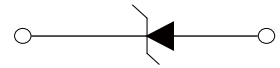


## FEATURES

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



SOD-323



Schematic Symbol

## APPROVALS

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

## MAXIMUM RATINGS (T<sub>A</sub>=25°C )

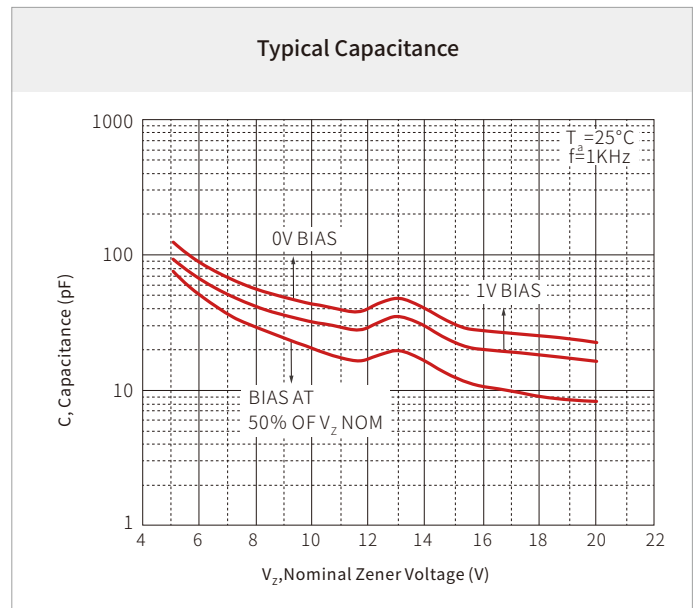
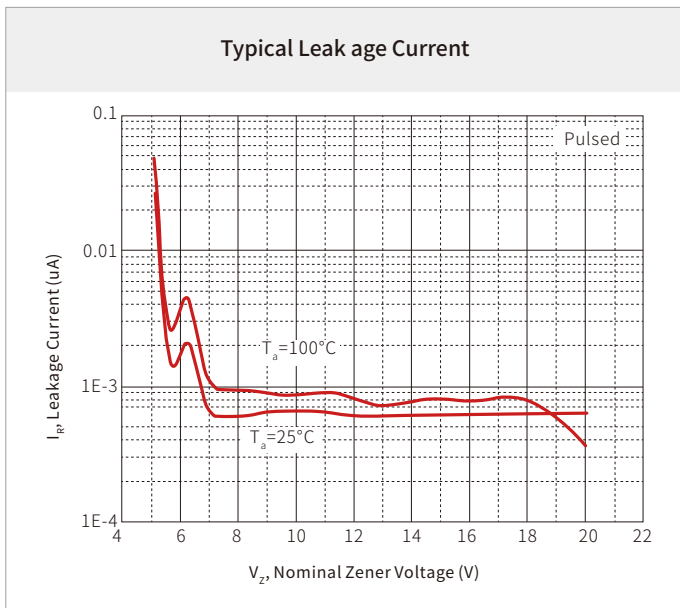
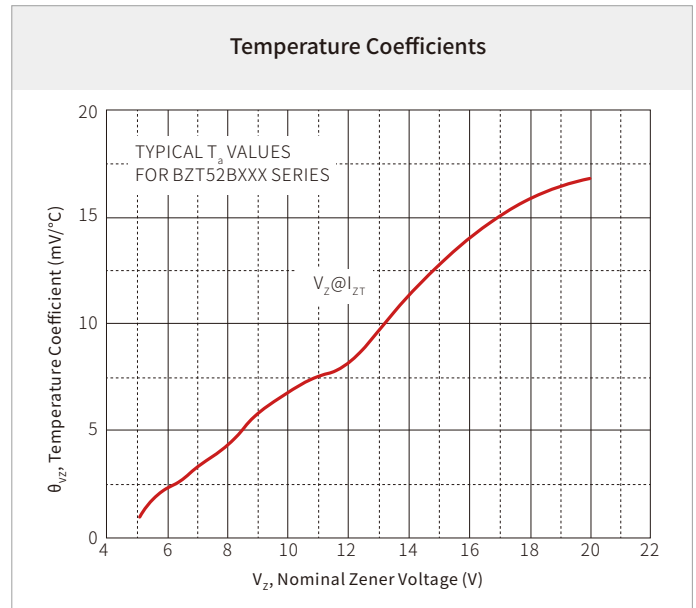
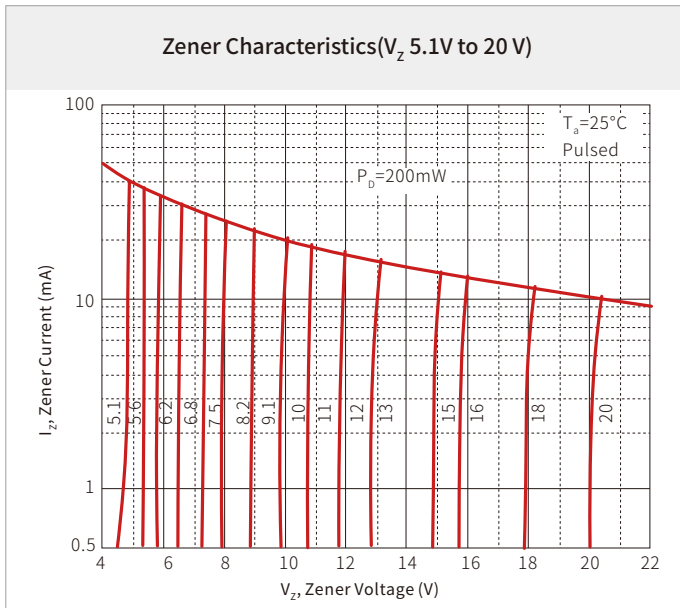
| Parameter  | Symbo                             | Value       | Unit |
|--|-----------------------------------|-------------|------|
| Forward Voltage (Note 2) @ I <sub>F</sub> = 10mA | V <sub>F</sub>                    | 0.9         | V    |
| Power Dissipation(Note 1)                        | P <sub>D</sub>                    | 200         | mW   |
| Thermal Resistance from Junction to Ambient      | R <sub>θJA</sub>                  | 625         | °C/W |
| Operation Junction and Storage Temperature Range | T <sub>J</sub> , T <sub>STG</sub> | -55 to +150 | °C   |

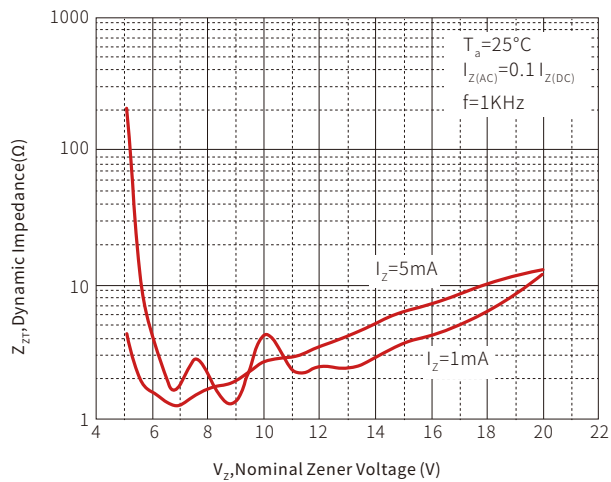
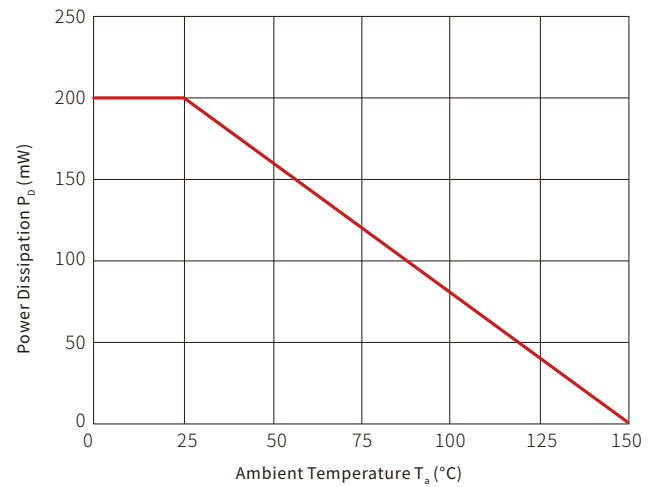
Notes: 1. Device mounted on ceramic PCB: 7.6mm x 9.4mm x 0.87mm with pad areas 25mm<sup>2</sup>.  
 2. Short duration test pulse used to minimize self-heating effect.

# ELECTRICAL CHARACTERISTICS

| Part Number | Device Marking Code | Zener Voltage Range             |         |         |                      | Maximum Zener Impedance          |                                  |                      | Maximum Reverse Current |                | Temperature Coefficient of Zener voltage @I <sub>ZT</sub> =5mA mV/°C |      | Test Current I <sub>ZTC</sub> mA |
|-------------|---------------------|---------------------------------|---------|---------|----------------------|----------------------------------|----------------------------------|----------------------|-------------------------|----------------|--|------|----------------------------------|
|             |                     | V <sub>Z</sub> @I <sub>ZT</sub> |         |         | I <sub>ZT</sub> (mA) | Z <sub>ZT</sub> @I <sub>ZT</sub> | Z <sub>ZK</sub> @I <sub>ZK</sub> | I <sub>ZK</sub> (mA) | I <sub>R</sub>          | V <sub>R</sub> | Min.   | Max. |                                  |
|             |                     | Nom.(V)                         | Min.(V) | Max.(V) | mA                   | Ω                                | Ω                                | mA                   | uA                      | V              |  |      |                                  |
| 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                                |
| BZT52B43S   | 2WU                 | 43                              | 41.16   | 43.84   | 2                    | 100                              | 700                              | 1.0                  | 0.1                     | 32.0           | 10.0   | 12.0 | 5                                |

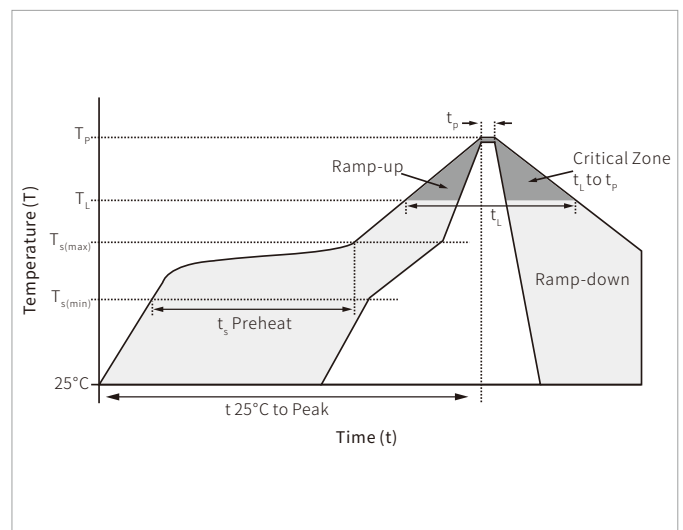
# CHARACTERISTIC CURVES



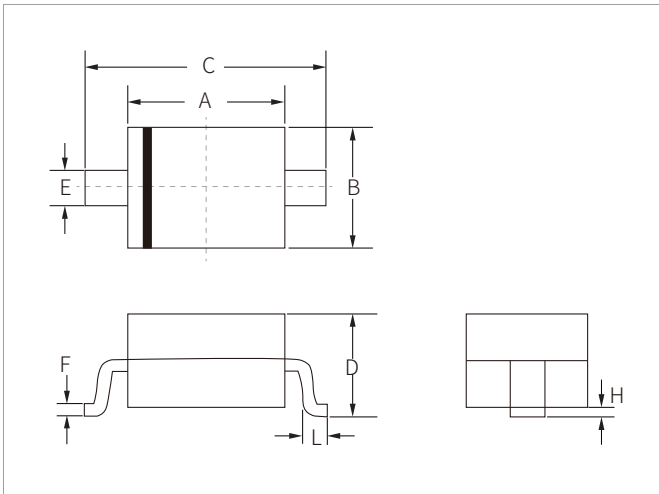
**Effect of Zener Voltage on Zener Impedance**

**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 $^\circ\text{C}$                 |

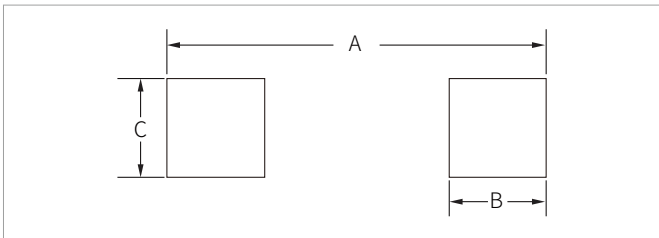


## SOD-323 PACKAGE INFORMATION



| 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 |
|-------------|-------------------|----------|-----------|
| BZT52BxxxS  | SOD-323           | 3000PCS  | 7"        |

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