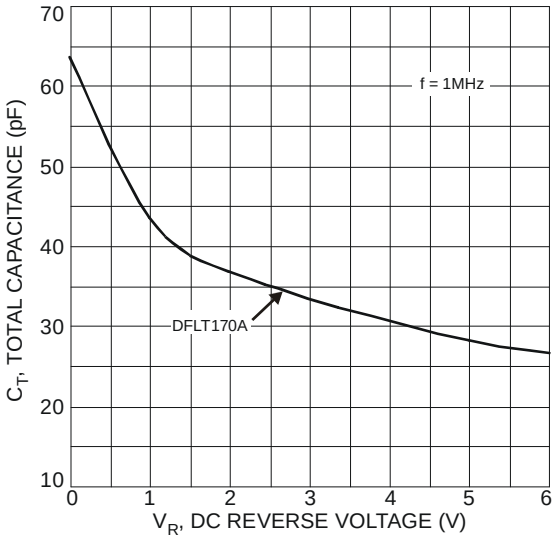


Fig. 7 Total Capacitance vs. Reverse Voltage

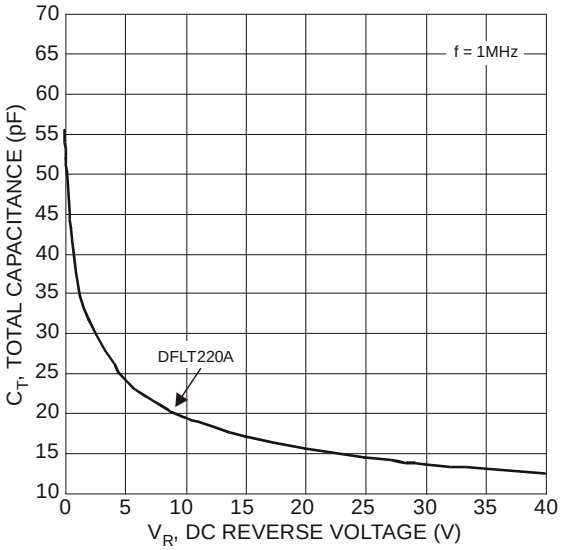
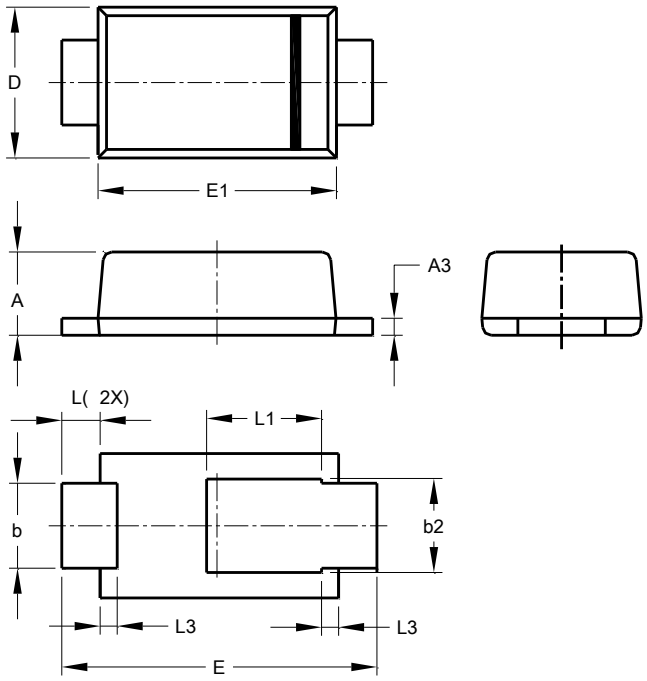


Fig. 8 Total Capacitance vs. Reverse Voltage

Package Outline Dimensions

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

PowerDI®123



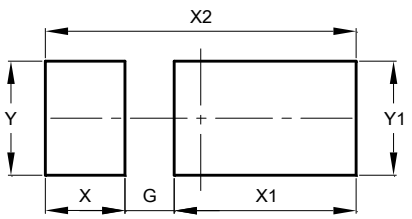
PowerDI®123			
Dim	**Min**	**Max**	**Typ**
A	0.93	1.00	0.98
A3	0.15	0.25	0.20
b	0.85	1.25	1.00
b2	1.025	1.125	1.10
D	1.63	1.93	1.78
E	3.50	3.90	3.70
E1	2.60	3.00	2.80
L	0.40	0.50	0.45
L1	1.25	1.40	1.35
L3	0.125	0.275	0.20
All Dimensions in mm			

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Suggested Pad Layout

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

PowerDI®123



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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