

SOD-323 SURFACE MOUNT SILICON ZENER DIODES

● Features

- Low Zener Impedance
- Power Dissipation of 200mW
- High Stability and High Reliability
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260°C

● Applications

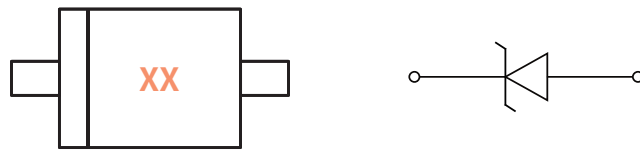
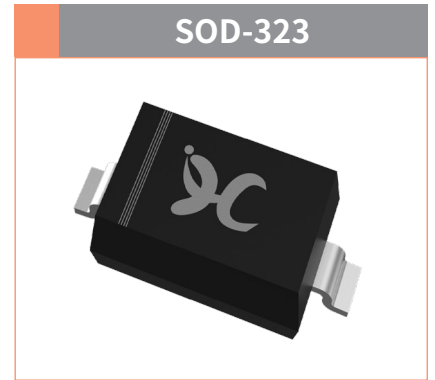
Zener diode is generally used as reference voltage sources in regulated power supplies or as protective diode in overvoltage protection circuits.

● Mechanical Data

- Case: SOD-323
- 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
2.0 to 75 Volts
Power Dissipation
0.2 Watts



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

| PARAMETER | SYMBOL | UNIT | VALUE |
|-------------------------------------|-----------------|-------|------------|
| Power Dissipation | P_D | mW | 200 |
| 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 | 417 |

● 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 |

BZT52C2V0S THRU BZT52C75S

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 | |
|-------------|---------|-----------------------|------|------|-----------------|----------------------------------|----------------------------------|-----------------|--------------------------------|--|------|--------------------------|----------------------|
| | | 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) | Min. | Max. | I _{ZM} (mA) |
| BZT52C2V0S | WY | 1.80 | 2.0 | 2.15 | 5 | 150 | 600 | 1.0 | 100 | 1.0 | -3.5 | 0 | 5 |
| BZT52C2V4S | WX | 2.2 | 2.4 | 2.6 | 5 | 100 | 600 | 1.0 | 50 | 1.0 | -3.5 | 0 | 5 |
| BZT52C2V7S | W1 | 2.5 | 2.7 | 2.9 | 5 | 100 | 600 | 1.0 | 20 | 1.0 | -3.5 | 0 | 5 |
| BZT52C3V0S | W2 | 2.8 | 3.0 | 3.2 | 5 | 95 | 600 | 1.0 | 10 | 1.0 | -3.5 | 0 | 5 |
| BZT52C3V3S | W3 | 3.1 | 3.3 | 3.5 | 5 | 95 | 600 | 1.0 | 5 | 1.0 | -3.5 | 0 | 5 |
| BZT52C3V6S | W4 | 3.4 | 3.6 | 3.8 | 5 | 90 | 600 | 1.0 | 5 | 1.0 | -3.5 | 0 | 5 |
| BZT52C3V9S | W5 | 3.7 | 3.9 | 4.1 | 5 | 90 | 600 | 1.0 | 3 | 1.0 | -3.5 | 0 | 5 |
| BZT52C4V3S | W6 | 4.0 | 4.3 | 4.6 | 5 | 90 | 600 | 1.0 | 3 | 1.0 | -3.5 | 0 | 5 |
| BZT52C4V7S | W7 | 4.4 | 4.7 | 5.0 | 5 | 80 | 500 | 1.0 | 3 | 2.0 | -3.5 | 0.2 | 5 |
| BZT52C5V1S | W8 | 4.8 | 5.1 | 5.4 | 5 | 60 | 480 | 1.0 | 2 | 2.0 | -2.7 | 1.2 | 5 |
| BZT52C5V6S | W9 | 5.2 | 5.6 | 6.0 | 5 | 40 | 400 | 1.0 | 1 | 2.0 | -2.0 | 2.5 | 5 |
| BZT52C6V2S | WA | 5.8 | 6.2 | 6.6 | 5 | 10 | 150 | 1.0 | 3 | 4.0 | 0.4 | 3.7 | 5 |
| BZT52C6V8S | WB | 6.4 | 6.8 | 7.2 | 5 | 15 | 80 | 1.0 | 2 | 4.0 | 1.2 | 4.5 | 5 |
| BZT52C7V5S | WC | 7.0 | 7.5 | 7.9 | 5 | 15 | 80 | 1.0 | 1 | 5.0 | 2.5 | 5.3 | 5 |
| BZT52C8V2S | WD | 7.7 | 8.2 | 8.7 | 5 | 15 | 80 | 1.0 | 0.7 | 5.0 | 3.2 | 6.2 | 5 |
| BZT52C9V1S | WE | 8.5 | 9.1 | 9.6 | 5 | 15 | 100 | 1.0 | 0.5 | 6.0 | 3.8 | 7.0 | 5 |
| BZT52C10S | WF | 9.4 | 10 | 10.6 | 5 | 20 | 150 | 1.0 | 0.2 | 7.0 | 4.5 | 8.0 | 5 |
| BZT52C11S | WG | 10.4 | 11 | 11.6 | 5 | 20 | 150 | 1.0 | 0.1 | 8.0 | 5.4 | 9.0 | 5 |
| BZT52C12S | WH | 11.4 | 12 | 12.7 | 5 | 25 | 150 | 1.0 | 0.1 | 8.0 | 6.0 | 10.0 | 5 |
| BZT52C13S | WI | 12.4 | 13 | 14.1 | 5 | 30 | 170 | 1.0 | 0.1 | 8.0 | 7.0 | 11.0 | 5 |
| BZT52C15S | WJ | 13.8 | 15 | 15.6 | 5 | 30 | 200 | 1.0 | 0.1 | 10.5 | 9.2 | 13.0 | 5 |
| BZT52C16S | WK | 15.3 | 16 | 17.1 | 5 | 40 | 200 | 1.0 | 0.1 | 11.2 | 10.4 | 14.0 | 5 |
| BZT52C18S | WL | 16.8 | 18 | 19.1 | 5 | 45 | 225 | 1.0 | 0.1 | 12.6 | 12.4 | 16.0 | 5 |
| BZT52C20S | WM | 18.8 | 20 | 21.2 | 5 | 55 | 225 | 1.0 | 0.1 | 14.0 | 14.4 | 18.0 | 5 |
| BZT52C22S | WN | 20.8 | 22 | 23.3 | 5 | 55 | 250 | 1.0 | 0.1 | 15.4 | 16.4 | 20.0 | 5 |
| BZT52C24S | WO | 22.8 | 24 | 25.6 | 5 | 70 | 250 | 1.0 | 0.1 | 16.8 | 18.4 | 22.0 | 5 |
| BZT52C27S | WP | 25.1 | 27 | 28.9 | 2 | 80 | 300 | 0.5 | 0.1 | 18.9 | 21.4 | 25.3 | 2 |
| BZT52C30S | WQ | 28.0 | 30 | 32.0 | 2 | 80 | 300 | 0.5 | 0.1 | 21.0 | 24.4 | 29.4 | 2 |
| BZT52C33S | WR | 31.0 | 33 | 35.0 | 2 | 80 | 325 | 0.5 | 0.1 | 23.1 | 27.4 | 33.4 | 2 |
| BZT52C36S | WS | 34.0 | 36 | 38.0 | 2 | 90 | 350 | 0.5 | 0.1 | 25.2 | 30.4 | 37.4 | 2 |
| BZT52C39S | WT | 37.0 | 39 | 41.0 | 2 | 130 | 350 | 0.5 | 0.1 | 27.3 | 33.4 | 41.2 | 2 |
| BZT52C43S | WU | 40.0 | 43 | 46.0 | 5 | 100 | 700 | 1.0 | 0.1 | 32.0 | 10.0 | 12.0 | 5 |
| BZT52C47S | WV | 44.0 | 47 | 50.0 | 5 | 100 | 750 | 1.0 | 0.1 | 35.0 | 10.0 | 12.0 | 5 |
| BZT52C51S | WW | 48.0 | 51 | 54.0 | 5 | 100 | 750 | 1.0 | 0.1 | 38.0 | 10.0 | 12.0 | 5 |
| BZT52C56S | XW | 52.0 | 56 | 60.0 | 5 | 135 | 700 | 1.0 | 0.1 | 39.0 | 10.0 | 12.0 | 5 |
| BZT52C62S | 6E | 58.0 | 62 | 66.0 | 5 | 200 | 1000 | 1.0 | 0.2 | 47.0 | 10.0 | 12.0 | 5 |
| BZT52C68S | 6F | 64.0 | 68 | 72.0 | 5 | 250 | 1000 | 1.0 | 0.2 | 52.0 | 10.0 | 12.0 | 5 |
| BZT52C75S | 6H | 70.0 | 75 | 79.0 | 5 | 300 | 1000 | 1.0 | 0.2 | 57 | 10.0 | 12.0 | 5 |

BZT52C2V0S THRU BZT52C75S

SURFACE MOUNT ZENER DIODES

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

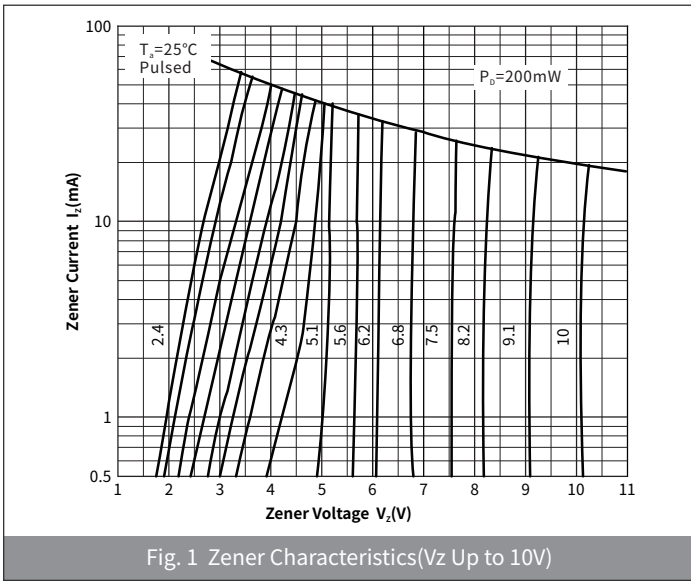


Fig. 1 Zener Characteristics(Vz Up to 10V)

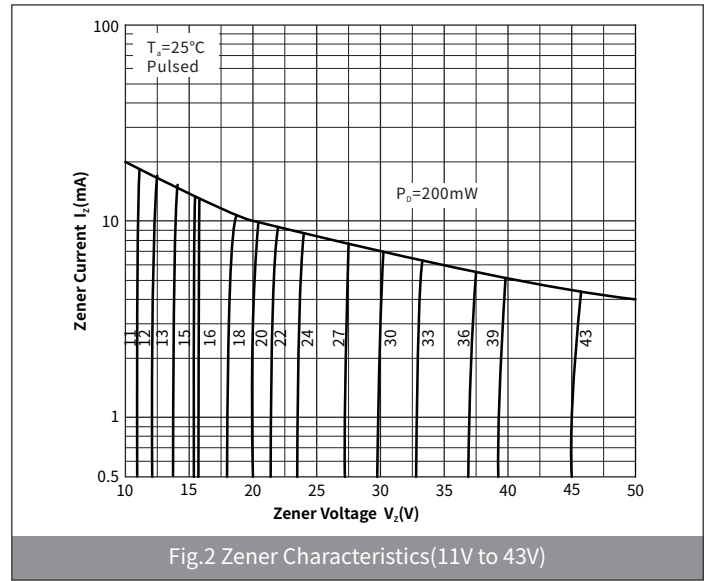


Fig. 2 Zener Characteristics(11V to 43V)

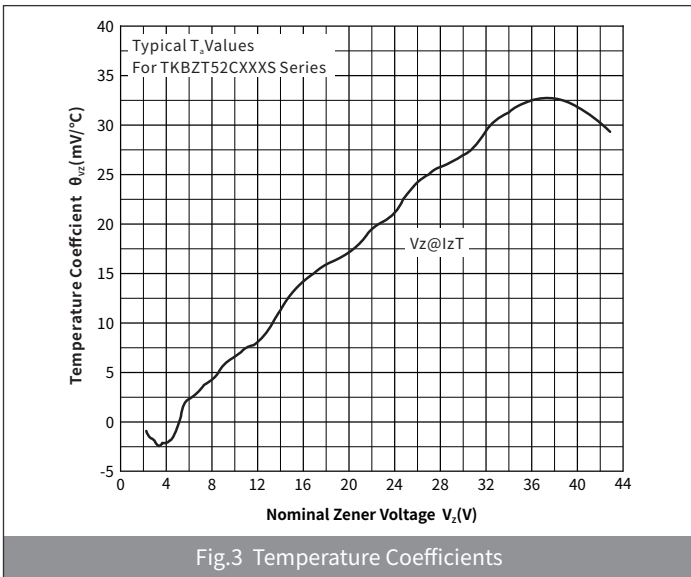


Fig. 3 Temperature Coefficients

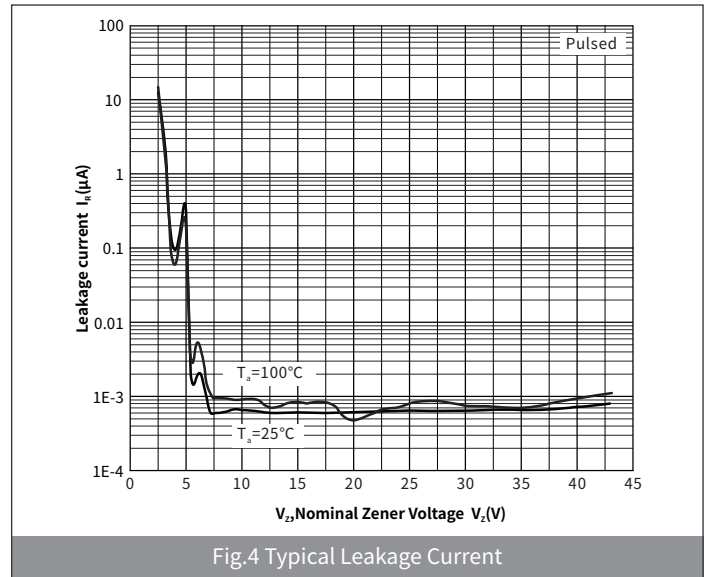


Fig. 4 Typical Leakage Current

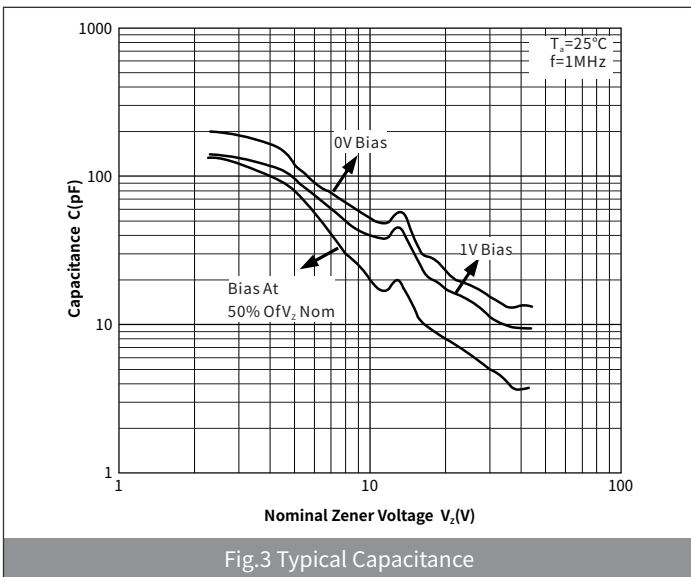


Fig. 3 Typical Capacitance

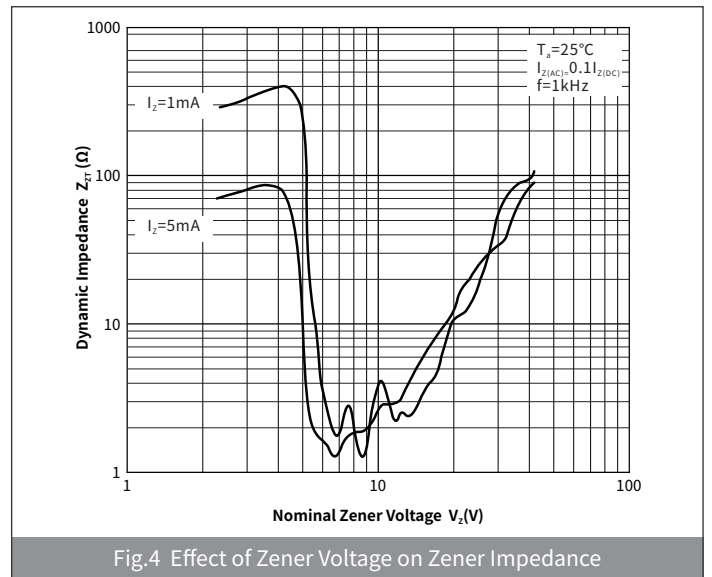


Fig. 4 Effect of Zener Voltage on Zener Impedance

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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-323 | R1 | 0.0048 | 3000 | 45000 | 180000 | 7" |

Package Outline Dimensions (SOD-323)

| Symbol | Dimensions | | | |
|----------------|-------------|------|----------|-------|
| | Millimeters | | Inches | |
| | Min. | Max. | Min. | Max. |
| A | 1.60 | 1.80 | 0.063 | 0.071 |
| B | 0.25 | 0.40 | 0.010 | 0.016 |
| C | 2.30 | 2.80 | 0.091 | 0.110 |
| D | 0.80 | 1.10 | 0.031 | 0.043 |
| D ₁ | 0.80 | 0.90 | 0.031 | 0.035 |
| E | 1.20 | 1.40 | 0.047 | 0.055 |
| F | 0.08 | 0.18 | 0.003 | 0.007 |
| L | 0.475REF | | 0.019REF | |
| L ₁ | 0.25 | 0.40 | 0.010 | 0.016 |
| H | - | 0.14 | - | 0.006 |

Suggested Pad Layout

| Symbol | Dimensions | | | |
|--------|-------------|------|--------|-------|
| | Millimeters | | Inches | |
| | Min. | Max. | Min. | Max. |
| X | 0.65 | 0.75 | 0.026 | 0.030 |
| Y | 0.65 | 0.75 | 0.026 | 0.030 |
| Z | 2.10 | 2.20 | 0.084 | 0.088 |

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