

## BZT52B2V4S-BZT52B39S ZENER DIODES



### Features

- Planar Die Construction
- General Purpose, Medium Current
- Ideally Suited for Automated Assembly Processes
- Available in Lead Free Version
- This is a Halogen Free Device
- All SMC parts are traceable to the wafer lot
- Additional testing can be offered upon request

### Schematic & Pin Configuration



### Mechanical Characteristics

- Case: SOD-323, Molded plastic
- Terminals: Plated Leads Solderable per MIL-STD-202, Method 208
- Polarity: Cathode Band
- Weight: 0.04 grams(approx)

### Maximum Ratings @ $T_A=25^{\circ}\text{C}$ unless otherwise specified

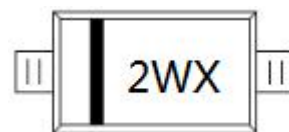
| Characteristic                                 | Symbol          | Value       | Units                |
|--|-----------------|-------------|----------------------|
| Forward Voltage (Note 2) @ $I_F = 10\text{mA}$ | $V_F$           | 0.9         | V                    |
| Power Dissipation (Note 1)                     | $P_D$           | 200         | mW                   |
| Thermal Resistance from Junction to Ambient    | $R_{\theta JA}$ | 625         | $^{\circ}\text{C/W}$ |
| Junction Temperature                           | $T_J$           | 150         | $^{\circ}\text{C}$   |
| Storage Temperature Range                      | $T_{STG}$       | -55 to +150 | $^{\circ}\text{C}$   |

### Ordering Information

| Device                       | Package | Shipping       |
|------------------------------|---------|----------------|
| BZT52B2V4S-<br>BZT52B39S     | SOD-323 | 3000pcs / reel |
| BZT52B2V4STR-<br>BZT52B39STR | SOD-323 | 3000pcs / reel |

For information on tape and reel specifications, including part orientation and tape sizes, please refer to our tape and reel packaging specification.

### Marking Diagram



2WX = Marking Code

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

| Type Number | Type Code | Zener Voltage Range (Note 2)    |        |        |                 | Maximum Zener Impedance (Note 3) |                                  |                 | Maximum Reverse Current |                | Typical Temperature Coefficient @I <sub>ZTC</sub> |      | Test Current I <sub>ZTC</sub> |
|-------------|-----------|---------------------------------|--------|--------|-----------------|----------------------------------|----------------------------------|-----------------|-------------------------|----------------|---|------|-------------------------------|
|             |           | V <sub>Z</sub> @I <sub>ZR</sub> |        |        | I <sub>ZR</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> | mV/°C   |      |                               |
|             |           | Nom(V)                          | Min(V) | Max(V) | mA              | Ω                                |                                  | mA              | μA                      | V              | Min   | Max  |                               |
| BZT52B2V4S  | 2WX       | 2.4                             | 2.35   | 2.45   | 5               | 100                              | 600                              | 1.0             | 50                      | 1.0            | -3.5  | 0    | 5                             |
| BZT52B2V7S  | 2W1       | 2.7                             | 2.65   | 2.75   | 5               | 100                              | 600                              | 1.0             | 20                      | 1.0            | -3.5  | 0    | 5                             |
| BZT52B3V0S  | 2W2       | 3.0                             | 2.94   | 3.06   | 5               | 95                               | 600                              | 1.0             | 10                      | 1.0            | -3.5  | 0    | 5                             |
| BZT52B3V3S  | 2W3       | 3.3                             | 3.23   | 3.37   | 5               | 95                               | 600                              | 1.0             | 5                       | 1.0            | -3.5  | 0    | 5                             |
| BZT52B3V6S  | 2W4       | 3.6                             | 3.53   | 3.67   | 5               | 90                               | 600                              | 1.0             | 5                       | 1.0            | -3.5  | 0    | 5                             |
| BZT52B3V9S  | 2W5       | 3.9                             | 3.82   | 3.98   | 5               | 90                               | 600                              | 1.0             | 3                       | 1.0            | -3.5  | 0    | 5                             |
| BZT52B4V3S  | 2W6       | 4.3                             | 4.21   | 4.39   | 5               | 90                               | 600                              | 1.0             | 3                       | 1.0            | -3.5  | 0    | 5                             |
| BZT52B4V7S  | 2W7       | 4.7                             | 4.61   | 4.79   | 5               | 80                               | 500                              | 1.0             | 3                       | 2.0            | -3.5  | 0.2  | 5                             |
| BZT52B5V1S  | 2W8       | 5.1                             | 5.00   | 5.20   | 5               | 60                               | 480                              | 1.0             | 2                       | 2.0            | -2.7  | 1.2  | 5                             |
| BZT52B5V6S  | 2W9       | 5.6                             | 5.49   | 5.71   | 5               | 40                               | 400                              | 1.0             | 1                       | 2.0            | -2.0  | 2.5  | 5                             |
| BZT52B6V2S  | 2WA       | 6.2                             | 6.08   | 6.32   | 5               | 10                               | 150                              | 1.0             | 3                       | 4.0            | 0.4   | 3.7  | 5                             |
| BZT52B6V8S  | 2WB       | 6.8                             | 6.66   | 6.94   | 5               | 15                               | 80                               | 1.0             | 2                       | 4.0            | 1.2   | 4.5  | 5                             |
| BZT52B7V5S  | 2WC       | 7.5                             | 7.35   | 7.65   | 5               | 15                               | 80                               | 1.0             | 1                       | 5.0            | 2.5   | 5.3  | 5                             |
| BZT52B8V2S  | 2WD       | 8.2                             | 8.04   | 8.36   | 5               | 15                               | 80                               | 1.0             | 0.7                     | 5.0            | 3.2   | 6.2  | 5                             |
| BZT52B9V1S  | 2WE       | 9.1                             | 8.92   | 9.28   | 5               | 15                               | 100                              | 1.0             | 0.5                     | 6.0            | 3.8   | 7.0  | 5                             |
| BZT52B10S   | 2WF       | 10                              | 9.80   | 10.20  | 5               | 20                               | 150                              | 1.0             | 0.2                     | 7.0            | 4.5   | 8.0  | 5                             |
| BZT52B11S   | 2WG       | 11                              | 10.78  | 11.22  | 5               | 20                               | 150                              | 1.0             | 0.1                     | 8.0            | 5.4   | 9.0  | 5                             |
| BZT52B12S   | 2WH       | 12                              | 11.76  | 12.24  | 5               | 25                               | 150                              | 1.0             | 0.1                     | 8.0            | 6.0   | 10.0 | 5                             |
| BZT52B13S   | 2WI       | 13                              | 12.74  | 13.26  | 5               | 30                               | 170                              | 1.0             | 0.1                     | 8.0            | 7.0   | 11.0 | 5                             |
| BZT52B15S   | 2WJ       | 15                              | 14.70  | 15.30  | 5               | 30                               | 200                              | 1.0             | 0.1                     | 10.5           | 9.2   | 13.0 | 5                             |
| BZT52B16S   | 2WK       | 16                              | 15.68  | 16.32  | 5               | 40                               | 200                              | 1.0             | 0.1                     | 11.2           | 10.4  | 14.0 | 5                             |
| BZT52B18S   | 2WL       | 18                              | 17.64  | 18.36  | 5               | 45                               | 225                              | 1.0             | 0.1                     | 12.6           | 12.4  | 16.0 | 5                             |
| BZT52B20S   | 2WM       | 20                              | 19.60  | 20.40  | 5               | 55                               | 225                              | 1.0             | 0.1                     | 14.0           | 14.4  | 18.0 | 5                             |
| BZT52B22S   | 2WN       | 22                              | 21.56  | 22.44  | 5               | 55                               | 250                              | 1.0             | 0.1                     | 15.4           | 16.4  | 20.0 | 5                             |
| BZT52B24S   | 2WO       | 24                              | 23.52  | 24.48  | 5               | 70                               | 250                              | 1.0             | 0.1                     | 16.8           | 18.4  | 22.0 | 5                             |
| BZT52B27S   | 2WP       | 27                              | 26.46  | 27.54  | 2               | 80                               | 300                              | 0.5             | 0.1                     | 18.9           | 21.4  | 25.3 | 2                             |
| BZT52B30S   | 2WQ       | 30                              | 29.40  | 30.60  | 2               | 80                               | 300                              | 0.5             | 0.1                     | 21.0           | 24.4  | 29.4 | 2                             |
| BZT52B33S   | 2WR       | 33                              | 32.34  | 33.66  | 2               | 80                               | 325                              | 0.5             | 0.1                     | 23.1           | 27.4  | 33.4 | 2                             |
| BZT52B36S   | 2WS       | 36                              | 35.28  | 36.72  | 2               | 90                               | 350                              | 0.5             | 0.1                     | 25.2           | 30.4  | 37.4 | 2                             |
| BZT52B39S   | 2WT       | 39                              | 38.22  | 39.78  | 2               | 130                              | 350                              | 0.5             | 0.1                     | 27.3           | 33.4  | 41.2 | 2                             |

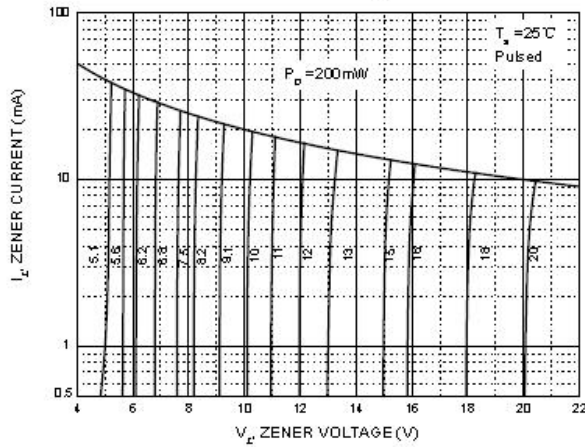
Notes: 1. Device mounted on ceramic PCB: 7.6mm x 9.4mm x 0.87mm with pad areas 25mm<sup>2</sup>.

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

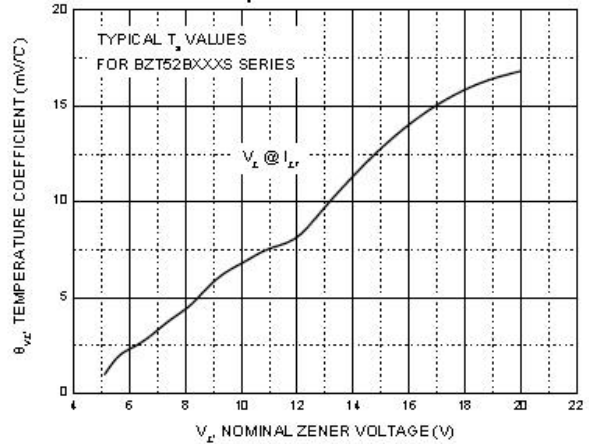
3. f = 1kHz.

**Ratings and Characteristics Curves**

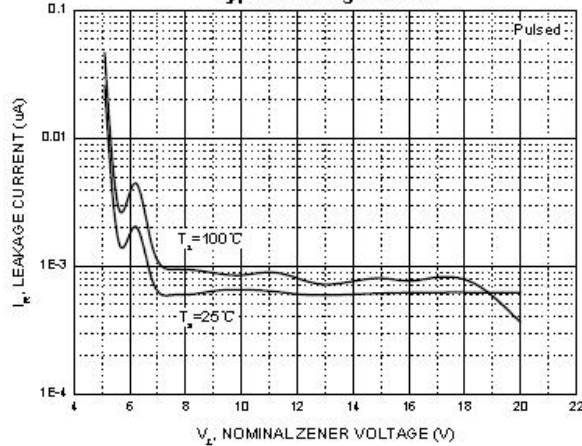
**Zener Characteristics ( $V_z$  5.1V to 20 V)**



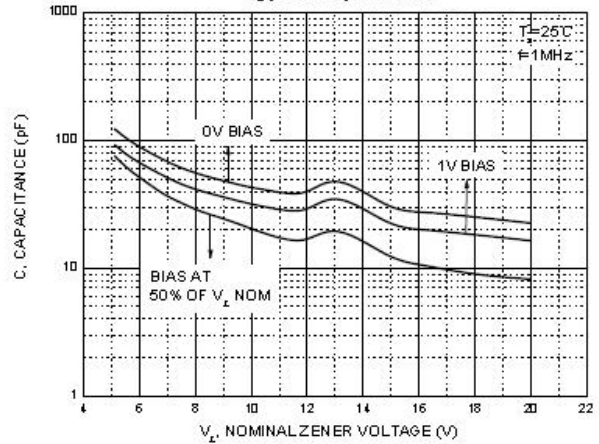
**Temperature Coefficients**



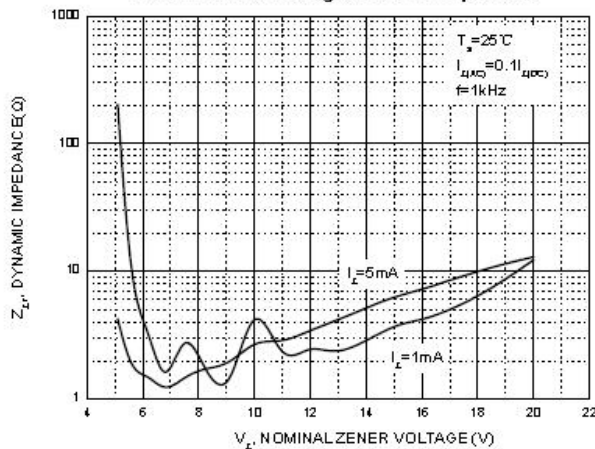
**Typical Leakage Current**



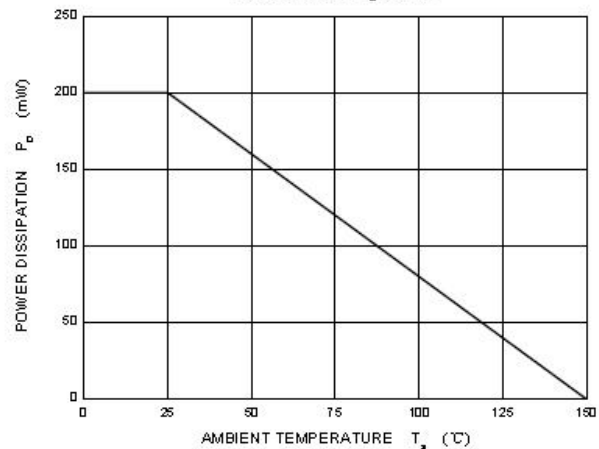
**Typical Capacitance**



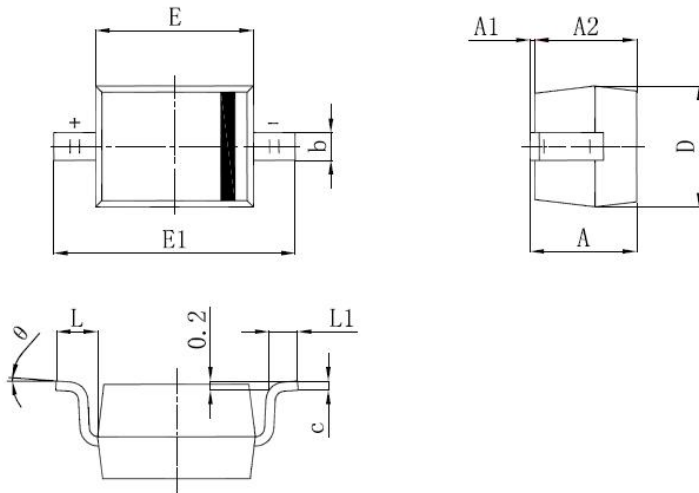
**Effect of Zener Voltage on Zener Impedance**



**Power Derating Curve**

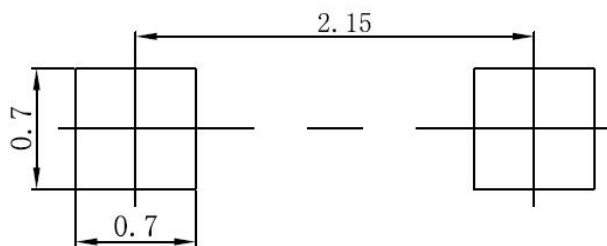


**Mechanical Dimensions SOD-323**



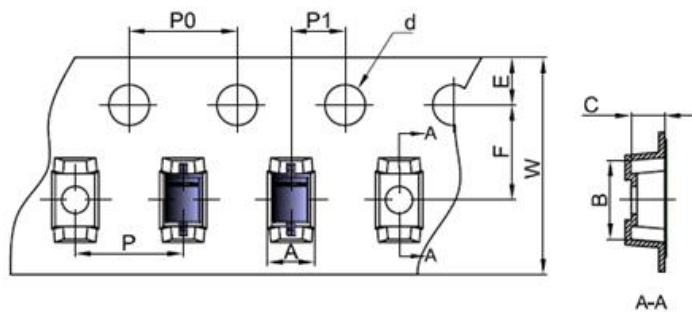
| SYMBOL   | Millimeters |       | Inches     |       |
|----------|-------------|-------|------------|-------|
|          | MIN.        | MAX.  | MIN.       | MAX.  |
| A        | -           | 1.000 | -          | 0.039 |
| A1       | 0.000       | 0.100 | 0.000      | 0.004 |
| A2       | 0.800       | 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       | 2.500       | 2.700 | 0.098      | 0.106 |
| L        | 0.475 REF.  |       | 0.019 REF. |       |
| L1       | 0.250       | 0.400 | 0.010      | 0.016 |
| $\theta$ | 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.

**Carrier Tape Specification SOD-323**



| SYMBOL | Millimeters |      |
|--------|-------------|------|
|        | Min.        | Max. |
| B      | 2.85        | 2.95 |
| C      | 1.20        | 1.30 |
| d      | 1.40        | 1.60 |
| E      | 1.65        | 1.85 |
| F      | 3.40        | 3.60 |
| P      | 3.90        | 4.10 |
| P0     | 3.90        | 4.10 |
| P1     | 1.90        | 2.10 |
| W      | 7.90        | 8.30 |

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