

## Features

- Very Sharp Breakdown Characteristics
- Very Tight Tolerance on  $V_Z$
- Ideally Suited for Automated Assembly Processes
- Very Low Leakage Current
- **Lead, Halogen and Antimony Free, RoHS Compliant "Green" Device (Notes 2 and 3)**

## Mechanical Data

- Case: SOD-323
- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020D
- 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 1)                           | $P_D$           | 200         | mW                 |
| Thermal Resistance, Junction to Ambient Air (Note 1) | $R_{\theta JA}$ | 625         | $^\circ\text{C/W}$ |
| Operating and Storage Temperature Range              | $T_J, T_{STG}$  | -65 to +150 | $^\circ\text{C}$   |

- Notes:
1. 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>
  2. No purposefully added lead. Halogen and Antimony Free.
  3. Product manufactured with Data Code V9 (week 33, 2008) and newer are built with Green Molding Compound. Product manufactured prior to Date Code V9 are built with Non-Green Molding Compound and may contain Halogens or  $\text{Sb}_2\text{O}_3$  Fire Retardants.

**Electrical Characteristics** @T<sub>A</sub> = 25°C unless otherwise specified

| Type Number | Marking Code | Zener Voltage Range<br>(Notes 4, 5) |         |                 | Maximum Zener Impedance<br>(Note 6) |                                   |                 | Maximum Reverse<br>Current (Note 7) |                  |
|-------------|--------------|-------------------------------------|---------|-----------------|-------------------------------------|-----------------------------------|-----------------|-------------------------------------|------------------|
|             |              | V <sub>Z</sub> @ I <sub>ZT</sub>    |         | I <sub>ZT</sub> | Z <sub>YT</sub> @ I <sub>ZT</sub>   | Z <sub>ZK</sub> @ I <sub>ZK</sub> | I <sub>ZK</sub> | I <sub>R</sub>                      | @ V <sub>R</sub> |
|             |              | Min (V)                             | Max (V) | mA              | Ω                                   | Ω                                 | mA              | μA                                  | V                |
| DDZ5V1BS    | KM           | 4.94                                | 5.20    | 20              | 17                                  | 480                               | 1               | 5                                   | 1.5              |
| DDZ5V6BS    | KN           | 5.45                                | 5.73    | 20              | 11                                  | 400                               | 1               | 0.5                                 | 2.5              |
| DDZ6V2BS    | KO           | 5.96                                | 6.27    | 20              | 7                                   | 150                               | 1               | 0.5                                 | 4.0              |
| DDZ6V8CS    | YP           | 6.66                                | 7.01    | 20              | 5                                   | 150                               | 0.5             | 0.1                                 | 5.0              |
| DDZ7V5CS    | YQ           | 7.29                                | 7.67    | 20              | 6                                   | 120                               | 0.5             | 0.1                                 | 6.0              |
| DDZ8V2CS    | YR           | 8.03                                | 8.45    | 20              | 8                                   | 120                               | 0.5             | 0.1                                 | 6.5              |
| DDZ9V1CS    | YS           | 8.83                                | 9.30    | 20              | 8                                   | 120                               | 0.5             | 0.1                                 | 7.0              |
| DDZ10CS     | YT           | 9.70                                | 10.20   | 20              | 8                                   | 120                               | 0.5             | 0.1                                 | 8.0              |
| DDZ11CS     | YU           | 10.82                               | 11.38   | 10              | 10                                  | 120                               | 0.5             | 0.1                                 | 8.4              |
| DDZ12CS     | YV           | 11.74                               | 12.35   | 10              | 12                                  | 110                               | 0.5             | 0.1                                 | 9.1              |
| DDZ13BS     | KW           | 12.55                               | 13.21   | 10              | 14                                  | 110                               | 0.5             | 0.1                                 | 10.0             |
| DDZ14S      | GX           | 13.65                               | 14.35   | 10              | 16                                  | 110                               | 0.5             | 0.05                                | 11.0             |
| DDZ15S      | GY           | 14.80                               | 15.57   | 10              | 18                                  | 150                               | 0.5             | 0.05                                | 12.0             |
| DDZ16S      | YY           | 15.69                               | 16.51   | 10              | 18                                  | 150                               | 0.5             | 0.05                                | 12.0             |
| DDZ18CS     | YZ           | 17.42                               | 18.33   | 10              | 23                                  | 150                               | 0.5             | 0.05                                | 14.0             |
| DDZ20CS     | PJ           | 19.23                               | 20.22   | 10              | 28                                  | 200                               | 0.5             | 0.05                                | 15.0             |
| DDZ22DS     | 2K           | 21.52                               | 22.63   | 5               | 30                                  | 200                               | 0.5             | 0.05                                | 17.0             |
| DDZ24CS     | PL           | 23.12                               | 24.31   | 5               | 35                                  | 200                               | 0.5             | 0.05                                | 19.0             |
| DDZ27DS     | 2M           | 26.29                               | 27.64   | 5               | 45                                  | 250                               | 0.5             | 0.05                                | 21.0             |
| DDZ30DS     | 2N           | 29.02                               | 30.51   | 5               | 55                                  | 250                               | 0.5             | 0.05                                | 23.0             |
| DDZ33S      | RP           | 32.14                               | 33.79   | 5               | 75                                  | 250                               | 0.5             | 0.05                                | 27.0             |
| DDZ36S      | ZQ           | 35.36                               | 37.19   | 5               | 85                                  | 250                               | 0.5             | 0.05                                | 30.0             |
| DDZ39FS     | 5Q           | 38.02                               | 39.98   | 5               | 85                                  | 250                               | 0.5             | 0.05                                | 30.0             |
| DDZ43S      | ZR           | 42.14                               | 43.86   | 5               | 90                                  | —                                 | —               | 0.05                                | 33.0             |

- Notes:
- The Zener voltage is measured 40ms after power is supplied.
  - For inquiries on tighter tolerances, or alternate nominal zener voltages, please contact your Diodes Inc. sales representative for availability and minimum order details.
  - f = 1kHz.
  - Short duration pulse test used to minimize self-heating effect.

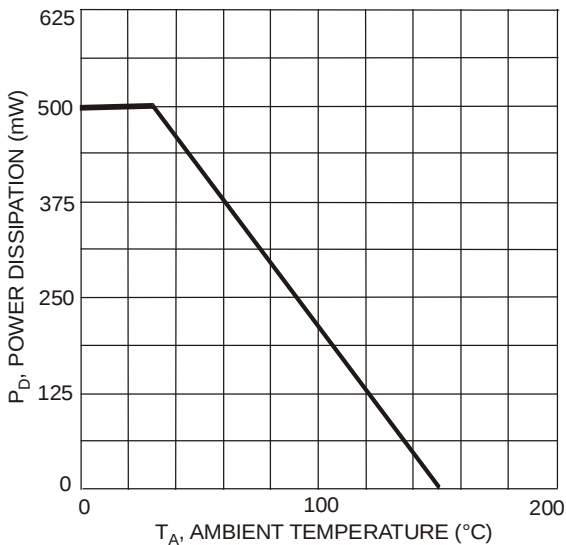


Fig. 1 Power Derating Curve

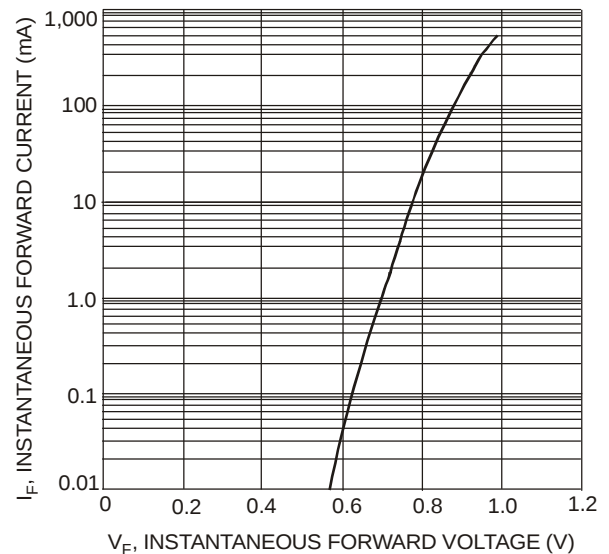


Fig. 2 Typical Forward Characteristics

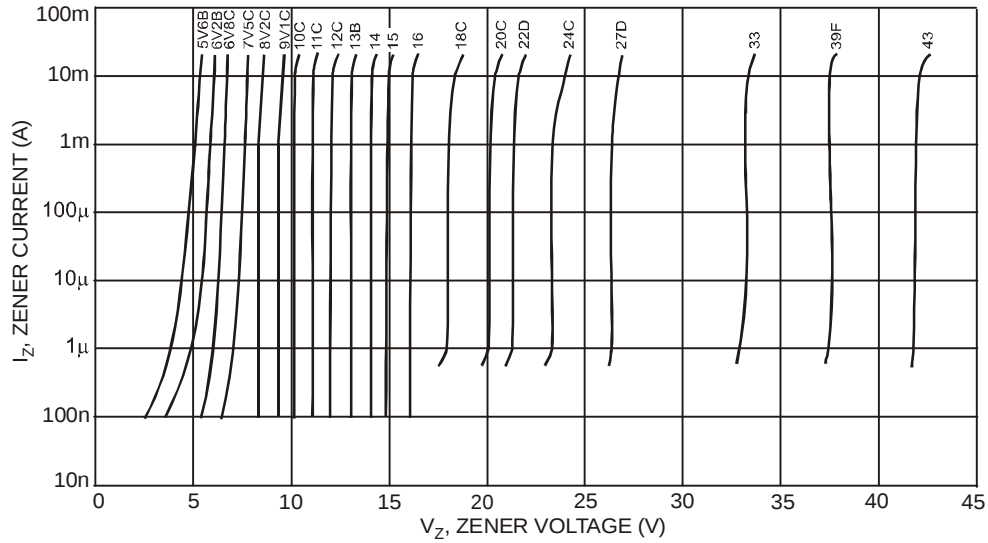


Fig. 3 Typical Zener Breakdown Characteristics

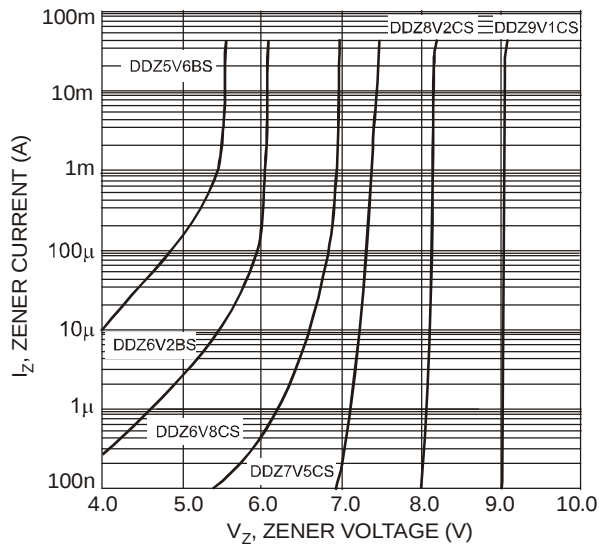


Fig. 4 Typical Zener Breakdown Characteristics,  
DDZ5V6BS - DDZ9V1CS

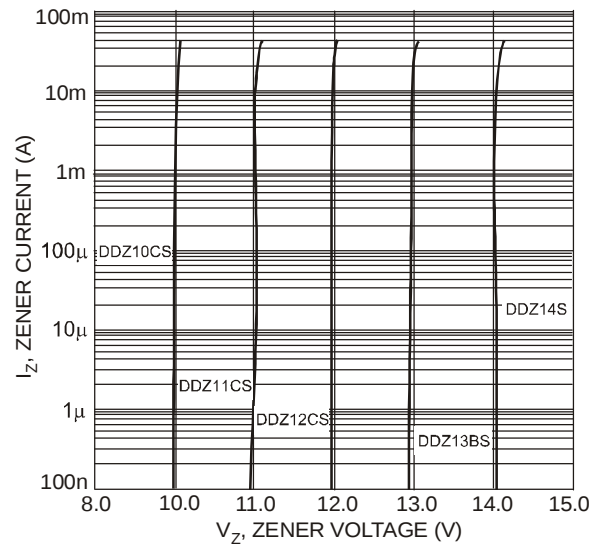


Fig. 5 Typical Zener Breakdown Characteristics,  
DDZ10CS - DDZ14S

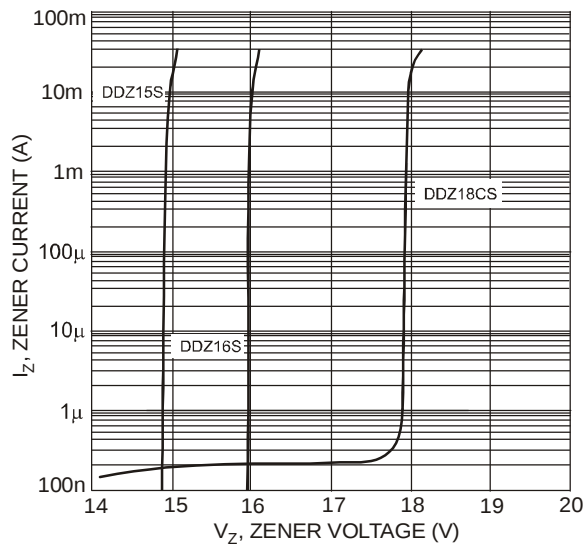


Fig. 6 Typical Zener Breakdown Characteristics,  
DDZ15S - DDZ18CS

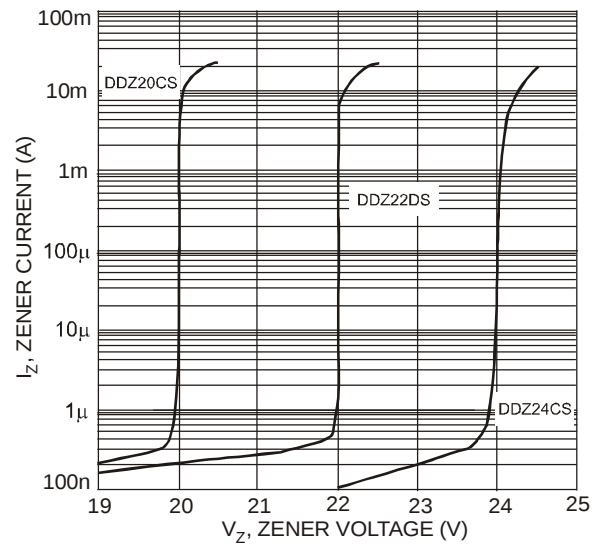


Fig. 7 Typical Zener Breakdown Characteristics,  
DDZ20CS - DDZ24CS

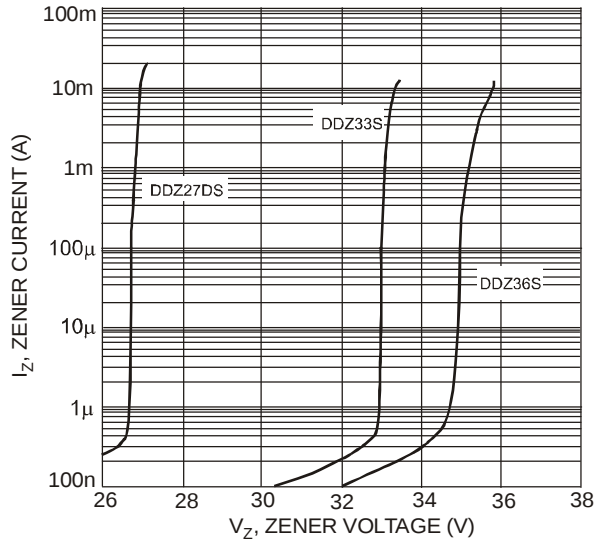


Fig. 8 Typical Zener Breakdown Characteristics,  
DDZ27DS - DDZ36S

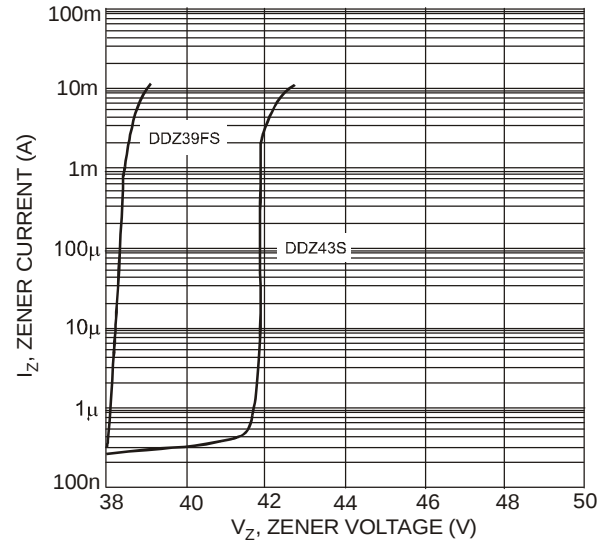


Fig. 9 Typical Zener Breakdown Characteristics,  
DDZ39FS - DDZ43S

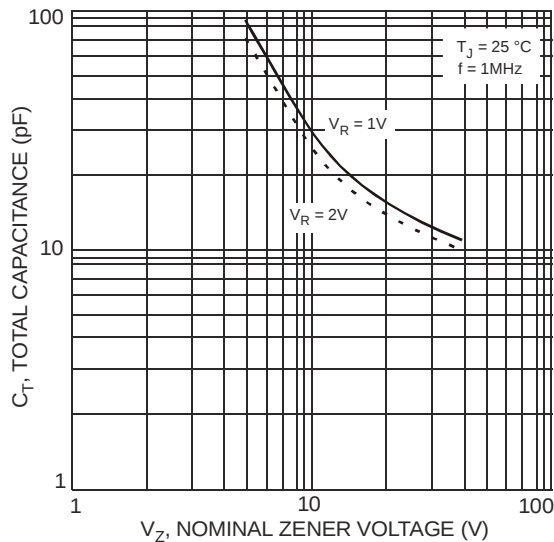


Fig. 10 Typical Total Capacitance  
vs. Nominal Zener Voltage

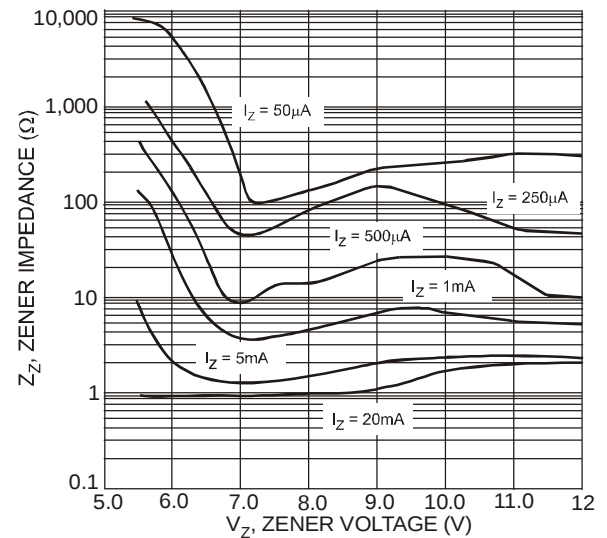


Fig. 11 Typical Zener Impedance Characteristics,  
DDZ5V6BS - DDZ12CS

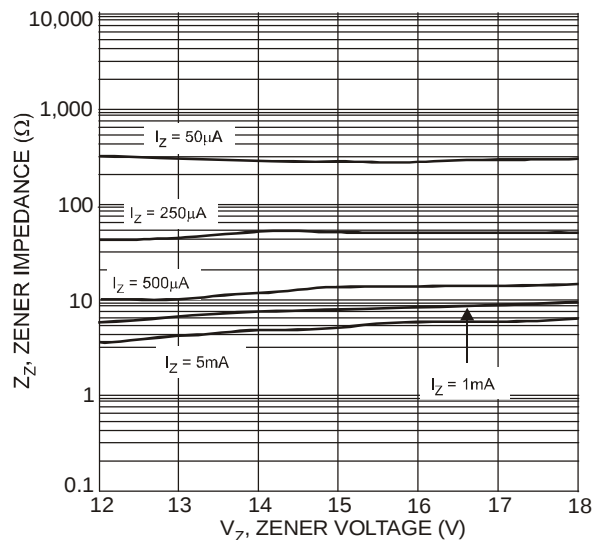


Fig. 12 Typical Zener Impedance Characteristics,  
DDZ12CS - DDZ18CS

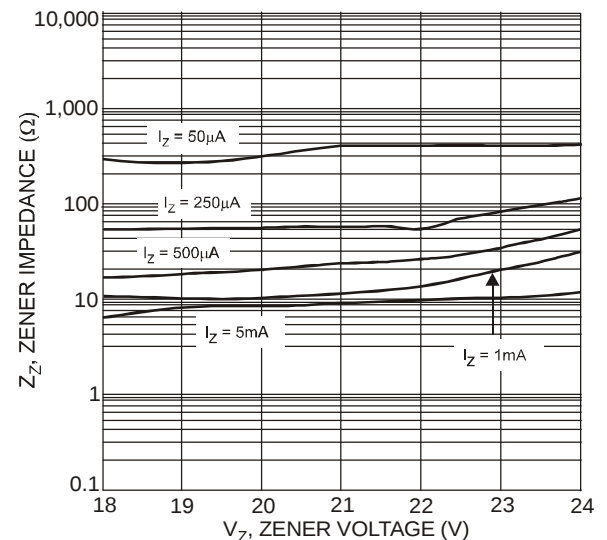


Fig. 13 Typical Zener Impedance Characteristics,  
DDZ18CS - DDZ24CS

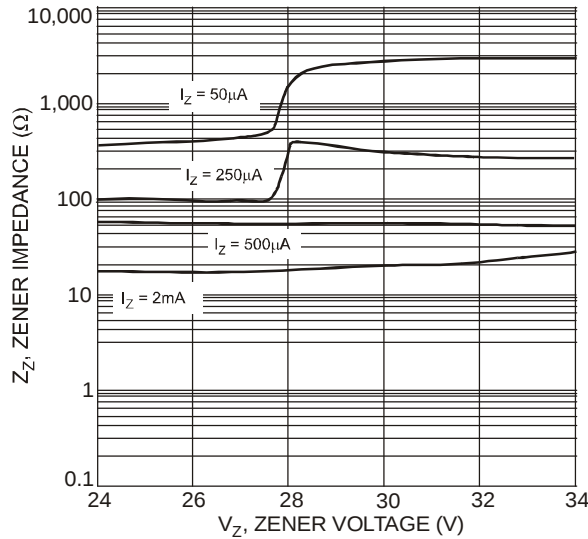


Fig. 14 Typical Zener Impedance Characteristics,  
DDZ24CS - DDZ33S

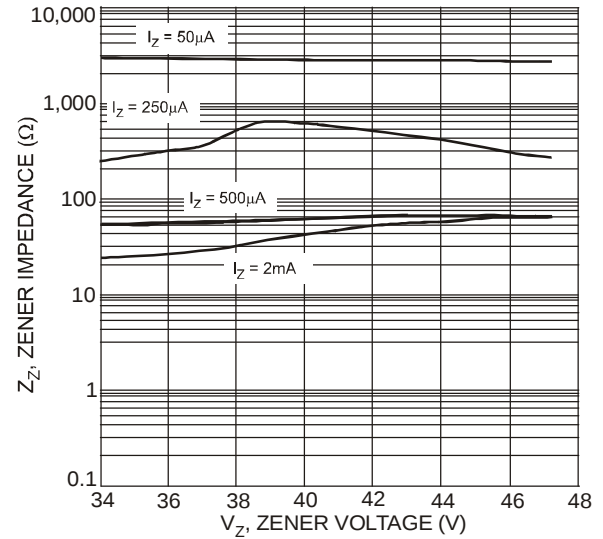


Fig. 15 Typical Zener Impedance Characteristics,  
DDZ36S - DDZ43S

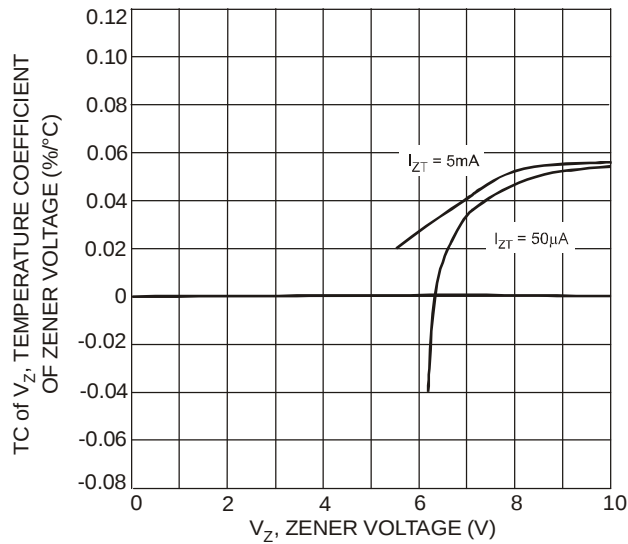


Fig. 16 Typical Temperature Coefficient of  
Zener Voltage vs. Zener Voltage, DDZ6V2BS-DDZ10CS

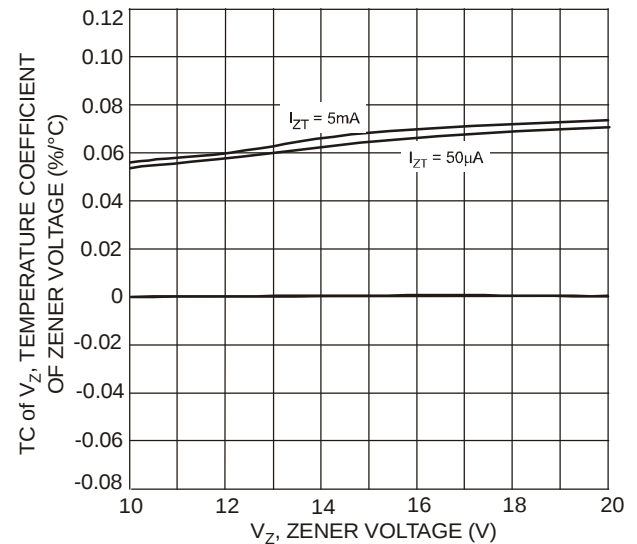


Fig. 17 Typical Temperature Coefficient of  
Zener Voltage vs. Zener Voltage, DDZ10CS-DDZ20CS

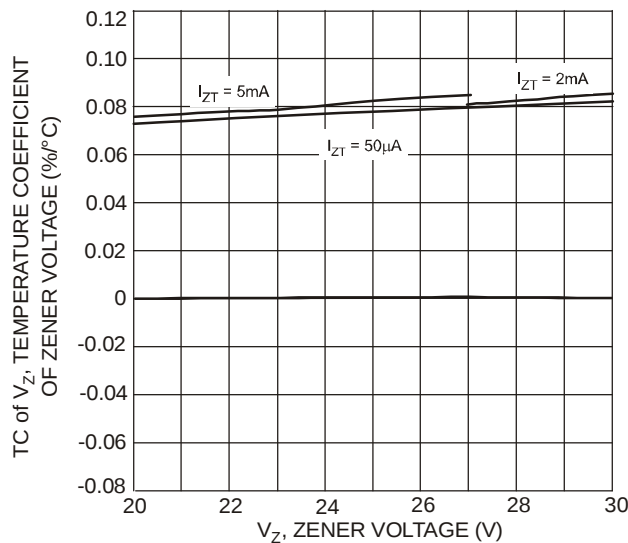


Fig. 18 Typical Temperature Coefficient of  
Zener Voltage vs. Zener Voltage, DDZ20CS-DDZ30DS

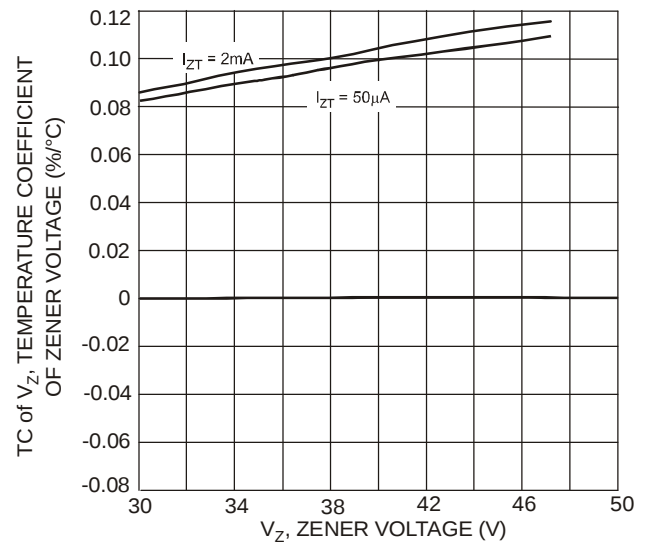


Fig. 19 Typical Temperature Coefficient of  
Zener Voltage vs. Zener Voltage, DDZ30DS-DDZ43S

## Ordering Information (Note 8)

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

\* Example: The part number for the 6.2 Volt device would be DDZ6V2BS-7.

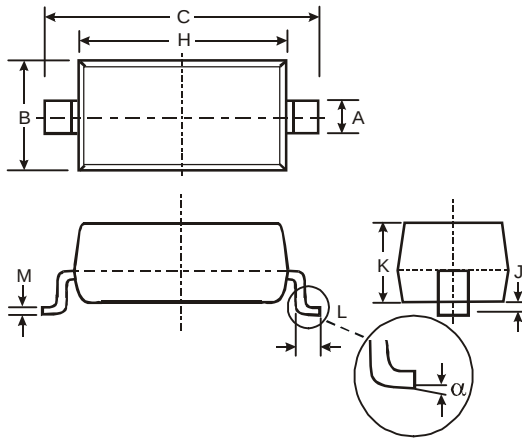
Notes: 8. For packaging details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

## Marking Information



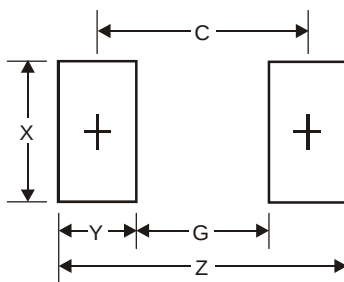
xx = Product Type Marking Code  
(See Electrical Characteristics Table)

## 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 |
| $\alpha$             | 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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