

## Features

- Small, Low Profile Surface Mount Package
- Very Sharp Breakdown Characteristics
- Ideally Suited for Automated Assembly Processes
- Very Low Leakage Current
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**

## Mechanical Data

- Case: SOD523
- Case Material: Molded Plastic, "Green" Molding Compound.  
UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020D
- Terminal Connections: Cathode Band
- Terminals: Finish - Matte Tin Annealed over Alloy 42 Leadframe.  
Solderable per MIL-STD-202, Method 208 
- Weight: 0.002 grams (Approximate)



Top View

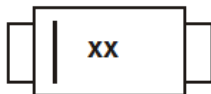
## Ordering Information (Note 4)

| Part Number               | Case   | Packaging         |
|---------------------------|--------|-------------------|
| (Type Number)-7* (Note 5) | SOD523 | 3,000/Tape & Reel |

\*Example: The part number for the 6.2 Volt device would be DDZ9691T-7.

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
  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>.
  5. Dispensed in every other cavity of the tape.

## Marking Information



xx = Product Type Marking Code  
(See Electrical Characteristics Table)

## Maximum Ratings (@T<sub>A</sub> = +25°C, unless otherwise specified.)

| Characteristic                          | Symbol         | Value | Unit |
|-----------------------------------------|----------------|-------|------|
| Forward Voltage @ I <sub>F</sub> = 10mA | V <sub>F</sub> | 0.9   | V    |

## Thermal Characteristics

| Characteristic                                       | Symbol                            | Value       | Unit |
|------------------------------------------------------|-----------------------------------|-------------|------|
| Power Dissipation (Note 6)                           | P <sub>D</sub>                    | 150         | mW   |
| Thermal Resistance, Junction to Ambient Air (Note 6) | R <sub>θJA</sub>                  | 833         | °C/W |
| Operating and Storage Temperature Range              | T <sub>J</sub> , T <sub>STG</sub> | -65 to +150 | °C   |

Notes: 6. Device mounted on FR-4 PC board with recommended pad layout, which can be found on our website at <http://www.diodes.com/products/packages.html>.

## Electrical Characteristics (@T<sub>A</sub> = +25°C, unless otherwise specified.)

| Type Number | Type Code | Zener Voltage Range (Note 7)     |         |         |                 | Maximum Reverse Leakage Current (Note 8) |      |
|-------------|-----------|----------------------------------|---------|---------|-----------------|------------------------------------------|------|
|             |           | V <sub>Z</sub> @ I <sub>ZT</sub> |         |         | I <sub>ZT</sub> | I <sub>R</sub> @ V <sub>R</sub>          |      |
|             |           | Nom (V)                          | Min (V) | Max (V) |                 | μA                                       | V    |
| DDZ9689T    | HH        | 5.1                              | 4.85    | 5.36    | 50              | 5                                        | 3    |
| DDZ9690T    | HJ        | 5.6                              | 5.32    | 5.88    | 50              | 2                                        | 4    |
| DDZ9691T    | HK        | 6.2                              | 5.89    | 6.51    | 50              | 1                                        | 5    |
| DDZ9692T    | HL        | 6.8                              | 6.46    | 7.14    | 50              | 0.1                                      | 5.1  |
| DDZ9693T    | HM        | 7.5                              | 7.13    | 7.88    | 50              | 0.1                                      | 5.7  |
| DDZ9694T    | HN        | 8.2                              | 7.79    | 8.61    | 50              | 0.1                                      | 6.2  |
| DDZ9696T    | HP        | 9.1                              | 8.65    | 9.56    | 50              | 0.1                                      | 6.9  |
| DDZ9697T    | HQ        | 10                               | 9.50    | 10.50   | 50              | 0.1                                      | 7.6  |
| DDZ9698T    | HR        | 11                               | 10.45   | 11.55   | 50              | 0.05                                     | 8.4  |
| DDZ9699T    | HS        | 12                               | 11.40   | 12.60   | 50              | 0.05                                     | 9.1  |
| DDZ9700T    | HT        | 13                               | 12.35   | 13.65   | 50              | 0.05                                     | 9.8  |
| DDZ9701T    | HU        | 14                               | 13.30   | 14.70   | 50              | 0.05                                     | 10.6 |
| DDZ9702T    | HV        | 15                               | 14.25   | 15.75   | 50              | 0.05                                     | 11.4 |
| DDZ9703T    | HW        | 16                               | 15.20   | 16.80   | 50              | 0.05                                     | 12.1 |
| DDZ9705T    | HY        | 18                               | 17.10   | 18.90   | 50              | 0.05                                     | 13.6 |
| DDZ9707T    | MD        | 20                               | 19.00   | 21.00   | 50              | 0.05                                     | 15.2 |
| DDZ9708T    | ME        | 22                               | 20.90   | 23.10   | 50              | 0.05                                     | 16.7 |
| DDZ9709T    | MF        | 24                               | 22.80   | 25.20   | 50              | 0.05                                     | 18.2 |
| DDZ9711T    | MH        | 27                               | 25.65   | 28.35   | 50              | 0.05                                     | 20.4 |
| DDZ9712T    | MJ        | 28                               | 26.60   | 29.40   | 50              | 0.05                                     | 21.2 |
| DDZ9713T    | MK        | 30                               | 28.50   | 31.50   | 50              | 0.05                                     | 22.8 |
| DDZ9714T    | ML        | 33                               | 31.35   | 34.65   | 50              | 0.05                                     | 25.0 |
| DDZ9715T    | MM        | 36                               | 34.20   | 37.80   | 50              | 0.05                                     | 27.3 |
| DDZ9716T    | MN        | 39                               | 37.05   | 40.95   | 50              | 0.05                                     | 29.6 |
| DDZ9717T    | MO        | 43                               | 40.85   | 45.15   | 50              | 0.05                                     | 32.6 |

Notes: 7. Nominal Zener voltage is measured with the device junction in thermal equilibrium at T<sub>J</sub> = 30°C ±1°C.  
8. Short duration pulse test used to minimize self-heating effect.

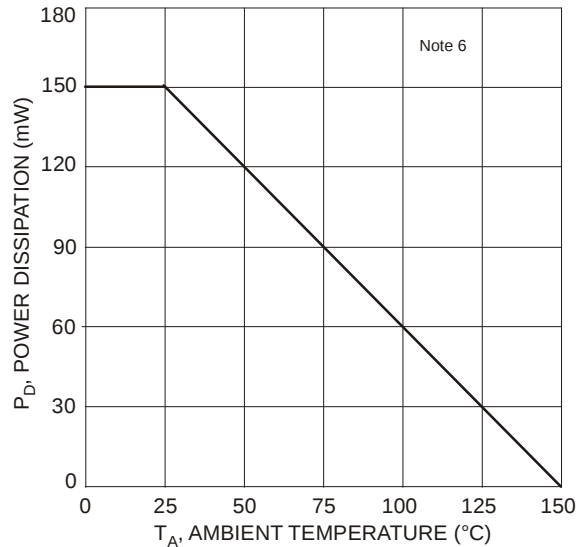


Fig. 1 Power Derating Curve

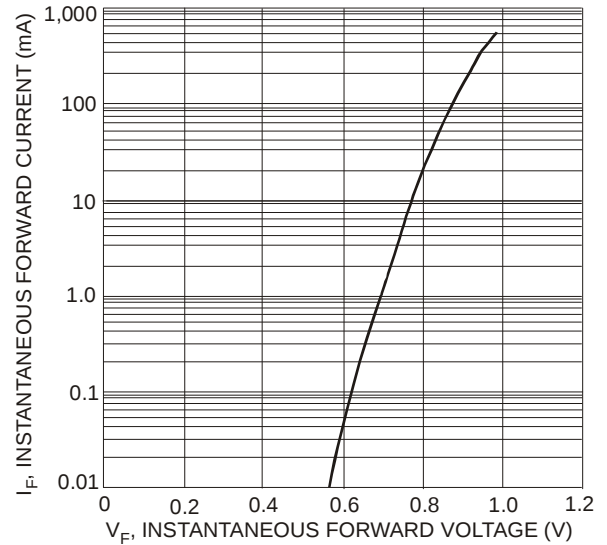


Fig. 2 Typical Forward Characteristics

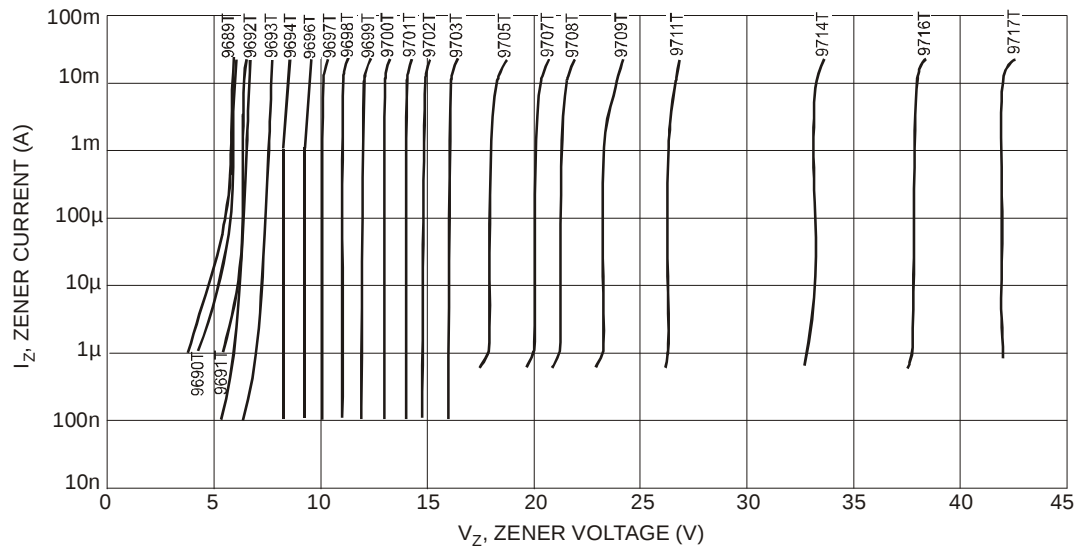


Fig. 3 Typical Zener Breakdown Characteristics

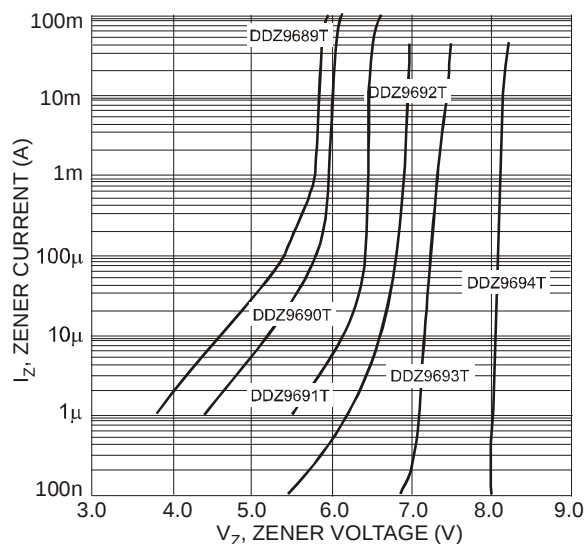


Fig. 4 Typical Zener Breakdown Characteristics,  
DDZ9692T - DDZ9694T

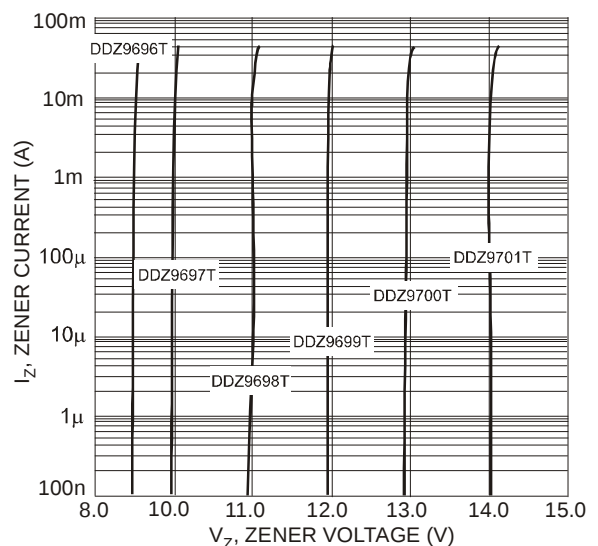


Fig. 5 Typical Zener Breakdown Characteristics,  
DDZ9696T - DDZ9701T

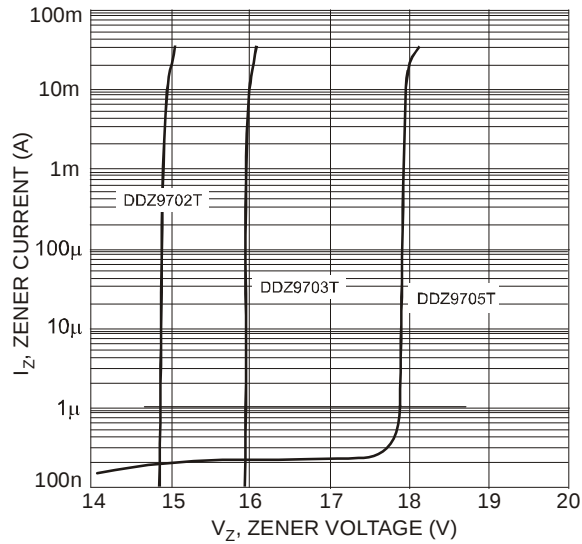


Fig. 6 Typical Zener Breakdown Characteristics, DDZ9702T - DDZ9705T

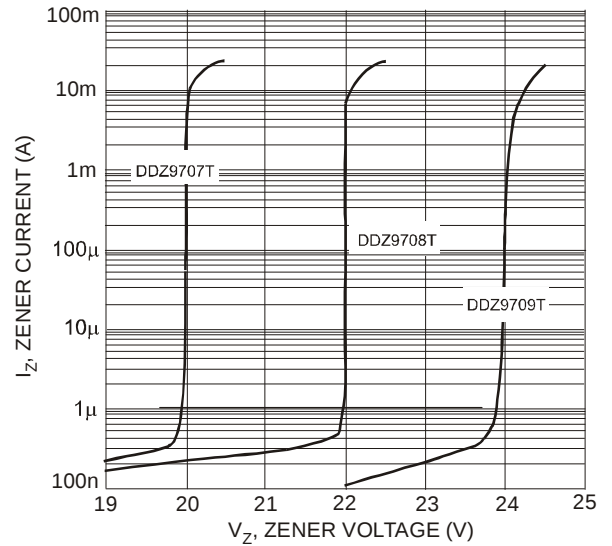


Fig. 7 Typical Zener Breakdown Characteristics, DDZ9707T - DDZ9709T

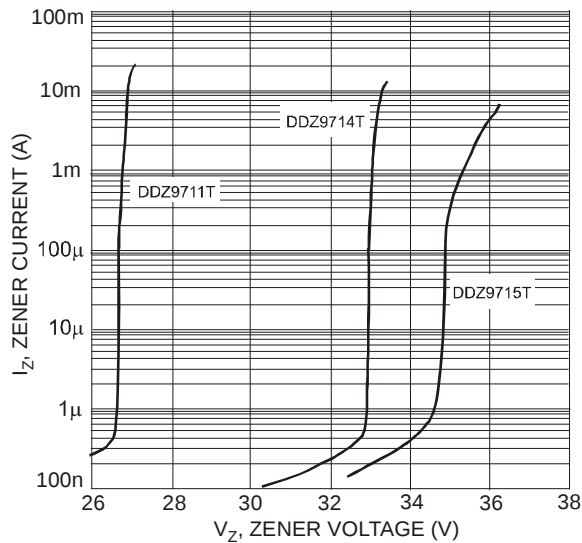


Fig. 8 Typical Zener Breakdown Characteristics, DDZ9711T - DDZ9715T

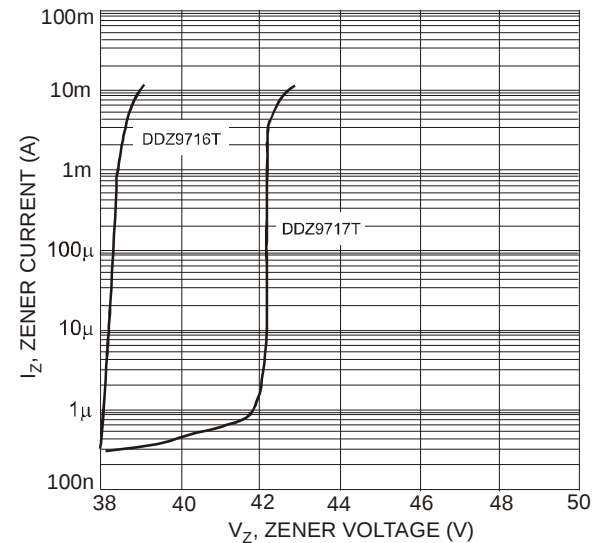


Fig. 9 Typical Zener Breakdown Characteristics, DDZ9716T - DDZ9717T

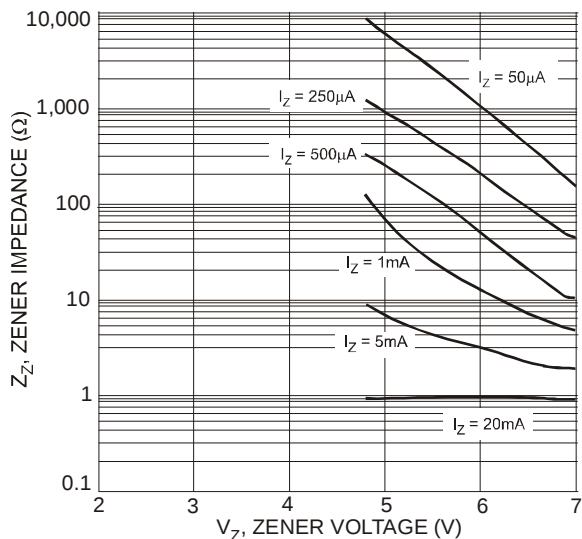


Fig. 10 Typical Zener Impedance Characteristics, DDZ9689T - DDZ9692T

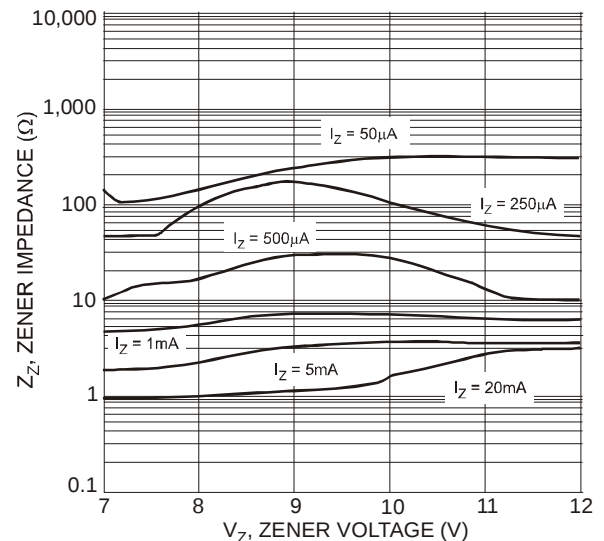


Fig. 11 Typical Zener Impedance Characteristics, DDZ9693T - DDZ9699T

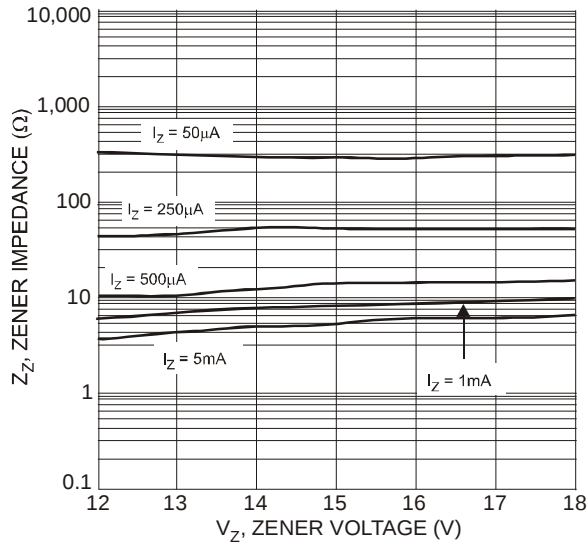


Fig. 12 Typical Zener Impedance Characteristics, DDZ9699T - DDZ9705T

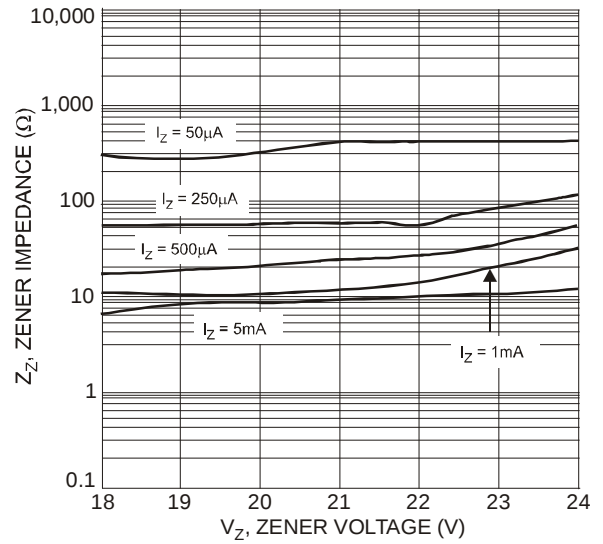


Fig. 13 Typical Zener Impedance Characteristics, DDZ9705T - DDZ9709T

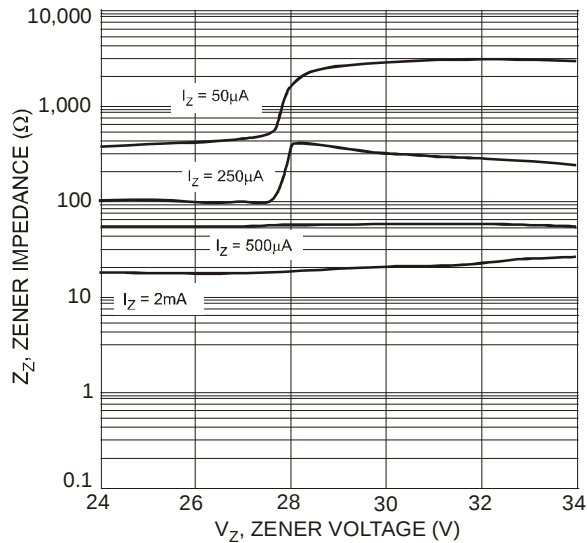


Fig. 14 Typical Zener Impedance Characteristics, DDZ9709T - DDZ9714T

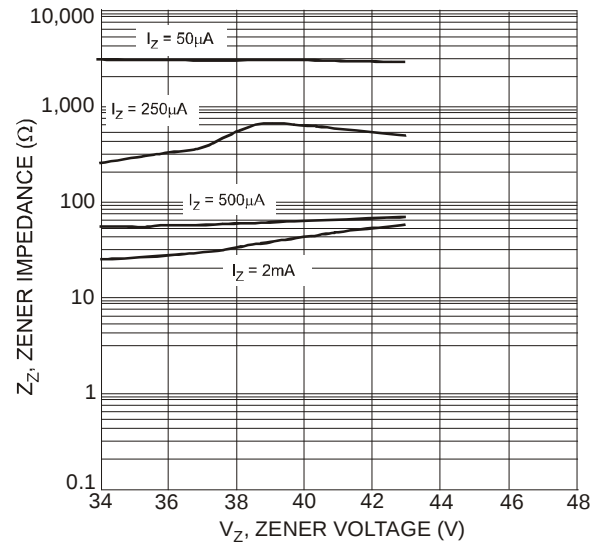


Fig. 15 Typical Zener Impedance Characteristics, DDZ9715T - DDZ9717T

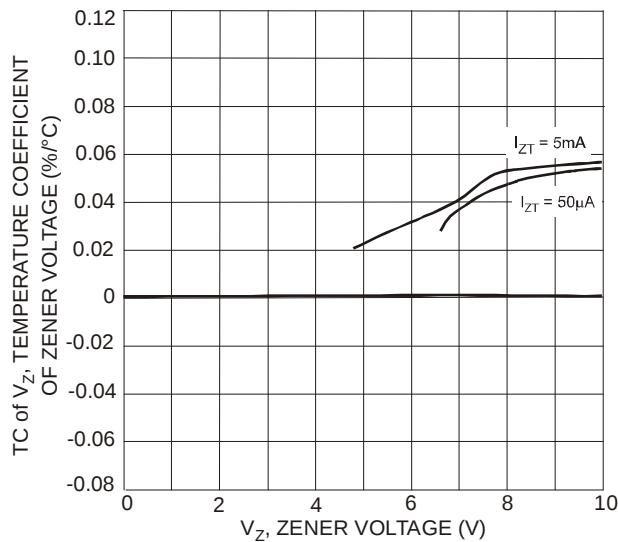


Fig. 16 Typical Temperature Coefficient of Zener Voltage vs. Zener Voltage, DDZ9694T - DDZ9697T

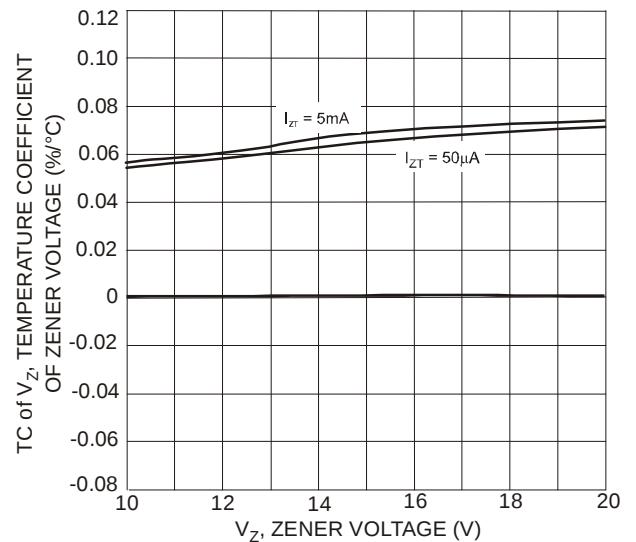


Fig. 17 Typical Temperature Coefficient of Zener Voltage vs. Zener Voltage, DDZ9697T - DDZ9707T

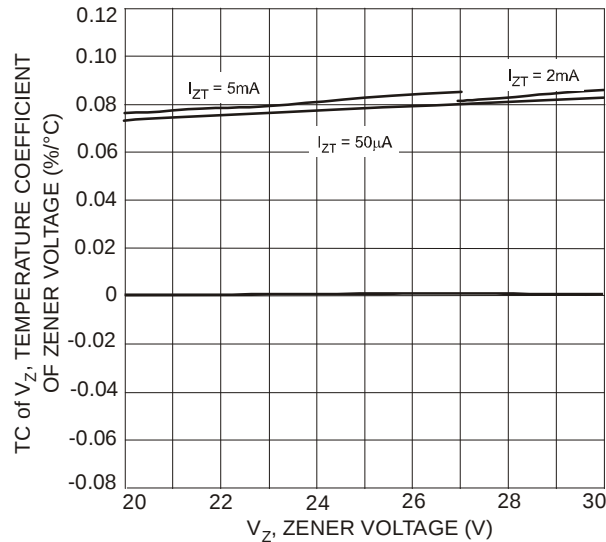


Fig. 18 Typical Temperature Coefficient of Zener Voltage vs. Zener Voltage, DDZ9707T - DDZ9713T

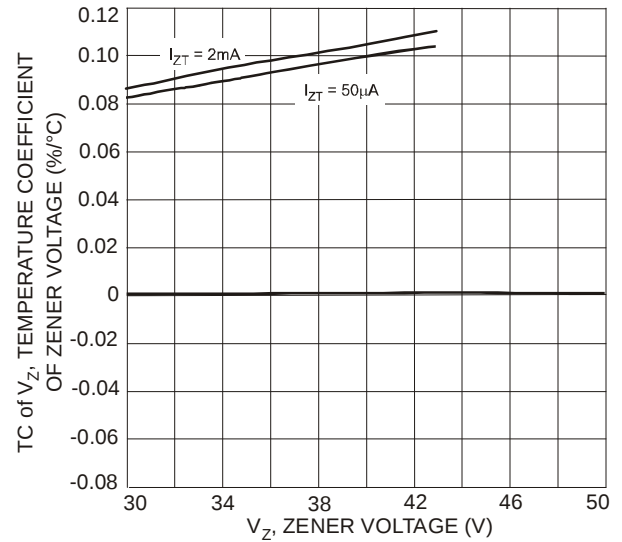
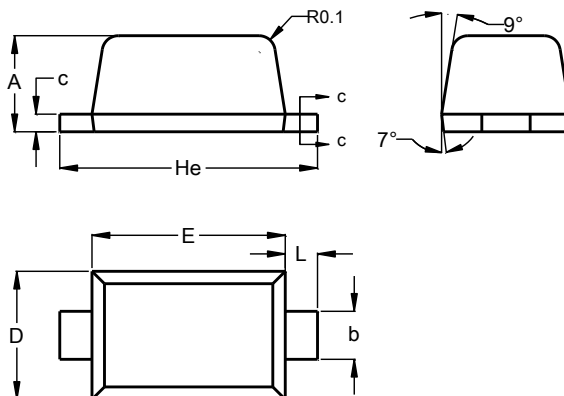


Fig. 19 Typical Temperature Coefficient of Zener Voltage vs. Zener Voltage, DDZ9713T - DDZ9717T

## Package Outline Dimensions

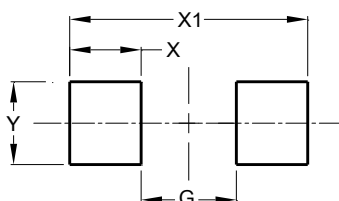
Please see <http://www.diodes.com/package-outlines.html> for the latest version.



| SOD523               |      |      |
|----------------------|------|------|
| Dim                  | Min  | Max  |
| A                    | 0.55 | 0.65 |
| b                    | 0.26 | 0.34 |
| c                    | 0.11 | 0.17 |
| D                    | 0.75 | 0.85 |
| E                    | 1.15 | 1.25 |
| He                   | 1.55 | 1.65 |
| L                    | 0.10 | 0.30 |
| All Dimensions in mm |      |      |

## Suggested Pad Layout

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



| Dimensions | Value (in mm) |
|------------|---------------|
| G          | 0.80          |
| X          | 0.60          |
| X1         | 2.00          |
| Y          | 0.70          |

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