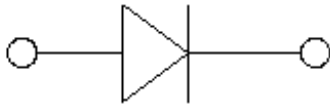


Zener Diodes



Features

- Moisture sensitivity level 1
- Zener voltage 2.4V~75V

Application

- Linear voltage regulator
- DC regulator
- Small-signal surge protection

Mechanical data

- **Package:** SOD-123
- **Terminals:** Tin plated leads, solderable per J-STD-002 and JESD22-B102

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

| Parameter | Symbol | Unit | Value |
|-------------------------------------|-----------|--------------------|-------------|
| Forward voltage @ $I_F=10\text{mA}$ | V_F | V | 0.9 |
| Power dissipation | P_D | mW | 500 |
| Maximum regulator current | I_{ZM} | mA | P_D/V_Z |
| Junction temperature | T_J | $^{\circ}\text{C}$ | -55 to +150 |
| Storage temperature | T_{STG} | $^{\circ}\text{C}$ | -55 to +150 |



BZT52C2V4 THRU BZT52C75

■ Electrical Characteristics (T_a=25°C Unless otherwise specified)

| Type number | Device marking | V _Z @ I _{ZT} (V) | | | Z _{ZT} (Ω) | | Z _{ZK} (Ω) | | I _R (μA) @V _R | | Typical temperature coefficient @ I _{ZTC} mV/°C | | Test Current I _{ZTC} mA | Diode capacitance Cd (pF) | Non-repetitive peak reverse current I _{ZSM} (A) |
|-------------|----------------|--------------------------------------|-----|------|----------------------|-----|----------------------|-----|-------------------------------------|--------------------|--|------|----------------------------------|---------------------------|--|
| | | min | typ | max | I _{ZT} (mA) | max | I _{ZK} (mA) | max | max | V _R (V) | min | max | | | |
| BZT52C2V4 | WX | 2.28 | 2.4 | 2.52 | 5 | 100 | 1.0 | 600 | 50 | 1.0 | -3.5 | 0 | 5 | 450 | 6 |
| BZT52C2V7 | W1 | 2.57 | 2.7 | 2.84 | 5 | 100 | 1.0 | 600 | 20 | 1.0 | -3.5 | 0 | 5 | 450 | 6 |
| BZT52C3V0 | W2 | 2.85 | 3.0 | 3.15 | 5 | 95 | 1.0 | 600 | 10 | 1.0 | -3.5 | 0 | 5 | 450 | 6 |
| BZT52C3V3 | W3 | 3.14 | 3.3 | 3.47 | 5 | 95 | 1.0 | 600 | 5 | 1.0 | -3.5 | 0 | 5 | 450 | 6 |
| BZT52C3V6 | W4 | 3.42 | 3.6 | 3.78 | 5 | 90 | 1.0 | 600 | 5 | 1.0 | -3.5 | 0 | 5 | 450 | 4.5 |
| BZT52C3V9 | W5 | 3.71 | 3.9 | 4.1 | 5 | 90 | 1.0 | 600 | 3 | 1.0 | -3.5 | 0 | 5 | 450 | 4.5 |
| BZT52C4V3 | W6 | 4.09 | 4.3 | 4.52 | 5 | 90 | 1.0 | 600 | 3 | 1.0 | -3.5 | 0 | 5 | 450 | 3.5 |
| BZT52C4V7 | W7 | 4.47 | 4.7 | 4.94 | 5 | 80 | 1.0 | 500 | 3 | 2.0 | -3.5 | 0 | 5 | 300 | 3.5 |
| BZT52C5V1 | W8 | 4.85 | 5.1 | 5.36 | 5 | 60 | 1.0 | 480 | 2 | 2.0 | -2.7 | 1.2 | 5 | 300 | 3 |
| BZT52C5V6 | W9 | 5.32 | 5.6 | 5.88 | 5 | 40 | 1.0 | 400 | 1 | 2.0 | -2 | 2.5 | 5 | 200 | 3 |
| BZT52C6V2 | WA | 5.8 | 6.2 | 6.6 | 5 | 10 | 1.0 | 150 | 3 | 4.0 | 0.4 | 3.7 | 5 | 200 | 3 |
| BZT52C6V8 | WB | 6.4 | 6.8 | 7.2 | 5 | 15 | 1.0 | 80 | 2 | 4.0 | 1.2 | 4.5 | 5 | 200 | 2 |
| BZT52C7V5 | WC | 7.0 | 7.5 | 7.9 | 5 | 15 | 1.0 | 80 | 1 | 5.0 | 2.5 | 5.3 | 5 | 150 | 2 |
| BZT52C8V2 | WD | 7.7 | 8.2 | 8.7 | 5 | 15 | 1.0 | 80 | 0.7 | 5.0 | 3.2 | 6.2 | 5 | 150 | 2 |
| BZT52C9V1 | WE | 8.5 | 9.1 | 9.6 | 5 | 15 | 1.0 | 100 | 0.5 | 6.0 | 3.8 | 7.0 | 5 | 150 | 1.8 |
| BZT52C10 | WF | 9.4 | 10 | 10.6 | 5 | 20 | 1.0 | 150 | 0.2 | 7.0 | 4.5 | 8.0 | 5 | 90 | 1.8 |
| BZT52C11 | WG | 10.4 | 11 | 11.6 | 5 | 20 | 1.0 | 150 | 0.1 | 8.0 | 5.4 | 9.0 | 5 | 85 | 1.8 |
| BZT52C12 | WH | 11.4 | 12 | 12.7 | 5 | 25 | 1.0 | 150 | 0.1 | 8.0 | 6.0 | 10.0 | 5 | 85 | 1.8 |
| BZT52C13 | WI | 12.4 | 13 | 14.1 | 5 | 30 | 1.0 | 170 | 0.1 | 8.0 | 7.0 | 11.0 | 5 | 80 | 1 |
| BZT52C15 | WJ | 14.25 | 15 | 15.6 | 5 | 30 | 1.0 | 200 | 0.1 | 10.5 | 9.2 | 13.0 | 5 | 75 | 1 |
| BZT52C16 | WK | 15.3 | 16 | 17.1 | 5 | 40 | 1.0 | 200 | 0.1 | 11.2 | 10.4 | 14.0 | 5 | 75 | 1 |
| BZT52C18 | WL | 16.8 | 18 | 19.1 | 5 | 45 | 1.0 | 225 | 0.1 | 12.6 | 12.4 | 16.0 | 5 | 70 | 1 |
| BZT52C20 | WM | 18.8 | 20 | 21.2 | 5 | 55 | 1.0 | 225 | 0.1 | 14.0 | 14.4 | 18.0 | 5 | 60 | 1 |
| BZT52C22 | WN | 20.8 | 22 | 23.3 | 5 | 55 | 1.0 | 250 | 0.1 | 15.4 | 16.4 | 20.0 | 5 | 60 | 0.6 |



BZT52C2V4 THRU BZT52C75

| Type number | Device marking | $V_Z @ I_{ZT}$ (V) | | | $Z_{ZT}(\Omega)$ | | $Z_{ZK}(\Omega)$ | | $I_R(\mu A) @ V_R$ | | Typical temperature coefficient @ I_{ZTC} mV/°C | | Test Current I_{ZTC} | Diode capacitance Cd (pF) | Non-repetitive peak reverse current I_{ZSM} (A) |
|-------------|----------------|--------------------|-----|------|------------------|-----|------------------|------|--------------------|----------|---|------|------------------------|---------------------------|---|
| | | min | typ | max | $I_{ZT}(mA)$ | max | $I_{ZK}(mA)$ | max | max | $V_R(V)$ | min | max | mA | max | max |
| BZT52C24 | WO | 22.8 | 24 | 25.6 | 5 | 70 | 1.0 | 250 | 0.1 | 16.8 | 18.4 | 22.0 | 5 | 55 | 0.6 |
| BZT52C27 | WP | 25.1 | 27 | 28.9 | 2 | 80 | 0.5 | 300 | 0.1 | 18.9 | 21.4 | 25.3 | 2 | 50 | 0.6 |
| BZT52C30 | WQ | 28 | 30 | 32 | 2 | 80 | 0.5 | 300 | 0.1 | 21.0 | 24.4 | 29.4 | 2 | 50 | 0.6 |
| BZT52C33 | WR | 31 | 33 | 35 | 2 | 80 | 0.5 | 325 | 0.1 | 23.1 | 27.4 | 33.4 | 2 | 45 | 0.6 |
| BZT52C36 | WS | 34 | 36 | 38 | 2 | 90 | 0.5 | 350 | 0.1 | 25.2 | 30.4 | 37.4 | 2 | 45 | 0.6 |
| BZT52C39 | WT | 37 | 39 | 41 | 2 | 130 | 0.5 | 350 | 0.1 | 27.3 | 33.4 | 41.2 | 2 | 45 | 0.6 |
| BZT52C43 | WU | 40 | 43 | 46 | 5 | 100 | 1.0 | 750 | 0.1 | 32 | 37.6 | 46.6 | 2 | 40 | 0.6 |
| BZT52C47 | WV | 44 | 47 | 50 | 5 | 100 | 1.0 | 750 | 0.1 | 35 | 42.0 | 51.8 | 2 | 40 | 0.5 |
| BZT52C51 | WW | 48 | 51 | 54 | 2 | 180 | 0.5 | 400 | 0.05 | 35.7 | 46.6 | 57.2 | 2 | 40 | 0.4 |
| BZT52C56 | X1 | 53 | 56 | 59 | 2 | 200 | 1 | 1000 | 0.1 | 42 | 52.2 | 63.8 | 2 | 40 | 0.3 |
| BZT52C62 | 5X2 | 58 | 62 | 66 | 2 | 215 | 0.5 | 450 | 0.05 | 43.4 | 58.8 | 71.6 | 2 | 35 | 0.3 |
| BZT52C68 | 5X3 | 64 | 68 | 72 | 2 | 240 | 0.5 | 475 | 0.05 | 47.6 | 65.6 | 79.8 | 2 | 35 | 0.25 |
| BZT52C75 | 5X4 | 70 | 75 | 79 | 2 | 255 | 0.5 | 500 | 0.05 | 52.5 | 73.4 | 88.6 | 2 | 35 | 0.25 |

■ Thermal Characteristics

| Parameter | Symbol | Unit | Value |
|---|------------------------|------|-------|
| Thermal resistance, junction-to-ambient | $R_{\theta J-A}^{(1)}$ | °C/W | 250 |
| Thermal resistance, junction-to-case | $R_{\theta J-C}^{(1)}$ | °C/W | 200 |

Note:

(1) Thermal resistance from junction to ambient and from junction to case mounted on P.C.B. with 8mm*9mm copper pad areas



BZT52C2V4 THRU BZT52C75

■ Characteristics

Fig 1: P_D - T_a Curve

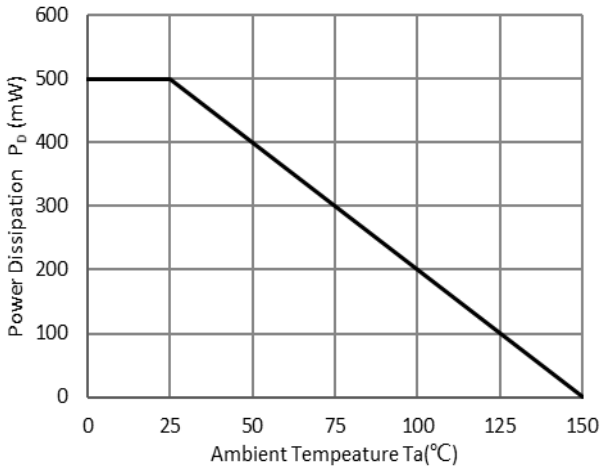


Fig 2: Zener Breakdown Characteristics

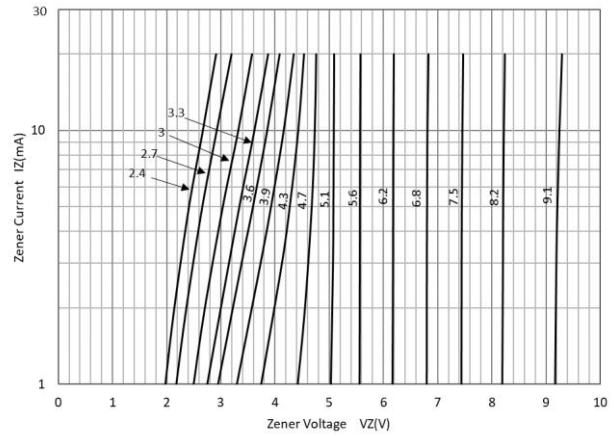


Fig 3: Zener Breakdown Characteristics

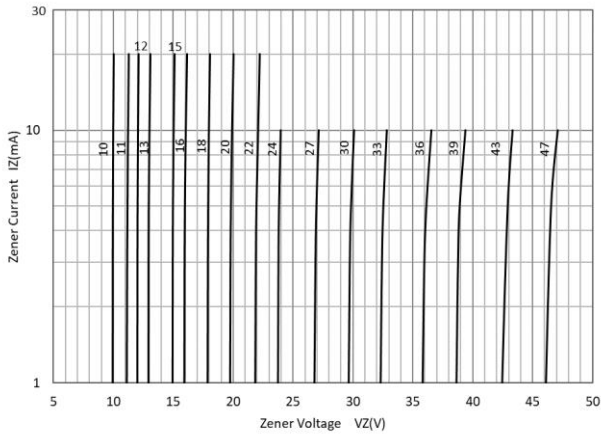


Fig 4: Zener Breakdown Characteristics

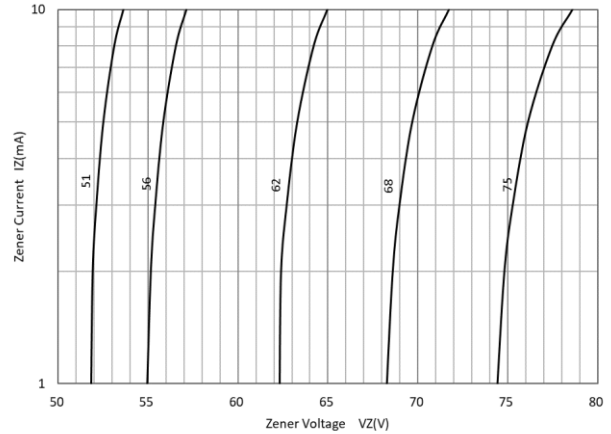


Fig 5: Typical Temperature Coefficient

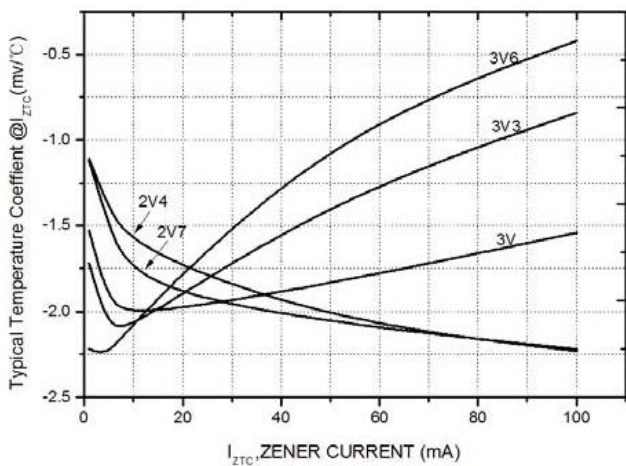
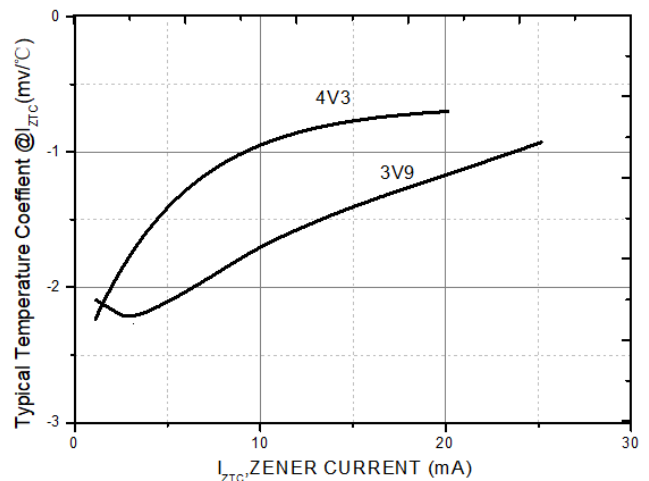


Fig 6: Typical Temperature Coefficient





BZT52C2V4 THRU BZT52C75

Fig 7: Typical Temperature Coefficient

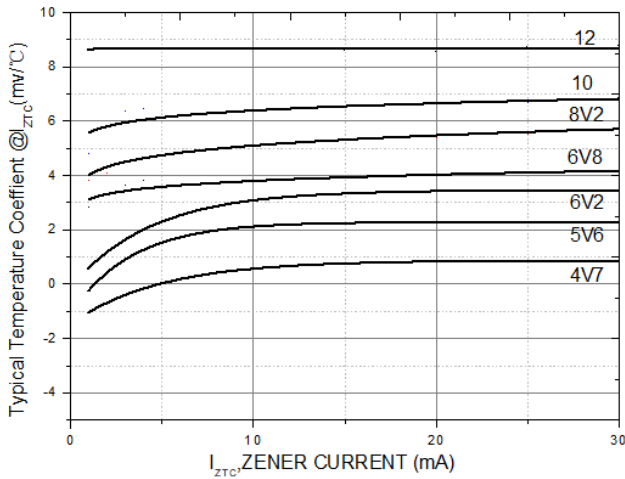


Fig 8: Typical Temperature Coefficient

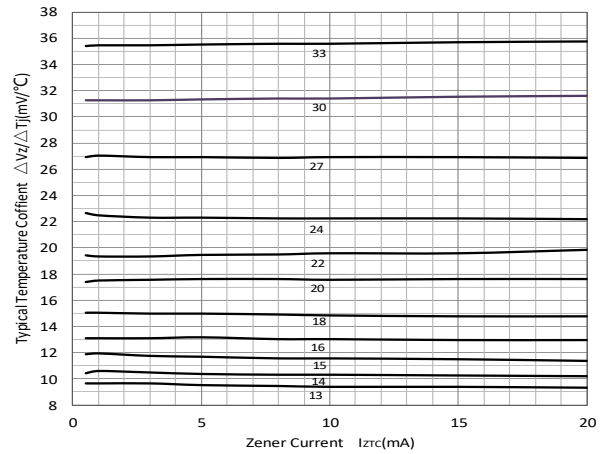


Fig 9: Typical Temperature Coefficient

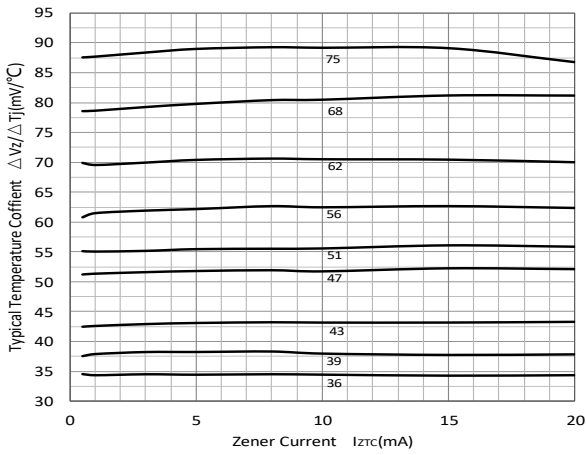


Fig 10: Typical Forward Voltage

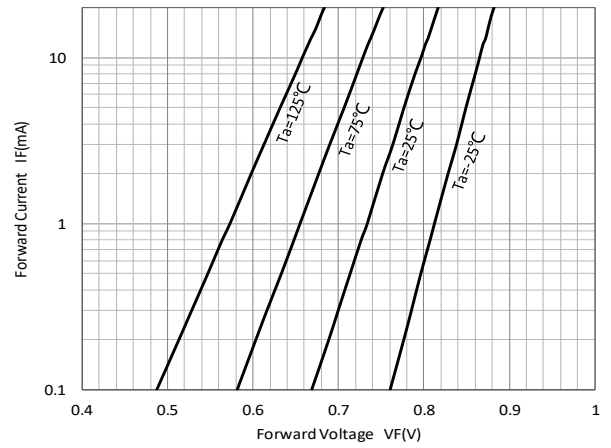


Fig 11: Typical Reverse Current

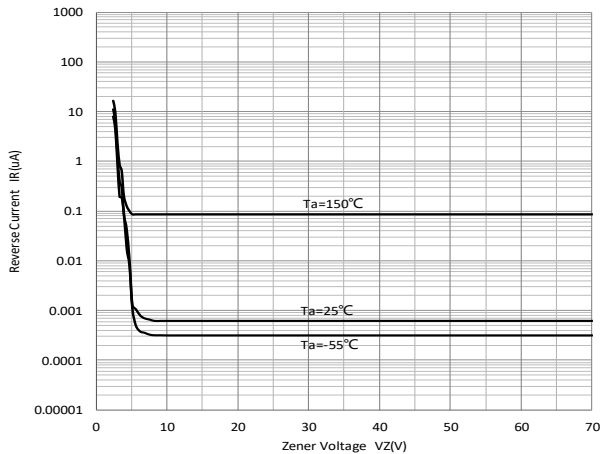
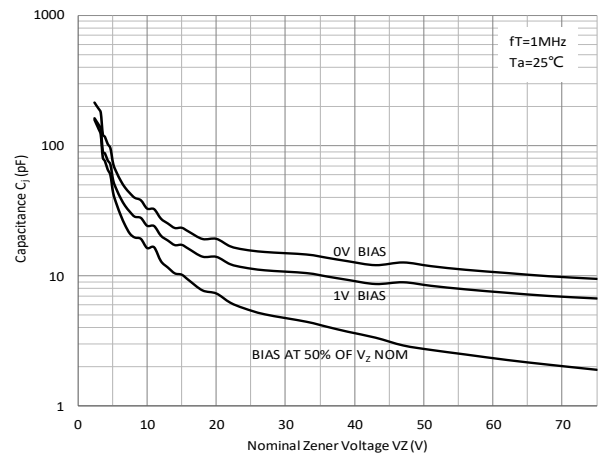


Fig 12: Typical Capacitance



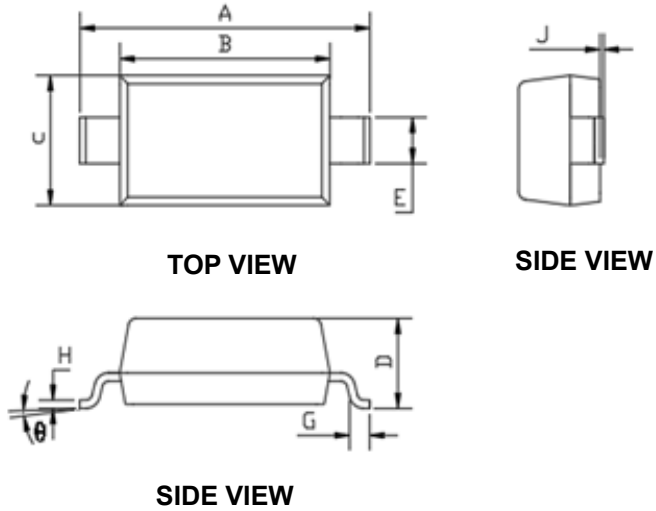


BZT52C2V4 THRU BZT52C75

■ Ordering Information

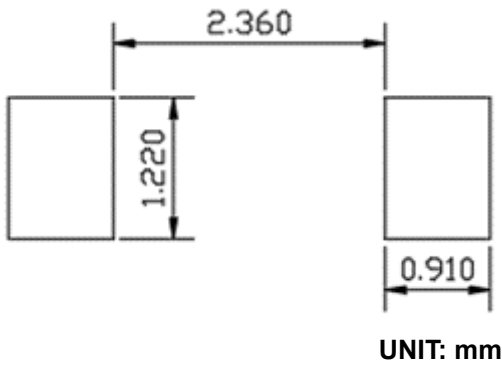
| Preferred P/N | Packing code | Unit weight(g) | Minimum package(pcs) | Inner box quantity(pcs) | Outer carton quantity(pcs) | Delivery mode |
|-------------------------|--------------|-------------------|----------------------|-------------------------|----------------------------|---------------|
| BZT52C2V4 THRU BZT52C75 | F2 | Approximate 0.011 | 3000 | 30000 | 120000 | 7" reel |
| BZT52C2V4 THRU BZT52C75 | F3 | Approximate 0.011 | 10000 | / | 210000 | 13" reel |

■ Outline Dimensions



| DIMENSIONS | | | | |
|------------|--------|-------|-------|-------|
| DIM | INCHES | | MM | |
| | MIN | MAX | MM | MAX |
| A | 0.140 | 0.152 | 3.550 | 3.850 |
| B | 0.100 | 0.112 | 2.550 | 2.850 |
| C | 0.055 | 0.071 | 1.400 | 1.800 |
| D | 0.037 | 0.053 | 0.950 | 1.350 |
| E | 0.020 | 0.028 | 0.510 | 0.710 |
| G | 0.006 | 0.018 | 0.150 | 0.450 |
| H | 0.003 | 0.010 | 0.080 | 0.250 |
| J | 0.000 | 0.006 | 0.000 | 0.150 |
| θ | 0 | 8° | 0 | 8° |

■ Suggested Pad Layout





BZT52C2V4 THRU BZT52C75

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