

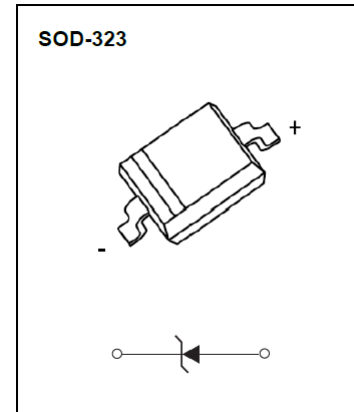


## AD-BZT52C\*S Series Plastic-Encapsulated Diode

AD-BZT52C\*S series      Zener diode

### FEATURES

- Planar die construction
- 200mW power dissipation on ceramic PBC
- General purpose, medium current
- AEC-Q101 qualified



### MARKING



XX = Device Code

The marking bar indicates the cathode

### MAXIMUM RATINGS ( $T_j = 25^\circ\text{C}$ unless otherwise specified)

| Parameter  | Symbol                        | Value     | Unit                      |
|--|-------------------------------|-----------|---------------------------|
| Forward voltage @ $I_F = 10\text{mA}$            | $V_F$ <sup>1)</sup>           | 0.9       | V                         |
| Power dissipation                                | $P_D$ <sup>2)</sup>           | 200       | mW                        |
| Thermal resistance from junction to ambient      | $R_{\theta JA}$ <sup>2)</sup> | 625       | $^\circ\text{C}/\text{W}$ |
| Operating junction and storage temperature range | $T_j, T_{stg}$                | -55 ~ 150 | $^\circ\text{C}$          |

**ELECTRICAL CHARACTERISTICS ( $T_j = 25^\circ\text{C}$  unless otherwise specified)**

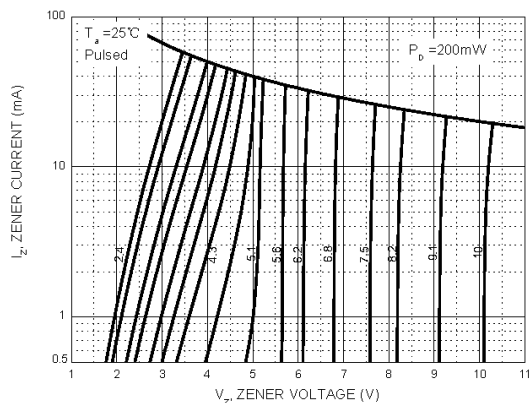
| Type number   | Marking    | Zener voltage range <sup>1)</sup> |      |      |                  | Maximum Zener impedance <sup>3)</sup> |                                   |                  | Maximum reverse current    |              | Temperature coefficient of Zener voltage<br>@ $I_{ZT} = 5\text{mA}$<br>(mV/°C) |      | Test current      |
|---------------|------------|-----------------------------------|------|------|------------------|---------------------------------------|-----------------------------------|------------------|----------------------------|--------------|--|------|-------------------|
|               |            | $V_z @ I_{ZT}$ (V)                |      |      | $I_{ZT}$<br>(mA) | $Z_{ZT} @ I_{ZT}$<br>( $\Omega$ )     | $Z_{ZK} @ I_{ZK}$<br>( $\Omega$ ) | $I_{ZK}$<br>(mA) | $I_R$<br>( $\mu\text{A}$ ) | $V_R$<br>(V) | Min  | Max  | $I_{ZTC}$<br>(mA) |
|               |            | Min                               | Norm | Max  |                  |                                       |                                   |                  |                            |              |  |      |                   |
| AD-BZT52C2V4S | $\bar{W}X$ | 2.20                              | 2.4  | 2.6  | 5                | 100                                   | 600                               | 1.0              | 50                         | 1.0          | -3.5   | 0    | 5                 |
| AD-BZT52C2V7S | $\bar{W}1$ | 2.5                               | 2.7  | 2.9  | 5                | 100                                   | 600                               | 1.0              | 20                         | 1.0          | -3.5   | 0    | 5                 |
| AD-BZT52C3V0S | $\bar{W}2$ | 2.8                               | 3.0  | 3.2  | 5                | 95                                    | 600                               | 1.0              | 10                         | 1.0          | -3.5   | 0    | 5                 |
| AD-BZT52C3V3S | $\bar{W}3$ | 3.1                               | 3.3  | 3.5  | 5                | 95                                    | 600                               | 1.0              | 5                          | 1.0          | -3.5   | 0    | 5                 |
| AD-BZT52C3V6S | $\bar{W}4$ | 3.4                               | 3.6  | 3.8  | 5                | 90                                    | 600                               | 1.0              | 5                          | 1.0          | -3.5   | 0    | 5                 |
| AD-BZT52C3V9S | $\bar{W}5$ | 3.7                               | 3.9  | 4.1  | 5                | 90                                    | 600                               | 1.0              | 3                          | 1.0          | -3.5   | 0    | 5                 |
| AD-BZT52C4V3S | $\bar{W}6$ | 4.0                               | 4.3  | 4.6  | 5                | 90                                    | 600                               | 1.0              | 3                          | 1.0          | -3.5   | 0    | 5                 |
| AD-BZT52C4V7S | $\bar{W}7$ | 4.4                               | 4.7  | 5.0  | 5                | 80                                    | 500                               | 1.0              | 3                          | 2.0          | -3.5   | 0.2  | 5                 |
| AD-BZT52C5V1S | $\bar{W}8$ | 4.8                               | 5.1  | 5.4  | 5                | 60                                    | 480                               | 1.0              | 2                          | 2.0          | -2.7   | 1.2  | 5                 |
| AD-BZT52C5V6S | $\bar{W}9$ | 5.2                               | 5.6  | 6.0  | 5                | 40                                    | 400                               | 1.0              | 1                          | 2.0          | -2.0   | 2.5  | 5                 |
| AD-BZT52C6V2S | $\bar{W}A$ | 5.8                               | 6.2  | 6.6  | 5                | 10                                    | 150                               | 1.0              | 3                          | 4.0          | 0.4  | 3.7  | 5                 |
| AD-BZT52C6V8S | $\bar{W}B$ | 6.4                               | 6.8  | 7.2  | 5                | 15                                    | 80                                | 1.0              | 2                          | 4.0          | 1.2  | 4.5  | 5                 |
| AD-BZT52C7V5S | $\bar{W}C$ | 7.0                               | 7.5  | 7.9  | 5                | 15                                    | 80                                | 1.0              | 1                          | 5.0          | 2.5  | 5.3  | 5                 |
| AD-BZT52C8V2S | $\bar{W}D$ | 7.7                               | 8.2  | 8.7  | 5                | 15                                    | 80                                | 1.0              | 0.7                        | 5.0          | 3.2  | 6.2  | 5                 |
| AD-BZT52C9V1S | $\bar{W}E$ | 8.5                               | 9.1  | 9.6  | 5                | 15                                    | 100                               | 1.0              | 0.5                        | 6.0          | 3.8  | 7.0  | 5                 |
| AD-BZT52C10S  | $\bar{W}F$ | 9.4                               | 10   | 10.6 | 5                | 20                                    | 150                               | 1.0              | 0.2                        | 7.0          | 4.5  | 8.0  | 5                 |
| AD-BZT52C11S  | $\bar{W}G$ | 10.4                              | 11   | 11.6 | 5                | 20                                    | 150                               | 1.0              | 0.1                        | 8.0          | 5.4  | 9.0  | 5                 |
| AD-BZT52C12S  | $\bar{W}H$ | 11.4                              | 12   | 12.7 | 5                | 25                                    | 150                               | 1.0              | 0.1                        | 8.0          | 6.0  | 10.0 | 5                 |
| AD-BZT52C13S  | $\bar{W}I$ | 12.4                              | 13   | 14.1 | 5                | 30                                    | 170                               | 1.0              | 0.1                        | 8.0          | 7.0  | 11.0 | 5                 |
| AD-BZT52C15S  | $\bar{W}J$ | 13.8                              | 15   | 15.6 | 5                | 30                                    | 200                               | 1.0              | 0.1                        | 10.5         | 9.2  | 13.0 | 5                 |
| AD-BZT52C16S  | $\bar{W}K$ | 15.3                              | 16   | 17.1 | 5                | 40                                    | 200                               | 1.0              | 0.1                        | 11.2         | 10.4   | 14.0 | 5                 |
| AD-BZT52C18S  | $\bar{W}L$ | 16.8                              | 18   | 19.1 | 5                | 45                                    | 225                               | 1.0              | 0.1                        | 12.6         | 12.4   | 16.0 | 5                 |
| AD-BZT52C20S  | $\bar{W}M$ | 18.8                              | 20   | 21.2 | 5                | 55                                    | 225                               | 1.0              | 0.1                        | 14.0         | 14.4   | 18.0 | 5                 |
| AD-BZT52C22S  | $\bar{W}N$ | 20.8                              | 22   | 23.3 | 5                | 55                                    | 250                               | 1.0              | 0.1                        | 15.4         | 16.4   | 20.0 | 5                 |
| AD-BZT52C24S  | $\bar{W}O$ | 22.8                              | 24   | 25.6 | 5                | 70                                    | 250                               | 1.0              | 0.1                        | 16.8         | 18.4   | 22.0 | 5                 |
| AD-BZT52C27S  | $\bar{W}P$ | 25.1                              | 27   | 28.9 | 2                | 80                                    | 300                               | 0.5              | 0.1                        | 18.9         | 21.4   | 25.3 | 2                 |
| AD-BZT52C30S  | $\bar{W}Q$ | 28.0                              | 30   | 32.0 | 2                | 80                                    | 300                               | 0.5              | 0.1                        | 21.0         | 24.4   | 29.4 | 2                 |
| AD-BZT52C33S  | $\bar{W}R$ | 31.0                              | 33   | 35.0 | 2                | 80                                    | 325                               | 0.5              | 0.1                        | 23.1         | 27.4   | 33.4 | 2                 |
| AD-BZT52C36S  | $\bar{W}S$ | 34.0                              | 36   | 38.0 | 2                | 90                                    | 350                               | 0.5              | 0.1                        | 25.2         | 30.4   | 37.4 | 2                 |
| AD-BZT52C39S  | $\bar{W}T$ | 37.0                              | 39   | 41.0 | 2                | 130                                   | 350                               | 0.5              | 0.1                        | 27.3         | 33.4   | 41.2 | 2                 |
| AD-BZT52C43S  | $\bar{W}U$ | 40.0                              | 43   | 46.0 | 2                | 100                                   | 700                               | 1.0              | 0.1                        | 32           | 10.0   | 12.0 | 5                 |

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

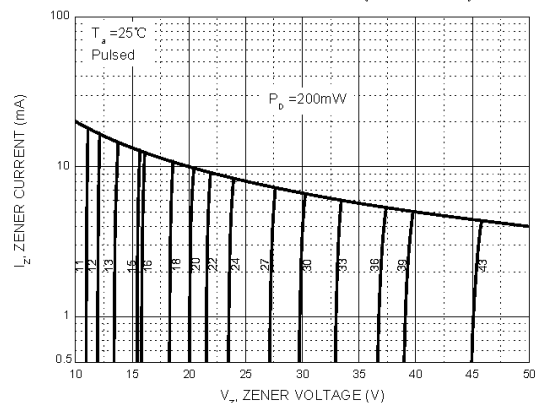
2) Measured with the device mounted on ceramic PCB: 7.6mm x 9.4mm with pad area of 25mm<sup>2</sup>.3)  $f = 1\text{kHz}$ .

# TYPICAL CHARACTERISTICS

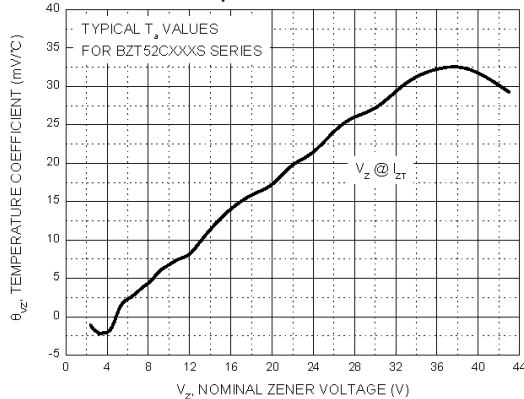
Zener Characteristics ( $V_z$  Up to 10 V)



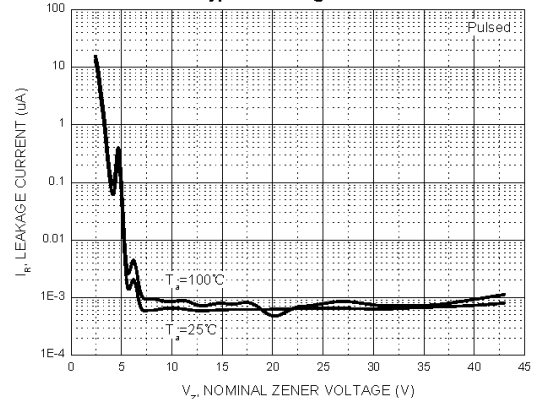
Zener Characteristics (11 V to 43 V)



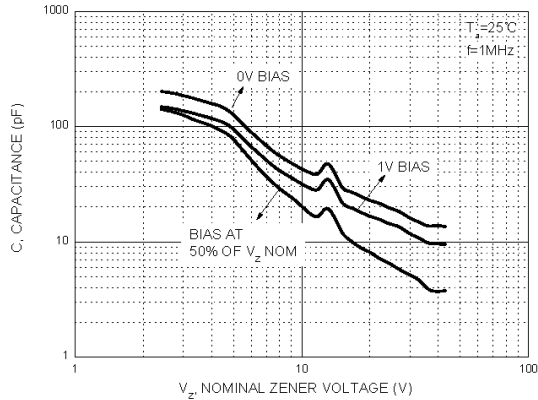
Temperature Coefficients



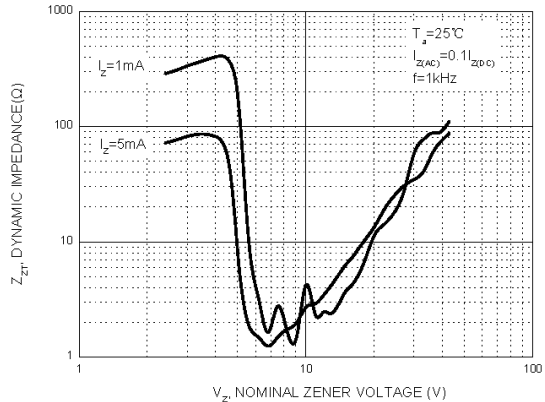
Typical Leakage Current



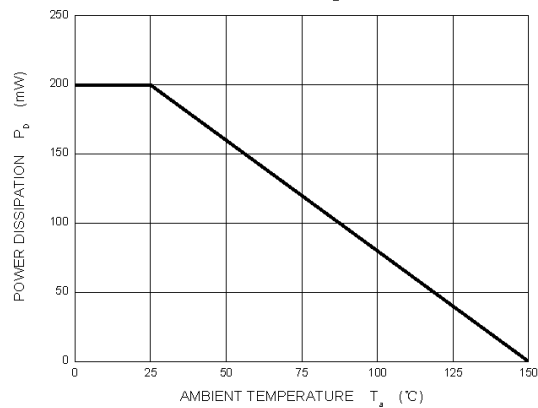
Typical Capacitance



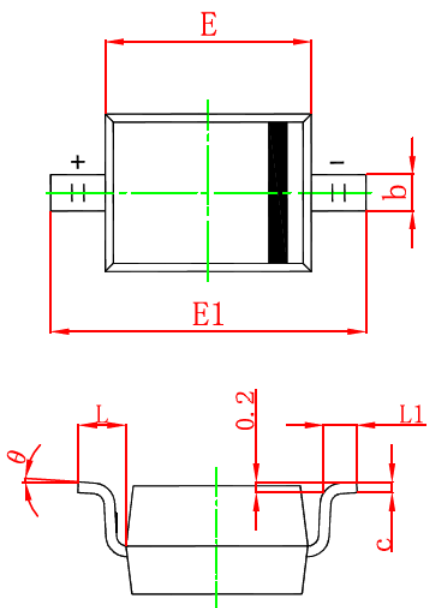
Effect of Zener Voltage on Zener Impedance



Power Derating Curve

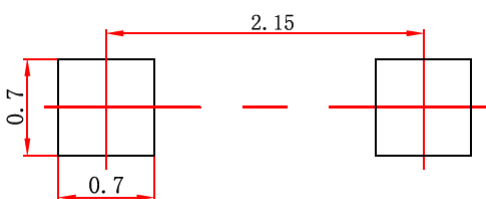


### SOD-323 PACKAGE OUTLINE DIMENSIONS



| Symbol | Dimensions In Millimeters |       | Dimensions In Inches |       |
|--------|---------------------------|-------|----------------------|-------|
|        | Min                       | Max   | Min                  | Max   |
| A      |                           | 1.100 |                      | 0.043 |
| A1     | 0.000                     | 0.100 | 0.000                | 0.004 |
| A2     | 0.800                     | 1.000 | 0.031                | 0.039 |
| 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                     | 2.750 | 0.098                | 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

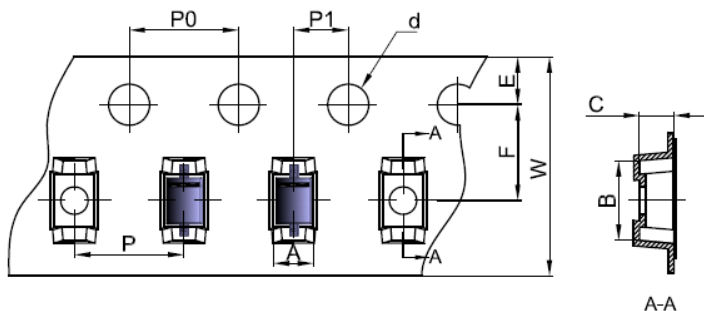


Note:

1. Controlling dimension in millimeters.
2. General tolerance: ±0.05mm.
3. The pad layout is for reference purpose only.

### SOD-323 TAPE AND REEL

#### SOD-323 Embossed Carrier Tape

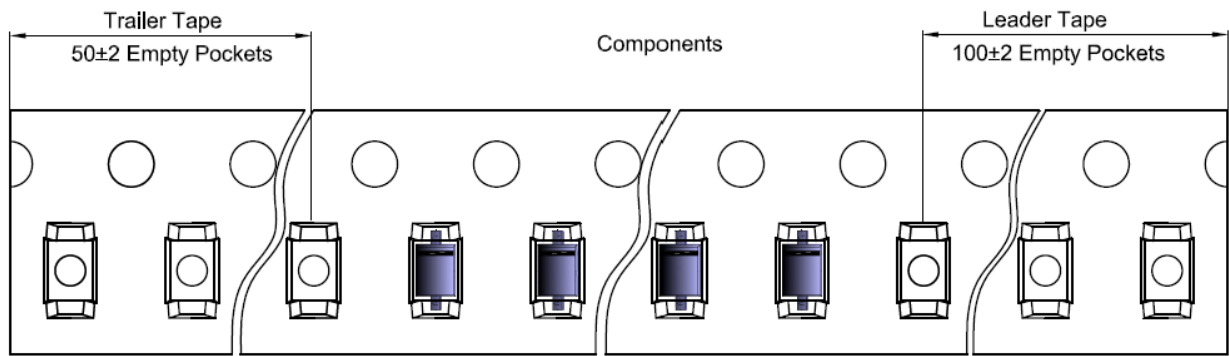


**Packaging Description:**  
 SOD-323 parts are shipped in tape. The carrier tape is made from a dissipative (carbon filled) polycarbonate resin. The cover tape is a multilayer film (Heat Activated Adhesive in nature) primarily composed of polyester film, adhesive layer, sealant, and anti-static sprayed agent. These reeled parts in standard option are shipped with 3,000 units per 7" or 17.8cm diameter reel. The reels are clear in color and is made of polystyrene plastic (anti-static coated).

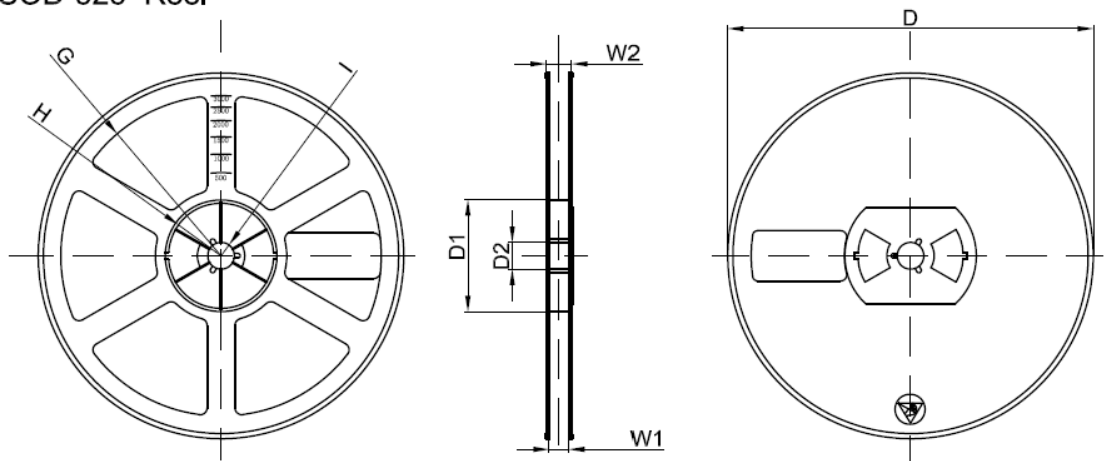
Dimensions are in millimeter

| Pkg type | A    | B   | C    | d     | E    | F    | P0   | P    | P1   | W    |
|----------|------|-----|------|-------|------|------|------|------|------|------|
| SOD-323  | 1.48 | 3.3 | 1.25 | Ø1.50 | 1.75 | 3.50 | 4.00 | 4.00 | 2.00 | 8.00 |

#### SOD-323 Tape Leader and Trailer



#### SOD-323 Reel



Dimensions are in millimeter

| Reel Option | D       | D1    | D2    | G      | H      | I     | W1   | W2    |
|-------------|---------|-------|-------|--------|--------|-------|------|-------|
| 7"Dia       | Ø178.00 | 54.40 | 13.00 | R78.00 | R25.60 | R6.50 | 9.50 | 12.30 |

| REEL     | Reel Size | Box        | Box Size(mm) | Carton      | Carton Size(mm) | G.W.(kg) |
|----------|-----------|------------|--------------|-------------|-----------------|----------|
| 3000 pcs | 7 inch    | 45,000 pcs | 203×203×195  | 180,000 pcs | 438×438×220     |          |

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