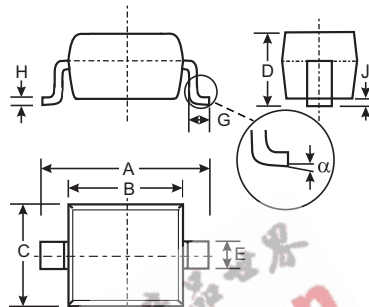


### Features

- Very Sharp Breakdown Characteristics
- Very Tight Tolerance on  $V_Z$
- Ideally Suited for Automated Assembly Processes
- Very Low Leakage Current
- **Lead Free By Design/RoHS Compliant (Note 5)**

### Mechanical Data

- Case: SOD-323
- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture sensitivity: Level 1 per J-STD-020C
- Terminals: Finish - Matte Tin annealed over Alloy 42 leadframe. Solderable per MIL-STD-202, Method 208
- Polarity: Cathode Band
- Marking & Type Code Information: See Electrical Specifications Table
- Ordering Information: See Last Page
- Weight: 0.004 grams (approximate)



| SOD-323              |              |      |
|----------------------|--------------|------|
| Dim                  | Min          | Max  |
| A                    | 2.30         | 2.70 |
| B                    | 1.60         | 1.80 |
| C                    | 1.20         | 1.40 |
| D                    | 1.05 Typical |      |
| E                    | 0.25         | 0.35 |
| G                    | 0.20         | 0.40 |
| H                    | 0.10         | 0.15 |
| J                    | 0.05 Typical |      |
| $\alpha$             | 0°           | 8°   |
| All Dimensions in mm |              |      |

### Maximum Ratings @ $T_A = 25^\circ\text{C}$ unless otherwise specified

| Characteristic                          | Symbol         | Value       | Unit             |
|---|----------------|-------------|------------------|
| Forward Voltage @ $I_F = 10\text{mA}$   | $V_F$          | 0.9         | V                |
| Operating and Storage Temperature Range | $T_j, T_{STG}$ | -65 to +150 | $^\circ\text{C}$ |

### Thermal Characteristics @ $T_A = 25^\circ\text{C}$ unless otherwise specified

| Characteristic                                       | Symbol          | Value | Unit               |
|--|-----------------|-------|--------------------|
| Power Dissipation (Note 1)                           | $P_d$           | 200   | mW                 |
| Thermal Resistance, Junction to Ambient Air (Note 1) | $R_{\theta JA}$ | 625   | $^\circ\text{C/W}$ |

Notes: 1. Device mounted on FR-4 PC board with recommended pad layout, which can be found on our website at <http://www.diodes.com/datasheets/ap02001.pdf>.

**Electrical Characteristics** @  $T_A = 25^\circ\text{C}$  unless otherwise specified

**Table 1**

| Type Number | Type Code | Zener Voltage Range (Note 2) |         |         |               | Maximum Reverse Leakage Current (Note 3) |      |
|-------------|-----------|------------------------------|---------|---------|---------------|--|------|
|             |           | $V_Z @ I_{ZT}$               |         |         | $I_{ZT}$      | $I_R @ V_R$                              |      |
|             |           | Nom (V)                      | Min (V) | Max (V) | $\mu\text{A}$ | $\mu\text{A}$                            | V    |
| DDZ9689S    | HH        | 5.1                          | 4.85    | 5.36    | 50            | 5  | 3    |
| DDZ9690S    | HJ        | 5.6                          | 5.32    | 5.88    | 50            | 2  | 4    |
| DDZ9691S    | HK        | 6.2                          | 5.89    | 6.51    | 50            | 1  | 5    |
| DDZ9692S    | HL        | 6.8                          | 6.46    | 7.14    | 50            | 0.1                                      | 5.1  |
| DDZ9693S    | HM        | 7.5                          | 7.13    | 7.88    | 50            | 0.1                                      | 5.7  |
| DDZ9694S    | HN        | 8.2                          | 7.79    | 8.61    | 50            | 0.1                                      | 6.2  |
| DDZ9696S    | HP        | 9.1                          | 8.65    | 9.56    | 50            | 0.1                                      | 6.9  |
| DDZ9697S    | HQ        | 10                           | 9.50    | 10.50   | 50            | 0.1                                      | 7.6  |
| DDZ9698S    | HR        | 11                           | 10.45   | 11.55   | 50            | 0.05                                     | 8.4  |
| DDZ9699S    | HS        | 12                           | 11.40   | 12.60   | 50            | 0.05                                     | 9.1  |
| DDZ9700S    | HT        | 13                           | 12.35   | 13.65   | 50            | 0.05                                     | 9.8  |
| DDZ9701S    | HU        | 14                           | 13.30   | 14.70   | 50            | 0.05                                     | 10.6 |
| DDZ9702S    | HV        | 15                           | 14.25   | 15.75   | 50            | 0.05                                     | 11.4 |
| DDZ9703S    | HW        | 16                           | 15.20   | 16.80   | 50            | 0.05                                     | 12.1 |
| DDZ9705S    | HY        | 18                           | 17.10   | 18.90   | 50            | 0.05                                     | 13.6 |
| DDZ9707S    | MD        | 20                           | 19.00   | 21.00   | 50            | 0.05                                     | 15.2 |
| DDZ9708S    | ME        | 22                           | 20.90   | 23.10   | 50            | 0.05                                     | 16.7 |
| DDZ9709S    | MF        | 24                           | 22.80   | 25.20   | 50            | 0.05                                     | 18.2 |
| DDZ9711S    | MH        | 27                           | 25.65   | 28.35   | 50            | 0.05                                     | 20.4 |
| DDZ9712S    | MJ        | 28                           | 26.60   | 29.40   | 50            | 0.05                                     | 21.2 |
| DDZ9713S    | MK        | 30                           | 28.50   | 31.50   | 50            | 0.05                                     | 22.8 |
| DDZ9714S    | ML        | 33                           | 31.35   | 34.65   | 50            | 0.05                                     | 25.0 |
| DDZ9715S    | MM        | 36                           | 34.20   | 37.80   | 50            | 0.05                                     | 27.3 |
| DDZ9716S    | MN        | 39                           | 37.05   | 40.95   | 50            | 0.05                                     | 29.6 |
| DDZ9717S    | MO        | 43                           | 40.85   | 45.15   | 50            | 0.05                                     | 32.6 |

- Notes:
- Nominal Zener voltage is measured with the device junction in thermal equilibrium at  $T_J = 30^\circ\text{C} \pm 1^\circ\text{C}$ .
  - Short duration pulse test used to minimize self-heating effect.

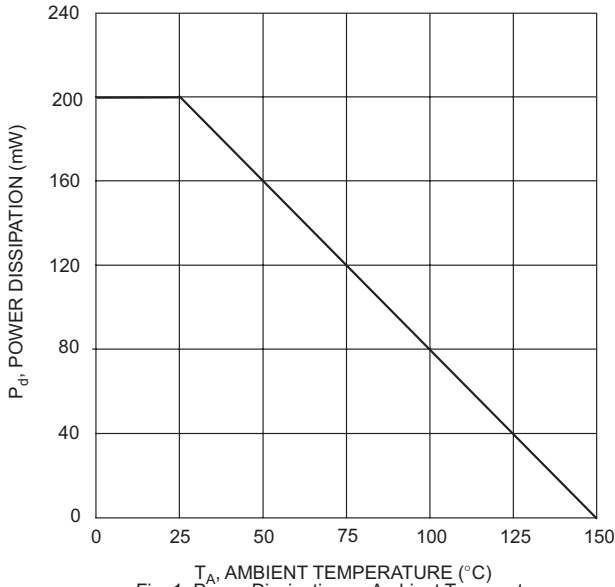


Fig. 1 Power Dissipation vs Ambient Temperature

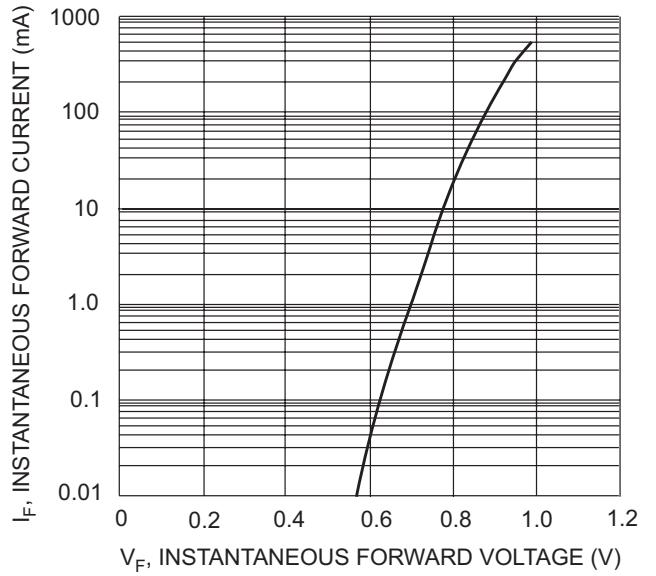


Fig. 2 Typical Forward Characteristics

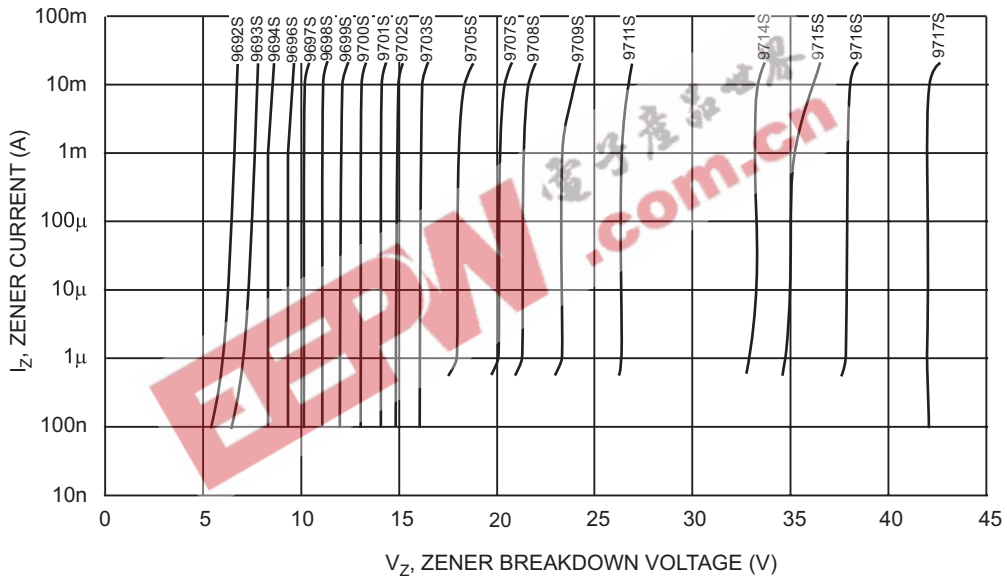


Fig. 3 Typical Reverse Characteristics

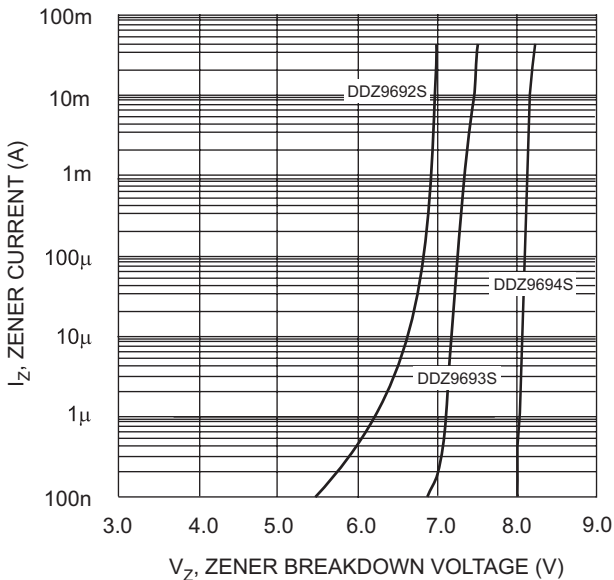


Fig. 4 Typical Reverse Characteristics, DDZ9692S - DDZ9694S

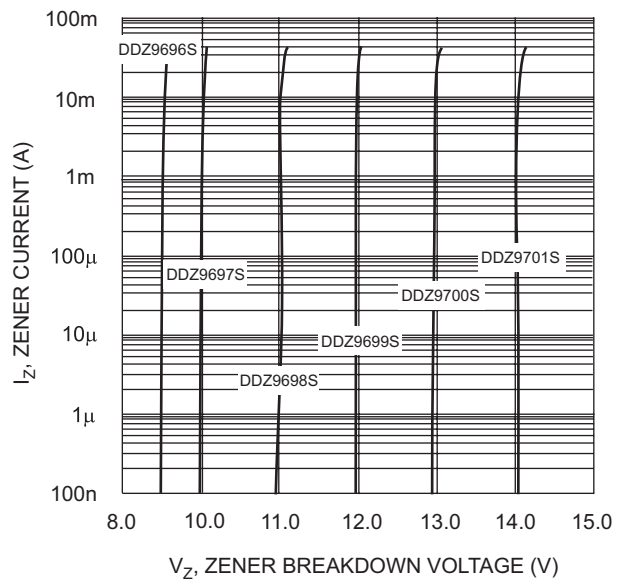


Fig. 5 Typical Reverse Characteristics, DDZ9696S - DDZ9701S

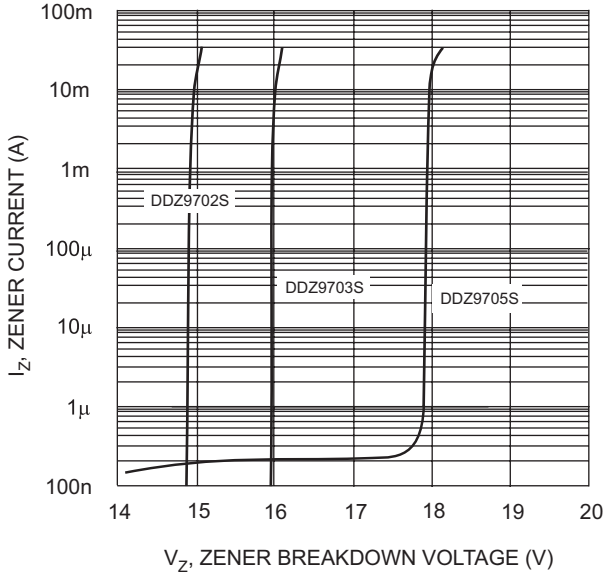


Fig. 6 Typical Reverse Characteristics, DDZ9702S - DDZ9705S

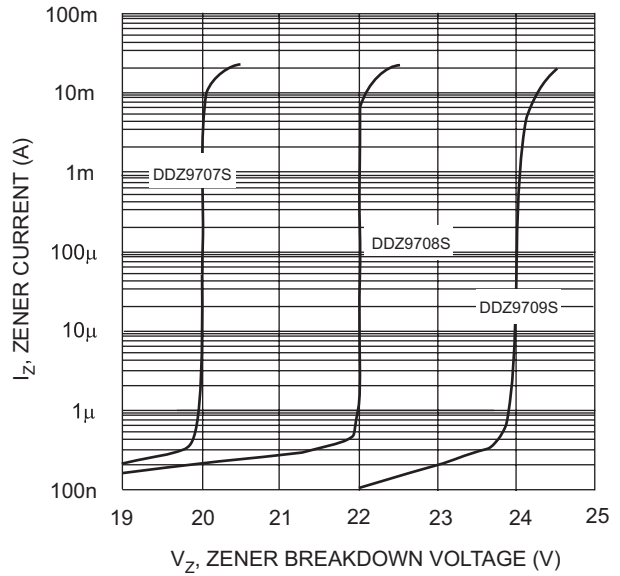


Fig. 7 Typical Reverse Characteristics, DDZ9707S - DDZ9709S

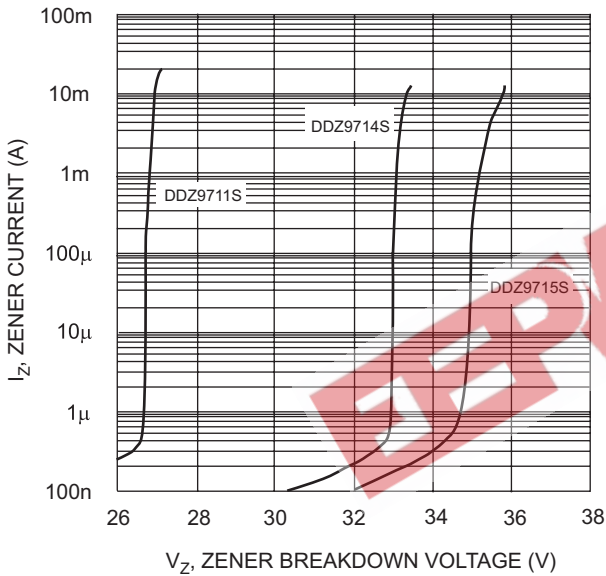


Fig. 8 Typical Reverse Characteristics, DDZ9711S - DDZ9715S

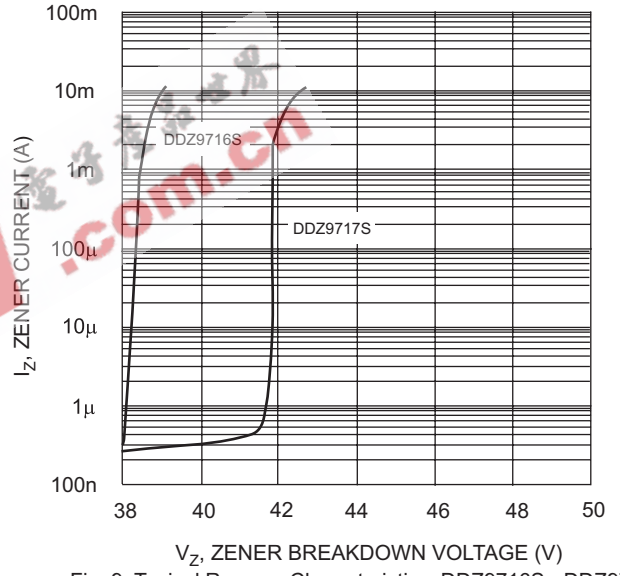


Fig. 9 Typical Reverse Characteristics, DDZ9716S - DDZ9717S

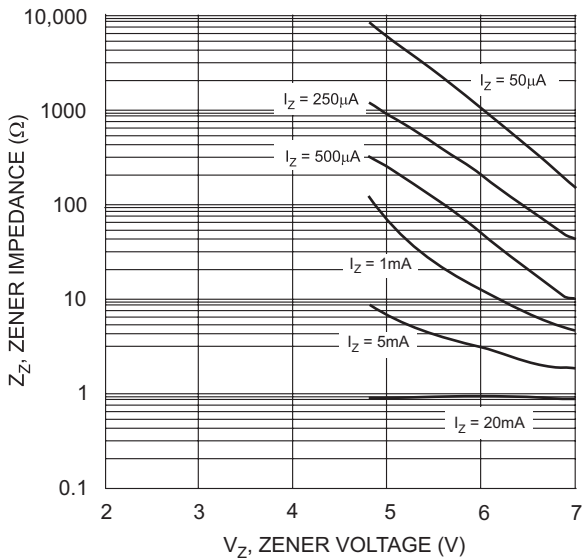


Fig. 10 Typical Zener Impedance Characteristics, DDZ9689S - DDZ9692S

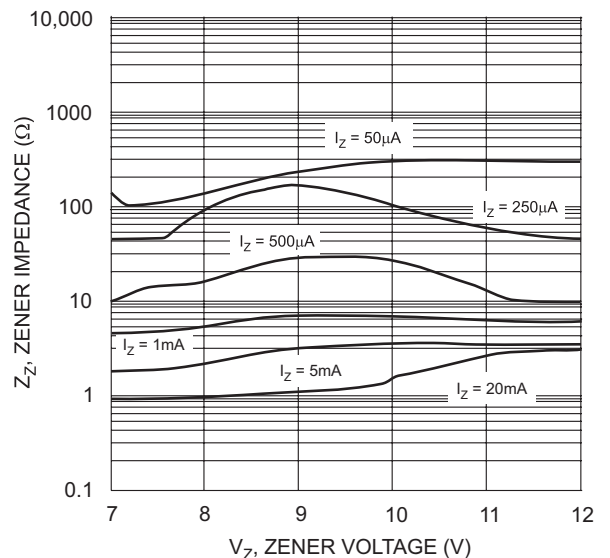


Fig. 11 Typical Zener Impedance Characteristics, DDZ9693S - DDZ9699S

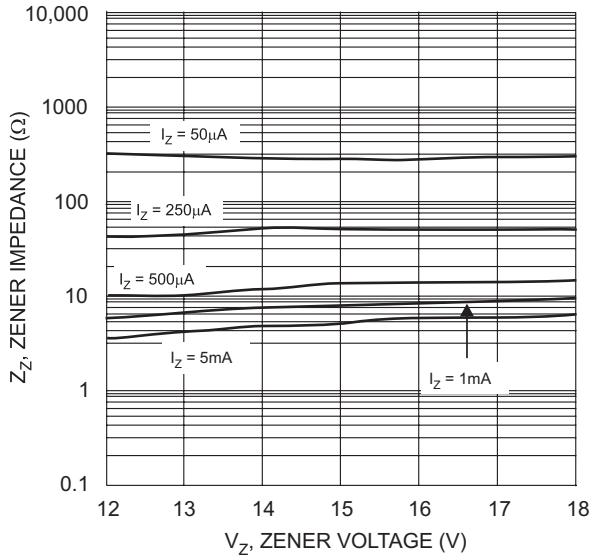


Fig. 12 Typical Zener Impedance Characteristics, DDZ9699S - DDZ9705S

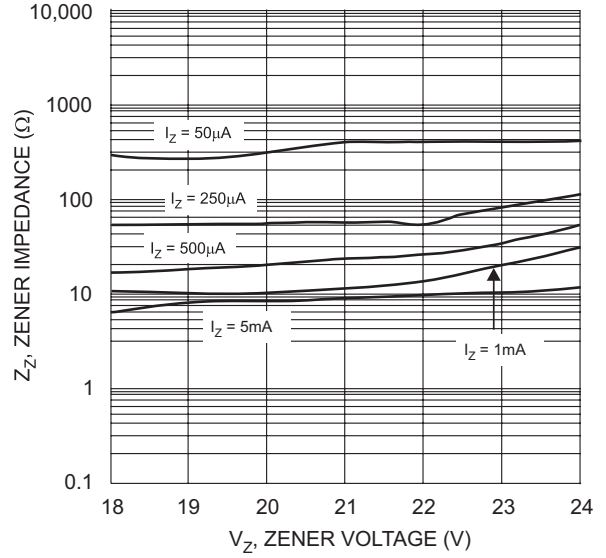


Fig. 13 Typical Zener Impedance Characteristics, DDZ9705S - DDZ9709S

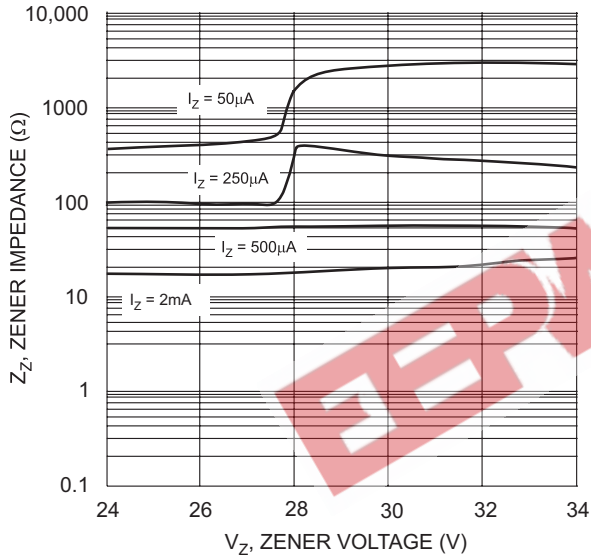


Fig. 14 Typical Zener Impedance Characteristics, DDZ9709S - DDZ9714S

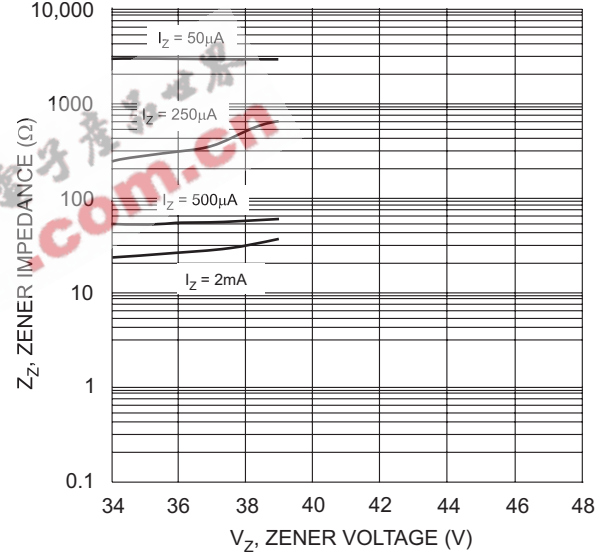


Fig. 15 Typical Zener Impedance Characteristics, DDZ9715S - DDZ9717S

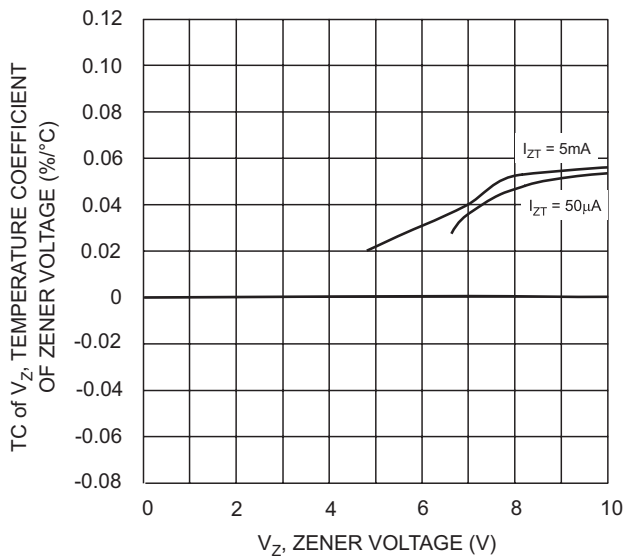


Fig. 16 Typical Temperature Coefficient of Zener Voltage vs. Zener Voltage, DDZ9692S - DDZ9697S

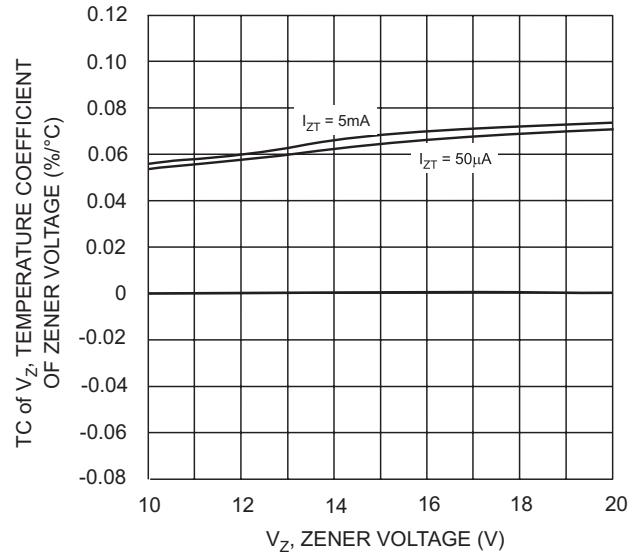


Fig. 17 Typical Temperature Coefficient of Zener Voltage vs. Zener Voltage, DDZ9697S - DDZ9707S

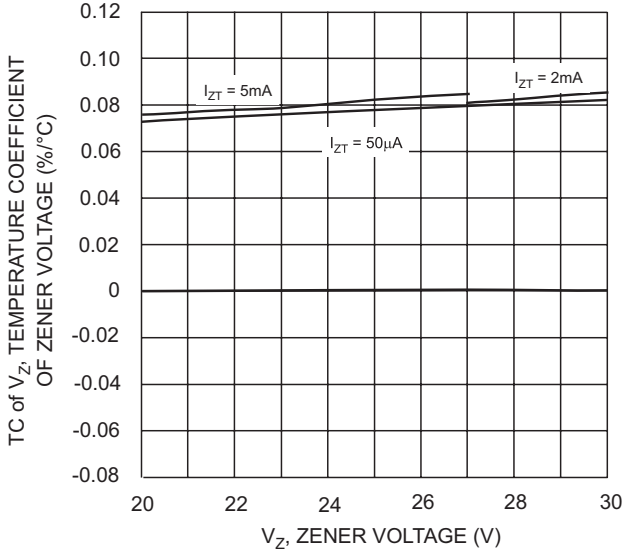


Fig. 18 Typical Temperature Coefficient of Zener Voltage, DDZ9707S - DDZ9713S

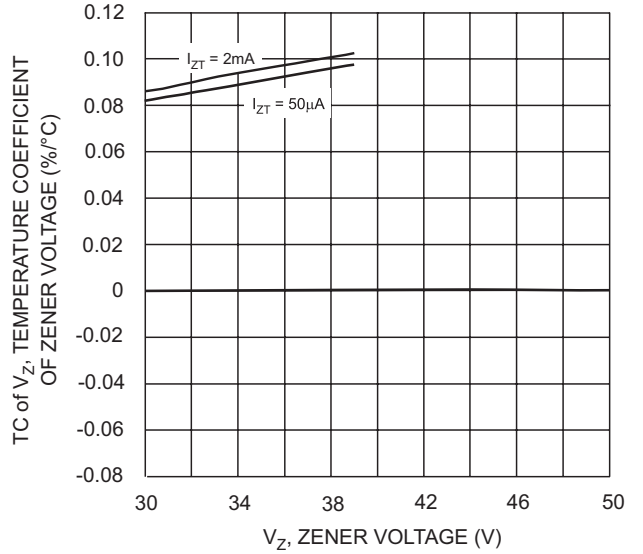


Fig. 19 Typical Temperature Coefficient of Zener Voltage, DDZ9713S - DDZ9717S

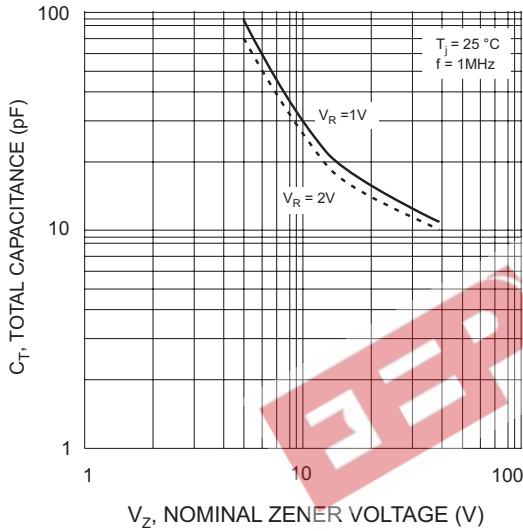


Fig. 20 Total Capacitance vs Nominal Zener Voltage

**Ordering Information** (Note 4)

| Device           | Packaging | Shipping         |
|------------------|-----------|------------------|
| (Type Number)-7* | SOD-323   | 3000/Tape & Reel |

\* Example: The part number for the 6.2 Volt device would be DDZ9691S-7.

- Notes: 4. For Packaging Details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.  
5. No purposefully added lead.

**Marking Information**



XX = Product Type Marking Code (See Table 1)

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