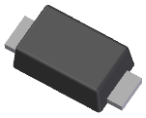
# 1.0W SURFACE MOUNT POWER ZENER DIODE
## PowerDI123

## Features

- 1W Power Dissipation on FR-4 PCB
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**

## 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)



Top View

## Ordering Information (Note 4)

| Part Number | Case | Packaging |
|---|---|---|
| (Type Number)-7* | PowerDI123 | 3,000/Tape & Reel |

* Add "-7" to the appropriate type number in Electrical Characteristics Table. Example: 6.2V Zener = DFLZ6V2-7

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 | … | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Code | U | V | W | X | Y | … | D | E | F | G | H | I |

| 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.)

| 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 | | 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 |
| DFLZ5V1 | FHK | 5.1 | 4.8 | 5.4 | 100 | 2 | 6 | 2.5 | 1 | -0.08 | -0.2 |
| DFLZ5V6 | FHL | 5.6 | 5.2 | 6.0 | 100 | 1 | 4 | 10 | 2 | -0.04 | 0.04 |
| DFLZ6V2 | FHN | 6.2 | 5.8 | 6.6 | 100 | 1 | 3 | 5 | 2 | -0.01 | 0.06 |
| DFLZ6V8 | FHO | 6.8 | 6.4 | 7.2 | 100 | 1 | 3 | 5 | 3 | 0 | 0.07 |
| DFLZ7V5 | FHQ | 7.5 | 7.0 | 7.9 | 100 | 1 | 2 | 5 | 3 | 0 | 0.07 |
| DFLZ8V2 | FHR | 8.2 | 7.7 | 8.7 | 100 | 1 | 2 | 5 | 3 | 0.03 | 0.08 |
| DFLZ9V1 | FHT | 9.1 | 8.5 | 9.6 | 50 | 1 | 4 | 5 | 5 | 0.03 | 0.08 |
| DFLZ10 | FHU | 10 | 9.4 | 10.6 | 50 | 1 | 4 | 5 | 7.5 | 0.05 | 0.09 |
| DFLZ11 | FHV | 11 | 10.4 | 11.6 | 50 | 1 | 7 | 4 | 8.2 | 0.05 | 0.10 |
| DFLZ12 | FHW | 12 | 11.4 | 12.7 | 50 | 1 | 7 | 3 | 9.1 | 0.05 | 0.10 |
| DFLZ13 | FHX | 13 | 12.4 | 14.1 | 50 | 1 | 10 | 2 | 10 | 0.05 | 0.10 |
| DFLZ15 | FHZ | 15 | 13.8 | 15.6 | 50 | 1 | 10 | 1 | 11 | 0.05 | 0.10 |
| DFLZ16 | FJA | 16 | 15.3 | 17.1 | 25 | 1 | 15 | 1 | 12 | 0.06 | 0.11 |
| DFLZ18 | FJF | 18 | 16.8 | 19.1 | 25 | 2 | 15 | 1 | 13 | 0.06 | 0.11 |
| DFLZ20 | FJG | 20 | 18.8 | 21.2 | 25 | 3 | 15 | 1 | 15 | 0.06 | 0.11 |
| DFLZ22 | FJK | 22 | 20.8 | 23.3 | 25 | 3 | 15 | 1 | 16 | 0.06 | 0.11 |
| DFLZ24 | FJL | 24 | 22.8 | 25.6 | 25 | 2 | 15 | 1 | 18 | 0.06 | 0.11 |
| DFLZ27 | FJN | 27 | 25.1 | 28.9 | 25 | 3 | 15 | 1 | 20 | 0.06 | 0.11 |
| DFLZ30 | FJQ | 30 | 28 | 32 | 25 | 8 | 15 | 1 | 22 | 0.06 | 0.11 |
| DFLZ33 | FJR | 33 | 31 | 35 | 25 | 5 | 15 | 1 | 24 | 0.06 | 0.11 |
| DFLZ36 | FJS | 36 | 34 | 38 | 10 | 5 | 40 | 1 | 27 | 0.06 | 0.11 |
| DFLZ39 | FJT | 39 | 37 | 41 | 10 | 5 | 40 | 1 | 30 | 0.06 | 0.11 |

Notes: 5. Device mounted on 1.5" x 1.5", FR-4 PCB; 2 oz. Cu with 1"x1" pad layout.
6. Theoretical RθJS 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.

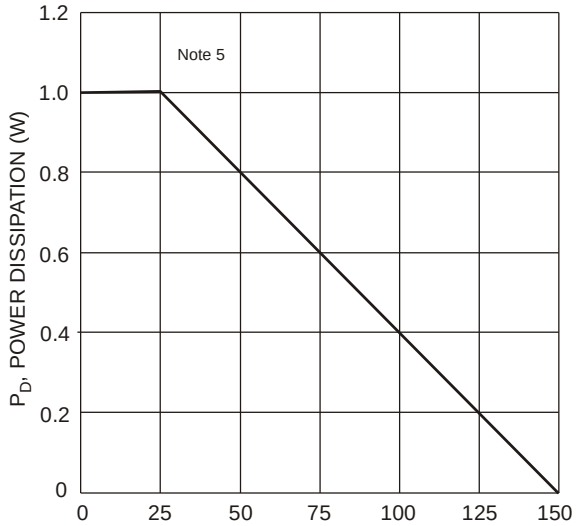



Figure 1 Power Derating Curve

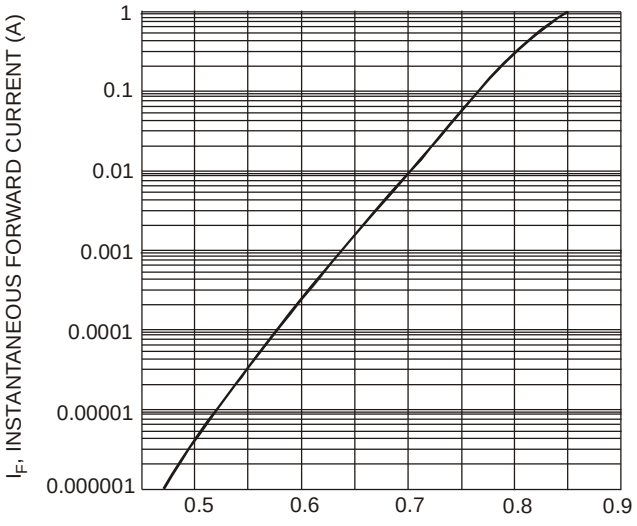



Figure 2 Typical Forward Characteristics

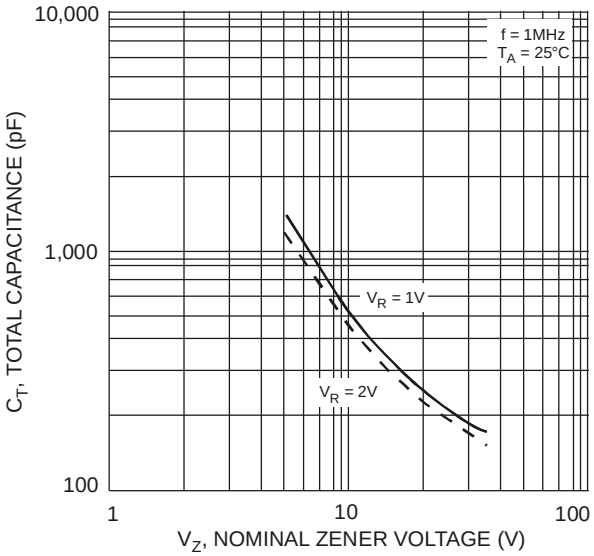
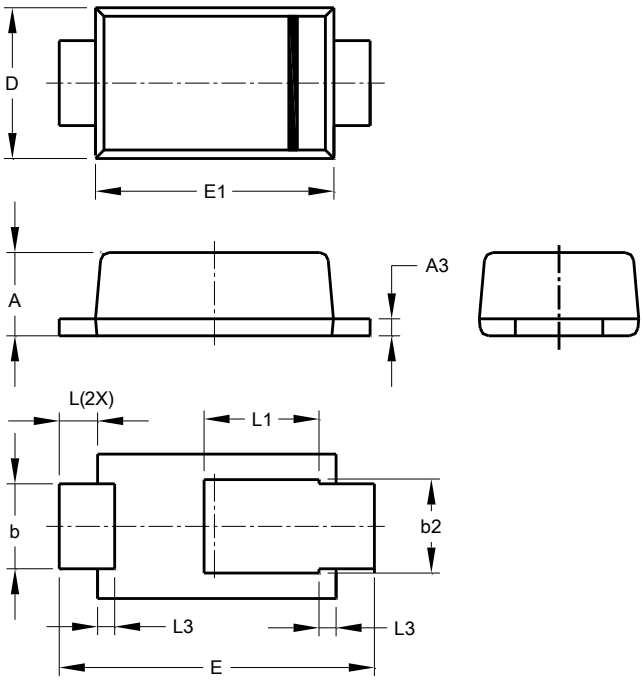



Figure 3 Typical Total Capacitance vs. Nominal Zener Voltage

## Package Outline Dimensions

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

**PowerDI123**

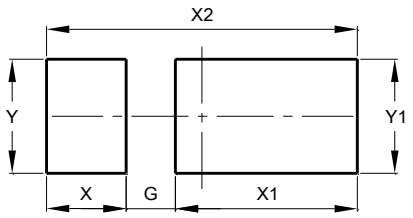



| PowerDI123 | | | |
|---|---|---|---|
| **Dim** | **Min** | **Max** | **Typ** |
| **A** | 0.93 | 1.00 | 0.98 |
| **A3** | 0.15 | 0.25 | 0.20 |
| **b** | 0.85 | 1.25 | 1.00 |
| **b2** | 1.025 | 1.125 | 1.10 |
| **D** | 1.63 | 1.93 | 1.78 |
| **E** | 3.50 | 3.90 | 3.70 |
| **E1** | 2.60 | 3.00 | 2.80 |
| **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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