

SOD-523 SURFACE MOUNT SILICON ZENER DIODES

Features

- Low Zener Impedance
- Power Dissipation of 150mW
- High Stability and High Reliability
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260°C

Applications

Zener diode is generally used as reference voltage sources in regulated power supplies or as protective diode in overvoltage protection circuits.

Mechanical Data

- Case: SOD-523
- Molding compound meets UL 94V-0 flammability rating, RoHS-compliant, halogen-free
- Terminals: Solder plated, solderable per MIL-STD-750, Method 2026
- Polarity: Cathode line denotes the cathode end

Function Diagram

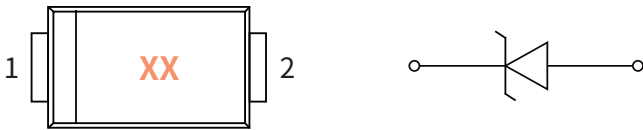
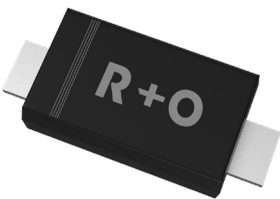
Zener Diode

2.4 to 43 Volts

Power Dissipation

150 Milliwatts

SOD-523



Maximum Ratings (Ta=25°C Unless otherwise specified)

| PARAMETER                           | SYMBOL           | UNIT  | VALUE      |
|-------------------------------------|------------------|-------|------------|
| Power Dissipation                   | $P_D$            | mW    | 150        |
| Forward Voltage @ $I_F=10\text{mA}$ | $V_F$            | V     | 0.9        |
| Storage Temperature                 | $T_{\text{stg}}$ | °C    | -55 ~ +150 |
| Junction Temperature                | $T_J$            | °C    | -55 ~ +150 |
| Typical Thermal Resistance          | $R_{\theta J-A}$ | °C /W | 833        |

Electrical Parameter

| SYMBOL   | PARAMETER                          |
|----------|------------------------------------|
| $V_Z$    | Reverse zener voltage @ $I_{ZT}$   |
| $I_{ZT}$ | Reverse current                    |
| $Z_{ZT}$ | Maximum Zener Impedance @ $I_{ZT}$ |
| $I_{ZK}$ | Reverse Current                    |
| $Z_{ZK}$ | Maximum Zener Impedance @ $I_{ZK}$ |
| $I_R$    | Reverse leakage current @ $V_R$    |
| $V_R$    | Reverse voltage                    |
| $I_F$    | Forward current                    |
| $V_F$    | Forward voltage @ $I_F$            |

BZX584C2V4 THRU BZX584C43

SURFACE MOUNT ZENER DIODES

● Electrical Characteristics (Ta=25°C Unless otherwise noted)

| Type Number | Marking | Nominal Zener Voltage |      |      |                 | Zener Impedance                  |                                  |                 | Leakage Current                |                    | Typical Temperature coefficient @ I <sub>ZTC</sub> (mV/°C ) |      | Admissible Zener Current |
|-------------|---------|-----------------------|------|------|-----------------|----------------------------------|----------------------------------|-----------------|--------------------------------|--------------------|-------------------------------------------------------------|------|--------------------------|
|             |         | V <sub>Z</sub> (V)    |      |      | 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.                  | Nom. | Max. | (mA)            | (Ω)                              |                                  | (mA)            | I <sub>R</sub> (μA)            | V <sub>R</sub> (V) | Min.                                                        | Max. | I <sub>ZM</sub> ( mA)    |
| BZX584C2V4  | Z11     | 2.2                   | 2.4  | 2.6  | 5               | 100                              | 600                              | 1.0             | 50                             | 1.0                | -3.5                                                        | 0    | 5                        |
| BZX584C2V7  | Z12     | 2.5                   | 2.7  | 2.9  | 5               | 100                              | 600                              | 1.0             | 20                             | 1.0                | -3.5                                                        | 0    | 5                        |
| BZX584C3V0  | Z13     | 2.8                   | 3.0  | 3.2  | 5               | 95                               | 600                              | 1.0             | 10                             | 1.0                | -3.5                                                        | 0    | 5                        |
| BZX584C3V3  | Z14     | 3.1                   | 3.3  | 3.5  | 5               | 95                               | 600                              | 1.0             | 5                              | 1.0                | -3.5                                                        | 0    | 5                        |
| BZX584C3V6  | Z15     | 3.4                   | 3.6  | 3.8  | 5               | 90                               | 600                              | 1.0             | 5                              | 1.0                | -3.5                                                        | 0    | 5                        |
| BZX584C3V9  | Z16     | 3.7                   | 3.9  | 4.1  | 5               | 90                               | 600                              | 1.0             | 3                              | 1.0                | -3.5                                                        | 0    | 5                        |
| BZX584C4V3  | Z17     | 4.0                   | 4.3  | 4.6  | 5               | 90                               | 600                              | 1.0             | 3                              | 1.0                | -3.5                                                        | 0    | 5                        |
| BZX584C4V7  | Z1      | 4.4                   | 4.7  | 5.0  | 5               | 80                               | 500                              | 1.0             | 3                              | 2.0                | -3.5                                                        | 0.2  | 5                        |
| BZX584C5V1  | Z2      | 4.8                   | 5.1  | 5.4  | 5               | 60                               | 480                              | 1.0             | 2                              | 2.0                | -2.7                                                        | 1.2  | 5                        |
| BZX584C5V6  | Z3      | 5.2                   | 5.6  | 6.0  | 5               | 40                               | 400                              | 1.0             | 1                              | 2.0                | -2                                                          | 2.5  | 5                        |
| BZX584C6V2  | Z4      | 5.8                   | 6.2  | 6.6  | 5               | 10                               | 150                              | 1.0             | 3                              | 4.0                | 0.4                                                         | 3.7  | 5                        |
| BZX584C6V8  | Z5      | 6.4                   | 6.8  | 7.2  | 5               | 15                               | 80                               | 1.0             | 2                              | 4.0                | 1.2                                                         | 4.5  | 5                        |
| BZX584C7V5  | Z6      | 7.0                   | 7.5  | 7.9  | 5               | 15                               | 80                               | 1.0             | 1                              | 5.0                | 2.5                                                         | 5.3  | 5                        |
| BZX584C8V2  | Z7      | 7.7                   | 8.2  | 8.7  | 5               | 15                               | 80                               | 1.0             | 0.7                            | 5.0                | 3.2                                                         | 6.2  | 5                        |
| BZX584C9V1  | Z8      | 8.5                   | 9.1  | 9.6  | 5               | 15                               | 100                              | 1.0             | 0.5                            | 6.0                | 3.8                                                         | 7.0  | 5                        |
| BZX584C10   | Z9      | 9.4                   | 10   | 10.6 | 5               | 20                               | 150                              | 1.0             | 0.2                            | 7.0                | 4.5                                                         | 8.0  | 5                        |
| BZX584C11   | Y1      | 10.4                  | 11   | 11.6 | 5               | 20                               | 150                              | 1.0             | 0.1                            | 8.0                | 5.4                                                         | 9.0  | 5                        |
| BZX584C12   | Y2      | 11.4                  | 12   | 12.7 | 5               | 25                               | 150                              | 1.0             | 0.1                            | 8.0                | 6.0                                                         | 10.0 | 5                        |
| BZX584C13   | Y3      | 12.4                  | 13   | 14.1 | 5               | 30                               | 170                              | 1.0             | 0.1                            | 8.0                | 7.0                                                         | 11.0 | 5                        |
| BZX584C15   | Y4      | 13.8                  | 15   | 15.6 | 5               | 30                               | 200                              | 1.0             | 0.1                            | 10.5               | 9.2                                                         | 13.0 | 5                        |
| BZX584C16   | Y5      | 15.3                  | 16   | 17.1 | 5               | 40                               | 200                              | 1.0             | 0.1                            | 11.2               | 10.4                                                        | 14.0 | 5                        |
| BZX584C18   | Y6      | 16.8                  | 18   | 19.1 | 5               | 45                               | 225                              | 1.0             | 0.1                            | 12.6               | 12.4                                                        | 16.0 | 5                        |
| BZX584C20   | Y7      | 18.8                  | 20   | 21.2 | 5               | 55                               | 225                              | 1.0             | 0.1                            | 14.0               | 14.4                                                        | 18.0 | 5                        |
| BZX584C22   | Y8      | 20.8                  | 22   | 23.3 | 5               | 55                               | 250                              | 1.0             | 0.1                            | 15.4               | 16.4                                                        | 20.0 | 5                        |
| BZX584C24   | Y9      | 22.8                  | 24   | 25.6 | 5               | 70                               | 250                              | 1.0             | 0.1                            | 16.8               | 18.4                                                        | 22.0 | 5                        |
| BZX584C27   | Y10     | 25.1                  | 27   | 28.9 | 2               | 80                               | 300                              | 0.5             | 0.1                            | 18.9               | 21.4                                                        | 25.3 | 2                        |
| BZX584C30   | Y11     | 28                    | 30   | 32   | 2               | 80                               | 300                              | 0.5             | 0.1                            | 21.0               | 24.4                                                        | 29.4 | 2                        |
| BZX584C33   | Y12     | 31                    | 33   | 35   | 2               | 80                               | 325                              | 0.5             | 0.1                            | 23.1               | 27.4                                                        | 33.4 | 2                        |
| BZX584C36   | Y13     | 34                    | 36   | 38   | 2               | 90                               | 350                              | 0.5             | 0.1                            | 25.2               | 30.4                                                        | 37.4 | 2                        |
| BZX584C39   | Y14     | 37                    | 39   | 41   | 2               | 130                              | 350                              | 0.5             | 0.1                            | 27.3               | 33.4                                                        | 41.2 | 2                        |
| BZX584C43   | Y15     | 40                    | 43   | 46   | 5               | 100                              | 700                              | 1.0             | 0.1                            | 32.0               | 10.0                                                        | 12.0 | 5                        |

# BZX584C2V4 THRU BZX584C43

SURFACE MOUNT ZENER DIODES

## ● Ratings And Characteristics Curves ( $T_a=25^\circ\text{C}$ Unless otherwise specified)

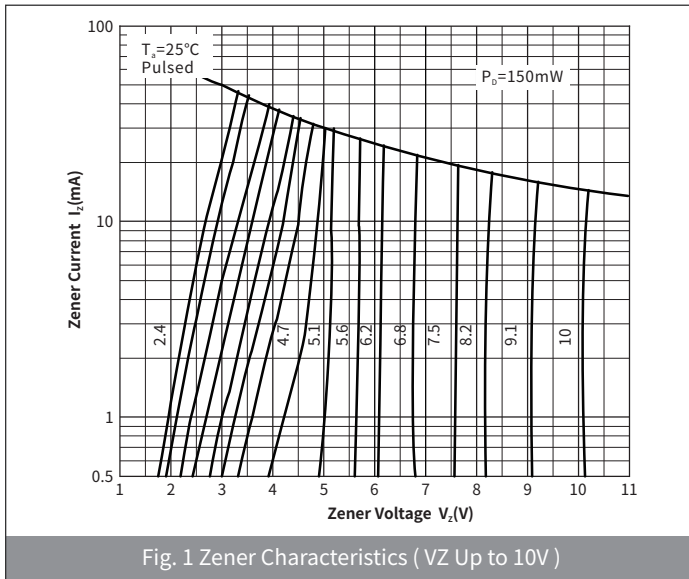


Fig. 1 Zener Characteristics (VZ Up to 10V)

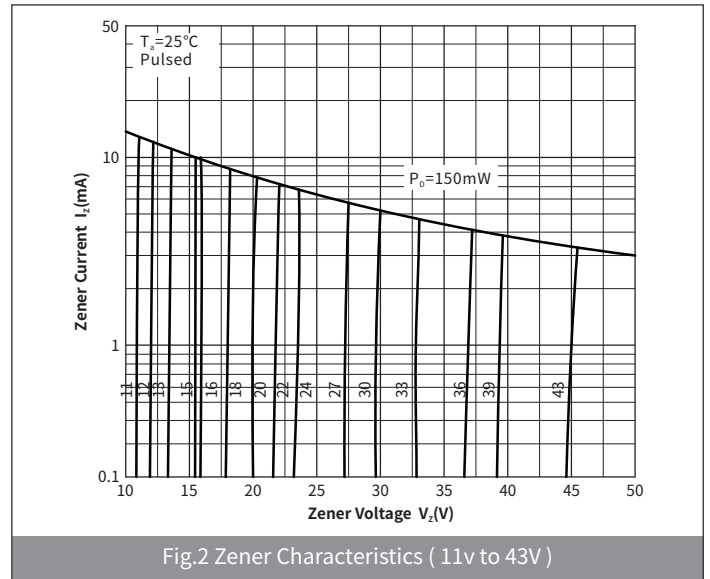


Fig.2 Zener Characteristics (11v to 43V)

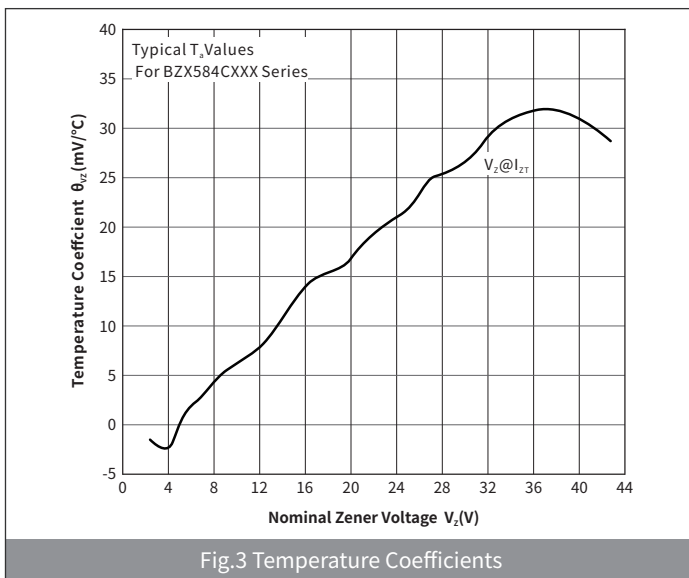


Fig.3 Temperature Coefficients

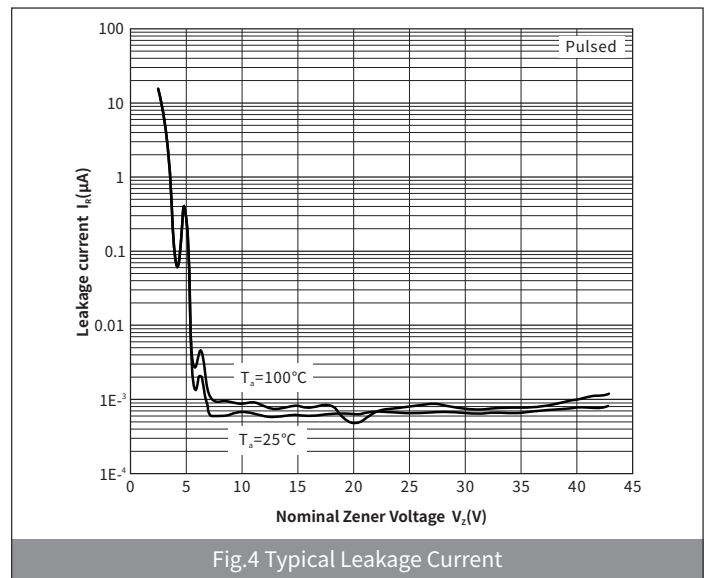


Fig.4 Typical Leakage Current

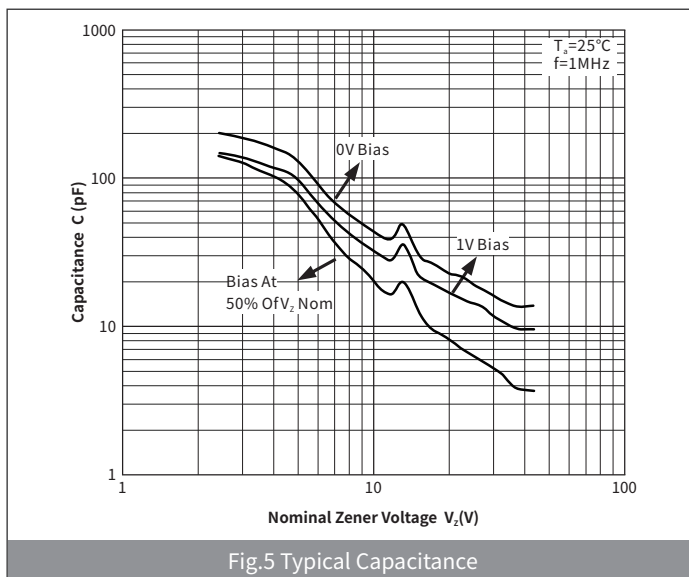


Fig.5 Typical Capacitance

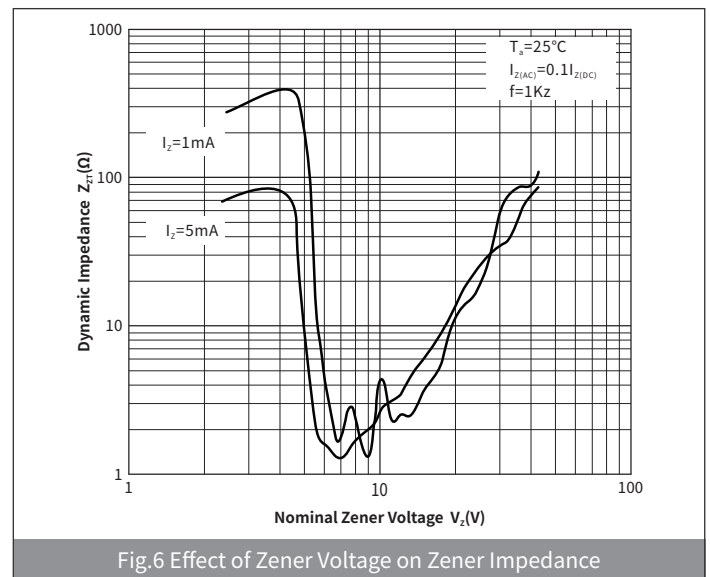


Fig.6 Effect of Zener Voltage on Zener Impedance

# BZX584C2V4 THRU BZX584C43

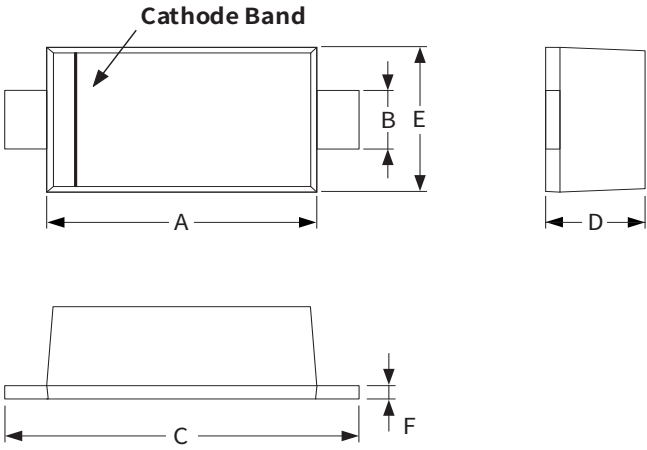
SURFACE MOUNT ZENER DIODES

## ● Ordering Information

| PACKAGE | PACKAGE CODE | UNIT WEIGHT(g) | REEL(pcs) | BOX(pcs) | CARTON(pcs) | DELIVERY MODE |
|---------|--------------|----------------|-----------|----------|-------------|---------------|
| SOD-523 | R1           | 0.002          | 3000      | 45000    | 180000      | 7"            |

## ● Package Outline Dimensions (SOD-523)

| Symbol | Dimensions  |      |        |       |
|--------|-------------|------|--------|-------|
|        | Millimeters |      | Inches |       |
|        | Min         | Max  | Min    | Max   |
| A      | 1.10        | 1.30 | 0.043  | 0.051 |
| B      | 0.25        | 0.35 | 0.010  | 0.014 |
| C      | 1.50        | 1.70 | 0.059  | 0.067 |
| D      | 0.50        | 0.70 | 0.020  | 0.027 |
| E      | 0.70        | 0.90 | 0.027  | 0.035 |
| F      | 0.05        | 0.20 | 0.002  | 0.008 |



## ● Suggested Pad Layout

| Symbol | Dimensions  |      |        |       |
|--------|-------------|------|--------|-------|
|        | Millimeters |      | Inches |       |
|        | Min.        | Max. | Min.   | Max.  |
| X      | 0.55        | 0.65 | 0.022  | 0.026 |
| Y      | 0.65        | 0.75 | 0.026  | 0.029 |
| Z      | 1.37        | 1.47 | 0.054  | 0.058 |

