

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 1)**
- **“Green” Device (Note 2)**

Mechanical Data

- Case: SOD-323
- Case Material: Molded Plastic, “Green” Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish - Matte Tin annealed over Alloy 42 leadframe. Solderable per MIL-STD-202, Method 208
- Polarity: Cathode Band
- Marking Information: See Page 6
- Ordering Information: See Page 6
- Weight: 0.004 grams (approximate)



Top View

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 |

Thermal Characteristics

| Characteristic | Symbol | Value | Unit |
|--|-----------------|-------------|--------------------|
| Power Dissipation (Note 3) | P_D | 200 | mW |
| Thermal Resistance, Junction to Ambient Air (Note 3) | $R_{\theta JA}$ | 625 | $^\circ\text{C/W}$ |
| Operating and Storage Temperature Range | T_J, T_{STG} | -65 to +150 | $^\circ\text{C}$ |

- Notes:
1. No purposefully added lead.
 2. Diode's Inc.'s “Green” policy can be found on our website at http://www.diodes.com/products/lead_free/index.php.
 3. 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°C unless otherwise specified

| Type Number | Type Code | Zener Voltage Range (Note 3) | | | | Maximum Reverse Leakage Current (Note 4) | |
|-------------------|-----------|----------------------------------|---------|---------|-----------------|--|------|
| | | V _Z @ I _{ZT} | | | I _{ZT} | I _R @ V _R | |
| | | Nom (V) | Min (V) | Max (V) | μA | μA | 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 (Note 5) | 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°C ±1°C.
 - Short duration pulse test used to minimize self-heating effect.
 - Qualified to AEC-Q101 Standards for High Reliability

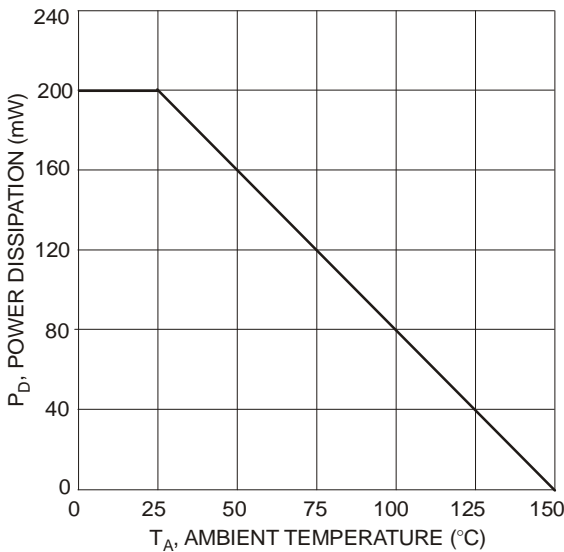


Fig. 1 Power Derating Curve

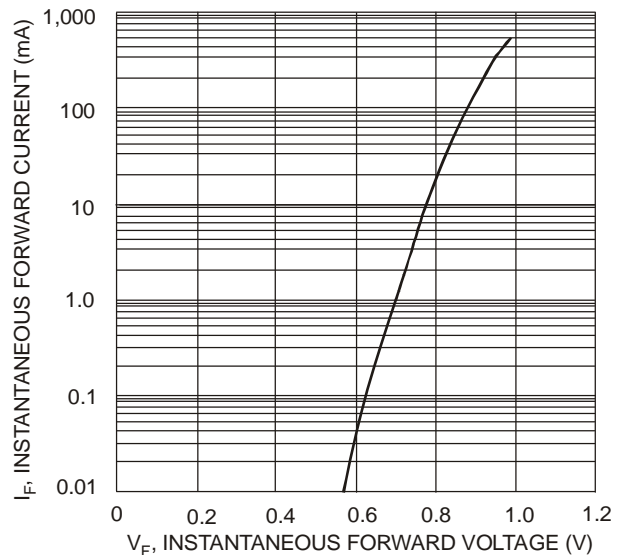


Fig. 2 Typical Forward Characteristics

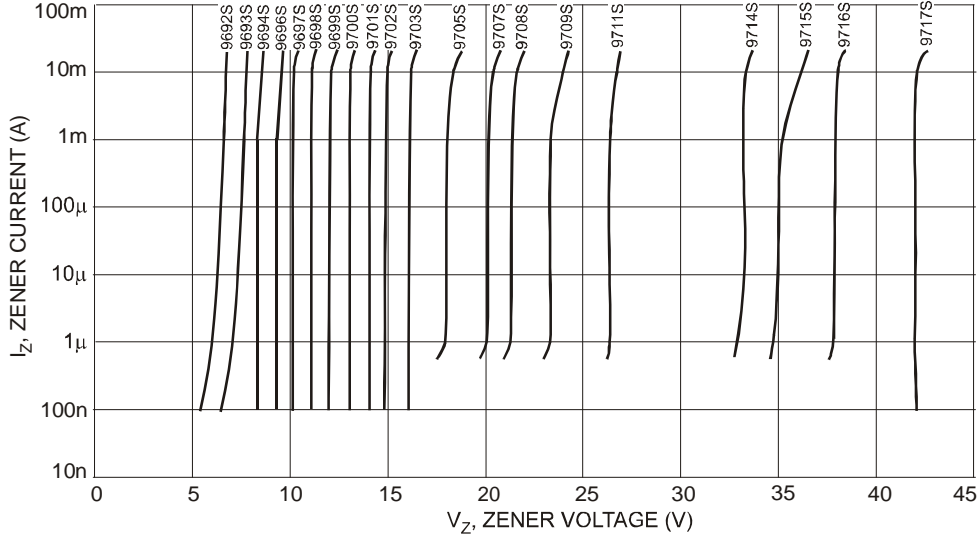


Fig. 3 Typical Zener Breakdown Characteristics

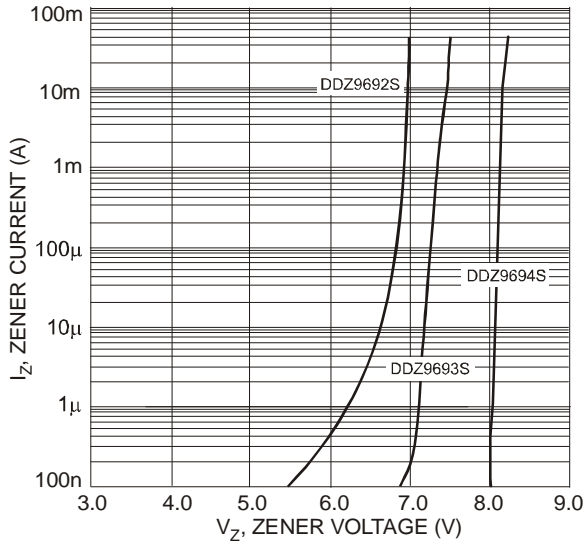


Fig. 4 Typical Zener Breakdown Characteristics, DDZ9692S - DDZ9694S

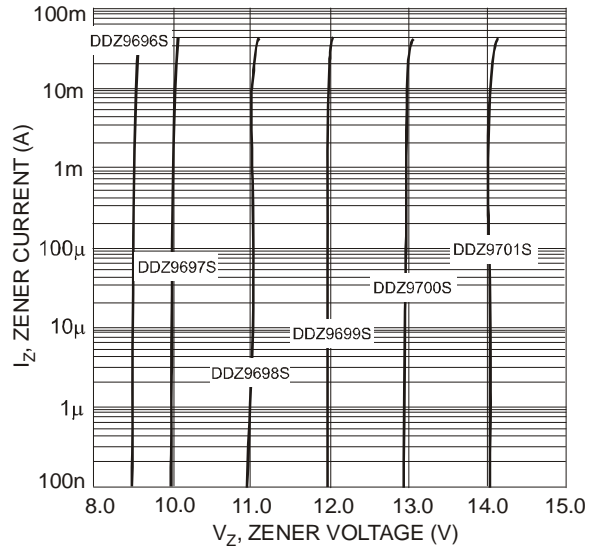


Fig. 5 Typical Zener Breakdown Characteristics, DDZ9696S - DDZ9701S

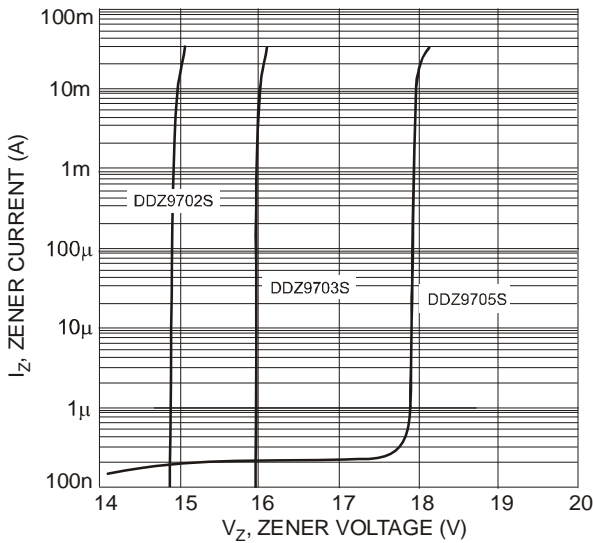


Fig. 6 Typical Zener Breakdown Characteristics, DDZ9702S - DDZ9705S

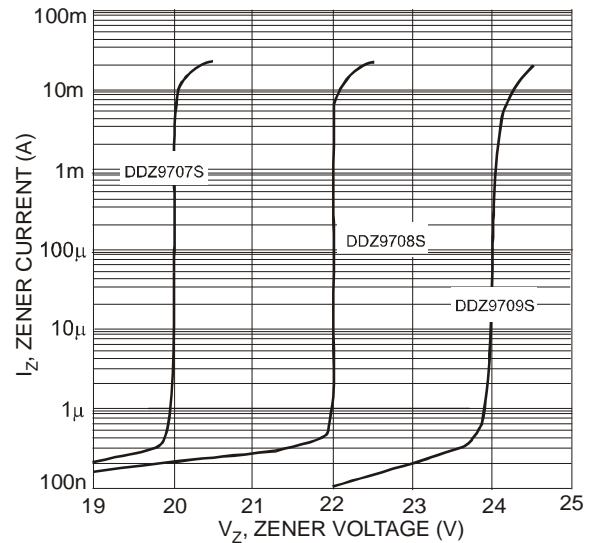


Fig. 7 Typical Zener Breakdown Characteristics, DDZ9707S - DDZ9709S

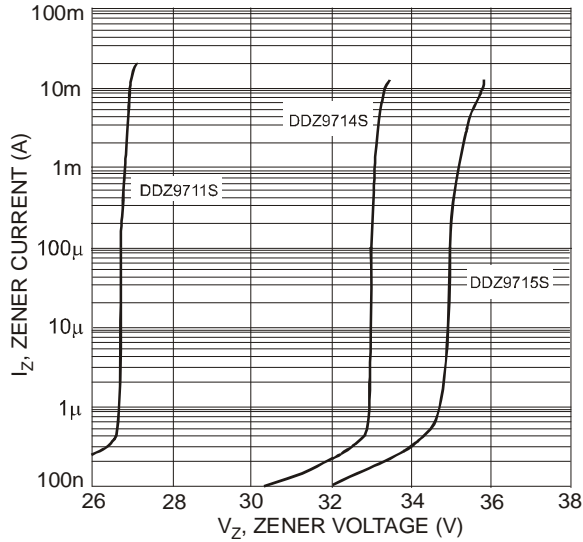


Fig. 8 Typical Zener Breakdown Characteristics, DDZ9711S - DDZ9715S

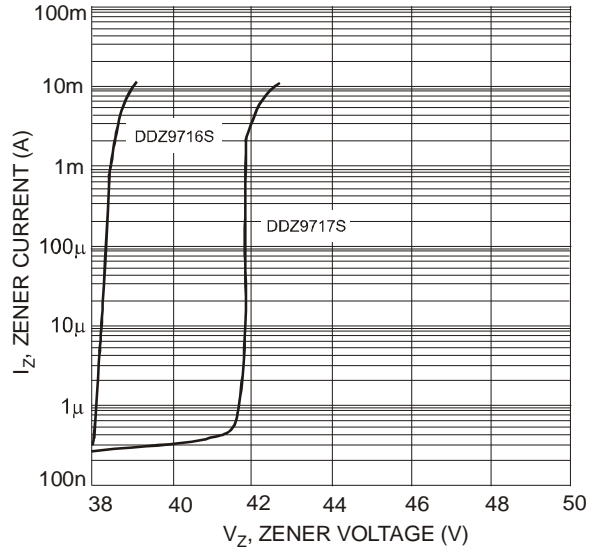


Fig. 9 Typical Zener Breakdown Characteristics, DDZ9716S - DDZ9717S

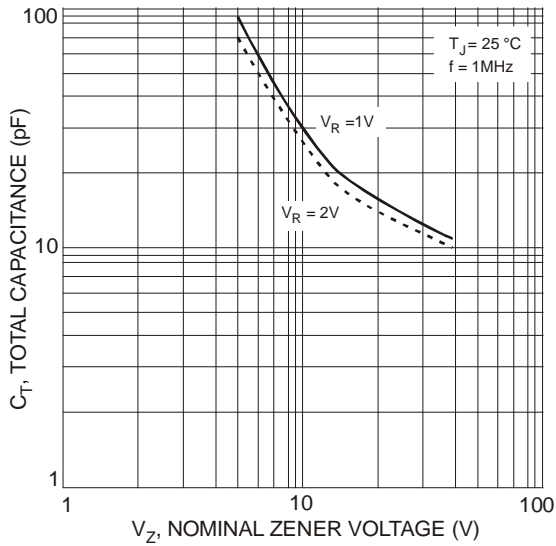


Fig. 10 Total Capacitance vs. Nominal Zener Voltage

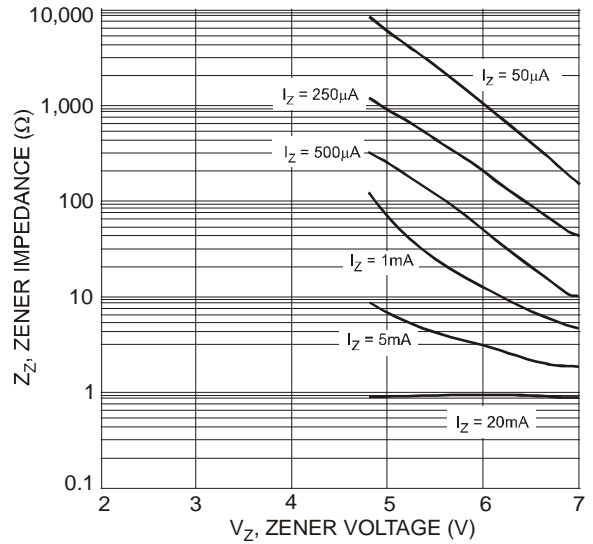


Fig. 11 Typical Zener Impedance Characteristics, DDZ9689S - DDZ9692S

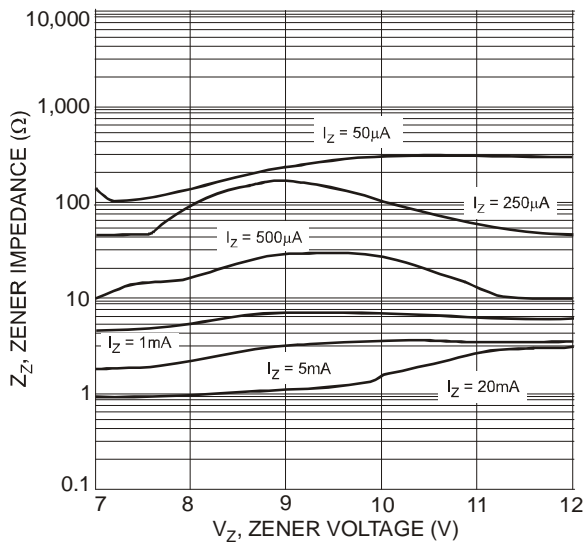


Fig. 12 Typical Zener Impedance Characteristics, DDZ9693S - DDZ9699S

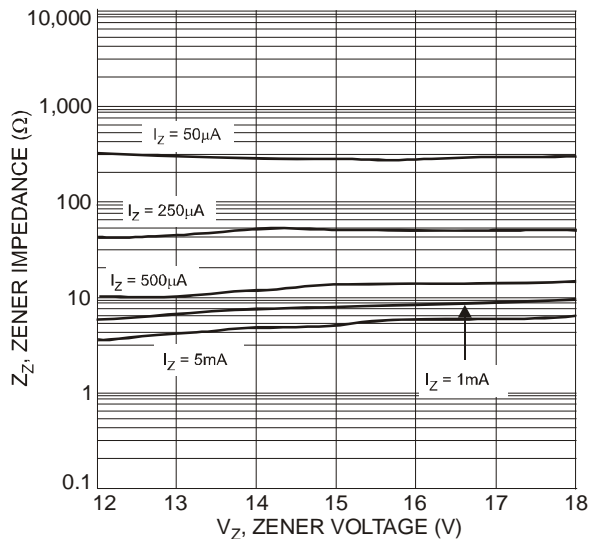


Fig. 13 Typical Zener Impedance Characteristics, DDZ9699S - DDZ9705S

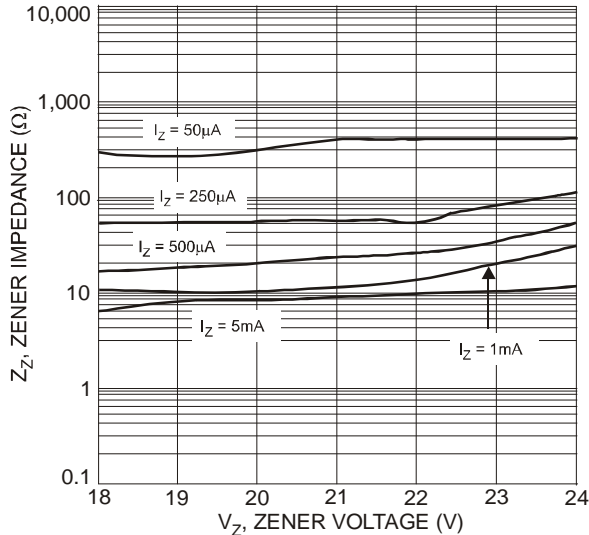


Fig. 14 Typical Zener Impedance Characteristics, DDZ9705S - DDZ9709S

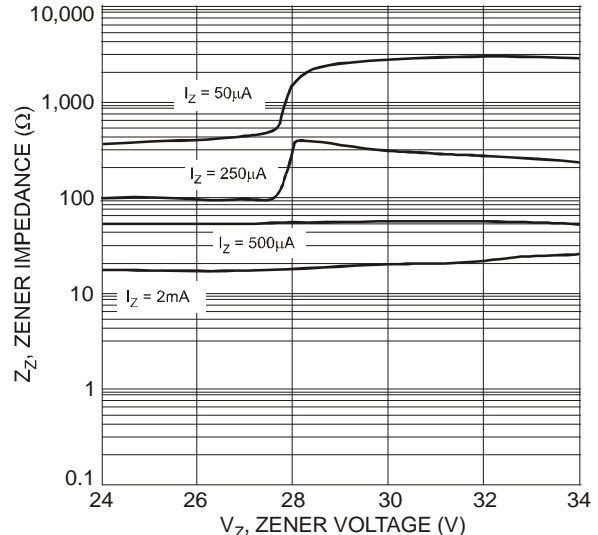


Fig. 15 Typical Zener Impedance Characteristics, DDZ9709S - DDZ9714S

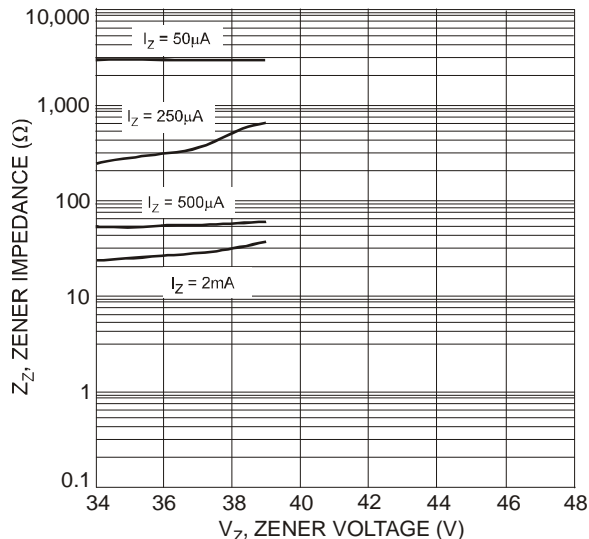


Fig. 16 Typical Zener Impedance Characteristics, DDZ9715S - DDZ9716S

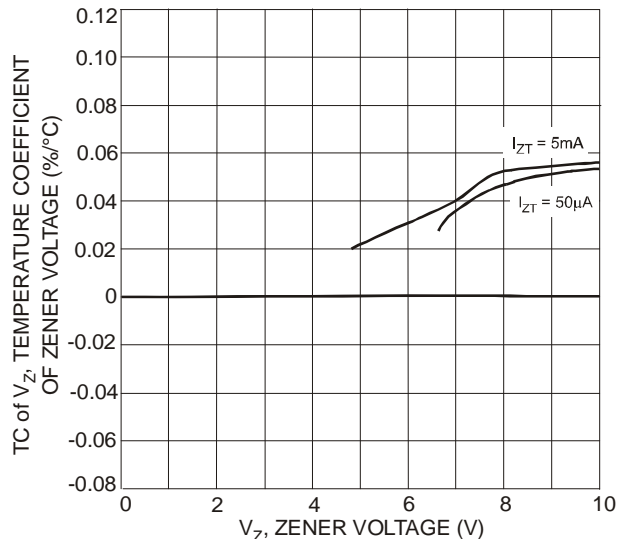


Fig. 17 Typical Temperature Coefficient of Zener Voltage vs. Zener Voltage, DDZ9692S - DDZ9697S

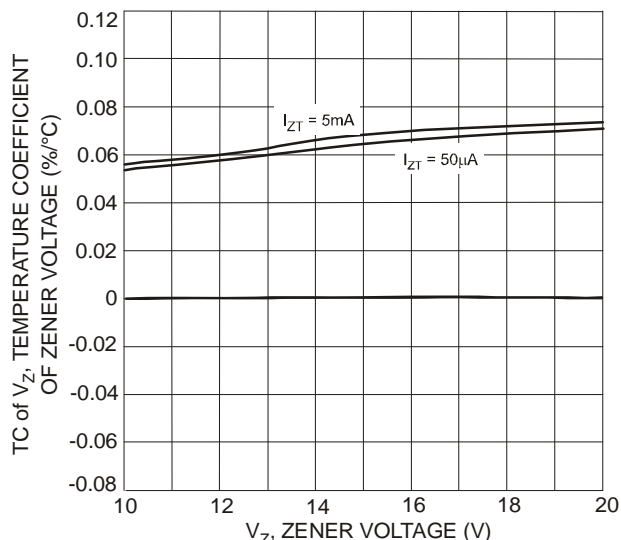


Fig. 18 Typical Temperature Coefficient of Zener Voltage vs. Zener Voltage, DDZ9697S - DDZ9707S

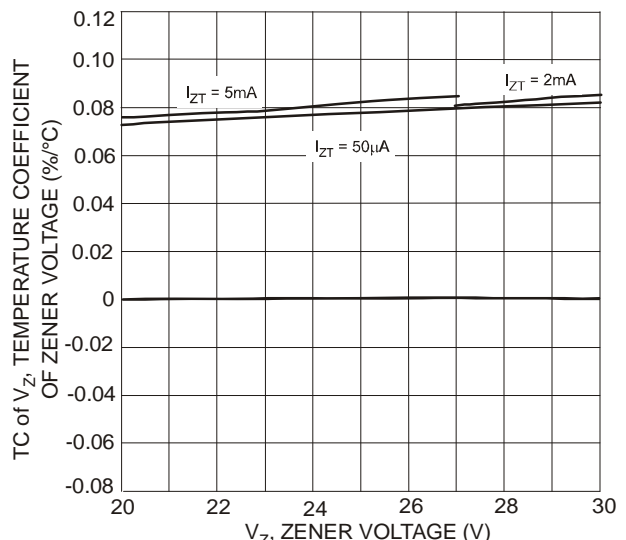


Fig. 19 Typical Temperature Coefficient of Zener Voltage vs. Zener Voltage, DDZ9707S - DDZ9713S

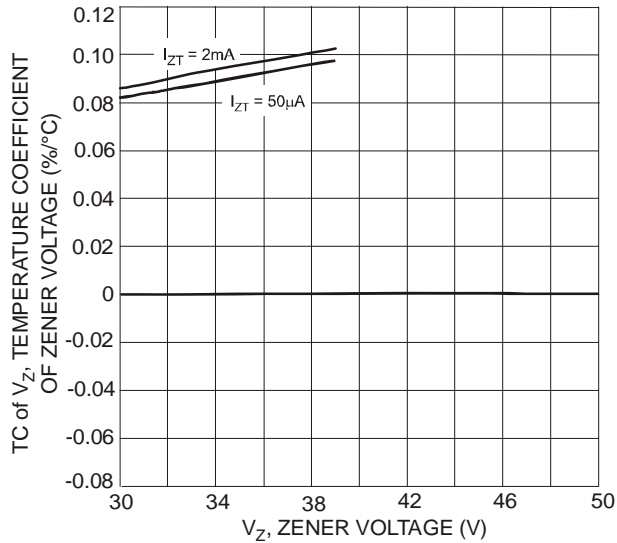


Fig. 20 Typical Temperature Coefficient of Zener Voltage vs. Zener Voltage, DDZ9713S - DDZ9716S

Ordering Information (Note 6)

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

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

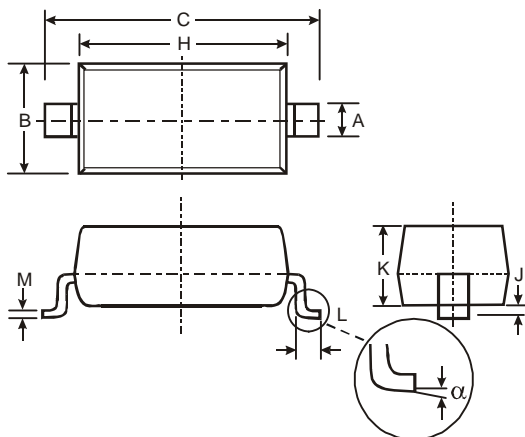
Notes: 6. For packaging details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

Marking Information



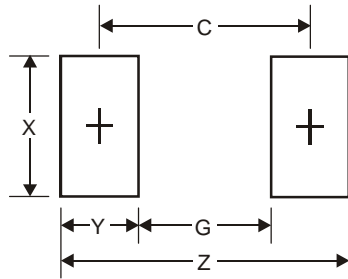
xx = Product Type Marking Code
(See Electrical Characteristics Table)

Package Outline Dimensions



| SOD-323 | | |
|----------------------|------|------|
| Dim | Min | Max |
| A | 0.25 | 0.35 |
| B | 1.20 | 1.40 |
| C | 2.30 | 2.70 |
| H | 1.60 | 1.80 |
| J | 0.00 | 0.10 |
| K | 1.0 | 1.1 |
| L | 0.20 | 0.40 |
| M | 0.10 | 0.15 |
| α | 0° | 8° |
| All Dimensions in mm | | |

Suggested Pad Layout



| Dimensions | Value (in mm) |
|------------|---------------|
| Z | 3.75 |
| G | 1.05 |
| X | 0.65 |
| Y | 1.35 |
| C | 2.40 |

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