

Features

- Very Tight Tolerance on V_Z
- Ideally Suited for Automated Assembly Processes
- 500mW Power Dissipation on FR-4 PCB (Note 1)
- **Totally Lead-Free & Fully RoHS Compliant (Notes 2 & 3)**
- **Halogen and Antimony Free. "Green" Device (Notes 4)**
- **Qualified to AEC-Q101 Standards for High Reliability**
- **PPAP Capable (Note 5)**

Mechanical Data

- Case: SOD123
- 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 Alloy 42 Leadframe. Solderable per MIL-STD-202, Method 208
- Weight: 0.01 grams (Approximate)

SOD123



Top View

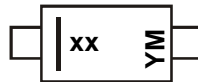
Ordering Information (Notes 5 & 6)

| Part Number | Qualification | Case | Packaging |
|----------------------|---------------|--------|------------------|
| DDZ(V_Z Rank)-7* | Commercial | SOD123 | 3000/Tape & Reel |
| DDZ(V_Z Rank)Q-7* | Automotive | SOD123 | 3000/Tape & Reel |

* Example: The part number for the 6.2 Volt device would be DDZ6V2B-7.

- Notes:
1. Device mounted on FR-4 PC board with 4" x 4" copper pads.
 2. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
 3. 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.
 4. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
 5. Automotive products are AEC-Q101 qualified and are PPAP capable. For more information, please refer to http://www.diodes.com/product_compliance_definitions.html.
 6. For packaging details, go to our website at <http://www.diodes.com/products/packages.html>.

Marking Information



xx = Product Type Marking Code
(See Electrical Characteristics Table)
YM = Date Code Marking
Y = Year (ex: C = 2015)
M = Month (ex: 9 = September)

Date Code Key

| Year | 2003 | 2004 | ... | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 |
|------|------|------|-----|------|------|------|------|------|------|------|------|------|
| Code | P | R | ... | Z | A | B | C | D | E | F | G | H |

| 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 = 10mA | V _F | 0.9 | V |

Thermal Characteristics

| Characteristic | Symbol | Value | Unit |
|--|-----------------------------------|-------------|------|
| Power Dissipation (Note 7) @T _L = +75 °C | P _D | 500 | mW |
| Power Dissipation (Note 8) @T _A = +25 °C | P _D | 410 | mW |
| Power Dissipation (Note 9) @T _A = +25 °C | P _D | 310 | mW |
| Thermal Resistance, Junction to Ambient Air (Note 8) | R _{θJA} | 305 | °C/W |
| Thermal Resistance, Junction to Ambient Air (Note 9) | R _{θJA} | 403 | °C/W |
| Operating and Storage Temperature Range | T _J , T _{STG} | -65 to +150 | °C |

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

| Type Number | Marking Code | Zener Voltage Range (Note 10) | | | Maximum Zener Impedance f = 1kHz | | | Maximum Reverse Current (Note 11) | |
|-------------|--------------|----------------------------------|---------|-----------------|-----------------------------------|-----------------------------------|-----------------|-----------------------------------|------------------|
| | | V _Z @ I _{ZT} | | I _{ZT} | Z _{ZT} @ I _{ZT} | Z _{ZK} @ I _{ZK} | I _{ZK} | I _R | @ V _R |
| | | Min (V) | Max (V) | mA | Ω | | mA | μA | V |
| DDZ5V1B | KM | 4.94 | 5.20 | 20 | 17 | 480 | 1 | 5 | 1.5 |
| DDZ5V6B | KN | 5.45 | 5.73 | 20 | 11 | 400 | 1 | 0.5 | 2.5 |
| DDZ6V2B | KO | 5.96 | 6.27 | 20 | 7 | 150 | 1 | 0.5 | 4.0 |
| DDZ6V8B | KP | 6.49 | 6.83 | 20 | 5 | 150 | 0.5 | 0.1 | 5.0 |
| DDZ6V8C | YP | 6.66 | 7.01 | 20 | 5 | 150 | 0.5 | 0.1 | 5.0 |
| DDZ7V5B | KQ | 7.07 | 7.45 | 20 | 6 | 120 | 0.5 | 0.1 | 6.0 |
| DDZ7V5C | YQ | 7.29 | 7.67 | 20 | 6 | 120 | 0.5 | 0.1 | 6.0 |
| DDZ8V2B | KR | 7.78 | 8.19 | 20 | 8 | 120 | 0.5 | 0.1 | 6.5 |
| DDZ8V2C | YR | 8.03 | 8.45 | 20 | 8 | 120 | 0.5 | 0.1 | 6.5 |
| DDZ9V1B | KS | 8.57 | 9.01 | 20 | 8 | 120 | 0.5 | 0.1 | 7.0 |
| DDZ9V1C | YS | 8.83 | 9.30 | 20 | 8 | 120 | 0.5 | 0.1 | 7.0 |
| DDZ10B | KT | 9.41 | 9.90 | 20 | 8 | 120 | 0.5 | 0.1 | 8.0 |
| DDZ10C | YT | 9.70 | 10.20 | 20 | 8 | 120 | 0.5 | 0.1 | 8.0 |
| DDZ11B | KU | 10.50 | 11.05 | 10 | 10 | 120 | 0.5 | 0.1 | 8.4 |
| DDZ11C | YU | 10.82 | 11.38 | 10 | 10 | 120 | 0.5 | 0.1 | 8.4 |
| DDZ12B | KV | 11.44 | 12.03 | 10 | 12 | 110 | 0.5 | 0.1 | 9.1 |
| DDZ12C | YV | 11.74 | 12.35 | 10 | 12 | 110 | 0.5 | 0.1 | 9.1 |
| DDZ13B | KW | 12.55 | 13.21 | 10 | 14 | 110 | 0.5 | 0.1 | 10.0 |
| DDZ14 | GX | 13.65 | 14.35 | 10 | 16 | 110 | 0.5 | 0.05 | 11.0 |
| DDZ14B | KX | 13.89 | 14.62 | 10 | 16 | 110 | 0.5 | 0.05 | 11.0 |
| DDZ15 | GY | 14.80 | 15.57 | 10 | 18 | 150 | 0.5 | 0.05 | 12.0 |
| DDZ16B | KY | 15.25 | 16.04 | 10 | 18 | 150 | 0.5 | 0.05 | 12.0 |
| DDZ16 | YY | 15.69 | 16.51 | 10 | 18 | 150 | 0.5 | 0.05 | 12.0 |
| DDZ17 | KZ | 16.82 | 17.70 | 10 | 23 | 150 | 0.5 | 0.05 | 14.0 |
| DDZ18C | YZ | 17.42 | 18.33 | 10 | 23 | 150 | 0.5 | 0.05 | 14.0 |
| DDZ19 | ZJ | 18.63 | 19.59 | 10 | 28 | 200 | 0.5 | 0.05 | 15.0 |
| DDZ20C | PJ | 19.23 | 20.22 | 10 | 28 | 200 | 0.5 | 0.05 | 15.0 |
| DDZ21 | ZK | 20.64 | 21.71 | 5 | 30 | 200 | 0.5 | 0.05 | 17.0 |
| DDZ22D | 2K | 21.52 | 22.63 | 5 | 30 | 200 | 0.5 | 0.05 | 17.0 |
| DDZ23 | ZL | 22.61 | 23.77 | 5 | 35 | 200 | 0.5 | 0.05 | 19.0 |
| DDZ24C | PL | 23.12 | 24.31 | 5 | 35 | 200 | 0.5 | 0.05 | 19.0 |
| DDZ26 | ZM | 24.97 | 26.26 | 5 | 45 | 250 | 0.5 | 0.05 | 21.0 |
| DDZ27D | 2M | 26.29 | 27.64 | 5 | 45 | 250 | 0.5 | 0.05 | 21.0 |
| DDZ28 | ZN | 27.70 | 29.13 | 5 | 55 | 250 | 0.5 | 0.05 | 23.0 |
| DDZ30D | 2N | 29.02 | 30.51 | 5 | 55 | 250 | 0.5 | 0.05 | 23.0 |
| DDZ31 | ZO | 30.32 | 31.88 | 5 | 65 | 250 | 0.5 | 0.05 | 25.0 |
| DDZ33 | RP | 32.14 | 33.79 | 5 | 75 | 250 | 0.5 | 0.05 | 27.0 |
| DDZ34 | ZP | 32.79 | 34.49 | 5 | 75 | 250 | 0.5 | 0.05 | 27.0 |
| DDZ36 | ZQ | 35.36 | 37.19 | 5 | 85 | 250 | 0.5 | 0.05 | 30.0 |
| DDZ39F | 5Q | 38.02 | 39.98 | 5 | 85 | 250 | 0.5 | 0.05 | 30.0 |
| DDZ43 | ZR | 42.14 | 43.86 | 5 | 90 | — | — | 0.05 | 33.0 |

- Notes:
- R_{θJL} = 132°C/W
 - Device mounted on Alumina ceramic PC board, single-sided, 14mm x 14mm x 1.0mm, 2oz copper traces, with copper pad area 40mm².
 - Device mounted on FR-4 PC board, single-sided, 25mm x 25mm x 1.6mm, 2oz copper traces with 1x minimum recommended pad layout.
 - The Zener voltage is measured <40ms after power is supplied.
 - Short duration pulse test used to minimize self-heating effect.

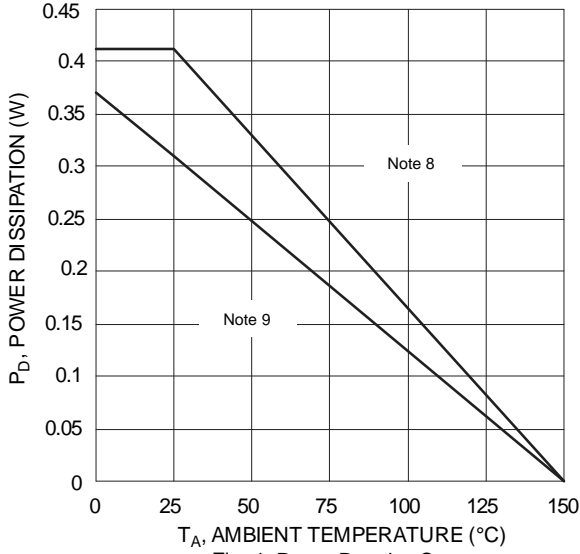


Fig. 1 Power Derating Curve

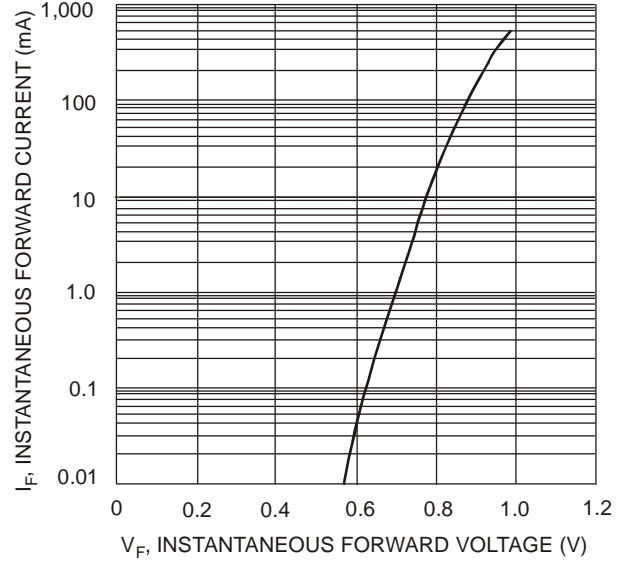


Fig. 2 Typical Forward Characteristics

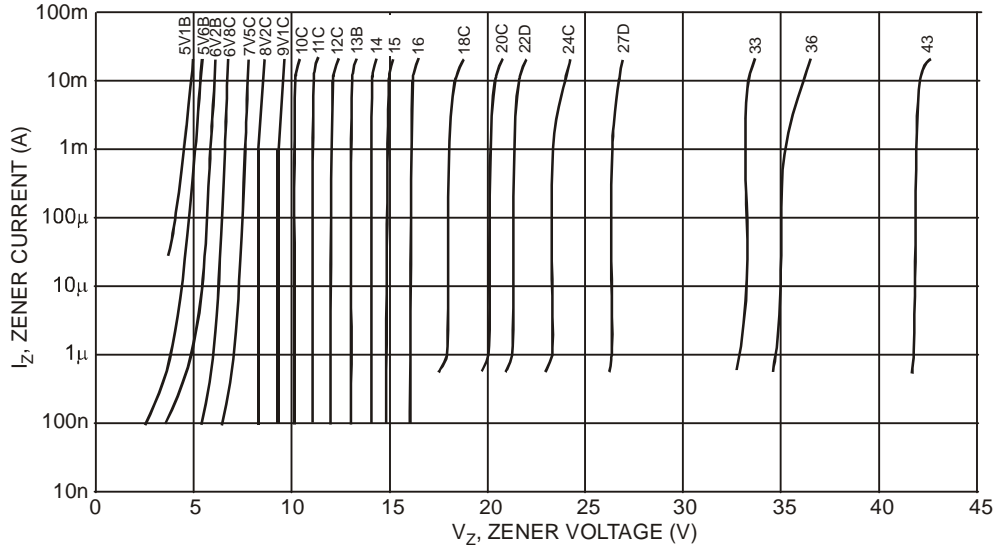


Fig. 3 Typical Zener Breakdown Characteristics

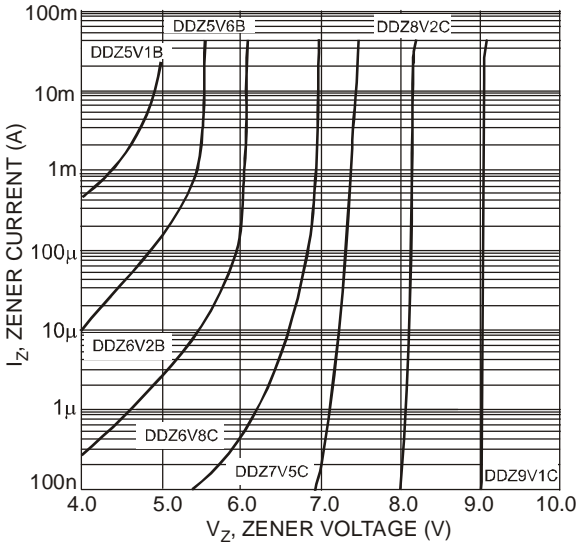


Fig. 4 Typical Zener Breakdown Characteristics, DDZ5V1B - DDZ9V1C

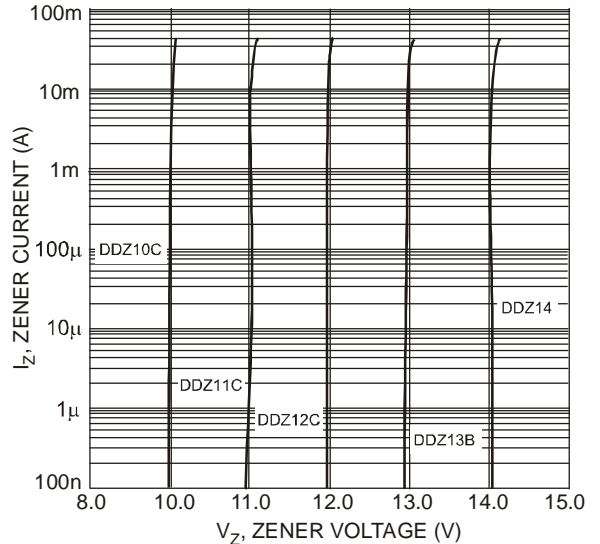


Fig. 5 Typical Zener Breakdown Characteristics, DDZ10C - DDZ14

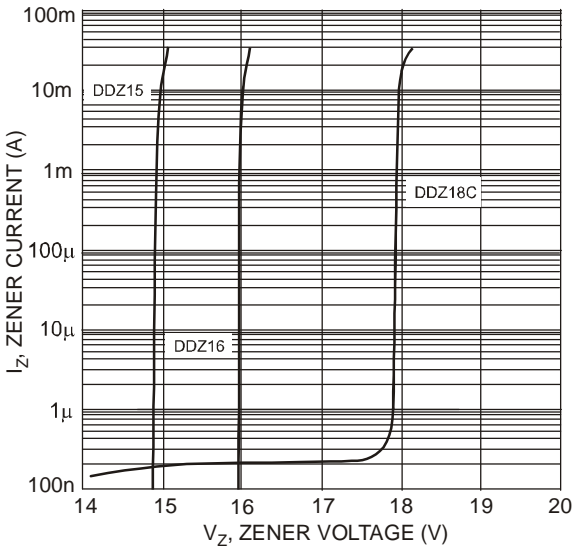


Fig. 6 Typical Zener Breakdown Characteristics, DDZ15 - DDZ18C

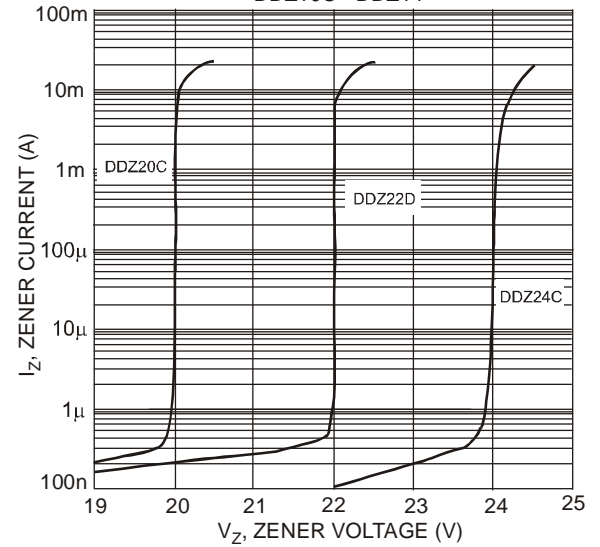


Fig. 7 Typical Zener Breakdown Characteristics, DDZ20C - DDZ24C

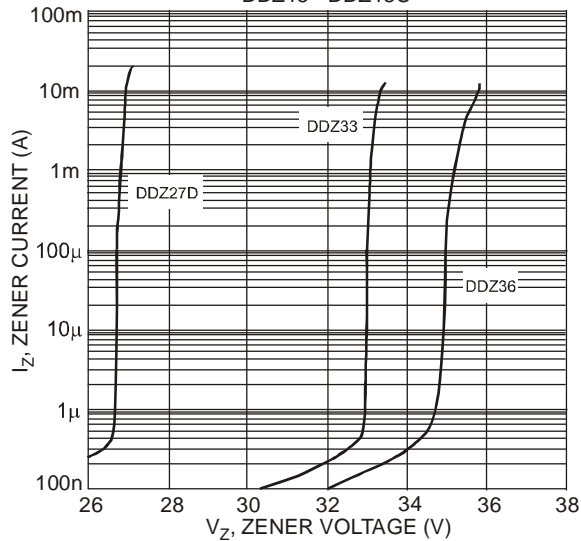


Fig. 8 Typical Zener Breakdown Characteristics, DDZ27D - DDZ36

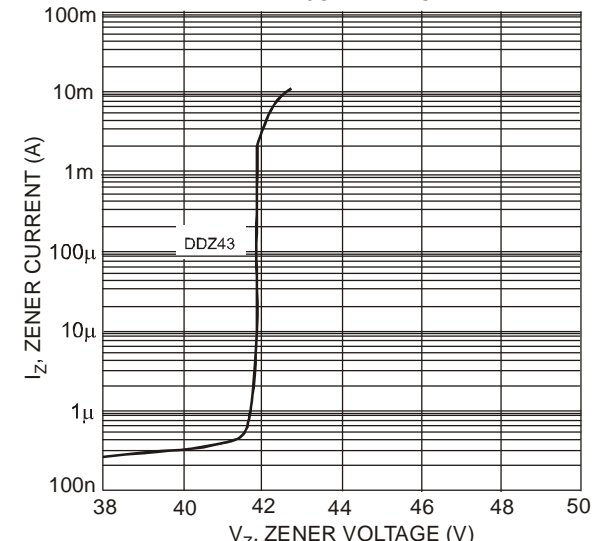


Fig. 9 Typical Zener Breakdown Characteristics, DDZ43

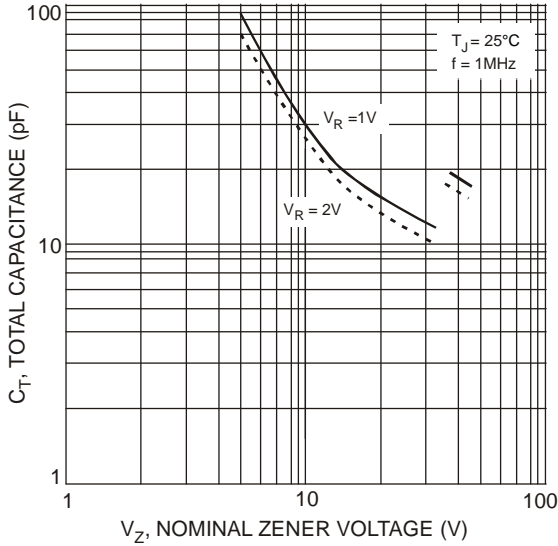


Fig. 10 Typical Total Capacitance vs. Nominal Zener Voltage

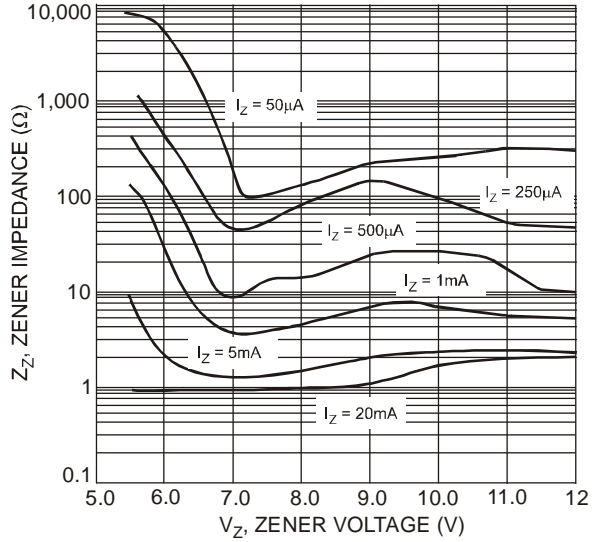


Fig. 11 Typical Zener Impedance Characteristics, DDZ5V6B - DDZ12C

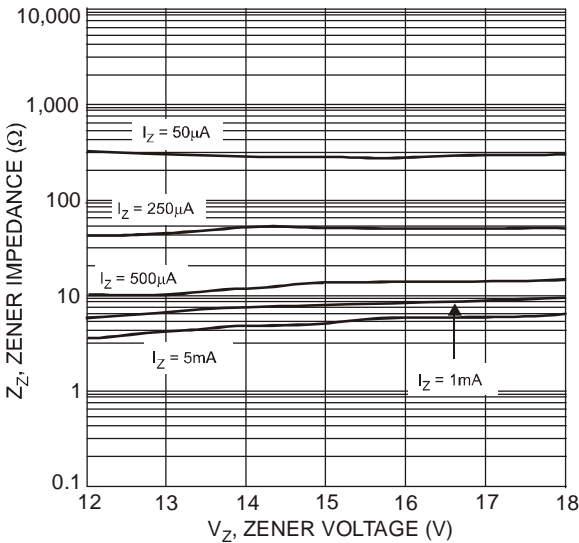


Fig. 12 Typical Zener Impedance Characteristics, DDZ12C - DDZ18C

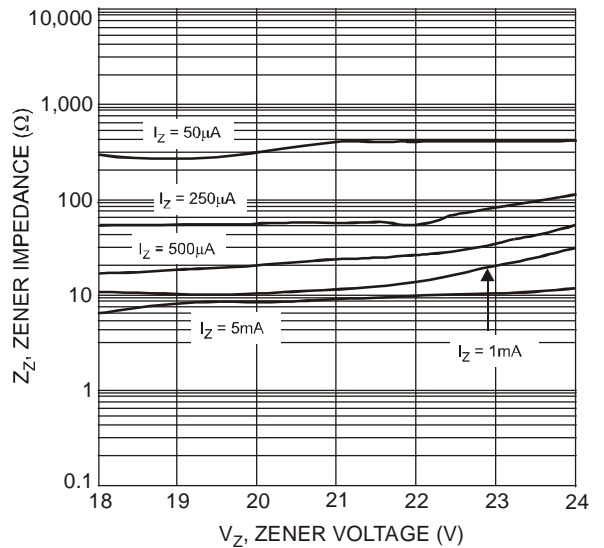


Fig. 13 Typical Zener Impedance Characteristics, DDZ18C - DDZ24C

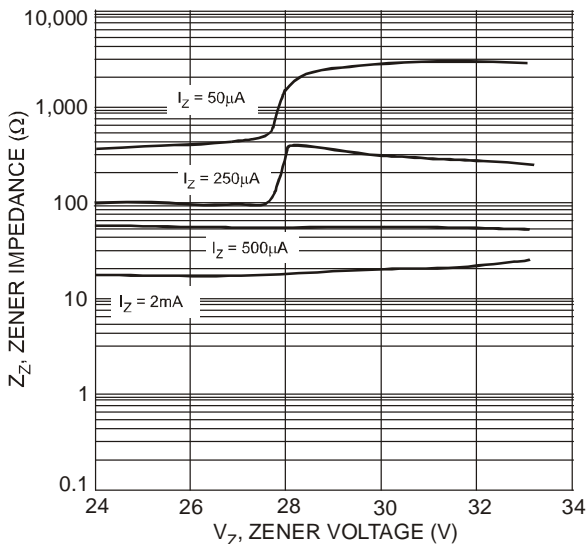


Fig. 14 Typical Zener Impedance Characteristics, DDZ24C - DDZ33

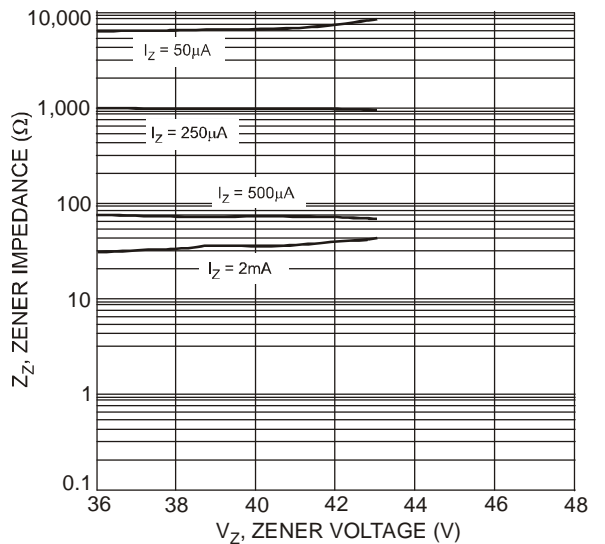


Fig. 15 Typical Zener Impedance Characteristics, DDZ36 - DDZ43

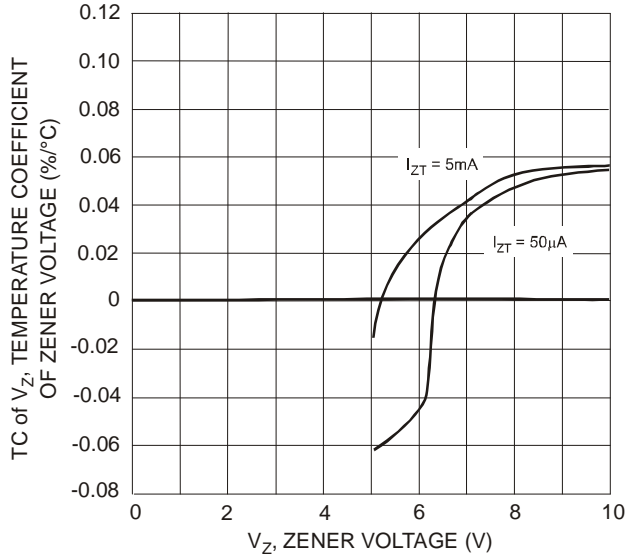


Fig. 16 Typical Temperature Coefficient of Zener Voltage vs. Zener Voltage, DDZ5V1B-DDZ10C

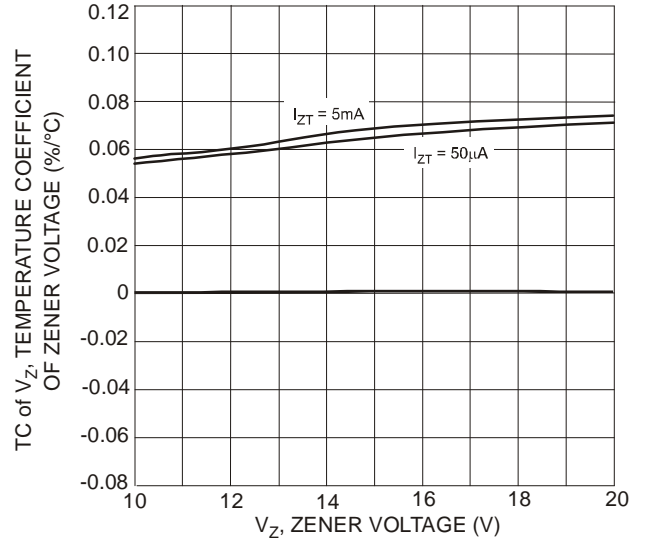


Fig. 17 Typical Temperature Coefficient of Zener Voltage vs. Zener Voltage, DDZ10C-DDZ20C

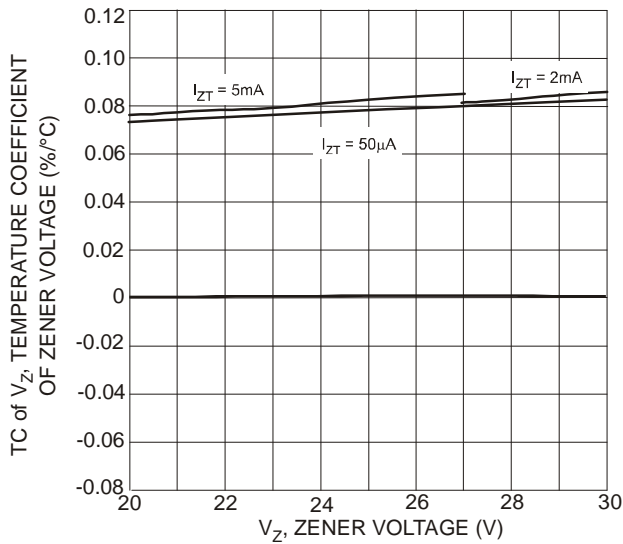


Fig. 18 Typical Temperature Coefficient of Zener Voltage vs. Zener Voltage, DDZ20C-DDZ30D

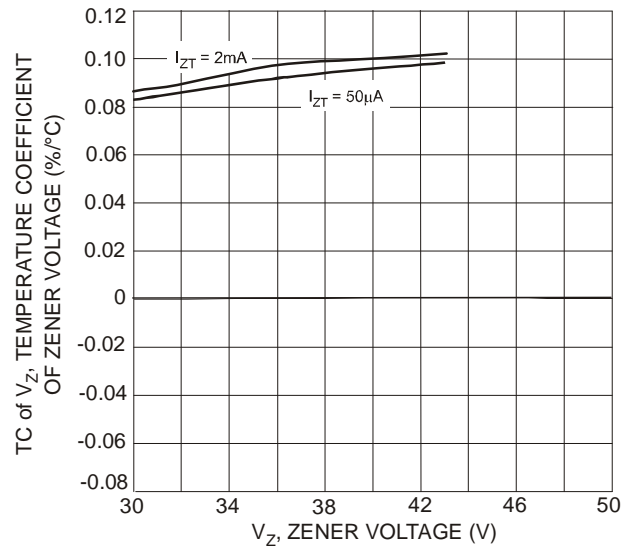
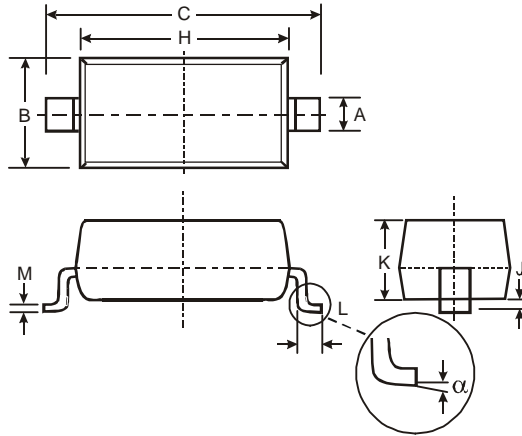


Fig. 19 Typical Temperature Coefficient of Zener Voltage vs. Zener Voltage, DDZ30D-DDZ43

Package Outline Dimensions

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

SOD123

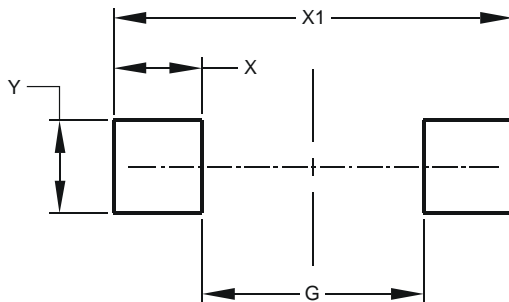


| SOD123 | | |
|----------------------|----------|------|
| Dim | Min | Max |
| A | 0.55 Typ | |
| B | 1.40 | 1.70 |
| C | 3.55 | 3.85 |
| H | 2.55 | 2.85 |
| J | 0.00 | 0.10 |
| K | 1.00 | 1.35 |
| L | 0.25 | 0.40 |
| M | 0.10 | 0.15 |
| α | 0 | 8° |
| All Dimensions in mm | | |

Suggested Pad Layout

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

SOD123



| Dimensions | Value (in mm) |
|------------|---------------|
| G | 2.250 |
| X | 0.900 |
| X1 | 4.050 |
| Y | 0.950 |

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