

SOD-123 SURFACE MOUNT SILICON ZENER DIODES

● Features

- Low Zener Impedance
- Power Dissipation of 350mW
- High Stability and High Reliability
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260°C

Zener Diode
2.4 to 43 Volts
Power Dissipation
350 Milliwatts

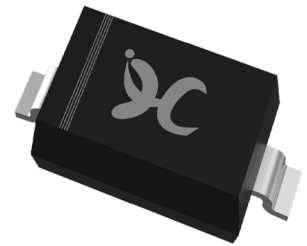
● Applications

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

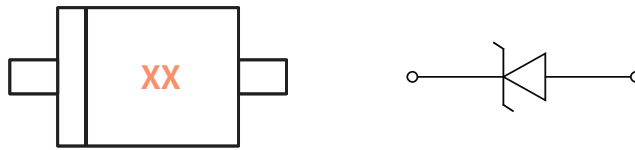
● Mechanical Data

- Case: SOD-123
- 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

SOD-123



● Function Diagram

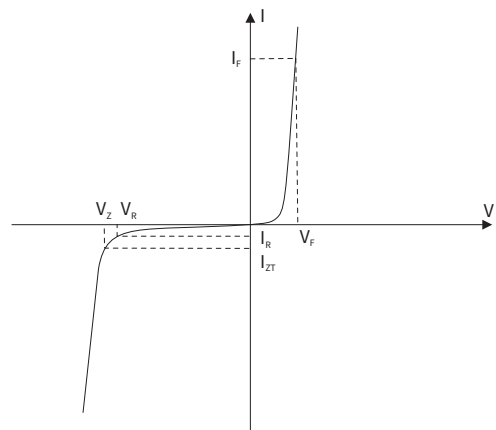


● Maximum Ratings (Ta=25°C Unless otherwise specified)

| PARAMETER | SYMBOL | UNIT | VALUE |
|-------------------------------------|-----------------|-------|------------|
| Power Dissipation | P_D | mW | 350 |
| Forward Voltage @ $I_F=10\text{mA}$ | V_F | V | 0.9 |
| Storage Temperature | T_{stg} | °C | -55 ~ +150 |
| Junction Temperature | T_J | °C | -55 ~ +150 |
| Typical Thermal Resistance | $R_{\theta JA}$ | °C /W | 357 |

● 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 |



BZT52C2V4 THRU BZT52C75

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 _{ZTC} (mV/°C) | | Admissible Zener Current I _{ZM} (mA) | |
|-------------|---------|-----------------------|------|-------|-----------------|----------------------------------|----------------------------------|---------------------|--------------------------------|--|------|--|------|
| | | V _Z (V) | | | I _{ZT} | Z _{ZT} @I _{ZT} | Z _{ZK} @I _{ZK} | I _{ZK} | I _R @V _R | | Min. | | Max. |
| | | Min. | Nom. | Max. | (mA) | (Ω) | (mA) | I _R (μA) | V _R (V) | | | | |
| BZT52C2V4 | WX | 2.28 | 2.4 | 2.52 | 5 | 100 | 600 | 1.0 | 50 | 1.0 | -3.5 | 0 | 5 |
| BZT52C2V7 | W1 | 2.57 | 2.7 | 2.84 | 5 | 100 | 600 | 1.0 | 20 | 1.0 | -3.5 | 0 | 5 |
| BZT52C3V0 | W2 | 2.85 | 3.0 | 3.15 | 5 | 95 | 600 | 1.0 | 10 | 1.0 | -3.5 | 0 | 5 |
| BZT52C3V3 | W3 | 3.14 | 3.3 | 3.47 | 5 | 95 | 600 | 1.0 | 5 | 1.0 | -3.5 | 0 | 5 |
| BZT52C3V6 | W4 | 3.42 | 3.6 | 3.78 | 5 | 90 | 600 | 1.0 | 5 | 1.0 | -3.5 | 0 | 5 |
| BZT52C3V9 | W5 | 3.71 | 3.9 | 4.10 | 5 | 90 | 600 | 1.0 | 3 | 1.0 | -3.5 | 0 | 5 |
| BZT52C4V3 | W6 | 4.09 | 4.3 | 4.52 | 5 | 90 | 600 | 1.0 | 3 | 1.0 | -3.5 | 0 | 5 |
| BZT52C4V7 | W7 | 4.47 | 4.7 | 4.94 | 5 | 80 | 500 | 1.0 | 3 | 2.0 | -3.5 | 0.2 | 5 |
| BZT52C5V1 | W8 | 4.85 | 5.1 | 5.36 | 5 | 60 | 480 | 1.0 | 2 | 2.0 | -2.7 | 1.2 | 5 |
| BZT52C5V6 | W9 | 5.32 | 5.6 | 5.88 | 5 | 40 | 400 | 1.0 | 1 | 2.0 | -2.0 | 2.5 | 5 |
| BZT52C6V2 | WA | 5.89 | 6.2 | 6.51 | 5 | 10 | 150 | 1.0 | 3 | 4.0 | 0.4 | 3.7 | 5 |
| BZT52C6V8 | WB | 6.46 | 6.8 | 7.14 | 5 | 15 | 80 | 1.0 | 2 | 4.0 | 1.2 | 4.5 | 5 |
| BZT52C7V5 | WC | 7.13 | 7.5 | 7.88 | 5 | 15 | 80 | 1.0 | 1 | 5.0 | 2.5 | 5.3 | 5 |
| BZT52C8V2 | WD | 7.79 | 8.2 | 8.61 | 5 | 15 | 80 | 1.0 | 0.7 | 5.0 | 3.2 | 6.2 | 5 |
| BZT52C9V1 | WE | 8.65 | 9.1 | 9.56 | 5 | 15 | 100 | 1.0 | 0.5 | 6.0 | 3.8 | 7.0 | 5 |
| BZT52C10 | WF | 9.50 | 10 | 10.50 | 5 | 20 | 150 | 1.0 | 0.2 | 7.0 | 4.5 | 8.0 | 5 |
| BZT52C11 | WG | 10.45 | 11 | 11.55 | 5 | 20 | 150 | 1.0 | 0.1 | 8.0 | 5.4 | 9.0 | 5 |
| BZT52C12 | WH | 11.40 | 12 | 12.60 | 5 | 25 | 150 | 1.0 | 0.1 | 8.0 | 6.0 | 10.0 | 5 |
| BZT52C13 | WI | 12.35 | 13 | 13.65 | 5 | 30 | 170 | 1.0 | 0.1 | 8.0 | 7.0 | 11.0 | 5 |
| BZT52C15 | WJ | 14.25 | 15 | 15.75 | 5 | 30 | 200 | 1.0 | 0.1 | 10.5 | 9.2 | 13.0 | 5 |
| BZT52C16 | WK | 15.20 | 16 | 16.80 | 5 | 40 | 200 | 1.0 | 0.1 | 11.2 | 10.4 | 14.0 | 5 |
| BZT52C18 | WL | 17.10 | 18 | 18.90 | 5 | 45 | 225 | 1.0 | 0.1 | 12.6 | 12.4 | 16.0 | 5 |
| BZT52C20 | WM | 19.00 | 20 | 21.00 | 5 | 55 | 225 | 1.0 | 0.1 | 14.0 | 14.4 | 18.0 | 5 |
| BZT52C22 | WN | 20.90 | 22 | 23.10 | 5 | 55 | 250 | 1.0 | 0.1 | 15.4 | 16.4 | 20.0 | 5 |
| BZT52C24 | WO | 22.80 | 24 | 25.20 | 5 | 70 | 250 | 1.0 | 0.1 | 16.8 | 18.4 | 22.0 | 5 |
| BZT52C27 | WP | 25.65 | 27 | 28.35 | 2 | 80 | 300 | 0.5 | 0.1 | 18.9 | 21.4 | 25.3 | 2 |
| BZT52C30 | WQ | 28.50 | 30 | 31.50 | 2 | 80 | 300 | 0.5 | 0.1 | 21.0 | 24.4 | 29.4 | 2 |
| BZT52C33 | WR | 31.35 | 33 | 34.65 | 2 | 80 | 325 | 0.5 | 0.1 | 23.1 | 27.4 | 33.4 | 2 |
| BZT52C36 | WS | 34.20 | 36 | 37.80 | 2 | 90 | 350 | 0.5 | 0.1 | 25.2 | 30.4 | 37.4 | 2 |
| BZT52C39 | WT | 37.05 | 39 | 40.95 | 2 | 130 | 350 | 0.5 | 0.1 | 27.3 | 33.4 | 41.2 | 2 |
| BZT52C43 | WU | 40.85 | 43 | 45.15 | 5 | 100 | 700 | 1.0 | 0.1 | 32.0 | 10.0 | 12.0 | 5 |
| BZT52C47 | WV | 44.65 | 47 | 49.35 | 5 | 100 | 750 | 1.0 | 0.1 | 35.0 | 10.0 | 12.0 | 5 |
| BZT52C51 | WW | 48.45 | 51 | 53.55 | 5 | 100 | 750 | 1.0 | 0.1 | 38.0 | 10.0 | 12.0 | 5 |
| BZT52C56 | XW | 52.0 | 56 | 60.0 | 5 | 135 | 700 | 1.0 | 0.1 | 39.0 | 10.0 | 12.0 | 5 |
| BZT52C62 | 6E | 58.0 | 62 | 66.0 | 5 | 200 | 1000 | 1.0 | 0.2 | 47.0 | 10.0 | 12.0 | 5 |
| BZT52C68 | 6F | 64.0 | 68 | 72.0 | 5 | 250 | 1000 | 1.0 | 0.2 | 52.0 | 10.0 | 12.0 | 5 |
| BZT52C75 | 6H | 70.0 | 75 | 79.0 | 5 | 300 | 1000 | 1.0 | 0.2 | 57 | 10.0 | 12.0 | 5 |

BZT52C2V4 THRU BZT52C75

SURFACE MOUNT ZENER DIODES

● Ratings And Characteristics Curves (Ta=25°C Unless otherwise specified)

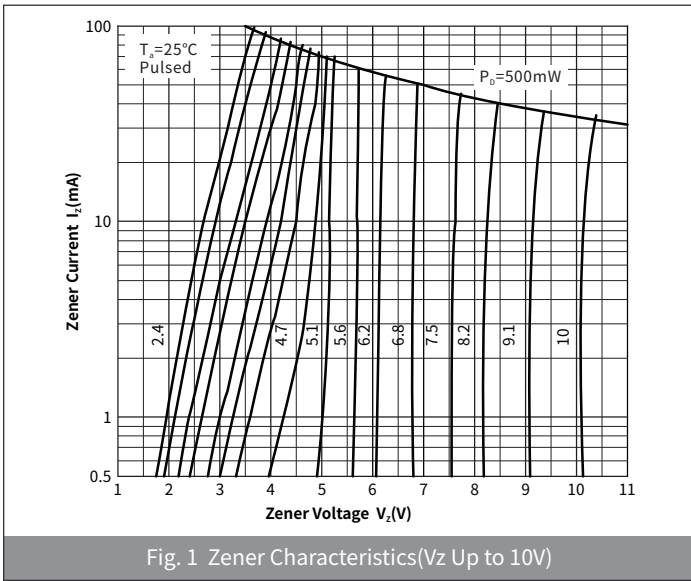


Fig. 1 Zener Characteristics(V_z Up to 10V)

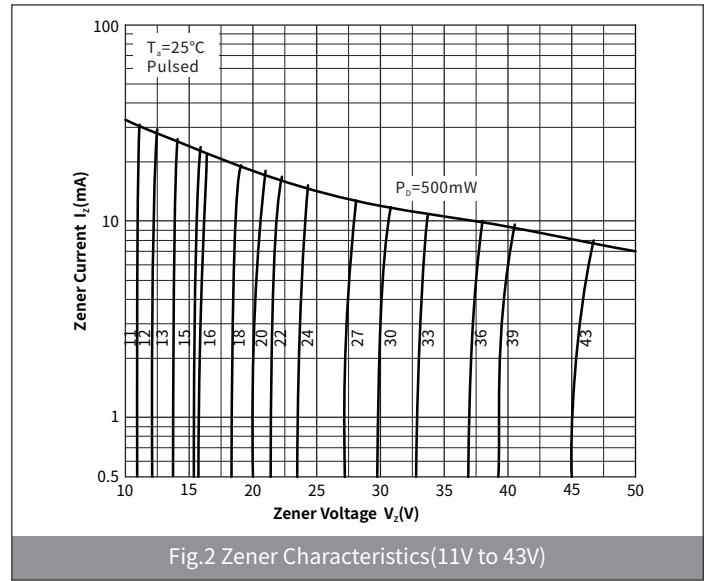


Fig. 2 Zener Characteristics(11V to 43V)

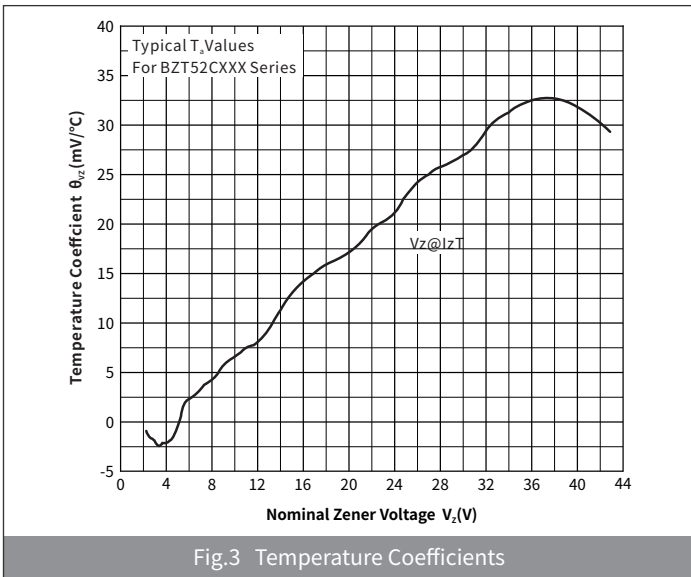


Fig. 3 Temperature Coefficients

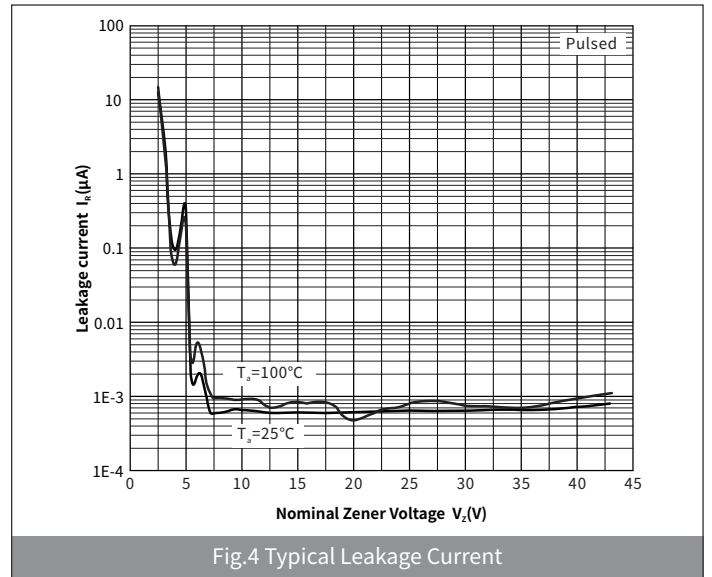


Fig. 4 Typical Leakage Current

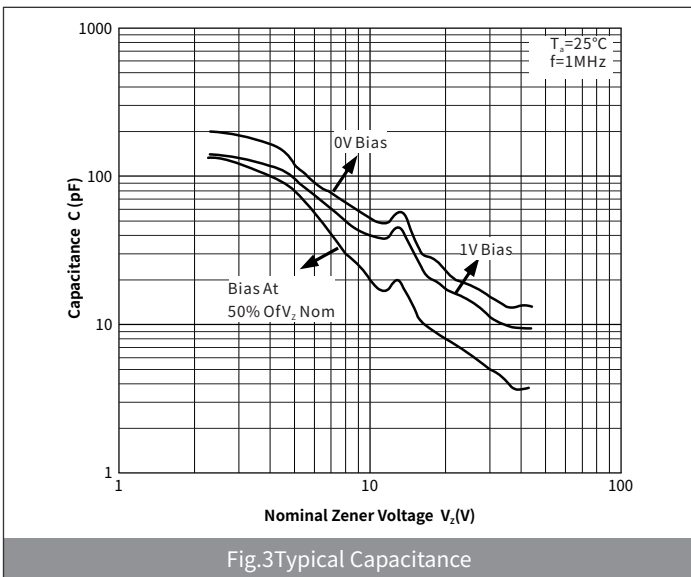


Fig. 3 Typical Capacitance

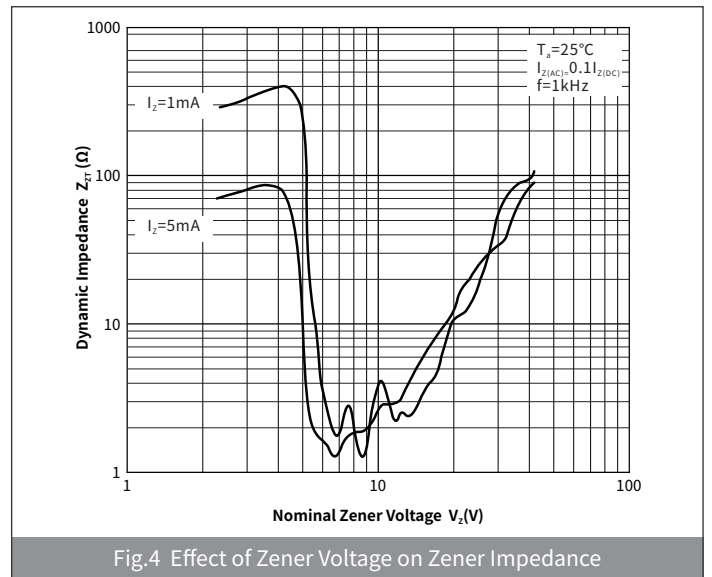


Fig. 4 Effect of Zener Voltage on Zener Impedance

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SURFACE MOUNT ZENER DIODES

● Ordering Information

| PACKAGE | PACKAGE CODE | UNIT WEIGHT(g) | REEL(pcs) | BOX(pcs) | CARTON(pcs) | DELIVERY MODE |
|---------|--------------|----------------|-----------|----------|-------------|---------------|
| SOD-123 | R1 | 0.012 | 3000 | 45000 | 180000 | 7" |

● Package Outline Dimensions (SOD-123)

| Symbol | Dimensions | | | |
|----------|-------------|------|--------|-------|
| | Millimeters | | Inches | |
| | Min. | Max. | Min. | Max. |
| A | 3.55 | 3.85 | 0.140 | 0.152 |
| B | 2.55 | 2.85 | 0.100 | 0.112 |
| C | 1.40 | 1.80 | 0.055 | 0.071 |
| D | 0.95 | 1.35 | 0.140 | 0.152 |
| E | 0.51 | 0.71 | 0.037 | 0.053 |
| F | - | 0.15 | - | 0.006 |
| G | 0.15 | 0.45 | 0.006 | 0.008 |
| H | 0.08 | 0.25 | 0.003 | 0.010 |
| θ | - | 8° | - | 8° |

● Suggested Pad Layout

| Symbol | Dimensions | | | |
|--------|-------------|------|--------|-------|
| | Millimeters | | Inches | |
| | Min. | Max. | Min. | Max. |
| J | 0.91 | - | 0.036 | - |
| K | - | 2.36 | - | 0.092 |
| M | 1.22 | - | 0.048 | - |

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