1.0W SURFACE MOUNT POWER ZENER DIODE POWERDI®123

Features

- 1W Power Dissipation on FR-4 PCB
- Large, exposed pad and heat sink designed for superior thermal performance
- **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 e3
- Weight: 0.01 grams (Approximate)



Top View

Ordering Information (Note 4)

Part Number	Qualification	Case	Packaging
(Type Number)Q-7*	Automotive	POWERDI®123	3,000/Tape & Reel

* Add "-7" to the appropriate type number in Electrical Characteristics Table. Example: 6.2V Zener = DFLZ6V2Q-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 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)
YM = Date Code Marking
Y = Year (ex: A = 2013)
M = Month (ex: 9 = September)

Date Code Key

Year	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Code	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

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

Characteristic		Symbol	Value	Unit
Forward Voltage	@ I_F = 200mA	V_F	1.2	V

Thermal Characteristics

Characteristic	Symbol	Typ	Value	Unit
Power Dissipation (Note 5)	P_D	—	1.0	W
Thermal Resistance Junction to Ambient Air (Note 5)	$R_{\theta JA}$	110	—	°C/W
Thermal Resistance Junction to Soldering Point (Note 6)	$R_{\theta JS}$	—	9	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	—	-55 to +150	°C

Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Type Number	Marking Codes	Zener Voltage Range (Note 7)				Zener Impedance (Note 8)		Maximum Reverse Current (Note 7)		Temperature Coefficient @ I_{ZTC} %/°C	
		V_Z @ I_{ZT}			I_{ZT}	Z_{ZT} @ I_{ZT}		I_R	@ V_R		
		Nom (V)	Min (V)	Max (V)	mA	Typ (Ω)	Max (Ω)	µA	V	Min	Max
DFLZ5V1Q	FHK	5.1	4.8	5.4	100	2	6	2.5	1	-0.08	-0.2
DFLZ5V6Q	FHL	5.6	5.2	6.0	100	1	4	10	2	-0.04	0.04
DFLZ6V2Q	FHN	6.2	5.8	6.6	100	1	3	5	2	-0.01	0.06
DFLZ6V8Q	FHO	6.8	6.4	7.2	100	1	3	5	3	0	0.07
DFLZ7V5Q	FHQ	7.5	7.0	7.9	100	1	2	5	3	0	0.07
DFLZ8V2Q	FHR	8.2	7.7	8.7	100	1	2	5	3	0.03	0.08
DFLZ9V1Q	FHT	9.1	8.5	9.6	50	1	4	5	5	0.03	0.08
DFLZ10Q	FHU	10	9.4	10.6	50	1	4	5	7.5	0.05	0.09
DFLZ11Q	FHV	11	10.4	11.6	50	1	7	4	8.2	0.05	0.10
DFLZ12Q	FHW	12	11.4	12.7	50	1	7	3	9.1	0.05	0.10
DFLZ13Q	FHX	13	12.4	14.1	50	1	10	2	10	0.05	0.10
DFLZ15Q	FHZ	15	13.8	15.6	50	1	10	1	11	0.05	0.10
DFLZ16Q	FJA	16	15.3	17.1	25	1	15	1	12	0.06	0.11
DFLZ18Q	FJF	18	16.8	19.1	25	2	15	1	13	0.06	0.11
DFLZ20Q	FJG	20	18.8	21.2	25	3	15	1	15	0.06	0.11
DFLZ22Q	FJK	22	20.8	23.3	25	3	15	1	16	0.06	0.11
DFLZ24Q	FJL	24	22.8	25.6	25	2	15	1	18	0.06	0.11
DFLZ27Q	FJN	27	25.1	28.9	25	3	15	1	20	0.06	0.11
DFLZ30Q	FJQ	30	28	32	25	8	15	1	22	0.06	0.11
DFLZ33Q	FJR	33	31	35	25	5	15	1	24	0.06	0.11
DFLZ36Q	FJS	36	34	38	10	5	40	1	27	0.06	0.11
DFLZ39Q	FJT	39	37	41	10	5	40	1	30	0.06	0.11

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 AP02001.pdf at http://www.diodes.com.
6. Theoretical $R_{\theta JS}$ calculated from the top center of the die straight down to the PCB/cathode tab solder junction.
7. Short duration pulse test used to minimize self-heating effect.
8. The Zener impedance (Zzt) is measured by superimposing a minute alternating current on the regulated current (Izt).

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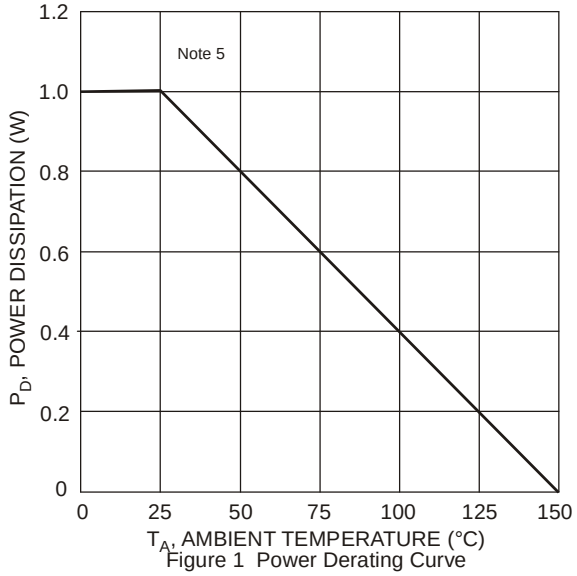


Figure 1 Power Derating Curve

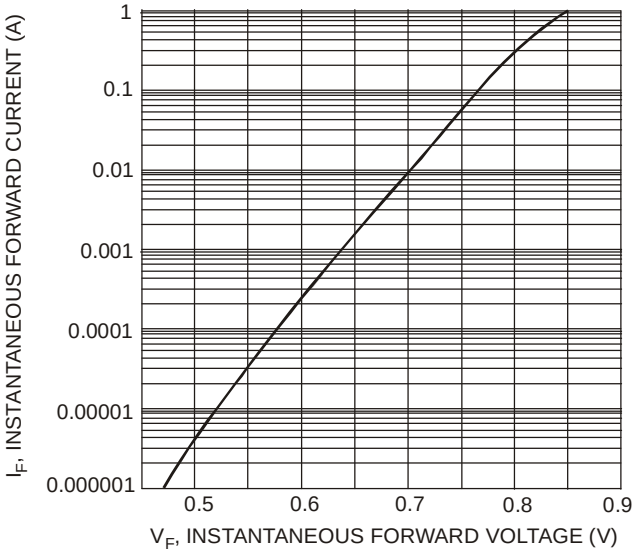


Figure 2 Typical Forward Characteristics

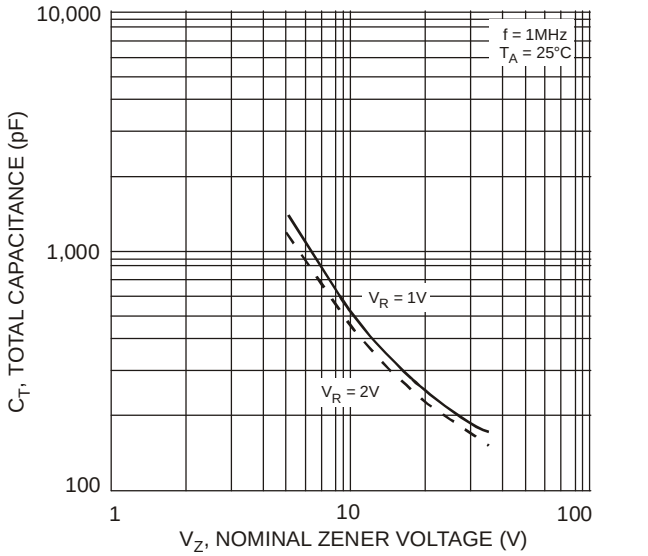
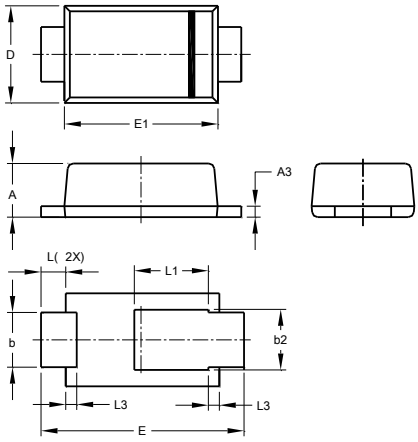


Figure 3 Typical Total Capacitance vs. Nominal Zener Voltage

Package Outline Dimensions

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

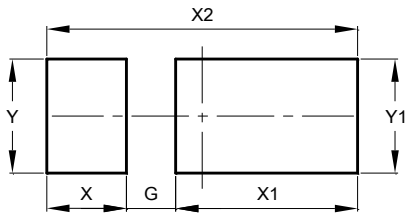


POWERDI®123			
Dim	**Min**	**Max**	**Typ**
A	0.93	1.00	0.98
A3	0.15	0.25	0.20
b	0.85	1.25	1.00
b2	1.025	1.125	1.10
D	1.63	1.93	1.78
E	3.50	3.90	3.70
E1	2.60	3.00	2.80
L	0.40	0.50	0.45
L1	1.25	1.40	1.35
L3	0.125	0.275	0.20
All Dimensions in mm			

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Suggested Pad Layout

Please see AP02001 at http://www.diodes.com/datasheets/ap02001.pdf for the latest version.



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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