

BZT52C2V4 THRU BZT52C75
PLASTIC-ENCAPSULATE ZENER DIODE



| | | | | | |
|----------------|--------------|--------------|--------|----------------|-----------------------------|
| VOLTAGE | 2.4~75 Volts | POWER | 500 mW | SOD-123 | Marking and Polarity |
|----------------|--------------|--------------|--------|----------------|-----------------------------|

FEATURES

- Low Zener Impedance
- Power Dissipation of 500mW
- High Stability and High Reliability
- Zener Voltage Tolerance: ± 5%(C Series)

MECHANICAL DATA

Package: SOD-123
Epoxy UL: 94V-0
Mounting position: Any
Weight: approx. 0.01g

Marking and Polarity

Remark:

- ①. xx=Modle code,xx=WX~X5
- ②. White band denotes cathode

Maximum Ratings & Thermal Characteristics (Ratings at 25°C ambient temperature unless otherwise specified.)

| Parameter | Symbol | Value | Unit |
|---|-----------------|-------------|------|
| Power Dissipation (Note1) | P_D | 500 | mW |
| Maximum instantaneous forward voltage@IF=10mA (Note2) | V_F | 1.0 | V |
| Operating Temperature Range | T_{OPR} | -55~+150 | °C |
| Storage temperature range | T_{STG} | -55~+150 | °C |
| Thermal Resistance, Junction to Ambient Air | $R_{\theta JA}$ | 400 (Note1) | °C/W |

- Notes: 1. Device mounted on ceramic PCB; 7.6mm x 9.4mm x 0.87mm with pad areas 25mm²
2. Pulse width < 10 ms

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Electrical Characteristic (Rating at 25°C ambient temperature unless otherwise specified).

| Device | Marking | Zener Voltage Range | | | | Maximum Zener Impedance | | | Maximum Reverse Current | |
|-----------|---------|---------------------------------|--------|--------|-----------------|----------------------------------|----------------------------------|-----------------|-------------------------|------|
| | | V _Z @I _{ZT} | | | I _{ZT} | Z _{zt} @I _{ZT} | Z _{zk} @I _{ZK} | I _{ZK} | IR | VR |
| | | Min(V) | Nom(V) | Max(V) | mA | Ω | | mA | uA | V |
| BZT52C2V4 | WX | 2.28 | 2.4 | 2.52 | 5 | 100 | 600 | 1.0 | 50 | 1.0 |
| BZT52C2V7 | W1 | 2.57 | 2.7 | 2.84 | 5 | 100 | 600 | 1.0 | 20 | 1.0 |
| BZT52C3V0 | W2 | 2.85 | 3.0 | 3.15 | 5 | 95 | 600 | 1.0 | 10 | 1.0 |
| BZT52C3V3 | W3 | 3.14 | 3.3 | 3.47 | 5 | 95 | 600 | 1.0 | 5 | 1.0 |
| BZT52C3V6 | W4 | 3.42 | 3.6 | 3.78 | 5 | 90 | 600 | 1.0 | 5 | 1.0 |
| BZT52C3V9 | W5 | 3.71 | 3.9 | 4.10 | 5 | 90 | 600 | 1.0 | 3 | 1.0 |
| BZT52C4V3 | W6 | 4.09 | 4.3 | 4.52 | 5 | 90 | 600 | 1.0 | 3 | 1.0 |
| BZT52C4V7 | W7 | 4.47 | 4.7 | 4.94 | 5 | 80 | 500 | 1.0 | 3 | 2.0 |
| BZT52C5V1 | W8 | 4.85 | 5.1 | 5.36 | 5 | 60 | 480 | 1.0 | 2 | 2.0 |
| BZT52C5V6 | W9 | 5.32 | 5.6 | 5.88 | 5 | 40 | 400 | 1.0 | 1 | 2.0 |
| BZT52C6V2 | WA | 5.89 | 6.2 | 6.51 | 5 | 10 | 150 | 1.0 | 3 | 4.0 |
| BZT52C6V8 | WB | 6.46 | 6.8 | 7.14 | 5 | 15 | 80 | 1.0 | 2 | 4.0 |
| BZT52C7V5 | WC | 7.13 | 7.5 | 7.88 | 5 | 15 | 80 | 1.0 | 1 | 5.0 |
| BZT52C8V2 | WD | 7.79 | 8.2 | 8.61 | 5 | 15 | 80 | 1.0 | 0.7 | 5.0 |
| BZT52C9V1 | WE | 8.65 | 9.1 | 9.56 | 5 | 15 | 100 | 1.0 | 0.5 | 6.0 |
| BZT52C10 | WF | 9.50 | 10.0 | 10.50 | 5 | 20 | 150 | 1.0 | 0.2 | 7.0 |
| BZT52C11 | WG | 10.45 | 11.0 | 11.55 | 5 | 20 | 150 | 1.0 | 0.1 | 8.0 |
| BZT52C12 | WH | 11.40 | 12.0 | 12.60 | 5 | 25 | 150 | 1.0 | 0.1 | 8.0 |
| BZT52C13 | WI | 12.35 | 13.0 | 13.65 | 5 | 30 | 170 | 1.0 | 0.1 | 8.0 |
| BZT52C15 | WJ | 14.25 | 15.0 | 15.75 | 5 | 30 | 200 | 1.0 | 0.1 | 10.5 |
| BZT52C16 | WK | 15.20 | 16.0 | 16.80 | 5 | 40 | 200 | 1.0 | 0.1 | 11.2 |
| BZT52C18 | WL | 17.10 | 18.0 | 18.90 | 5 | 45 | 225 | 1.0 | 0.1 | 12.6 |
| BZT52C20 | WM | 19.00 | 20.0 | 21.00 | 5 | 55 | 225 | 1.0 | 0.1 | 14.0 |
| BZT52C22 | WN | 20.90 | 22.0 | 23.10 | 5 | 55 | 250 | 1.0 | 0.1 | 15.4 |
| BZT52C24 | WO | 22.80 | 24.0 | 25.20 | 5 | 70 | 250 | 1.0 | 0.1 | 16.8 |
| BZT52C27 | WP | 25.65 | 27.0 | 28.35 | 2 | 80 | 300 | 0.5 | 0.1 | 18.9 |
| BZT52C30 | WQ | 28.50 | 30.0 | 31.50 | 2 | 80 | 300 | 0.5 | 0.1 | 21.0 |
| BZT52C33 | WR | 31.35 | 33.0 | 34.65 | 2 | 80 | 325 | 0.5 | 0.1 | 23.1 |
| BZT52C36 | WS | 34.20 | 36.0 | 37.80 | 2 | 90 | 350 | 0.5 | 0.1 | 25.2 |
| BZT52C39 | WT | 37.05 | 39.0 | 40.95 | 2 | 130 | 350 | 0.5 | 0.1 | 27.3 |
| BZT52C43 | WU | 40.85 | 43.0 | 45.15 | 2 | 130 | 350 | 0.5 | 0.1 | 29.4 |
| BZT52C47 | WV | 44.65 | 47.0 | 49.35 | 2 | 170 | 1000 | 0.25 | 0.1 | 36.0 |
| BZT52C51 | X1 | 48.45 | 51.0 | 53.55 | 2 | 180 | 1300 | 0.25 | 0.1 | 39.0 |
| BZT52C56 | X2 | 53.20 | 56.0 | 58.80 | 2 | 200 | 1400 | 0.25 | 0.1 | 43.0 |
| BZT52C62 | X3 | 58.90 | 62.0 | 65.10 | 2 | 225 | 1400 | 0.25 | 0.1 | 47.0 |
| BZT52C68 | X4 | 64.60 | 68.0 | 71.40 | 2 | 240 | 1600 | 0.25 | 0.1 | 52.0 |
| BZT52C75 | X5 | 71.25 | 75.0 | 78.75 | 2 | 265 | 1700 | 0.25 | 0.1 | 56.0 |

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RATING AND CHARACTERISTIC CURVES

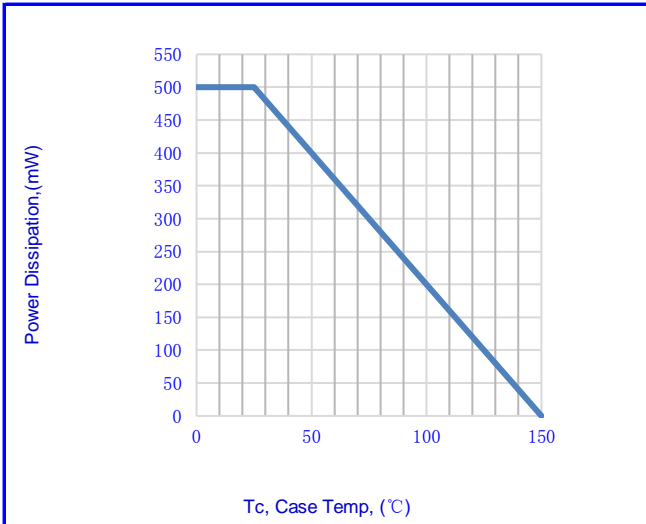


Fig.1-POWER DISSIPATION VS. AMBIENT TEMP.

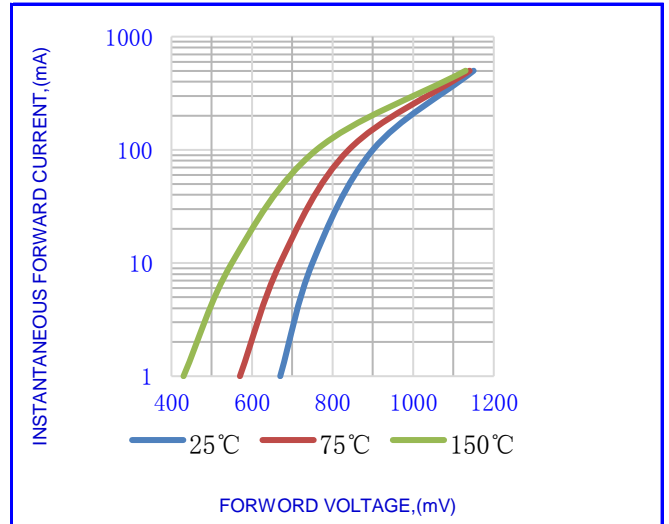


Fig.2- Forward characteristics

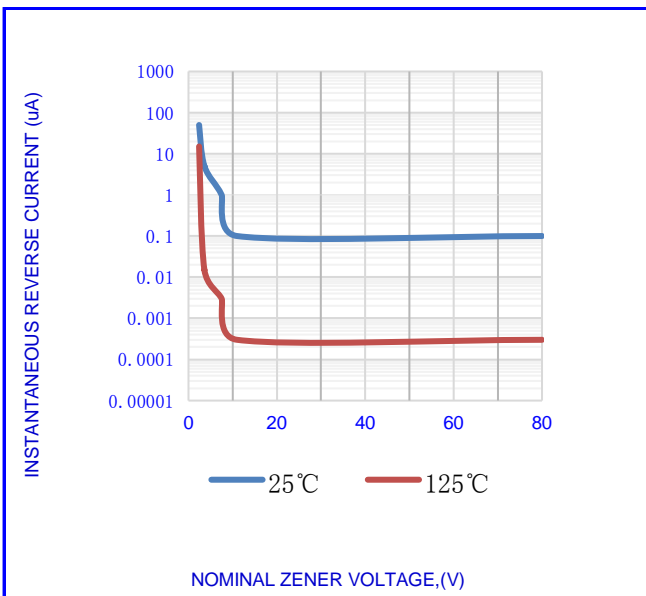


Fig.3- TYPICAL REVERSE CHARACTERISTICS

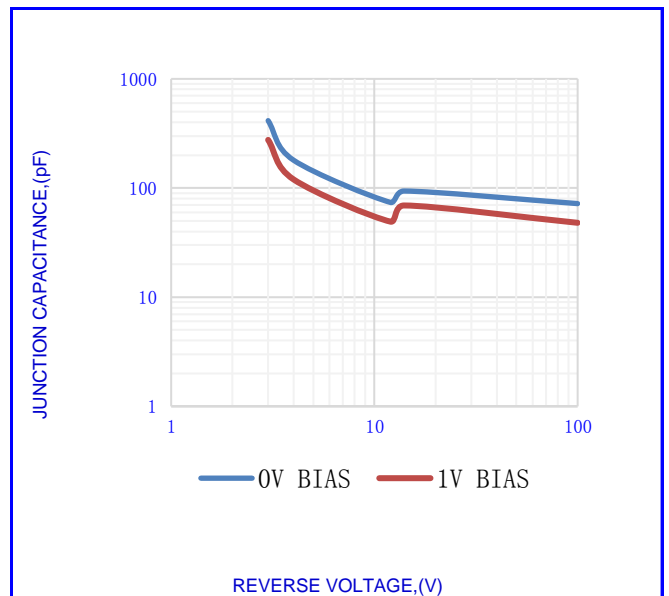


Fig.4- TYPICAL JUNCTION CAPACITANCE

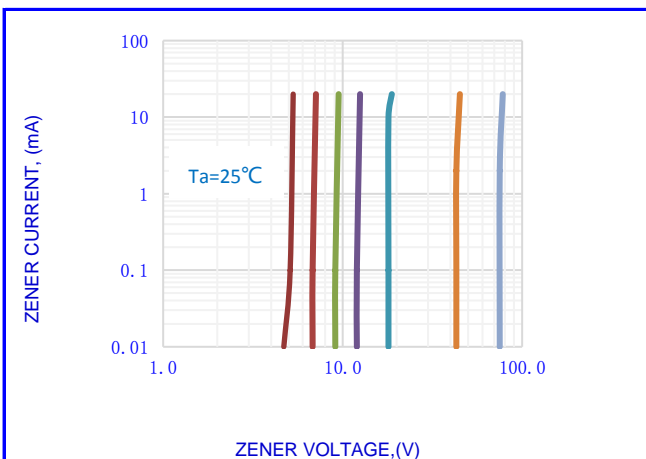


Fig.5-ZENER BREAKDOWN CHARACTERISTICS

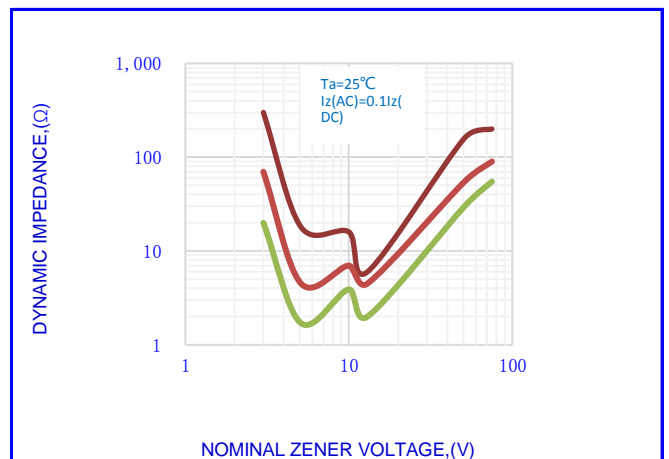


Fig.6-EFFECT OF ZENER VOLTAGE ON ZENER IMPEDANCE

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| OUTLINE DRAWINGS | | SOD-123 | | | | | |
|------------------|-------|--------------------|-------|-------|--------|-------|--|
| | | OUTLINE DIMENSIONS | | | | | |
| | | Millimeters | | | Inches | | |
| Dim. | Min. | Typ. | Max. | Min. | Typ. | Max. | |
| A | 2.500 | - | 2.800 | 0.098 | - | 0.110 | |
| B | 3.600 | - | 3.900 | 0.142 | - | 0.154 | |
| C | 1.400 | - | 1.800 | 0.055 | - | 0.071 | |
| D | 0.950 | - | 1.350 | 0.037 | - | 0.053 | |
| E | 0.500 | - | 0.700 | 0.020 | - | 0.028 | |
| F | - | - | 0.200 | - | - | 0.008 | |
| G | 0.400 | - | - | 0.016 | - | - | |
| H | - | - | 0.120 | - | - | 0.005 | |

| MOUNTING PAD LAYOUT | | SOD-123 | | | | | |
|---------------------|------|--------------------|------|------|--------|------|--|
| | | OUTLINE DIMENSIONS | | | | | |
| | | Millimeters | | | Inches | | |
| Dim. | Min. | Typ. | Max. | Min. | Typ. | Max. | |
| A | -- | 4.250 | -- | -- | 0.167 | -- | |
| B | -- | 1.220 | -- | -- | 0.048 | -- | |
| C | -- | 2.700 | -- | -- | 0.106 | -- | |
| D | -- | 0.780 | -- | -- | 0.031 | -- | |

Packing Information

| Package | Pack | Reel Size (mm) | Quantity (pcs/reel) | Inner Box Size LxWxH(mm) | Carton Size LxWxH(mm) | Quantity (Inner Box/carton) |
|---------|------|----------------|---------------------|--------------------------|-----------------------|-----------------------------|
| SOD-123 | T/R | Φ180 | 3000 | 210x208x203 | 440x440x230 | 4 |

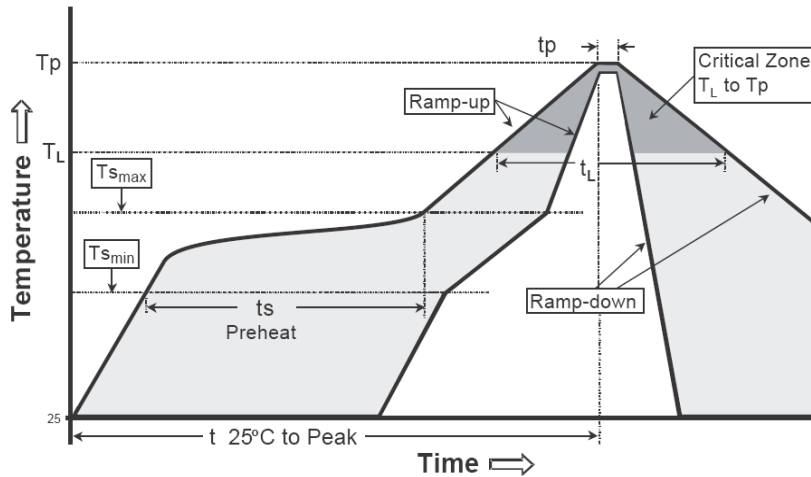
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Recommended wave soldering condition

| Product | Peak Temperature | Soldering Time |
|-----------------|------------------|-----------------|
| Pb-free devices | 260 +0/-5 °C | 5 +1/-1 seconds |

Recommended temperature profile for IR reflow



| Profile feature | Sn-Pb eutectic Assembly | Pb-free Assembly |
|--|----------------------------------|----------------------------------|
| Average ramp-up rate (Tsmmax to Tp) | 3°C/second max. | 3°C/second max. |
| Preheat -Temperature Min(TS min) -Temperature Max(TS max) -Time(ts min to ts max) | 100°C 150°C 60-120 seconds | 150°C 200°C 60-180 seconds |
| Time maintained above: -Temperature (TL) - Time (tL) | 183°C 60-150 seconds | 217°C 60-150 seconds |
| Peak Temperature(TP) | 240 +0/-5 °C | 260 +0/-5 °C |
| Time within 5°C of actual peak temperature(tp) | 10-30 seconds | 20-40 seconds |
| Ramp down rate | 6°C/second max. | 6°C/second max. |
| Time 25 °C to peak temperature | 6 minutes max. | 8 minutes max. |

Note : All temperatures refer to topside of the package, measured on the package body surface.

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