

## Features

- Small, Surface Mount Package
- Ideally suited for Automated Assembly Processes
- Very Sharp Breakdown Characteristics
- Very Tight Tolerance on Zener Breakdown Voltage
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**

## Mechanical Data

- Case: SOD323
- Case Material: 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: 0.004 grams (approximate)



Top View

## Ordering Information (Note 4)

| Device                     | Packaging | Shipping          |
|----------------------------|-----------|-------------------|
| (Type Number)-7*           | SOD323    | 3000/Tape & Reel  |
| (Type Number)-13* (Note 5) | SOD323    | 10000/Tape & Reel |

\* For (Type Number), please see the Electrical Characteristics Table. Example: 6.2V Zener = UDZ6V2B-7.

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
  2. See [http://www.diodes.com/quality/lead\\_free.html](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>
  5. Devices are readily available on 13" reels for select voltages only. For other voltages, devices can be made available on 13" reels upon request. Please Contact your Diodes Inc. sales representative for additional details.

## Marking Information



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

## Thermal Characteristics

| Characteristic                                      | Symbol          | Value       | Unit |
|-----------------------------------------------------|-----------------|-------------|------|
| Power Dissipation (Note 6)                          | $P_D$           | 200         | mW   |
| Thermal Resistance Junction to Ambient Air (Note 6) | $R_{\theta JA}$ | 625         | °C/W |
| Operating and Storage Temperature Range             | $T_J, T_{STG}$  | -65 to +150 | °C   |

## Electrical Characteristics (@ $T_A = +25^\circ\text{C}$ , unless otherwise specified.)

| Type Number      | Marking Code | Zener Voltage Range (Note 7) |         |          | Maximum Zener Impedance (Note 8) |                   |          | Maximum Reverse Current (Note 7) |       |
|------------------|--------------|------------------------------|---------|----------|----------------------------------|-------------------|----------|----------------------------------|-------|
|                  |              | $V_{ZT} @ I_{ZT}$            |         | $I_{ZT}$ | $Z_{ZT} @ I_{ZT}$                | $Z_{ZK} @ I_{ZK}$ | $I_{ZK}$ | $I_R$                            | $V_R$ |
|                  |              | Min (V)                      | Max (V) | mA       | $\Omega$                         |                   | mA       | $\mu\text{A}$                    | V     |
| UDZ3V6B (Note 9) | B7           | 3.600                        | 3.845   | 5        | 100                              | 1000              | 1.0      | 10                               | 1.0   |
| UDZ3V9B (Note 9) | B8           | 3.890                        | 4.160   | 5        | 100                              | 1000              | 1.0      | 5                                | 1.0   |
| UDZ4V3B (Note 9) | B9           | 4.170                        | 4.430   | 5        | 100                              | 1000              | 1.0      | 5                                | 1.0   |
| UDZ4V7B (Note 9) | BA           | 4.550                        | 4.750   | 5        | 100                              | 800               | 0.5      | 2                                | 1.0   |
| UDZ5V1B (Note 9) | BB           | 4.980                        | 5.200   | 5        | 80                               | 500               | 0.5      | 2                                | 1.5   |
| UDZ5V6B          | BC           | 5.490                        | 5.730   | 5        | 60                               | 200               | 0.5      | 1                                | 2.5   |
| UDZ6V2B          | BD           | 6.060                        | 6.330   | 5        | 60                               | 100               | 0.5      | 1                                | 3.0   |
| UDZ6V8B          | BE           | 6.650                        | 6.930   | 5        | 40                               | 60                | 0.5      | 0.5                              | 3.5   |
| UDZ7V5B (Note 9) | BF           | 7.280                        | 7.600   | 5        | 30                               | 60                | 0.5      | 0.5                              | 4.0   |
| UDZ8V2B          | BG           | 8.020                        | 8.360   | 5        | 30                               | 60                | 0.5      | 0.5                              | 5.0   |
| UDZ9V1B          | BH           | 8.850                        | 9.230   | 5        | 30                               | 60                | 0.5      | 0.5                              | 6.0   |
| UDZ10B           | BI           | 9.770                        | 10.210  | 5        | 30                               | 60                | 0.5      | 0.1                              | 7.0   |
| UDZ11B           | BJ           | 10.760                       | 11.220  | 5        | 30                               | 60                | 0.5      | 0.1                              | 8.0   |
| UDZ12B           | BK           | 11.740                       | 12.240  | 5        | 30                               | 80                | 0.5      | 0.1                              | 9.0   |
| UDZ13B           | BL           | 12.910                       | 13.490  | 5        | 37                               | 80                | 0.5      | 0.1                              | 10.0  |
| UDZ15B           | BM           | 14.340                       | 14.980  | 5        | 42                               | 80                | 0.5      | 0.1                              | 11.0  |

- Notes:
- Part 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>.
  - Short duration pulse test used to minimize self-heating effect.
  - The Zener impedances ( $Z_{ZT}$ ,  $Z_{ZK}$ ) are measured by superimposing a minute alternating current on the regulated current ( $I_Z$ ).
  - AEC-Q101 qualified

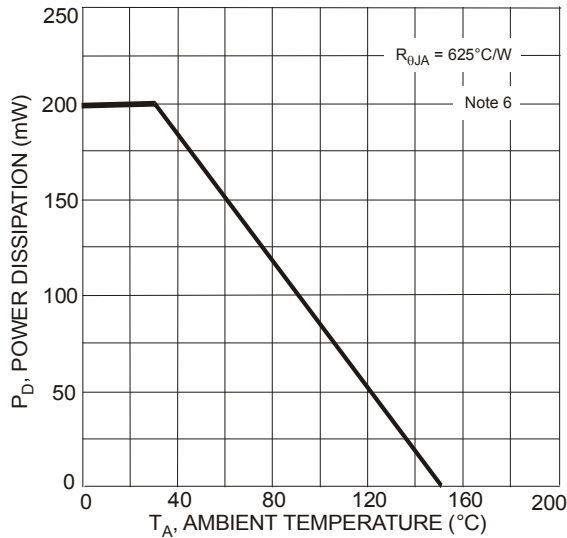


Fig. 1 Power Derating Curve

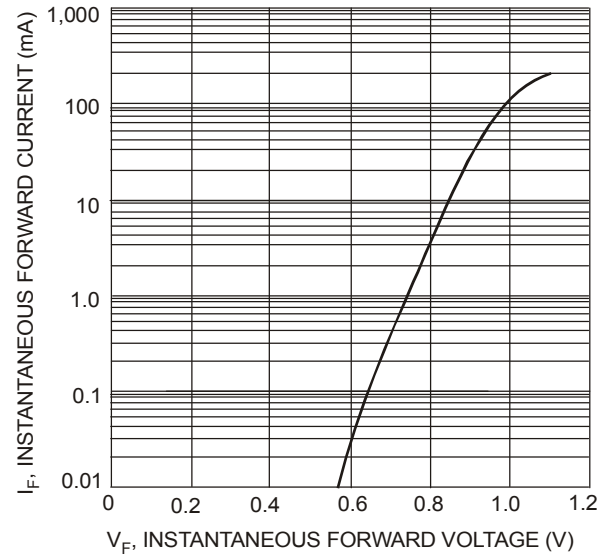


Fig. 2 Typical Forward Characteristics

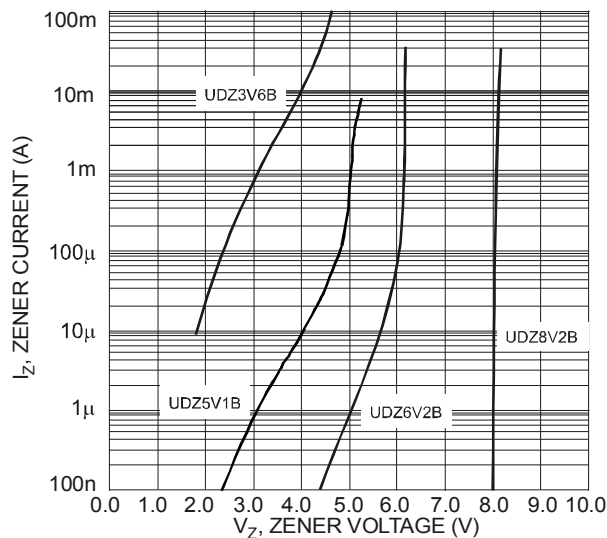


Fig. 3 Typical Zener Breakdown Characteristics,  
UDZ3V6B - UDZ8V2B

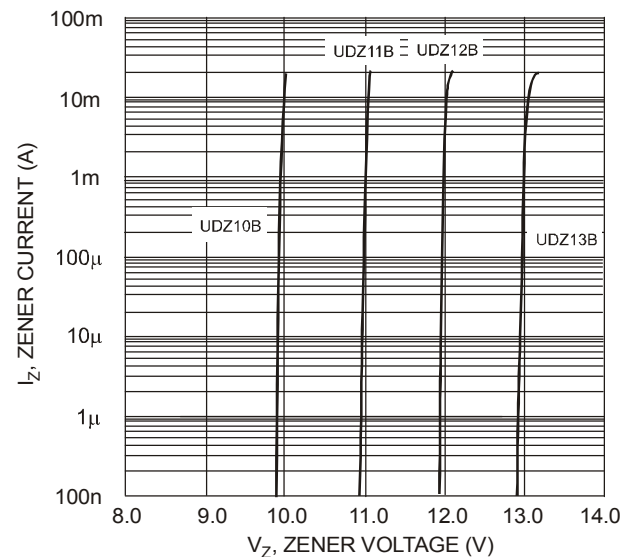


Fig. 4 Typical Zener Breakdown Characteristics,  
UDZ10B - UDZ13B

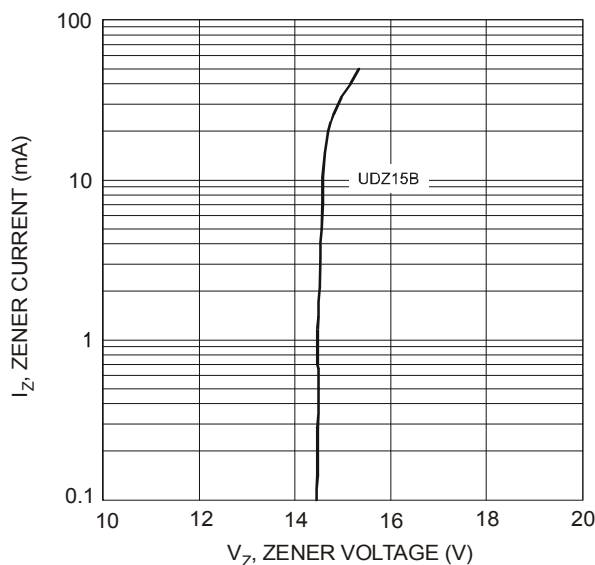


Fig. 5 Typical Zener Breakdown Characteristics, UDZ15B

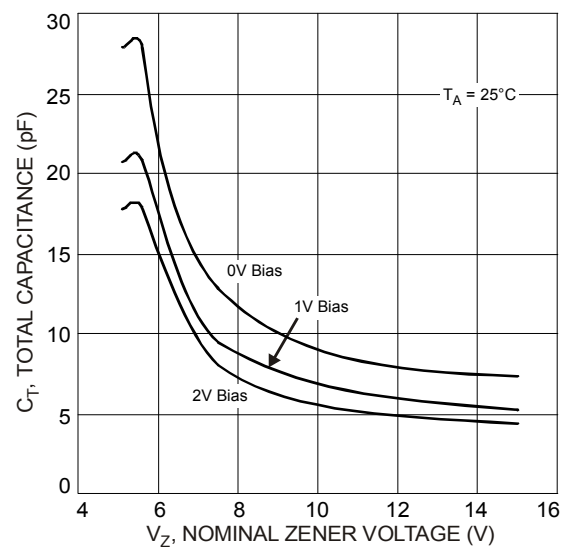


Fig. 6 Typical Total Capacitance  
vs. Nominal Zener Voltage

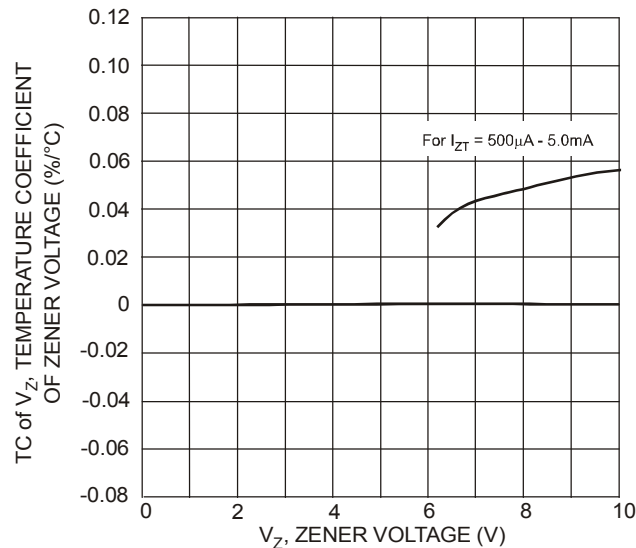


Fig. 7 Typical Temperature Coefficient of Zener Voltage vs. Zener Voltage, UDZ6V2B-UDZ10B

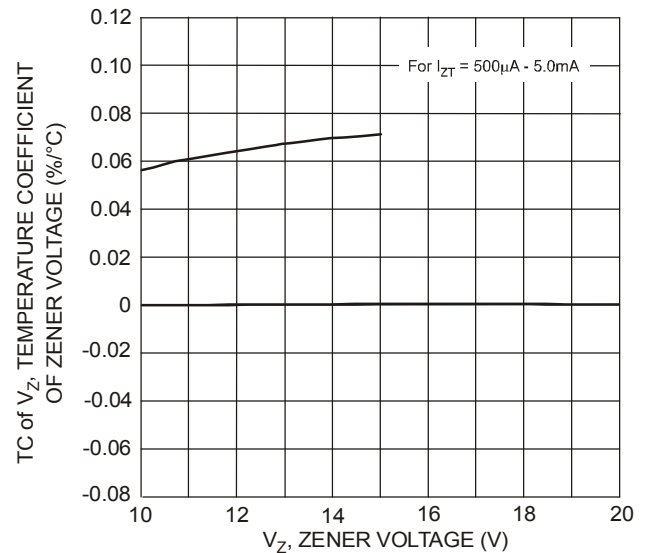
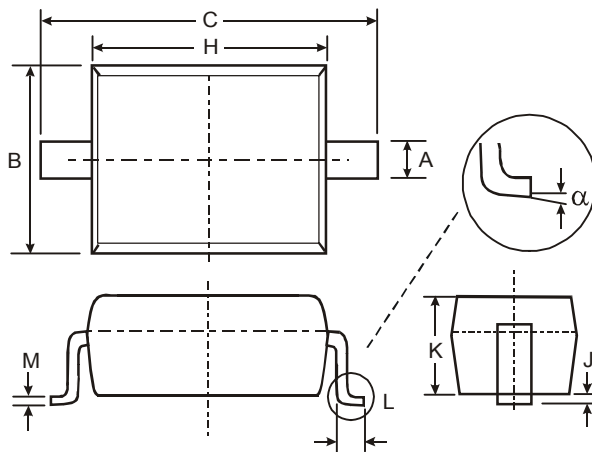


Fig. 8 Typical Temperature Coefficient of Zener Voltage vs. Zener Voltage, UDZ10B-UDZ15B

## Package Outline Dimensions

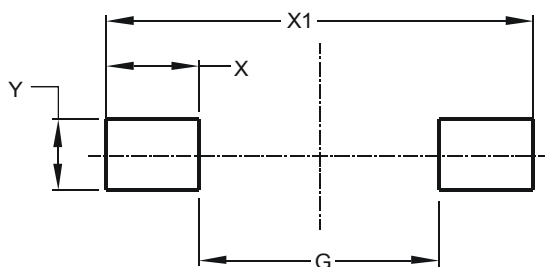
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for latest version.



| SOD323               |      |      |
|----------------------|------|------|
| 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 |
| $\alpha$             | 0°   | 8°   |
| All Dimensions in mm |      |      |

## Suggested Pad Layout

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



| Dimensions | Value (in mm) |
|------------|---------------|
| G          | 1.520         |
| X          | 0.590         |
| X1         | 2.700         |
| Y          | 0.450         |

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