

**FEATURES**

- Planar Die Construction
- 200mW Power Dissipation on Ceramic PCB
- General Purpose, Medium Current
- Ideally Suited for Automated Assembly Processes



SOD-323

**MECHANICAL DATA**

- Case: SOD-323 Molded Plastic
- Terminals: Solderable per MIL-STD-202, Method 208
- Polarity: Cathode Band
- Weight: 0.004 grams (approx.)



Cathode

**MAXIMUM RATINGS (T<sub>A</sub> = 25°C unless otherwise noted)**

| 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      | R <sub>θJ</sub>                  | 625       | °C /W |
| Junction Temperature                             | T <sub>J</sub>                   | 150       | °C    |
| Operating and Storage Temperature Range          | T <sub>J</sub> , T <sub>ST</sub> | -65~ +150 | °C    |

Notes: 1. Device mounted on ceramic PCB: 7.6mm x 9.4mm x 0.87mm with pad areas 25mm<sup>2</sup>

2. Short duration test pulse used to minimize self-heating effect

3. f=1K<sub>Hz</sub>

**ELECTRICAL CHARACTERISTICS @ Ta=25°C unless otherwise specified**

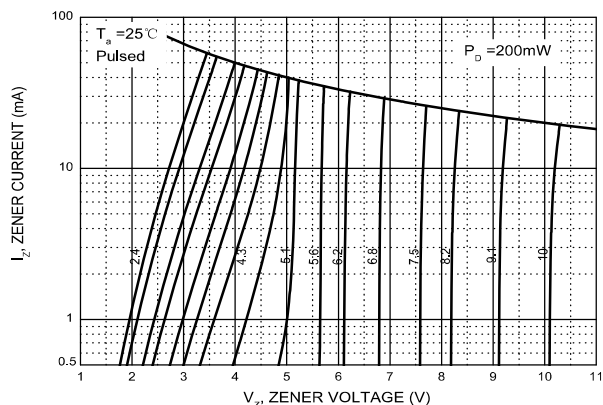
| Type<br>Number | Zener Voltage Range (Note 2)    |        |      |                 | Maximum Zener<br>Impedance<br>(Note 3) |                                  |                 | Maximum<br>Reverse<br>Current<br>(Note 2) |                | Typical<br>Temperature<br>Coefficient<br>@I <sub>ZTC</sub><br>mV/°C |      | Test<br>Current<br>I <sub>ZTC</sub> |
|----------------|---------------------------------|--------|------|-----------------|----------------------------------------|----------------------------------|-----------------|-------------------------------------------|----------------|---------------------------------------------------------------------|------|-------------------------------------|
|                |                                 |        |      |                 |                                        |                                  |                 |                                           |                |                                                                     |      |                                     |
|                | 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                                         | Min            | Max                                                                 | mA   |                                     |
| BZT52C2V4S     | 2.4                             | 2.20   | 2.60 | 5               | 100                                    | 600                              | 1.0             | 50                                        | 1.0            | -3.5                                                                | 0    | 5                                   |
| BZT52C2V7S     | 2.7                             | 2.5    | 2.9  | 5               | 100                                    | 600                              | 1.0             | 20                                        | 1.0            | -3.5                                                                | 0    | 5                                   |
| BZT52C3V0S     | 3.0                             | 2.8    | 3.2  | 5               | 95                                     | 600                              | 1.0             | 10                                        | 1.0            | -3.5                                                                | 0    | 5                                   |
| BZT52C3V3S     | 3.3                             | 3.1    | 3.5  | 5               | 95                                     | 600                              | 1.0             | 5                                         | 1.0            | -3.5                                                                | 0    | 5                                   |
| BZT52C3V6S     | 3.6                             | 3.4    | 3.8  | 5               | 90                                     | 600                              | 1.0             | 5                                         | 1.0            | -3.5                                                                | 0    | 5                                   |
| BZT52C3V9S     | 3.9                             | 3.7    | 4.1  | 5               | 90                                     | 600                              | 1.0             | 3                                         | 1.0            | -3.5                                                                | 0    | 5                                   |
| BZT52C4V3S     | 4.3                             | 4.0    | 4.6  | 5               | 90                                     | 600                              | 1.0             | 3                                         | 1.0            | -3.5                                                                | 0    | 5                                   |
| BZT52C4V7S     | 4.7                             | 4.4    | 5.0  | 5               | 80                                     | 500                              | 1.0             | 3                                         | 2.0            | -3.5                                                                | 0.2  | 5                                   |
| BZT52C5V1S     | 5.1                             | 4.8    | 5.4  | 5               | 60                                     | 480                              | 1.0             | 2                                         | 2.0            | -2.7                                                                | 1.2  | 5                                   |
| BZT52C5V6S     | 5.6                             | 5.2    | 6.0  | 5               | 40                                     | 400                              | 1.0             | 1                                         | 2.0            | -2.0                                                                | 2.5  | 5                                   |
| BZT52C6V2S     | 6.2                             | 5.8    | 6.6  | 5               | 10                                     | 150                              | 1.0             | 3                                         | 4.0            | 0.4                                                                 | 3.7  | 5                                   |
| BZT52C6V8S     | 6.8                             | 6.4    | 7.2  | 5               | 15                                     | 80                               | 1.0             | 2                                         | 4.0            | 1.2                                                                 | 4.5  | 5                                   |
| BZT52C7V5S     | 7.5                             | 7.0    | 7.9  | 5               | 15                                     | 80                               | 1.0             | 1                                         | 5.0            | 2.5                                                                 | 5.3  | 5                                   |
| BZT52C8V2S     | 8.2                             | 7.7    | 8.7  | 5               | 15                                     | 80                               | 1.0             | 0.7                                       | 5.0            | 3.2                                                                 | 6.2  | 5                                   |
| BZT52C9V1S     | 9.1                             | 8.5    | 9.6  | 5               | 15                                     | 100                              | 1.0             | 0.5                                       | 6.0            | 3.8                                                                 | 7.0  | 5                                   |
| BZT52C10S      | 10                              | 9.4    | 10.6 | 5               | 20                                     | 150                              | 1.0             | 0.2                                       | 7.0            | 4.5                                                                 | 8.0  | 5                                   |
| BZT52C11S      | 11                              | 10.4   | 11.6 | 5               | 20                                     | 150                              | 1.0             | 0.1                                       | 8.0            | 5.4                                                                 | 9.0  | 5                                   |
| BZT52C12S      | 12                              | 11.4   | 12.7 | 5               | 25                                     | 150                              | 1.0             | 0.1                                       | 8.0            | 6.0                                                                 | 10.0 | 5                                   |
| BZT52C13S      | 13                              | 12.4   | 14.1 | 5               | 30                                     | 170                              | 1.0             | 0.1                                       | 8.0            | 7.0                                                                 | 11.0 | 5                                   |
| BZT52C15S      | 15                              | 13.8   | 15.6 | 5               | 30                                     | 200                              | 1.0             | 0.1                                       | 10.5           | 9.2                                                                 | 13.0 | 5                                   |
| BZT52C16S      | 16                              | 15.3   | 17.1 | 5               | 40                                     | 200                              | 1.0             | 0.1                                       | 11.2           | 10.4                                                                | 14.0 | 5                                   |
| BZT52C18S      | 18                              | 16.8   | 19.1 | 5               | 45                                     | 225                              | 1.0             | 0.1                                       | 12.6           | 12.4                                                                | 16.0 | 5                                   |
| BZT52C20S      | 20                              | 18.8   | 21.2 | 5               | 55                                     | 225                              | 1.0             | 0.1                                       | 14.0           | 14.4                                                                | 18.0 | 5                                   |
| BZT52C22S      | 22                              | 20.8   | 23.3 | 5               | 55                                     | 250                              | 1.0             | 0.1                                       | 15.4           | 16.4                                                                | 20.0 | 5                                   |
| BZT52C24S      | 24                              | 22.8   | 25.6 | 5               | 70                                     | 250                              | 1.0             | 0.1                                       | 16.8           | 18.4                                                                | 22.0 | 5                                   |
| BZT52C27S      | 27                              | 25.1   | 28.9 | 2               | 80                                     | 300                              | 0.5             | 0.1                                       | 18.9           | 21.4                                                                | 25.3 | 2                                   |
| BZT52C30S      | 30                              | 28.0   | 32.0 | 2               | 80                                     | 300                              | 0.5             | 0.1                                       | 21.0           | 24.4                                                                | 29.4 | 2                                   |
| BZT52C33S      | 33                              | 31.0   | 35.0 | 2               | 80                                     | 325                              | 0.5             | 0.1                                       | 23.1           | 27.4                                                                | 33.4 | 2                                   |
| BZT52C36S      | 36                              | 34.0   | 38.0 | 2               | 90                                     | 350                              | 0.5             | 0.1                                       | 25.2           | 30.4                                                                | 37.4 | 2                                   |
| BZT52C39S      | 39                              | 37.0   | 41.0 | 2               | 130                                    | 350                              | 0.5             | 0.1                                       | 27.3           | 33.4                                                                | 41.2 | 2                                   |
| BZT52C43S      | 43                              | 40.0   | 46.0 | 5               | 100                                    | 700                              | 1.0             | 0.1                                       | 32             | 10.0                                                                | 12.0 | 5                                   |

Notes: 1. Device mounted on ceramic PCB: 7.6mm x 9.4mm x 0.87mm with pad areas 25mm<sup>2</sup>

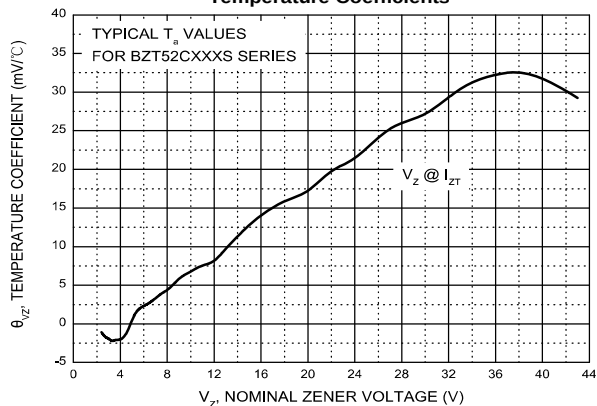
2. Short duration test pulse used to minimize self-heating effect

3. f=1KHZ

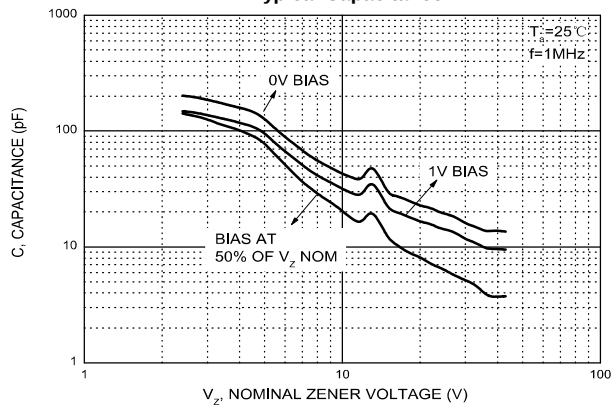
## Typical Characteristics

Zener Characteristics ( $V_Z$  Up to 10 V)

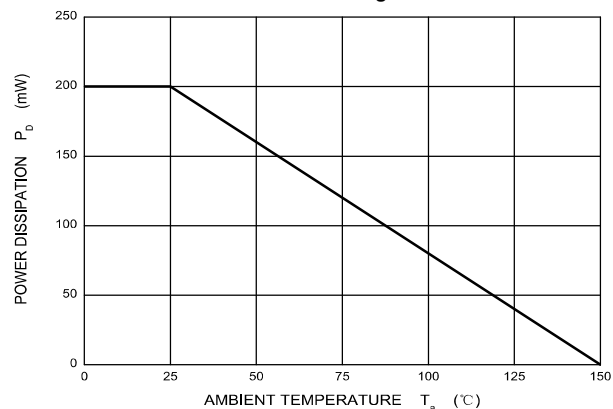
Temperature Coefficients



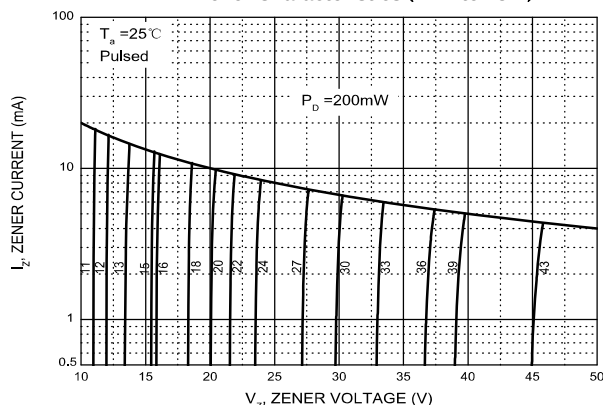
Typical Capacitance



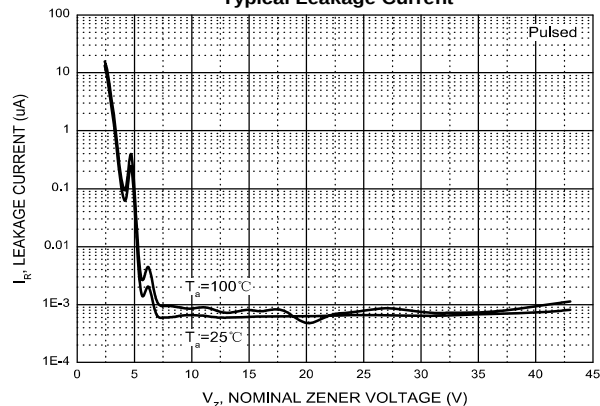
Power Derating Curve



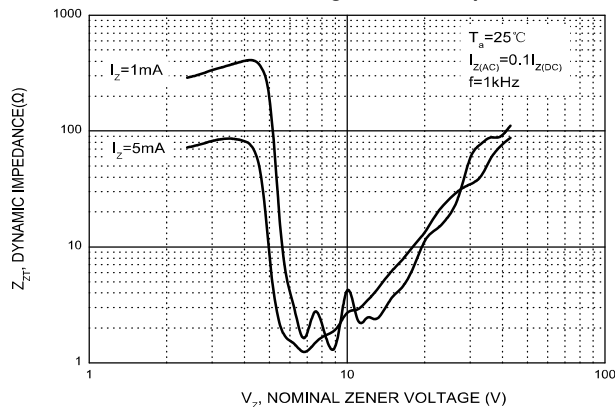
Zener Characteristics (11 V to 43 V)

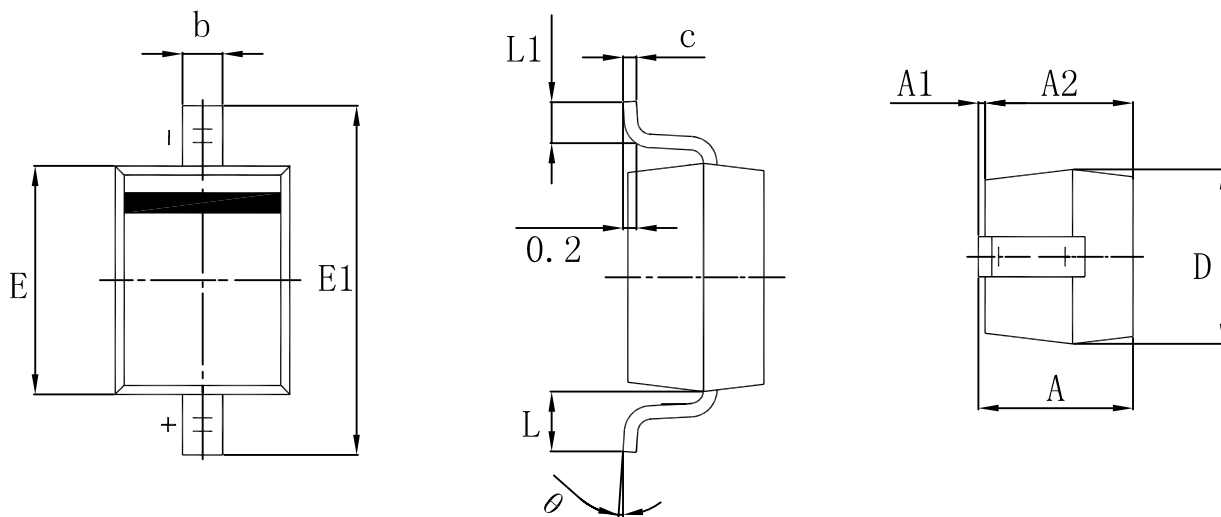


Typical Leakage Current

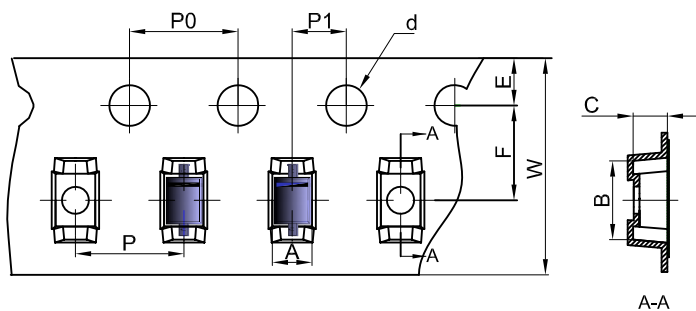


Effect of Zener Voltage on Zener Impedance



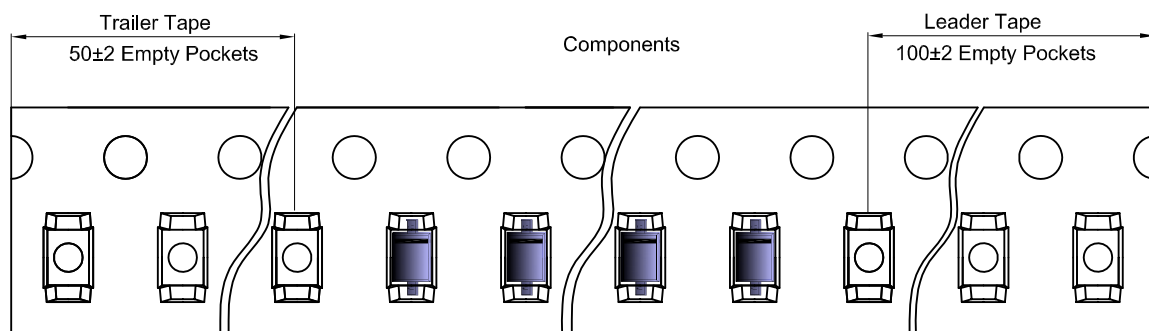
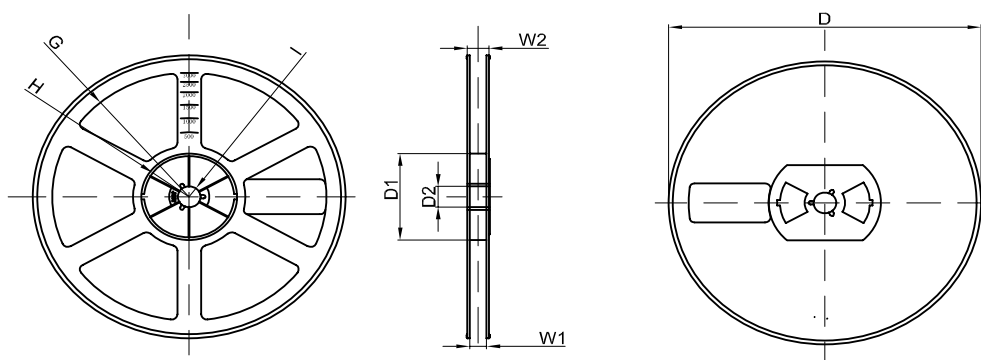
**SOD-323 Package Outline Dimensions**

| Symbol | Dimensions In Millimeters |       | Dimensions In Inches |       |
|--------|---------------------------|-------|----------------------|-------|
|        | Min.                      | Max.  | Min.                 | Max.  |
| A      |                           | 1.000 |                      | 0.039 |
| A1     | 0.000                     | 0.100 | 0.000                | 0.004 |
| A2     | 0.800                     | 0.900 | 0.310                | 0.035 |
| b      | 0.250                     | 0.350 | 0.010                | 0.014 |
| c      | 0.080                     | 0.150 | 0.003                | 0.006 |
| D      | 1.200                     | 1.400 | 0.047                | 0.055 |
| E      | 1.600                     | 1.800 | 0.063                | 0.071 |
| E1     | 2.550                     | 2.750 | 0.100                | 0.108 |
| L      | 0.475REF.                 |       | 0.019REF.            |       |
| L1     | 0.250                     | 0.400 | 0.010                | 0.016 |
| $\phi$ | 0°                        | 8°    | 0°                   | 8°    |

**SOD-323 Embossed Carrier Tape**

A-A

| DIMENSIONS ARE IN MILLIMETER |            |            |            |             |           |           |           |           |           |             |
|------------------------------|------------|------------|------------|-------------|-----------|-----------|-----------|-----------|-----------|-------------|
| TYPE                         | A          | B          | C          | d           | E         | F         | P0        | P         | P1        | W           |
| SOD-323                      | 1.48       | 3.30       | 1.25       | $\phi 1.55$ | 1.75      | 3.50      | 4.00      | 4.00      | 2.00      | 8.00        |
| TOLERANCE                    | $\pm 0.05$ | $\pm 0.05$ | $\pm 0.05$ | $\pm 0.1$   | $\pm 0.1$ | $\pm 0.1$ | $\pm 0.1$ | $\pm 0.1$ | $\pm 0.1$ | $+0.3/-0.1$ |

**SOD-323 Tape Leader and Traller****SOD-323 Reel**

| DIMENSIONS ARE IN MILLIMETER |               |         |         |         |         |         |         |         |
|------------------------------|---------------|---------|---------|---------|---------|---------|---------|---------|
| REEL OPTION                  | D             | D1      | D2      | G       | H       | I       | W1      | W2      |
| 7" DIA                       | $\phi 178.00$ | 54.40   | 13.00   | R78.00  | R25.60  | R6.50   | 9.50    | 12.30   |
| TOLERANCE                    | $\pm 2$       | $\pm 1$ | $\pm 1$ | $\pm 1$ | $\pm 1$ | $\pm 1$ | $\pm 1$ | $\pm 1$ |