

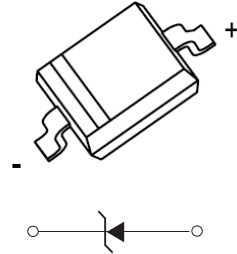


## BZT52CxxS Series Plastic-Encapsulate Zener Diode

### FEATURES

- Planar die construction
- 200mW power dissipation on ceramic PBC
- General purpose, medium current
- Ideally suited for automated assembly processes
- Available in lead free version

SOD-323



### 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 from Junction to Ambient      | R <sub>θJA</sub> | 625      | °C/W |
| Junction Temperature                             | T <sub>j</sub>   | 150      | °C   |
| Storage Temperature Range                        | T <sub>stg</sub> | -55~+150 | °C   |



## BZT52CxxS Series

### Plastic-Encapsulate Zener Diode

$T_a=25^{\circ}\text{C}$  unless otherwise specified

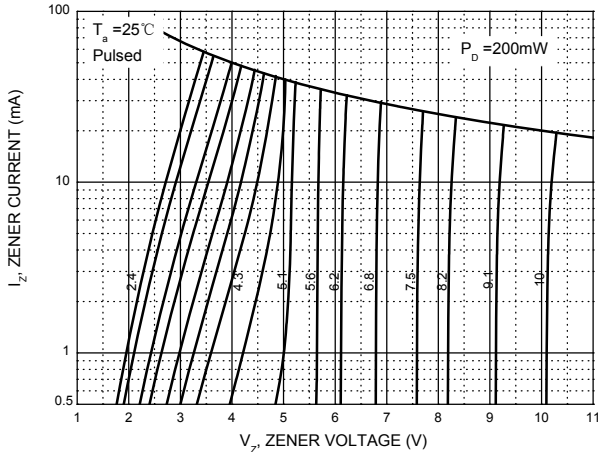
| TYPE       | Marking | Zener Voltage Range (Note 2)    |        |        |                 | Maximum Zener Impedance (Note 3) |                                  |                 | Maximum Reverse Current (Note 2) |                | Typical Temperature Coefficient @I <sub>ZTC</sub> mV/°C |      | Test Current 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  | mA                            |
|            |         | Nom(V)                          | Min(V) | Max(V) | (mA)            | Ω                                |                                  | (mA)            | μA                               | V              |                                                         |      |                               |
| BZT52C2V4S | WX      | 2.4                             | 2.20   | 2.60   | 5               | 100                              | 600                              | 1.0             | 50                               | 1.0            | -3.5                                                    | 0    | 5                             |
| BZT52C2V7S | W1      | 2.7                             | 2.5    | 2.9    | 5               | 100                              | 600                              | 1.0             | 20                               | 1.0            | -3.5                                                    | 0    | 5                             |
| BZT52C3V0S | W2      | 3.0                             | 2.8    | 3.2    | 5               | 95                               | 600                              | 1.0             | 10                               | 1.0            | -3.5                                                    | 0    | 5                             |
| BZT52C3V3S | W3      | 3.3                             | 3.1    | 3.5    | 5               | 95                               | 600                              | 1.0             | 5                                | 1.0            | -3.5                                                    | 0    | 5                             |
| BZT52C3V6S | W4      | 3.6                             | 3.4    | 3.8    | 5               | 90                               | 600                              | 1.0             | 5                                | 1.0            | -3.5                                                    | 0    | 5                             |
| BZT52C3V9S | W5      | 3.9                             | 3.7    | 4.1    | 5               | 90                               | 600                              | 1.0             | 3                                | 1.0            | -3.5                                                    | 0    | 5                             |
| BZT52C4V3S | W6      | 4.3                             | 4.0    | 4.6    | 5               | 90                               | 600                              | 1.0             | 3                                | 1.0            | -3.5                                                    | 0    | 5                             |
| BZT52C4V7S | W7      | 4.7                             | 4.4    | 5.0    | 5               | 80                               | 500                              | 1.0             | 3                                | 2.0            | -3.5                                                    | 0.2  | 5                             |
| BZT52C5V1S | W8      | 5.1                             | 4.8    | 5.4    | 5               | 60                               | 480                              | 1.0             | 2                                | 2.0            | -2.7                                                    | 1.2  | 5                             |
| BZT52C5V6S | W9      | 5.6                             | 5.2    | 6.0    | 5               | 40                               | 400                              | 1.0             | 1                                | 2.0            | -2                                                      | 2.5  | 5                             |
| BZT52C6V2S | WA      | 6.2                             | 5.8    | 6.6    | 5               | 10                               | 150                              | 1.0             | 3                                | 4.0            | 0.4                                                     | 3.7  | 5                             |
| BZT52C6V8S | WB      | 6.8                             | 6.4    | 7.2    | 5               | 15                               | 80                               | 1.0             | 2                                | 4.0            | 1.2                                                     | 4.5  | 5                             |
| BZT52C7V5S | WC      | 7.5                             | 7.0    | 7.9    | 5               | 15                               | 80                               | 1.0             | 1                                | 5.0            | 2.5                                                     | 5.3  | 5                             |
| BZT52C8V2S | WD      | 8.2                             | 7.7    | 8.7    | 5               | 15                               | 80                               | 1.0             | 0.7                              | 5.0            | 3.2                                                     | 6.2  | 5                             |
| BZT52C9V1S | WE      | 9.1                             | 8.5    | 9.6    | 5               | 15                               | 100                              | 1.0             | 0.5                              | 6.0            | 3.8                                                     | 7.0  | 5                             |
| BZT52C10S  | WF      | 10                              | 9.4    | 10.6   | 5               | 20                               | 150                              | 1.0             | 0.2                              | 7.0            | 4.5                                                     | 8.0  | 5                             |
| BZT52C11S  | WG      | 11                              | 10.4   | 11.6   | 5               | 20                               | 150                              | 1.0             | 0.1                              | 8.0            | 5.4                                                     | 9.0  | 5                             |
| BZT52C12S  | WH      | 12                              | 11.4   | 12.7   | 5               | 25                               | 150                              | 1.0             | 0.1                              | 8.0            | 6.0                                                     | 10.0 | 5                             |
| BZT52C13S  | WI      | 13                              | 12.4   | 14.1   | 5               | 30                               | 170                              | 1.0             | 0.1                              | 8.0            | 7.0                                                     | 11.0 | 5                             |
| BZT52C15S  | WJ      | 15                              | 13.8   | 15.6   | 5               | 30                               | 200                              | 1.0             | 0.1                              | 10.5           | 9.2                                                     | 13   | 5                             |
| BZT52C16S  | WK      | 16                              | 15.3   | 17.1   | 5               | 40                               | 200                              | 1.0             | 0.1                              | 11.2           | 10.4                                                    | 14   | 5                             |
| BZT52C18S  | WL      | 18                              | 16.8   | 19.1   | 5               | 45                               | 225                              | 1.0             | 0.1                              | 12.6           | 12.4                                                    | 16   | 5                             |
| BZT52C20S  | WM      | 20                              | 18.8   | 21.2   | 5               | 55                               | 225                              | 1.0             | 0.1                              | 14.0           | 14.4                                                    | 18.0 | 5                             |
| BZT52C22S  | WN      | 22                              | 20.8   | 23.3   | 5               | 55                               | 250                              | 1.0             | 0.1                              | 15.4           | 16.4                                                    | 20.0 | 5                             |
| BZT52C24S  | WO      | 24                              | 22.8   | 25.6   | 5               | 70                               | 250                              | 1.0             | 0.1                              | 16.8           | 18.4                                                    | 22.0 | 5                             |
| BZT52C27S  | WP      | 27                              | 25.1   | 28.9   | 2               | 80                               | 300                              | 0.5             | 0.1                              | 18.9           | 21.4                                                    | 25.3 | 2                             |
| BZT52C30S  | WQ      | 30                              | 28.0   | 32.0   | 2               | 80                               | 300                              | 0.5             | 0.1                              | 21.0           | 24.4                                                    | 29.4 | 2                             |
| BZT52C33S  | WR      | 33                              | 31.0   | 35.0   | 2               | 80                               | 325                              | 0.5             | 0.1                              | 23.1           | 27.4                                                    | 33.4 | 2                             |
| BZT52C36S  | WS      | 36                              | 34.0   | 38.0   | 2               | 90                               | 350                              | 0.5             | 0.1                              | 25.2           | 30.4                                                    | 37.4 | 2                             |
| BZT52C39S  | WT      | 39                              | 37.0   | 41.0   | 2               | 130                              | 350                              | 0.5             | 0.1                              | 27.3           | 33.4                                                    | 41.2 | 2                             |
| BZT52C43S  | WU      | 43                              | 40.0   | 46.0   | 2               | 100                              | 700                              | 1               | 0.1                              | 32             | 10                                                      | 12   | 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.

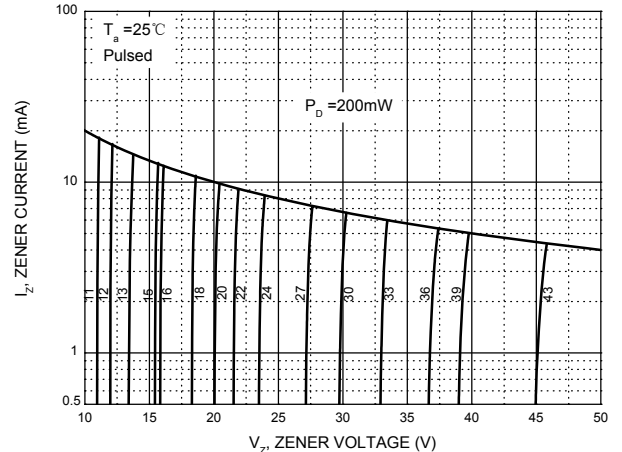


# Typical Characteristics

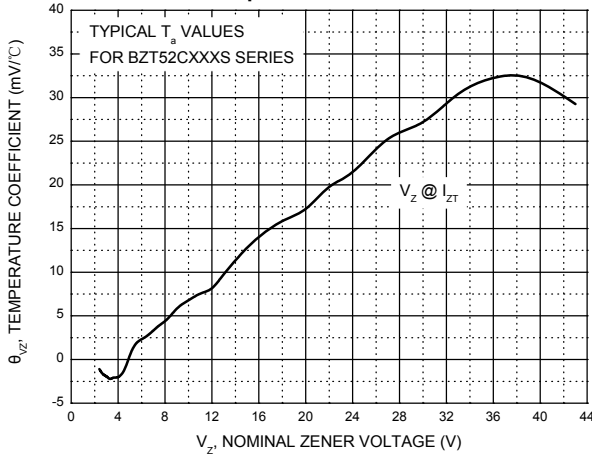
Zener Characteristics ( $V_z$  Up to 10 V)



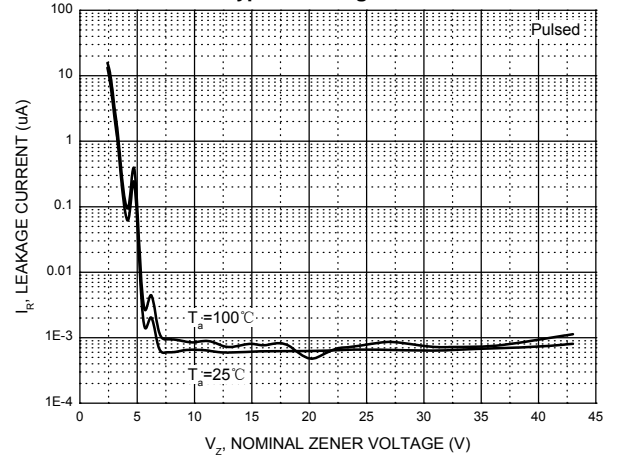
Zener Characteristics (11 V to 43 V)



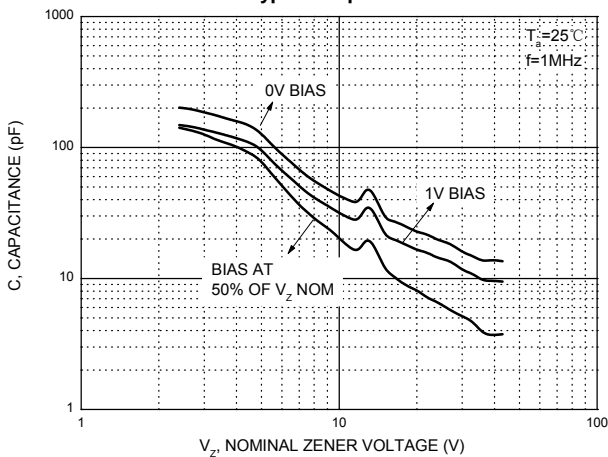
Temperature Coefficients



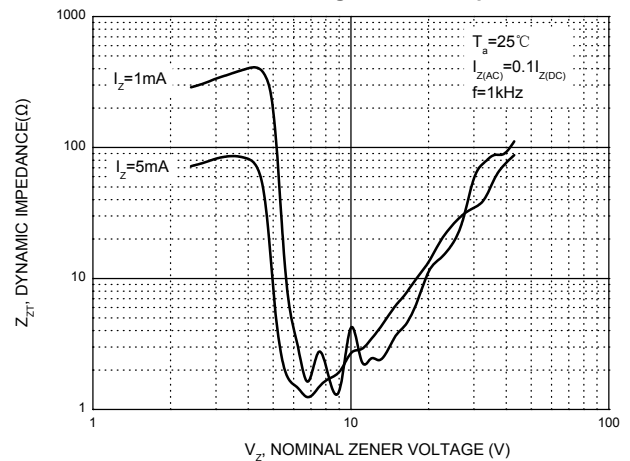
Typical Leakage Current



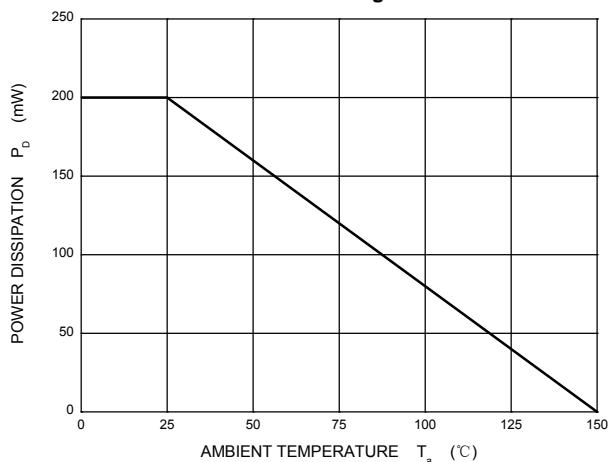
Typical Capacitance



Effect of Zener Voltage on Zener Impedance



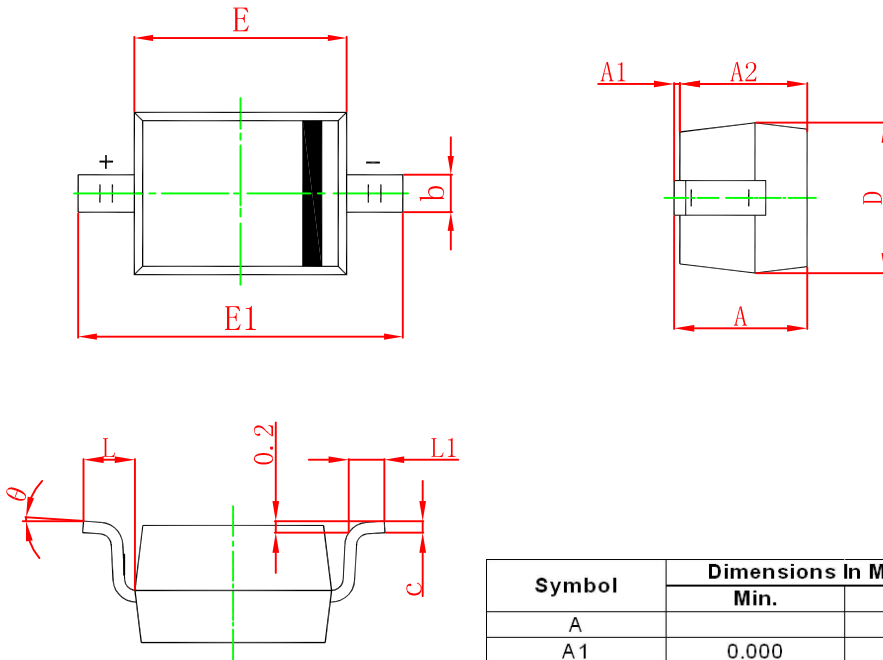
Power Derating Curve





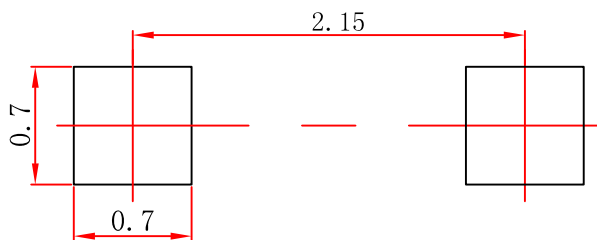
## BZT52CxxS Series Plastic-Encapsulate Zener Diode

### 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 | 0.031                | 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      | 0.475 REF.                |       | 0.019 REF.           |       |
| L1     | 0.250                     | 0.400 | 0.010                | 0.016 |
| θ      | 0°                        | 8°    | 0°                   | 8°    |

### SOD-323 Suggested Pad Layout



**Note:**

1. Controlling dimension: in millimeters.
2. General tolerance:  $\pm 0.05\text{mm}$ .
3. The pad layout is for reference purposes only.

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