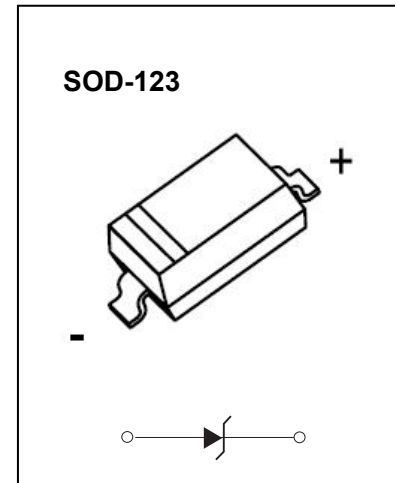


## SOD-123 Plastic-Encapsulate Diodes

### **BZT52C2V4-BZT52C43** ZENER DIODE

#### FEATURES:

- Planar Die Construction
- 350mW Power Dissipation on Ceramic PCB
- General Purpose, Medium Current
- Ideally Suited for Automated Assembly Processes
- Available in Lead Free Version



#### Maximum Ratings( $T_a=25^{\circ}\text{C}$ unless otherwise specified)

| Characteristic                                 | Symbol          | Value    | Unit                 |
|--|-----------------|----------|----------------------|
| Forward Voltage (Note 2) @ $I_F = 10\text{mA}$ | $V_F$           | 0.9      | V                    |
| Power Dissipation(Note 1)                      | $P_D$           | 350      | mW                   |
| Thermal Resistance from Junction to Ambient    | $R_{\theta JA}$ | 357      | $^{\circ}\text{C/W}$ |
| Junction Temperature                           | $T_J$           | 150      | $^{\circ}\text{C}$   |
| Storage Temperature                            | $T_{STG}$       | -55~+150 | $^{\circ}\text{C}$   |

# ELECTRICAL CHARACTERISTICS

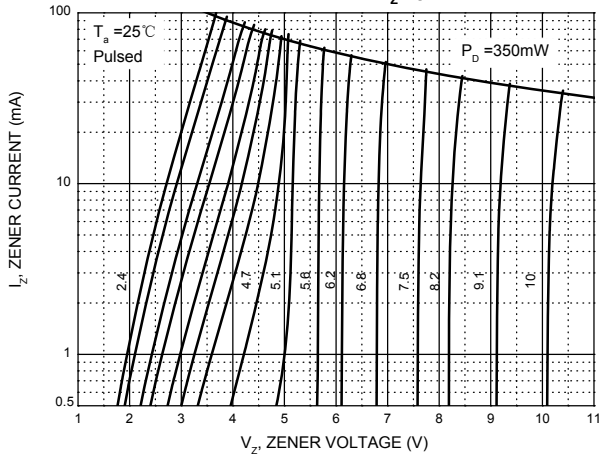
$T_a=25^{\circ}\text{C}$  unless otherwise specified

| Type Number | Type Code | Zener Voltage Range (Note 2) |        |        |          | Maximum Zener Impedance (Note 3) |                 |          | Maximum Reverse Current (Note 2) |       | Typical Temperature Coefficient @ $I_{ZTC}$ |      | Test Current $I_{ZTC}$ |
|-------------|-----------|------------------------------|--------|--------|----------|----------------------------------|-----------------|----------|----------------------------------|-------|---|------|------------------------|
|             |           | $V_Z@I_{ZT}$                 |        |        | $I_{ZT}$ | $Z_{ZT}@I_{ZT}$                  | $Z_{ZK}@I_{ZK}$ | $I_{ZK}$ | $I_R$                            | $V_R$ | mV/ $^{\circ}\text{C}$                      |      |                        |
|             |           | Nom(V)                       | Min(V) | Max(V) | mA       | $\Omega$                         |                 | mA       | $\mu\text{A}$                    | V     | Min   | Max  |                        |
| BZT52C2V4   | WX        | 2.4                          | 2.20   | 2.60   | 5        | 100                              | 600             | 1.0      | 50                               | 1.0   | -3.5  | 0    | 5                      |
| BZT52C2V7   | W1        | 2.7                          | 2.5    | 2.9    | 5        | 100                              | 600             | 1.0      | 20                               | 1.0   | -3.5  | 0    | 5                      |
| BZT52C3V0   | W2        | 3.0                          | 2.8    | 3.2    | 5        | 95                               | 600             | 1.0      | 10                               | 1.0   | -3.5  | 0    | 5                      |
| BZT52C3V3   | W3        | 3.3                          | 3.1    | 3.5    | 5        | 95                               | 600             | 1.0      | 5                                | 1.0   | -3.5  | 0    | 5                      |
| BZT52C3V6   | W4        | 3.6                          | 3.4    | 3.8    | 5        | 90                               | 600             | 1.0      | 5                                | 1.0   | -3.5  | 0    | 5                      |
| BZT52C3V9   | W5        | 3.9                          | 3.7    | 4.1    | 5        | 90                               | 600             | 1.0      | 3                                | 1.0   | -3.5  | 0    | 5                      |
| BZT52C4V3   | W6        | 4.3                          | 4.0    | 4.6    | 5        | 90                               | 600             | 1.0      | 3                                | 1.0   | -3.5  | 0    | 5                      |
| BZT52C4V7   | W7        | 4.7                          | 4.4    | 5.0    | 5        | 80                               | 500             | 1.0      | 3                                | 2.0   | -3.5  | 0.2  | 5                      |
| BZT52C5V1   | W8        | 5.1                          | 4.8    | 5.4    | 5        | 60                               | 480             | 1.0      | 2                                | 2.0   | -2.7  | 1.2  | 5                      |
| BZT52C5V6   | W9        | 5.6                          | 5.2    | 6.0    | 5        | 40                               | 400             | 1.0      | 1                                | 2.0   | -2.0  | 2.5  | 5                      |
| BZT52C6V2   | WA        | 6.2                          | 5.8    | 6.6    | 5        | 10                               | 150             | 1.0      | 3                                | 4.0   | 0.4   | 3.7  | 5                      |
| BZT52C6V8   | WB        | 6.8                          | 6.4    | 7.2    | 5        | 15                               | 80              | 1.0      | 2                                | 4.0   | 1.2   | 4.5  | 5                      |
| BZT52C7V5   | WC        | 7.5                          | 7.0    | 7.9    | 5        | 15                               | 80              | 1.0      | 1                                | 5.0   | 2.5   | 5.3  | 5                      |
| BZT52C8V2   | WD        | 8.2                          | 7.7    | 8.7    | 5        | 15                               | 80              | 1.0      | 0.7                              | 5.0   | 3.2   | 6.2  | 5                      |
| BZT52C9V1   | WE        | 9.1                          | 8.5    | 9.6    | 5        | 15                               | 100             | 1.0      | 0.5                              | 6.0   | 3.8   | 7.0  | 5                      |
| BZT52C10    | WF        | 10                           | 9.4    | 10.6   | 5        | 20                               | 150             | 1.0      | 0.2                              | 7.0   | 4.5   | 8.0  | 5                      |
| BZT52C11    | WG        | 11                           | 10.4   | 11.6   | 5        | 20                               | 150             | 1.0      | 0.1                              | 8.0   | 5.4   | 9.0  | 5                      |
| BZT52C12    | WH        | 12                           | 11.4   | 12.7   | 5        | 25                               | 150             | 1.0      | 0.1                              | 8.0   | 6.0   | 10.0 | 5                      |
| BZT52C13    | WI        | 13                           | 12.4   | 14.1   | 5        | 30                               | 170             | 1.0      | 0.1                              | 8.0   | 7.0   | 11.0 | 5                      |
| BZT52C15    | WJ        | 15                           | 13.8   | 15.6   | 5        | 30                               | 200             | 1.0      | 0.1                              | 10.5  | 9.2   | 13.0 | 5                      |
| BZT52C16    | WK        | 16                           | 15.3   | 17.1   | 5        | 40                               | 200             | 1.0      | 0.1                              | 11.2  | 10.4  | 14.0 | 5                      |
| BZT52C18    | WL        | 18                           | 16.8   | 19.1   | 5        | 45                               | 225             | 1.0      | 0.1                              | 12.6  | 12.4  | 16.0 | 5                      |
| BZT52C20    | WM        | 20                           | 18.8   | 21.2   | 5        | 55                               | 225             | 1.0      | 0.1                              | 14.0  | 14.4  | 18.0 | 5                      |
| BZT52C22    | WN        | 22                           | 20.8   | 23.3   | 5        | 55                               | 250             | 1.0      | 0.1                              | 15.4  | 16.4  | 20.0 | 5                      |
| BZT52C24    | WO        | 24                           | 22.8   | 25.6   | 5        | 70                               | 250             | 1.0      | 0.1                              | 16.8  | 18.4  | 22.0 | 5                      |
| BZT52C27    | WP        | 27                           | 25.1   | 28.9   | 2        | 80                               | 300             | 0.5      | 0.1                              | 18.9  | 21.4  | 25.3 | 2                      |
| BZT52C30    | WQ        | 30                           | 28.0   | 32.0   | 2        | 80                               | 300             | 0.5      | 0.1                              | 21.0  | 24.4  | 29.4 | 2                      |
| BZT52C33    | WR        | 33                           | 31.0   | 35.0   | 2        | 80                               | 325             | 0.5      | 0.1                              | 23.1  | 27.4  | 33.4 | 2                      |
| BZT52C36    | WS        | 36                           | 34.0   | 38.0   | 2        | 90                               | 350             | 0.5      | 0.1                              | 25.2  | 30.4  | 37.4 | 2                      |
| BZT52C39    | WT        | 39                           | 37.0   | 41.0   | 2        | 130                              | 350             | 0.5      | 0.1                              | 27.3  | 33.4  | 41.2 | 2                      |
| BZT52C43    | WU        | 43                           | 40.0   | 46.0   | 5        | 100                              | 700             | 1.0      | 0.1                              | 32    | 10.0  | 12.0 | 5                      |

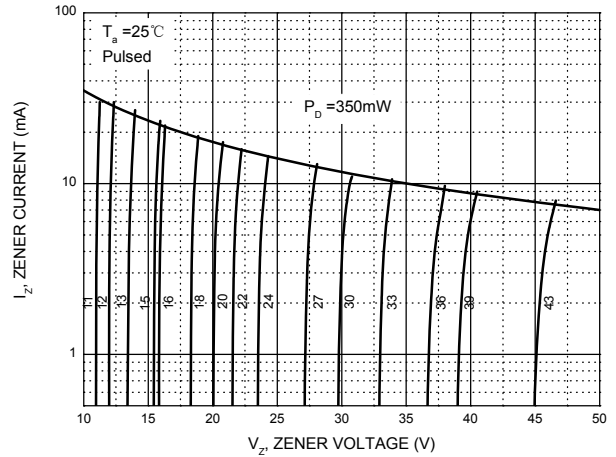
- Notes: 1. Device mounted on ceramic PCB: 7.6mm x 9.4mm x 0.87mm with pad areas 25mm<sup>2</sup>  
 2. Short duration test pulse used to minimize self-heating effect  
 3. f=1kHz

# Typical Characteristics

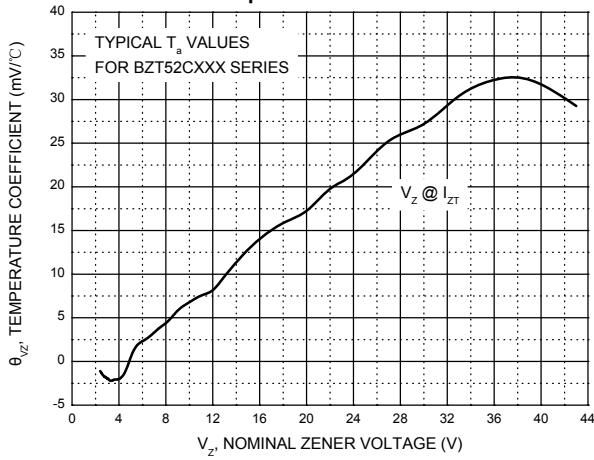
Zener Characteristics ( $V_z$  Up to 10 V)



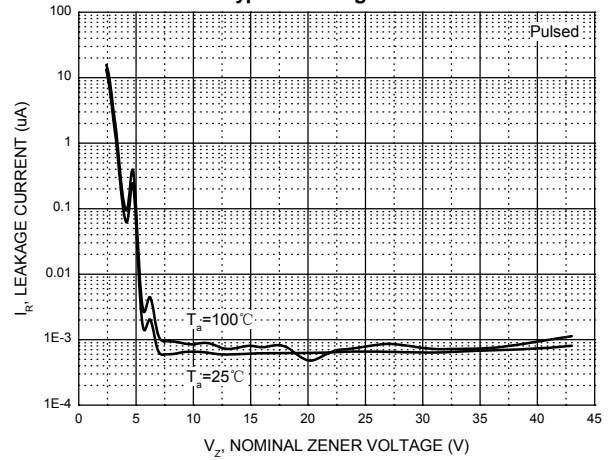
Zener Characteristics (11 V to 43 V)



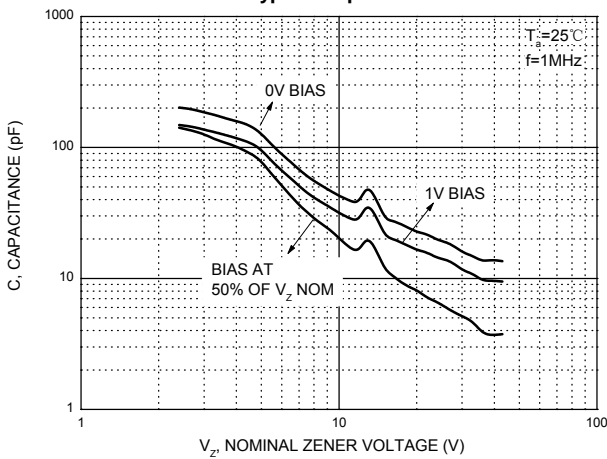
Temperature Coefficients



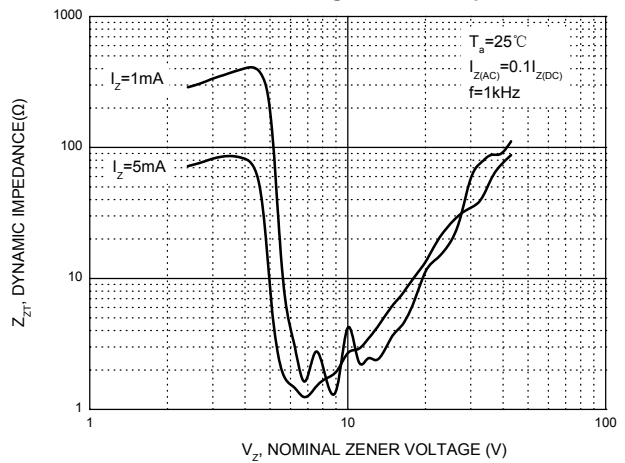
Typical Leakage Current



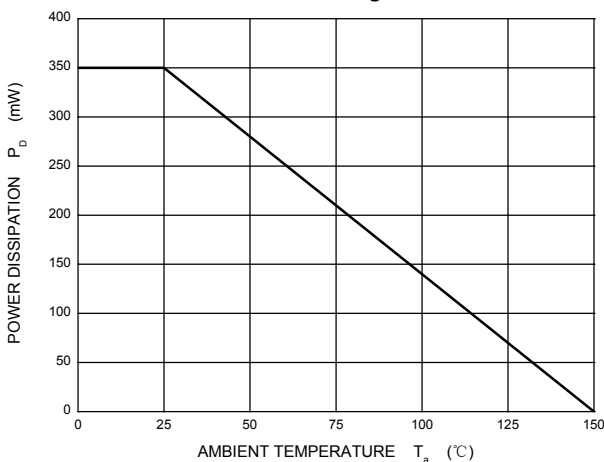
Typical Capacitance



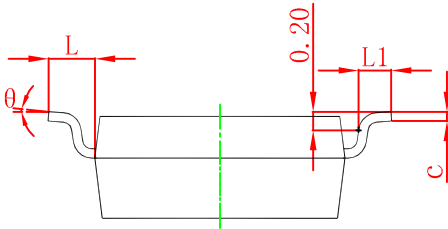
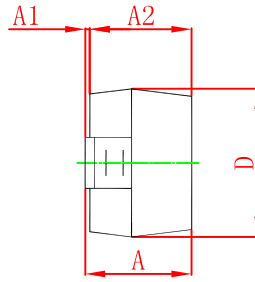
Effect of Zener Voltage on Zener Impedance



Power Derating Curve

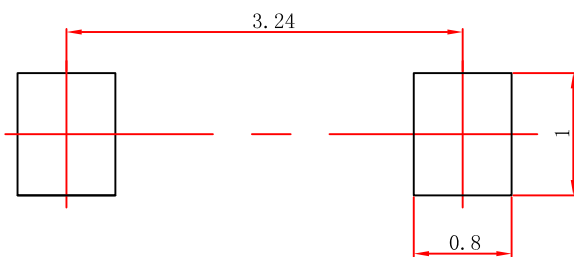


## SOD-123 Package Outline Dimensions



| Symbol | Dimensions In Millimeters |       | Dimensions In Inches |       |
|--------|---------------------------|-------|----------------------|-------|
|        | Min                       | Max   | Min                  | Max   |
| A      | 1.050                     | 1.250 | 0.041                | 0.049 |
| A1     | 0.000                     | 0.100 | 0.000                | 0.004 |
| A2     | 1.050                     | 1.150 | 0.041                | 0.045 |
| b      | 0.450                     | 0.650 | 0.018                | 0.026 |
| c      | 0.080                     | 0.150 | 0.003                | 0.006 |
| D      | 1.500                     | 1.700 | 0.059                | 0.067 |
| E      | 2.600                     | 2.800 | 0.102                | 0.110 |
| E1     | 3.550                     | 3.850 | 0.140                | 0.152 |
| L      | 0.500 REF                 |       | 0.020 REF            |       |
| L1     | 0.250                     | 0.450 | 0.010                | 0.018 |
| θ      | 0°                        | 8°    | 0°                   | 8°    |

## SOD-123 Suggested Pad Layout



### Note:

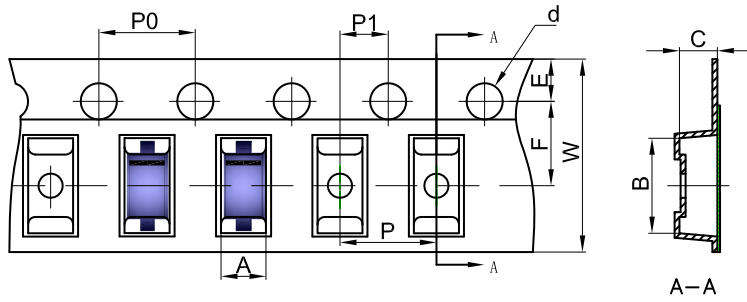
1. Controlling dimension: in millimeters.
2. General tolerance:  $\pm 0.05\text{mm}$ .
3. The pad layout is for reference purposes only.

### NOTICE

JCET reserve the right to make modifications, enhancements, improvements, corrections or other changes without further notice to any product herein. JCET does not assume any liability arising out of the application or use of any product described herein.

# SOD-123 Tape and Reel

## SOD-123 Embossed Carrier Tape



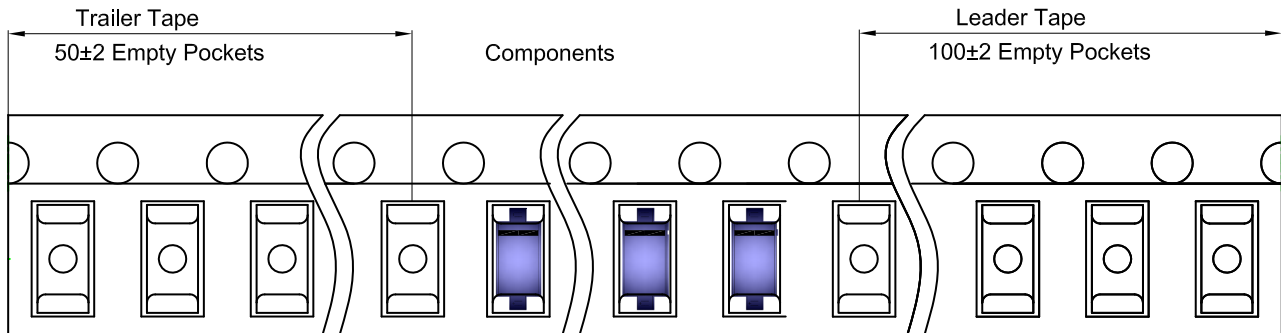
### Packaging Description:

SOD-123 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).

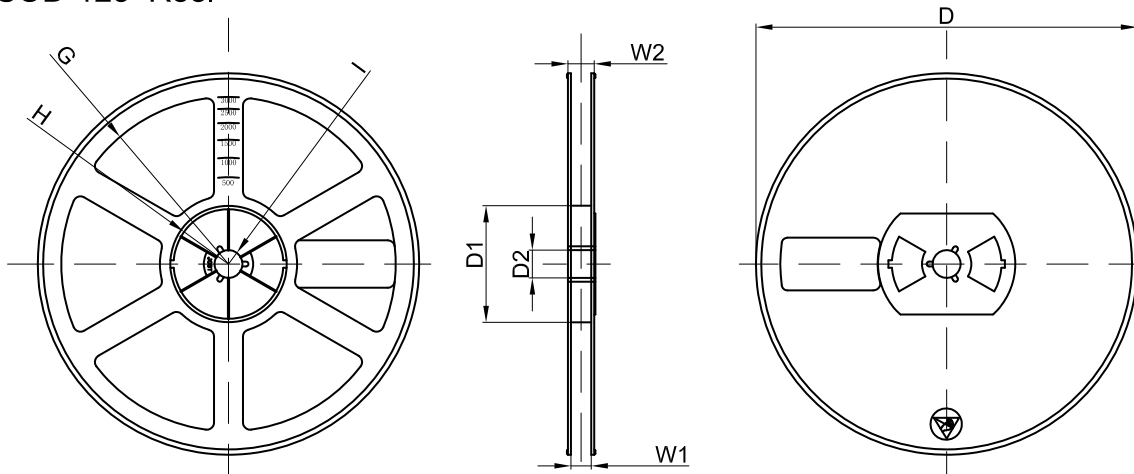
Dimensions are in millimeter

| Pkg type | A    | B    | C    | d     | E    | F    | P0   | P    | P1   | W    |
|----------|------|------|------|-------|------|------|------|------|------|------|
| SOD-123  | 1.85 | 3.95 | 1.57 | Ø1.55 | 1.75 | 3.50 | 4.00 | 4.00 | 2.00 | 8.00 |

## SOD-123 Tape Leader and Trailer



## SOD-123 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     |          |