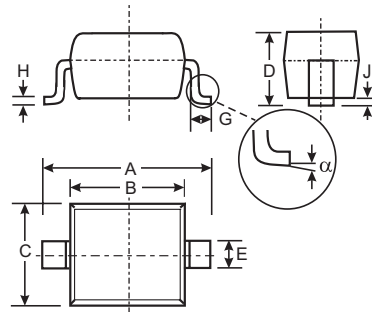


### Features

- Planar Die Construction
- Ultra-Small Surface Mount Package
- Ideally suited for Automated Assembly Processes
- **Lead Free/RoHS Compliant (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**

### Mechanical Data

- Case: SOD-323
- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020C
- Terminals: Solderable per MIL-STD-202, Method 208
- Lead Free Plating (Matte Tin Finish annealed over Alloy 42 leadframe).
- Polarity: Cathode Band
- Marking: See Sheet 2
- 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 |      |
| α                           | 0°           | 8°   |
| <b>All Dimensions in mm</b> |              |      |

### Maximum Ratings @ T<sub>A</sub> = 25°C unless otherwise specified

| Characteristic                                       | Symbol                            | Value       | Unit |
|--|-----------------------------------|-------------|------|
| Forward Voltage (Note 2) @ I <sub>F</sub> = 10mA     | V <sub>F</sub>                    | 0.9         | V    |
| Power Dissipation (Note 1)                           | P <sub>d</sub>                    | 200         | mW   |
| Thermal Resistance, Junction to Ambient Air (Note 1) | R <sub>θJA</sub>                  | 625         | °C/W |
| Operating and Storage Temperature Range              | T <sub>j</sub> , T <sub>STG</sub> | -65 to +150 | °C   |

- Notes:
1. Part mounted on FR-4 PC board with recommended pad layout, as per <http://www.diodes.com/datasheets/ap02001.pdf>.
  2. Short duration test pulse used in minimize self-heating effect.
  3. No purposefully added lead.

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

| Type Number | Marking Code              | Zener Voltage Range (Note 2)     |         |         |                 | Maximum Zener Impedance (Note 4)  |                                   |                 | Maximum Reverse Current (Note 2) |                | Temperature Coefficient of Zener Voltage @ I <sub>ZT</sub> = 5mA mV/°C |      |
|-------------|---------------------------|----------------------------------|---------|---------|-----------------|-----------------------------------|-----------------------------------|-----------------|----------------------------------|----------------|--|------|
|             |                           | V <sub>Z</sub> @ I <sub>ZT</sub> |         |         | I <sub>ZT</sub> | Z <sub>ZT</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  | Max  |
|             |                           | Nom (V)                          | Min (V) | Max (V) | (mA)            | Ω                                 |                                   | mA              | μA                               | V              |  |      |
| BZT52C2V0S  | WY, <u>WY</u>             | 2.0                              | 1.91    | 2.09    | 5               | 100                               | 600                               | 1.0             | 150                              | 1.0            | -3.5   | 0    |
| BZT52C2V4S  | WX, <u>WX</u>             | 2.4                              | 2.20    | 2.60    | 5               | 100                               | 600                               | 1.0             | 50                               | 1.0            | -3.5   | 0    |
| BZT52C2V7S  | W1, <u>W1</u>             | 2.7                              | 2.5     | 2.9     | 5               | 100                               | 600                               | 1.0             | 20                               | 1.0            | -3.5   | 0    |
| BZT52C3V0S  | W2, <u>W2</u>             | 3.0                              | 2.8     | 3.2     | 5               | 95                                | 600                               | 1.0             | 10                               | 1.0            | -3.5   | 0    |
| BZT52C3V3S  | W3, <u>W3</u>             | 3.3                              | 3.1     | 3.5     | 5               | 95                                | 600                               | 1.0             | 5                                | 1.0            | -3.5   | 0    |
| BZT52C3V6S  | W4, <u>W4</u>             | 3.6                              | 3.4     | 3.8     | 5               | 90                                | 600                               | 1.0             | 5                                | 1.0            | -3.5   | 0    |
| BZT52C3V9S  | W5, <u>W5</u>             | 3.9                              | 3.7     | 4.1     | 5               | 90                                | 600                               | 1.0             | 3                                | 1.0            | -3.5   | 0    |
| BZT52C4V3S  | W6, <u>W6</u>             | 4.3                              | 4.0     | 4.6     | 5               | 90                                | 600                               | 1.0             | 3                                | 1.0            | -3.5   | 0    |
| BZT52C4V7S  | W7, <u>W7</u>             | 4.7                              | 4.4     | 5.0     | 5               | 80                                | 500                               | 1.0             | 3                                | 2.0            | -3.5   | 0.2  |
| BZT52C5V1S  | W8, <u>W8</u>             | 5.1                              | 4.8     | 5.4     | 5               | 60                                | 480                               | 1.0             | 2                                | 2.0            | -2.7   | 1.2  |
| BZT52C5V6S  | W9, <u>W9</u>             | 5.6                              | 5.2     | 6.0     | 5               | 40                                | 400                               | 1.0             | 1                                | 2.0            | -2.0   | 2.5  |
| BZT52C6V2S  | WA, <u>WA</u>             | 6.2                              | 5.8     | 6.6     | 5               | 10                                | 150                               | 1.0             | 3                                | 4.0            | 0.4  | 3.7  |
| BZT52C6V8S  | WB, <u>WB</u>             | 6.8                              | 6.4     | 7.2     | 5               | 15                                | 80                                | 1.0             | 2                                | 4.0            | 1.2  | 4.5  |
| BZT52C7V5S  | WC, <u>WC</u> , <u>BF</u> | 7.5                              | 7.0     | 7.9     | 5               | 15                                | 80                                | 1.0             | 1                                | 5.0            | 2.5  | 5.3  |
| BZT52C8V2S  | WD, <u>WD</u>             | 8.2                              | 7.7     | 8.7     | 5               | 15                                | 80                                | 1.0             | 0.7                              | 5.0            | 3.2  | 6.2  |
| BZT52C9V1S  | WE, <u>WE</u>             | 9.1                              | 8.5     | 9.6     | 5               | 15                                | 100                               | 1.0             | 0.5                              | 6.0            | 3.8  | 7.0  |
| BZT52C10S   | WF, <u>WF</u>             | 10                               | 9.4     | 10.6    | 5               | 20                                | 150                               | 1.0             | 0.2                              | 7.0            | 4.5  | 8.0  |
| BZT52C11S   | WG, <u>WG</u>             | 11                               | 10.4    | 11.6    | 5               | 20                                | 150                               | 1.0             | 0.1                              | 8.0            | 5.4  | 9.0  |
| BZT52C12S   | WH, <u>WH</u>             | 12                               | 11.4    | 12.7    | 5               | 25                                | 150                               | 1.0             | 0.1                              | 8.0            | 6.0  | 10.0 |
| BZT52C13S   | WI, <u>WI</u>             | 13                               | 12.4    | 14.1    | 5               | 30                                | 170                               | 1.0             | 0.1                              | 8.0            | 7.0  | 11.0 |
| BZT52C15S   | WJ, <u>WJ</u>             | 15                               | 13.8    | 15.6    | 5               | 30                                | 200                               | 1.0             | 0.1                              | 10.5           | 9.2  | 13.0 |
| BZT52C16S   | WK, <u>WK</u>             | 16                               | 15.3    | 17.1    | 5               | 40                                | 200                               | 1.0             | 0.1                              | 11.2           | 10.4   | 14.0 |
| BZT52C18S   | WL, <u>WL</u>             | 18                               | 16.8    | 19.1    | 5               | 45                                | 225                               | 1.0             | 0.1                              | 12.6           | 12.4   | 16.0 |
| BZT52C20S   | WM, <u>WM</u>             | 20                               | 18.8    | 21.2    | 5               | 55                                | 225                               | 1.0             | 0.1                              | 14.0           | 14.4   | 18.0 |
| BZT52C22S   | WN, <u>WN</u>             | 22                               | 20.8    | 23.3    | 5               | 55                                | 250                               | 1.0             | 0.1                              | 15.4           | 16.4   | 20.0 |
| BZT52C24S   | WO, <u>WO</u>             | 24                               | 22.8    | 25.6    | 5               | 70                                | 250                               | 1.0             | 0.1                              | 16.8           | 18.4   | 22.0 |
| BZT52C27S   | WP, <u>WP</u>             | 27                               | 25.1    | 28.9    | 2               | 80                                | 300                               | 0.5             | 0.1                              | 18.9           | 21.4   | 25.3 |
| BZT52C30S   | WQ, <u>WQ</u>             | 30                               | 28.0    | 32.0    | 2               | 80                                | 300                               | 0.5             | 0.1                              | 21.0           | 24.4   | 29.4 |
| BZT52C33S   | WR, <u>WR</u>             | 33                               | 31.0    | 35.0    | 2               | 80                                | 325                               | 0.5             | 0.1                              | 23.1           | 27.4   | 33.4 |
| BZT52C36S   | WS, <u>WS</u>             | 36                               | 34.0    | 38.0    | 2               | 90                                | 350                               | 0.5             | 0.1                              | 25.2           | 30.4   | 37.4 |
| BZT52C39S   | WT, <u>WT</u>             | 39                               | 37.0    | 41.0    | 2               | 130                               | 350                               | 0.5             | 0.1                              | 27.3           | 33.4   | 41.2 |

- Notes: 2. Short duration test pulse used to minimize self-heating effect.  
3. No purposefully added lead.  
4. f = 1kHz.

## Ordering Information (Note 5)

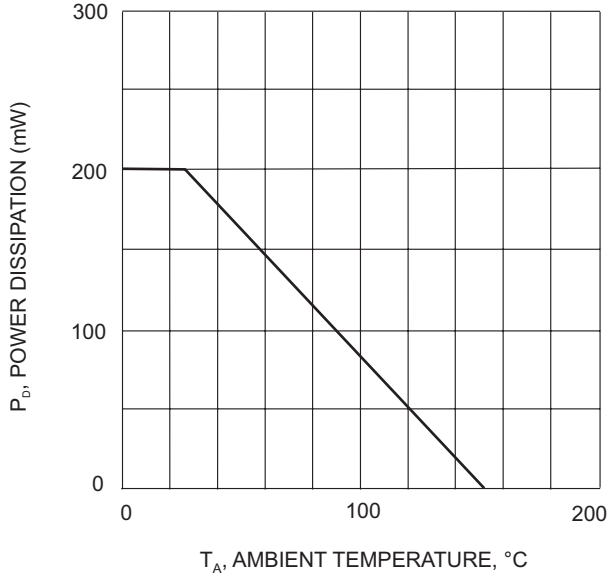
| Device            | Packaging | Shipping         |
|-------------------|-----------|------------------|
| (Type Number)-7-F | SOD-323   | 3000/Tape & Reel |

- Notes: 5. \*Add "-7-F" to the appropriate type number in Table 1 above example: 6.2V Zener = BZT52C6V2S-7-F.  
6. For Packaging Details, go to our website at: <http://www.diodes.com/datasheets/ap02007.pdf>.

## Marking Information



XX = Product Type Marking Code  
(See Table Above)



$T_A$ , AMBIENT TEMPERATURE, °C  
Fig. 1. Power Derating Curve

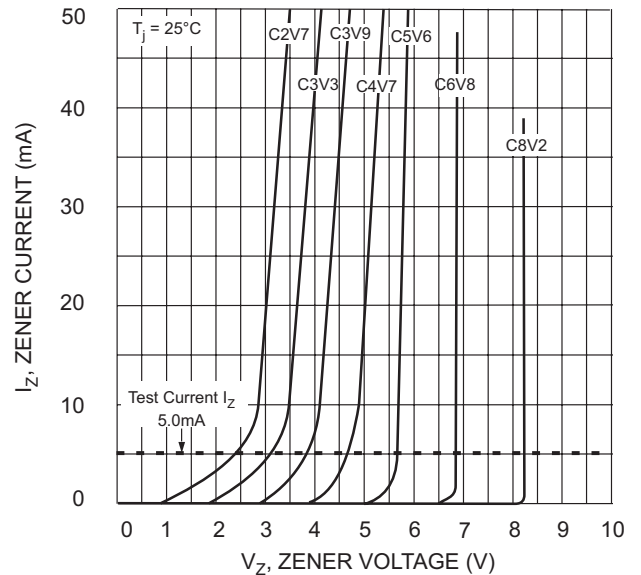


Fig. 2. Zener Breakdown Characteristics

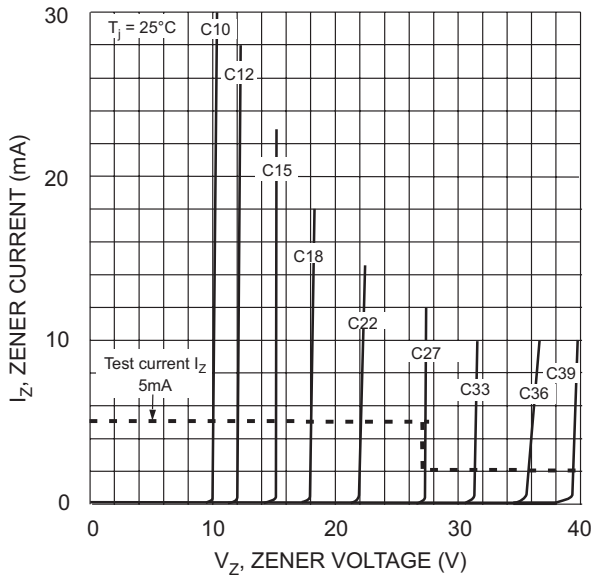


Fig. 3. Zener Breakdown Characteristics

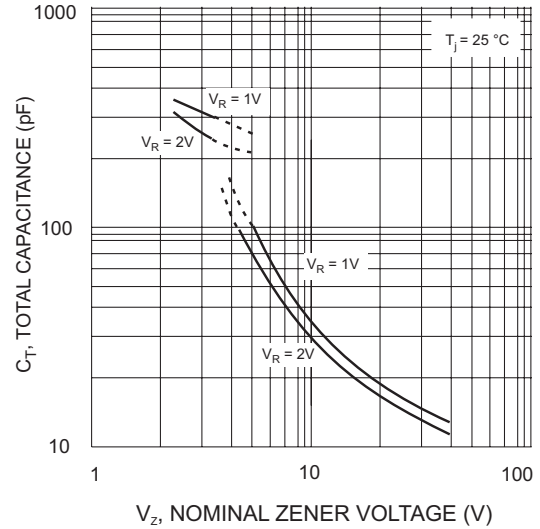


Fig. 4. Total Capacitance vs Nominal Zener Voltage

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