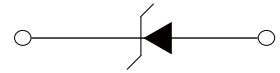


## FEATURES

- | Planar Die Construction
- | General Purpose, Medium Current
- | Ideally Suited for Automated Assembly Processes
- | Available in Lead Free Version
- | Meet AEC-Q101 Requirements



SOD-323



Schematic Symbol

## APPROVALS

|      |                                    |
|------|------------------------------------|
| RoHS | Compliance with 2011/65/EU         |
| HF   | Compliance with IEC61249-2-21:2003 |

## MAXIMUM RATINGS ( $T_A=25^{\circ}\text{C}$ )

| Parameter                                        | Symbol          | Value       | Unit                        |
|--------------------------------------------------|-----------------|-------------|-----------------------------|
| 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         | $^{\circ}\text{C}/\text{W}$ |
| Operation Junction and Storage Temperature Range | $T_J, T_{STG}$  | -55 to +150 | $^{\circ}\text{C}$          |

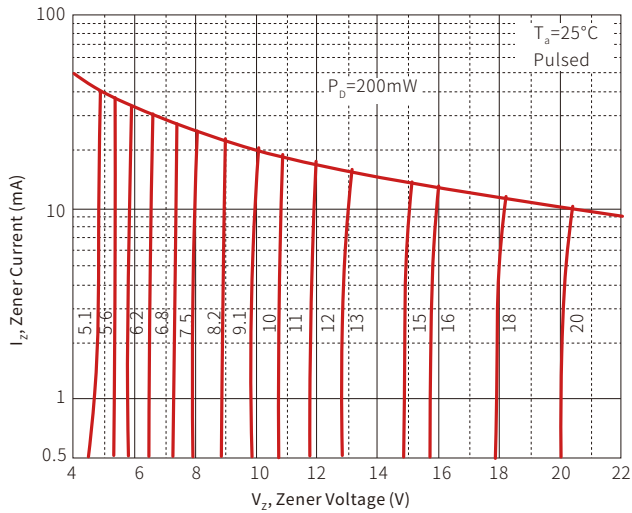
Notes: 1. Device mounted on ceramic PCB: 7.6mm x 9.4mm x 0.87mm with pad areas 25mm<sup>2</sup>.  
 2. Short duration test pulse used to minimize self-heating effect.

# ELECTRICAL CHARACTERISTICS

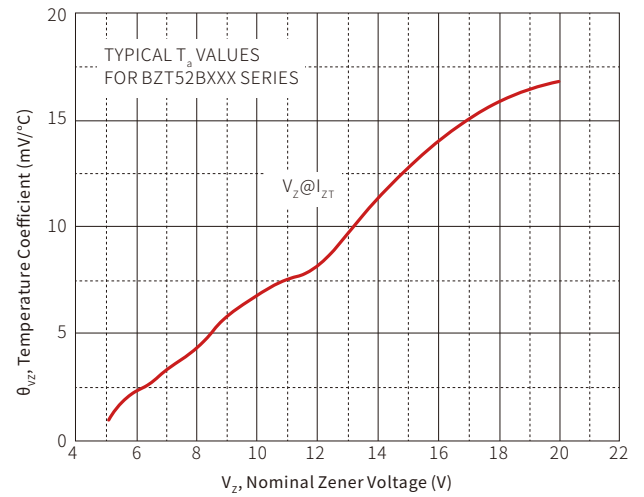
| Part Number | Device Marking Code | Zener Voltage Range             |         |         |                 | Maximum Zener Impedance          |                                  |                 | Maximum Reverse Current |                | Temperature Coefficient of Zener voltage @Izt=5mA mV/°C |      | Test Current IZTC |
|-------------|---------------------|---------------------------------|---------|---------|-----------------|----------------------------------|----------------------------------|-----------------|-------------------------|----------------|---------------------------------------------------------|------|-------------------|
|             |                     | 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                                | Ω                                | mA              | uA                      | V              |                                                         |      |                   |
| BZT52B2V4SQ | 2WX                 | 2.4                             | 2.35    | 2.45    | 5               | 100                              | 600                              | 1.0             | 50                      | 1.0            | -3.5                                                    | 0    | 5                 |
| BZT52B2V7SQ | 2W1                 | 2.7                             | 2.65    | 2.75    | 5               | 100                              | 600                              | 1.0             | 20                      | 1.0            | -3.5                                                    | 0    | 5                 |
| BZT52B3V0SQ | 2W2                 | 3.0                             | 2.94    | 3.06    | 5               | 95                               | 600                              | 1.0             | 10                      | 1.0            | -3.5                                                    | 0    | 5                 |
| BZT52B3V3SQ | 2W3                 | 3.3                             | 3.23    | 3.37    | 5               | 95                               | 600                              | 1.0             | 5                       | 1.0            | -3.5                                                    | 0    | 5                 |
| BZT52B3V6SQ | 2W4                 | 3.6                             | 3.53    | 3.67    | 5               | 90                               | 600                              | 1.0             | 5                       | 1.0            | -3.5                                                    | 0    | 5                 |
| BZT52B3V9SQ | 2W5                 | 3.9                             | 3.82    | 3.98    | 5               | 90                               | 600                              | 1.0             | 3                       | 1.0            | -3.5                                                    | 0    | 5                 |
| BZT52B4V3SQ | 2W6                 | 4.3                             | 4.21    | 4.39    | 5               | 90                               | 600                              | 1.0             | 3                       | 1.0            | -3.5                                                    | 0    | 5                 |
| BZT52B4V7SQ | 2W7                 | 4.7                             | 4.61    | 4.79    | 5               | 80                               | 500                              | 1.0             | 3                       | 2.0            | -3.5                                                    | 0.2  | 5                 |
| BZT52B5V1SQ | 2W8                 | 5.1                             | 5.00    | 5.20    | 5               | 60                               | 480                              | 1.0             | 2                       | 2.0            | -2.7                                                    | 1.2  | 5                 |
| BZT52B5V6SQ | 2W9                 | 5.6                             | 5.49    | 5.71    | 5               | 40                               | 400                              | 1.0             | 1                       | 2.0            | -2.0                                                    | 2.5  | 5                 |
| BZT52B6V2SQ | 2WA                 | 6.2                             | 6.08    | 6.32    | 5               | 10                               | 150                              | 1.0             | 3                       | 4.0            | 0.4                                                     | 3.7  | 5                 |
| BZT52B6V8SQ | 2WB                 | 6.8                             | 6.66    | 6.94    | 5               | 15                               | 80                               | 1.0             | 2                       | 4.0            | 1.2                                                     | 4.5  | 5                 |
| BZT52B7V5SQ | 2WC                 | 7.5                             | 7.35    | 7.65    | 5               | 15                               | 80                               | 1.0             | 1                       | 5.0            | 2.5                                                     | 5.3  | 5                 |
| BZT52B8V2SQ | 2WD                 | 8.2                             | 8.04    | 8.36    | 5               | 15                               | 80                               | 1.0             | 0.7                     | 5.0            | 3.2                                                     | 6.2  | 5                 |
| BZT52B9V1SQ | 2WE                 | 9.1                             | 8.92    | 9.28    | 5               | 15                               | 100                              | 1.0             | 0.5                     | 6.0            | 3.8                                                     | 7.0  | 5                 |
| BZT52B10SQ  | 2WF                 | 10                              | 9.80    | 10.20   | 5               | 20                               | 150                              | 1.0             | 0.2                     | 7.0            | 4.5                                                     | 8.0  | 5                 |
| BZT52B11SQ  | 2WG                 | 11                              | 10.78   | 11.22   | 5               | 20                               | 150                              | 1.0             | 0.1                     | 8.0            | 5.4                                                     | 9.0  | 5                 |
| BZT52B12SQ  | 2WH                 | 12                              | 11.76   | 12.24   | 5               | 25                               | 150                              | 1.0             | 0.1                     | 8.0            | 6.0                                                     | 10.0 | 5                 |
| BZT52B13SQ  | 2WI                 | 13                              | 12.74   | 13.26   | 5               | 30                               | 170                              | 1.0             | 0.1                     | 8.0            | 7.0                                                     | 11.0 | 5                 |
| BZT52B15SQ  | 2WJ                 | 15                              | 14.70   | 15.30   | 5               | 30                               | 200                              | 1.0             | 0.1                     | 10.5           | 9.2                                                     | 13.0 | 5                 |
| BZT52B16SQ  | 2WK                 | 16                              | 15.68   | 16.32   | 5               | 40                               | 200                              | 1.0             | 0.1                     | 11.2           | 10.4                                                    | 14.0 | 5                 |
| BZT52B18SQ  | 2WL                 | 18                              | 17.64   | 18.36   | 5               | 45                               | 225                              | 1.0             | 0.1                     | 12.6           | 12.4                                                    | 16.0 | 5                 |
| BZT52B20SQ  | 2WM                 | 20                              | 19.60   | 20.40   | 5               | 55                               | 225                              | 1.0             | 0.1                     | 14.0           | 14.4                                                    | 18.0 | 5                 |
| BZT52B22SQ  | 2WN                 | 22                              | 21.56   | 22.44   | 5               | 55                               | 250                              | 1.0             | 0.1                     | 15.4           | 16.4                                                    | 20.0 | 5                 |
| BZT52B24SQ  | 2WO                 | 24                              | 23.52   | 24.48   | 5               | 70                               | 250                              | 1.0             | 0.1                     | 16.8           | 18.4                                                    | 22.0 | 5                 |
| BZT52B27SQ  | 2WP                 | 27                              | 26.46   | 27.54   | 2               | 80                               | 300                              | 0.5             | 0.1                     | 18.9           | 21.4                                                    | 25.3 | 2                 |
| BZT52B30SQ  | 2WQ                 | 30                              | 29.40   | 30.60   | 2               | 80                               | 300                              | 0.5             | 0.1                     | 21.0           | 24.4                                                    | 29.4 | 2                 |
| BZT52B33SQ  | 2WR                 | 33                              | 32.34   | 33.66   | 2               | 80                               | 325                              | 0.5             | 0.1                     | 23.1           | 27.4                                                    | 33.4 | 2                 |
| BZT52B36SQ  | 2WS                 | 36                              | 35.28   | 36.72   | 2               | 90                               | 350                              | 0.5             | 0.1                     | 25.2           | 30.4                                                    | 37.4 | 2                 |
| BZT52B39SQ  | 2WT                 | 39                              | 38.22   | 39.78   | 2               | 130                              | 350                              | 0.5             | 0.1                     | 27.3           | 33.4                                                    | 41.2 | 2                 |
| BZT52B43SQ  | 2WU                 | 43                              | 41.16   | 43.84   | 2               | 100                              | 700                              | 1.0             | 0.1                     | 32.0           | 10.0                                                    | 12.0 | 5                 |

# CHARACTERISTIC CURVES

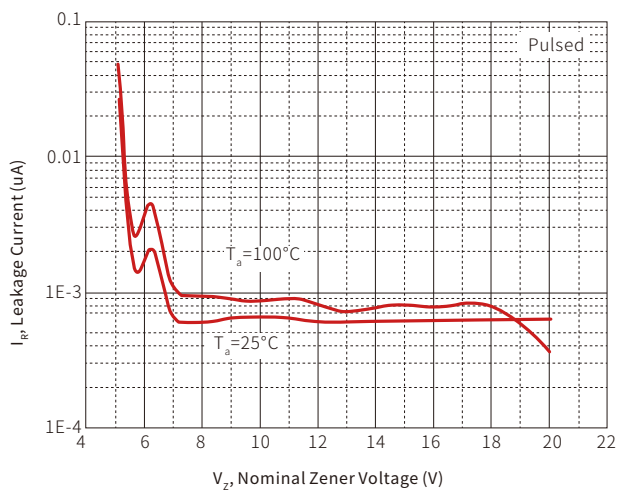
Zener Characteristics ( $V_z$  5.1V to 20 V)



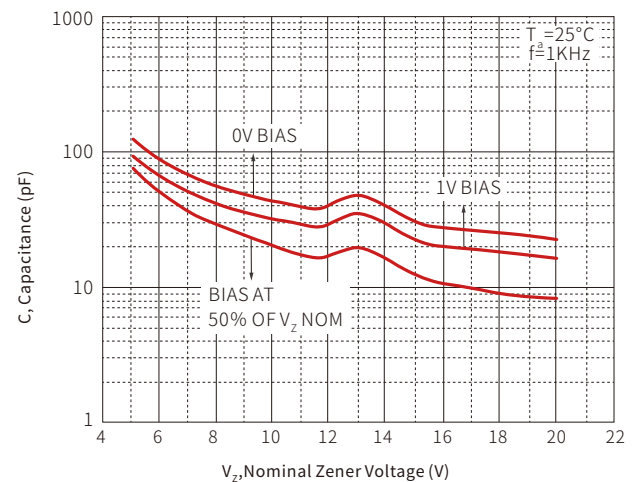
Temperature Coefficients

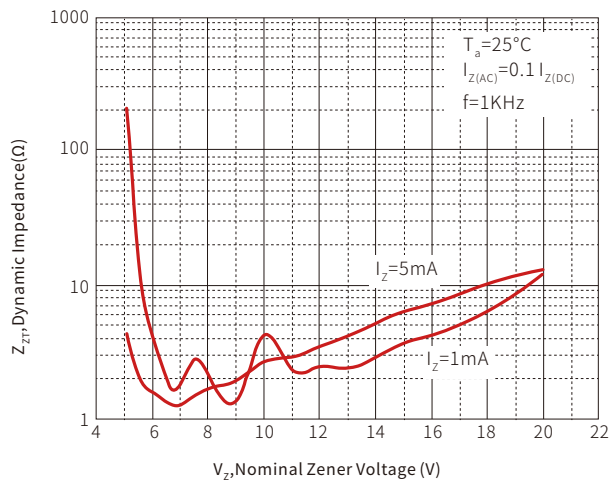
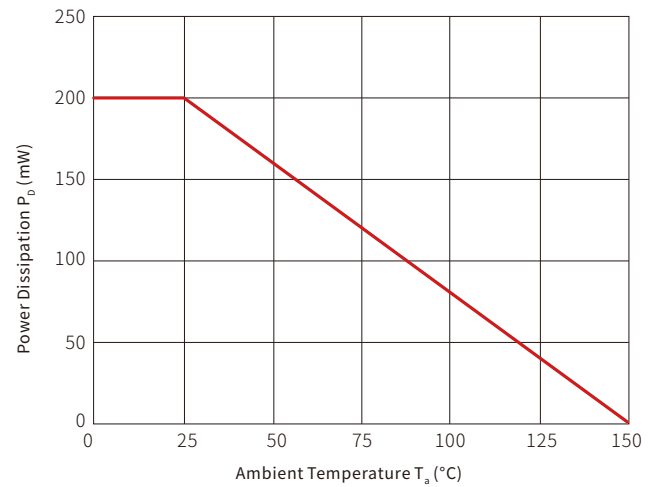


Typical Leakage Current



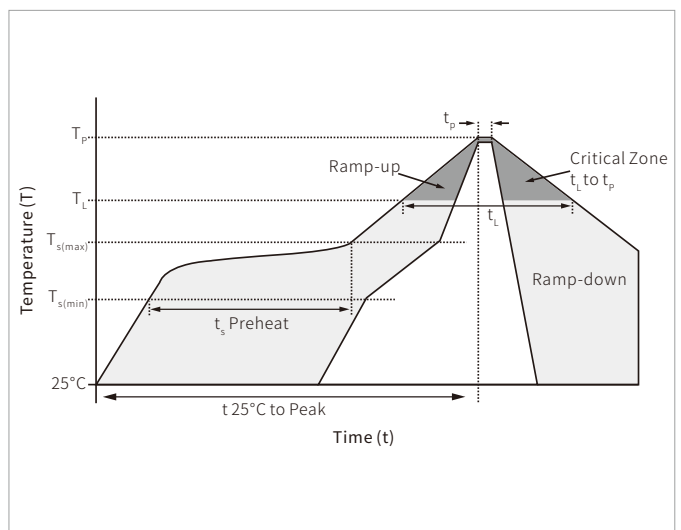
Typical Capacitance



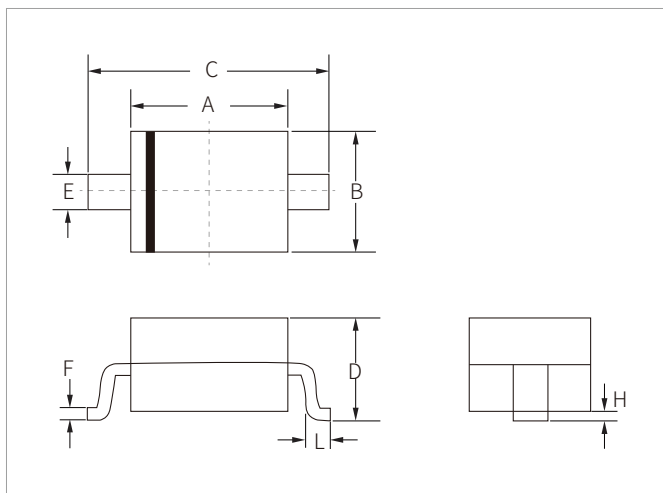
**Effect of Zener Voltage on Zener Impedance**

**Power Derating Curve**


## SOLDERING PARAMETERS

| Reflow Condition                                                    |                                   | Lead-free assembly                   |
|---------------------------------------------------------------------|-----------------------------------|--------------------------------------|
| Pre Heat                                                            | Temperature Max ( $T_{s(\min)}$ ) | 150 $^\circ\text{C}$                 |
|                                                                     | Temperature Max ( $T_{s(\max)}$ ) | 200 $^\circ\text{C}$                 |
|                                                                     | Time (min to max) ( $t_s$ )       | 60 – 180 secs                        |
| Average ramp up rate (Liquidus Temp ( $T_L$ ) to peak               |                                   | 3 $^\circ\text{C}/\text{second}$ max |
| $T_{s(\max)}$ to $T_L$ - Ramp-up Rate                               |                                   | 3 $^\circ\text{C}/\text{second}$ max |
| Reflow                                                              | Temperature ( $T_L$ ) (Liquidus)  | 217 $^\circ\text{C}$                 |
|                                                                     | Time (min to max) ( $t_L$ )       | 60 – 150 seconds                     |
| Peak Temperature ( $T_p$ )                                          |                                   | 260 $^\circ\text{C}$                 |
| Time within 5 $^\circ\text{C}$ of actual peak Temperature ( $t_p$ ) |                                   | 20 – 40 seconds                      |
| Ramp-down Rate                                                      |                                   | 6 $^\circ\text{C}/\text{second}$ max |
| Time 25 $^\circ\text{C}$ to peak Temperature ( $T_p$ )              |                                   | 8 minutes max.                       |
| Do not exceed                                                       |                                   | 260 $^\circ\text{C}$                 |

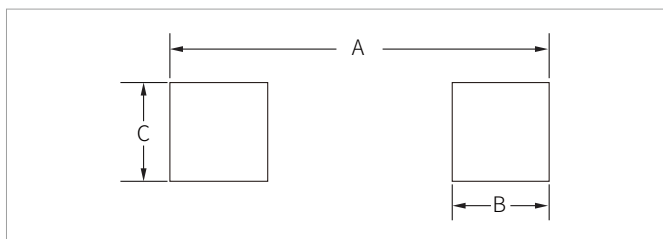


## SOD-323 PACKAGE INFORMATION



| Ref. | Millimeters |      | Inches |       |
|------|-------------|------|--------|-------|
|      | Min.        | Max. | Min.   | Max.  |
| A    | 1.60        | 1.90 | 0.063  | 0.075 |
| B    | 1.15        | 1.45 | 0.045  | 0.057 |
| C    | 2.35        | 2.75 | 0.093  | 0.108 |
| D    | 0.80        | 1.10 | 0.031  | 0.043 |
| E    | 0.25        | 0.40 | 0.010  | 0.016 |
| F    | 0.10        | 0.20 | 0.004  | 0.008 |
| H    | -           | 0.10 | -      | 0.004 |
| L    | 0.20        | 0.40 | 0.008  | 0.016 |

## RECOMMENDED PAD LAYOUT DIMENSIONS



| Ref. | Millimeters |      | Inches |       |
|------|-------------|------|--------|-------|
|      | Min.        | Max. | Min.   | Max.  |
| A    | 2.87        | 3.12 | 0.113  | 0.123 |
| B    | 0.66        | 0.91 | 0.026  | 0.036 |
| C    | 0.66        | 0.91 | 0.026  | 0.036 |

## ORDERING INFORMATION

| Part Number | Component Package | QTY/Reel | Reel Size |
|-------------|-------------------|----------|-----------|
| BZT52BxxxSQ | SOD-323           | 3000PCS  | 7"        |

**Headquarters**

No.3387 Shendu Road  
Pujiang I&E Park  
Minhang Shanghai China  
201000

**Hotline**

400-021-5756

**Web**

<https://www.semiware.com>

**Sales Center**

Tel: 86-21-3463-7458  
Email: [sales18@semiware.com](mailto:sales18@semiware.com)

**Customer Service**

Tel: 86-21-5484-1001  
Email: [sales17@semiware.com](mailto:sales17@semiware.com)

**Technical Support**

Tel: 86-21-3463-7654  
Email: [fae01@semiware.com](mailto:fae01@semiware.com)

**Complaint & Suggestions**

Tel: 86-21-3463-7172  
Ext: 8868  
Email: [cs03@semiware.com](mailto:cs03@semiware.com)

**By QR Code**

Website



Wechat

To find your local partner within Semiware's global website: [www.semiware.com](http://www.semiware.com)

© 2022 Semiware Semiconductor Inc.

The content of this document has been carefully checked and understood. However, neither Semiware nor its subsidiaries assume any liability whatsoever for any errors or inaccuracies of this document and the consequences thereof. Published specifications are subject to change without notice. Product suitability for any area of application must ultimately be determined by the customer. In all cases, products must never be operated outside their published specifications. Semiware does not guarantee the availability of all published products. This disclaimer shall be governed by substantive Chinese law and resulting disputes shall be settled by the courts at the place of business of Semiware. Latest publications and a complete disclaimer can be downloaded from the Semiware website. All trademarks recognized.