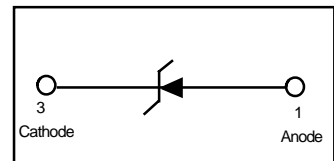
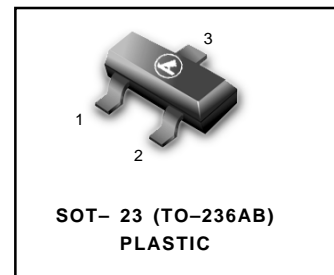


## Zener Voltage Regulator Diodes

- We declare that the material of product compliance with RoHS requirements.
- S- Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable

**LBZX84C2V4LT1G**  
Series  
**S-LBZX84C2V4LT1G**  
Series



### MAXIMUM CASE TEMPERATURE FOR SOLDERING

PURPOSES: 260°C for 10 seconds

### THERMAL CHARACTERISTICS

| Characteristic  | Symbol          | Max       | Unit               |
|---|-----------------|-----------|--------------------|
| Total Device Dissipation FR-5 Board(Note 1)<br>$T_A = 25^\circ\text{C}$<br>Derate above $25^\circ\text{C}$          | $P_D$           | 225       | mW                 |
| Thermal Resistance Junction to Ambient  | $R_{\theta JA}$ | 556       | $^\circ\text{C/W}$ |
| Total Device Dissipation<br>Alumina Substrate (Note 2), $T_A = 25^\circ\text{C}$<br>Derate above $25^\circ\text{C}$ | $P_D$           | 300       | mW                 |
| Thermal Resistance Junction to Ambient  | $R_{\theta JA}$ | 417       | $^\circ\text{C/W}$ |
| Junction and Storage Temperature  | $T_J, T_{stg}$  | -55to+150 | $^\circ\text{C}$   |

Note 1. FR-5 = 1.0 x 0.75 x 0.62 in.

Note 2. Alumina = 0.4 x 0.3 x 0.024 in. 99.5% alumina.

### Ordering Information

| Device                | Package | Shipping        |
|-----------------------|---------|-----------------|
| LBZX84C2V4LT1G Series | SOT-23  | 3000/Tape&Reel  |
| LBZX84C2V4LT3G Series | SOT-23  | 10000/Tape&Reel |

**LBZX84C2V4LT1G Series    S-LBZX84C2V4LT1G Series**

**ELECTRICAL CHARACTERISTICS – BZX84CxxxLT1 SERIES (STANDARD TOLERANCE)**

(Pinout: 1-Anode, 2-No Connection, 3-Cathode) (T<sub>A</sub> = 25°C unless otherwise noted, V<sub>F</sub> = 0.90 V Max. @ I<sub>F</sub> = 10 mA)

| Device*               | Device Marking | V <sub>Z1</sub> (Volts)<br>@ I <sub>ZT1</sub> = 5 mA<br>(Note 3) |            |             | Z <sub>VT1</sub><br>(Ω)<br>@ I <sub>ZT1</sub> =<br>5 mA   | V <sub>Z2</sub> (V)<br>@ I <sub>ZT2</sub> = 1 mA<br>(Note 3) |             | Z <sub>VT2</sub><br>(Ω)<br>@ I <sub>ZT2</sub> =<br>1 mA     | V <sub>Z3</sub> (V)<br>@ I <sub>ZT3</sub> = 20 mA<br>(Note 3) |             | Z <sub>VT3</sub><br>(Ω)<br>@ I <sub>ZT3</sub> =<br>20 mA   | Max Reverse<br>Leakage<br>Current |                         | C (pF)<br>@ V <sub>R</sub> = 0<br>f = 1 MHz |
|-----------------------|----------------|--|------------|-------------|---|--|-------------|---|---|-------------|--|-----------------------------------|-------------------------|---|
|                       |                | Min  | Nom        | Max         |   | Min  | Max         |   | Min   | Max         |  | I <sub>R</sub><br>μA              | V <sub>R</sub><br>Volts |   |
| LBZX84C2V4LT1G        | Z11            | 2.2  | 2.4        | 2.6         | 100   | 1.7  | 2.1         | 600   | 2.6   | 3.2         | 50   | 50                                | 1                       | 450   |
| LBZX84C2V7LT1G        | Z12            | 2.5  | 2.7        | 2.9         | 100   | 1.9  | 2.4         | 600   | 3   | 3.6         | 50   | 20                                | 1                       | 450   |
| LBZX84C3V0LT1G        | Z13            | 2.8  | 3          | 3.2         | 95  | 2.1  | 2.7         | 600   | 3.3   | 3.9         | 50   | 10                                | 1                       | 450   |
| LBZX84C3V3LT1G        | Z14            | 3.1  | 3.3        | 3.5         | 95  | 2.3  | 2.9         | 600   | 3.6   | 4.2         | 40   | 5                                 | 1                       | 450   |
| LBZX84C3V6LT1G        | Z15            | 3.4  | 3.6        | 3.8         | 90  | 2.7  | 3.3         | 600   | 3.9   | 4.5         | 40   | 5                                 | 1                       | 450   |
| LBZX84C3V9LT1G        | Z16            | 3.7  | 3.9        | 4.1         | 90  | 2.9  | 3.5         | 600   | 4.1   | 4.7         | 30   | 3                                 | 1                       | 450   |
| LBZX84C4V3LT1G        | W9             | 4  | 4.3        | 4.6         | 90  | 3.3  | 4           | 600   | 4.4   | 5.1         | 30   | 3                                 | 1                       | 450   |
| <b>LBZX84C4V7LT1G</b> | <b>Z1</b>      | <b>4.4</b>   | <b>4.7</b> | <b>5</b>    | <b>80</b>   | <b>3.7</b>   | <b>4.7</b>  | <b>500</b>  | <b>4.5</b>  | <b>5.4</b>  | <b>15</b>  | <b>3</b>                          | <b>2</b>                | <b>260</b>                                  |
| <b>LBZX84C5V1LT1G</b> | <b>Z2</b>      | <b>4.8</b>   | <b>5.1</b> | <b>5.4</b>  | <b>60</b>   | <b>4.2</b>   | <b>5.3</b>  | <b>480</b>  | <b>5</b>  | <b>5.9</b>  | <b>15</b>  | <b>2</b>                          | <b>2</b>                | <b>225</b>                                  |
| <b>LBZX84C5V6LT1G</b> | <b>Z3</b>      | <b>5.2</b>   | <b>5.6</b> | <b>6</b>    | <b>40</b>   | <b>4.8</b>   | <b>6</b>    | <b>400</b>  | <b>5.2</b>  | <b>6.3</b>  | <b>10</b>  | <b>1</b>                          | <b>2</b>                | <b>200</b>                                  |
| <b>LBZX84C6V2LT1G</b> | <b>Z4</b>      | <b>5.8</b>   | <b>6.2</b> | <b>6.6</b>  | <b>10</b>   | <b>5.6</b>   | <b>6.6</b>  | <b>150</b>  | <b>5.8</b>  | <b>6.8</b>  | <b>6</b>   | <b>3</b>                          | <b>4</b>                | <b>185</b>                                  |
| LBZX84C6V8LT1G        | Z5             | 6.4  | 6.8        | 7.2         | 15  | 6.3  | 7.2         | 80  | 6.4   | 7.4         | 6  | 2                                 | 4                       | 155   |
| LBZX84C7V5LT1G        | Z6             | 7  | 7.5        | 7.9         | 15  | 6.9  | 7.9         | 80  | 7   | 8           | 6  | 1                                 | 5                       | 140   |
| LBZX84C8V2LT1G        | Z7             | 7.7  | 8.2        | 8.7         | 15  | 7.6  | 8.7         | 80  | 7.7   | 8.8         | 6  | 0.7                               | 5                       | 135   |
| LBZX84C9V1LT1G        | Z8             | 8.5  | 9.1        | 9.6         | 15  | 8.4  | 9.6         | 100   | 8.5   | 9.7         | 8  | 0.5                               | 6                       | 130   |
| LBZX84C10LT1G         | Z9             | 9.4  | 10         | 10.6        | 20  | 9.3  | 10.6        | 150   | 9.4   | 10.7        | 10   | 0.2                               | 7                       | 130   |
| LBZX84C11LT1G         | Y1             | 10.4   | 11         | 11.6        | 20  | 10.2   | 11.6        | 150   | 10.4  | 11.8        | 10   | 0.1                               | 8                       | 130   |
| <b>LBZX84C12LT1G</b>  | <b>Y2</b>      | <b>11.4</b>  | <b>12</b>  | <b>12.7</b> | <b>25</b>   | <b>11.2</b>  | <b>12.7</b> | <b>150</b>  | <b>11.4</b>   | <b>12.9</b> | <b>10</b>  | <b>0.1</b>                        | <b>8</b>                | <b>130</b>                                  |
| LBZX84C13LT1G         | Y3             | 12.4   | 13         | 14.1        | 30  | 12.3   | 14          | 170   | 12.5  | 14.2        | 15   | 0.1                               | 8                       | 120   |
| LBZX84C15LT1G         | Y4             | 13.8   | 15         | 15.6        | 30  | 13.7   | 15.5        | 200   | 13.9  | 15.7        | 20   | 0.05                              | 10.5                    | 110   |
| LBZX84C16LT1G         | Y5             | 15.3   | 16         | 17.1        | 40  | 15.2   | 17          | 200   | 15.4  | 17.2        | 20   | 0.05                              | 11.2                    | 105   |
| <b>LBZX84C18LT1G</b>  | <b>Y6</b>      | <b>16.8</b>  | <b>18</b>  | <b>19.1</b> | <b>45</b>   | <b>16.7</b>  | <b>19</b>   | <b>225</b>  | <b>16.9</b>   | <b>19.2</b> | <b>20</b>  | <b>0.05</b>                       | <b>12.6</b>             | <b>100</b>                                  |
| LBZX84C20LT1G         | Y7             | 18.8   | 20         | 21.2        | 55  | 18.7   | 21.1        | 225   | 18.9  | 21.4        | 20   | 0.05                              | 14                      | 85  |
| LBZX84C22LT1G         | Y8             | 20.8   | 22         | 23.3        | 55  | 20.7   | 23.2        | 250   | 20.9  | 23.4        | 25   | 0.05                              | 15.4                    | 85  |
| LBZX84C24LT1G         | Y9             | 22.8   | 24         | 25.6        | 70  | 22.7   | 25.5        | 250   | 22.9  | 25.7        | 25   | 0.05                              | 16.8                    | 80  |
| Device                | Device Marking | V <sub>Z1</sub> Below<br>@ I <sub>ZT1</sub> = 2 mA               |            |             | Z <sub>VT1</sub><br>Below<br>@ I <sub>ZT1</sub> =<br>2 mA | V <sub>Z2</sub> Below<br>@ I <sub>ZT2</sub> = 0.1 mA         |             | Z <sub>VT2</sub><br>Below<br>@ I <sub>ZT2</sub> =<br>0.5 mA | V <sub>Z3</sub> Below<br>@ I <sub>ZT3</sub> = 10 mA           |             | Z <sub>VT3</sub><br>Below<br>@ I <sub>ZT3</sub> =<br>10 mA | Max Reverse<br>Leakage<br>Current |                         | C (pF)<br>@ V <sub>R</sub> = 0<br>f = 1 MHz |
|                       |                | Min  | Nom        | Max         |   | Min  | Max         |   | Min   | Max         |  | I <sub>R</sub><br>μA              | V <sub>R</sub><br>(V)   |   |
| LBZX84C27LT1G         | Y10            | 25.1   | 27         | 28.9        | 80  | 25   | 28.9        | 300   | 25.2  | 29.3        | 45   | 0.05                              | 18.9                    | 70  |
| LBZX84C30LT1G         | Y11            | 28   | 30         | 32          | 80  | 27.8   | 32          | 300   | 28.1  | 32.4        | 50   | 0.05                              | 21                      | 70  |
| LBZX84C33LT1G         | Y12            | 31   | 33         | 35          | 80  | 30.8   | 35          | 325   | 31.1  | 35.4        | 55   | 0.05                              | 23.1                    | 70  |
| LBZX84C36LT1G         | Y13            | 34   | 36         | 38          | 90  | 33.8   | 38          | 350   | 34.1  | 38.4        | 60   | 0.05                              | 25.2                    | 70  |
| LBZX84C39LT1G         | Y14            | 37   | 39         | 41          | 130   | 36.7   | 41          | 350   | 37.1  | 41.5        | 70   | 0.05                              | 27.3                    | 45  |
| LBZX84C43LT1G         | Y15            | 40   | 43         | 46          | 150   | 39.7   | 46          | 375   | 40.1  | 46.5        | 80   | 0.05                              | 30.1                    | 40  |
| LBZX84C47LT1G         | Y16            | 44   | 47         | 50          | 170   | 43.7   | 50          | 375   | 44.1  | 50.5        | 90   | 0.05                              | 32.9                    | 40  |
| LBZX84C51LT1G         | Y17            | 48   | 51         | 54          | 180   | 47.6   | 54          | 400   | 48.1  | 54.6        | 100  | 0.05                              | 35.7                    | 40  |
| LBZX84C56LT1G         | Y18            | 52   | 56         | 60          | 200   | 51.5   | 60          | 425   | 52.1  | 60.8        | 110  | 0.05                              | 39.2                    | 40  |
| LBZX84C62LT1G         | Y19            | 58   | 62         | 66          | 215   | 57.4   | 66          | 450   | 58.2  | 67          | 120  | 0.05                              | 43.4                    | 35  |
| LBZX84C68LT1G         | Y20            | 64   | 68         | 72          | 240   | 63.4   | 72          | 475   | 64.2  | 73.2        | 130  | 0.05                              | 47.6                    | 35  |
| LBZX84C75LT1G         | Y21            | 70   | 75         | 79          | 255   | 69.4   | 79          | 500   | 70.3  | 80.2        | 140  | 0.05                              | 52.5                    | 35  |

Note 3. Zener voltage is measured with a pulse test current I<sub>Z</sub> at an ambient temperature of 25°C.

LBZX84C2V4LT1G Series S-LBZX84C2V4LT1G Series

TYPICAL CHARACTERISTICS

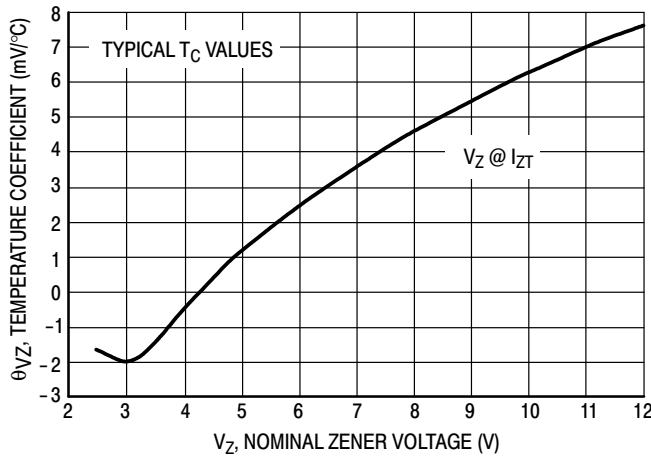


Figure 1. Temperature Coefficients (Temperature Range -55°C to +150°C)

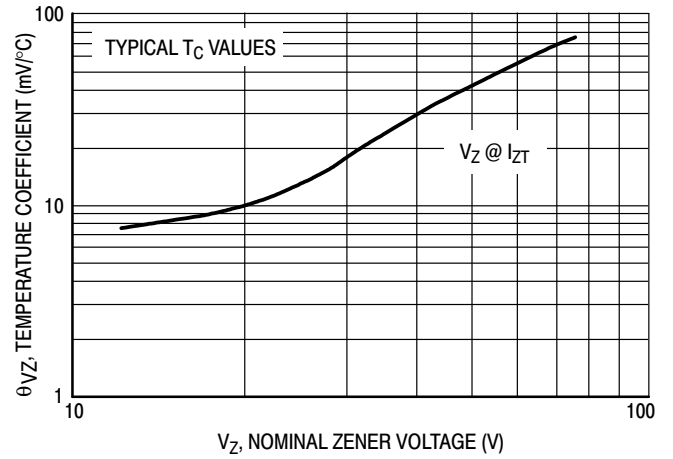


Figure 2. Temperature Coefficients (Temperature Range -55°C to +150°C)

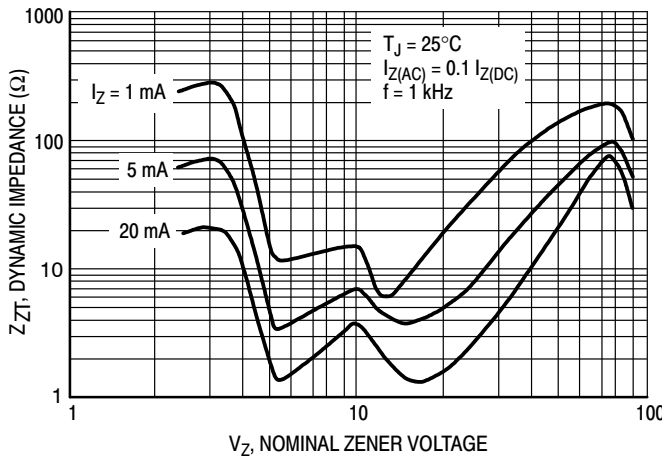


Figure 3. Effect of Zener Voltage on Zener Impedance

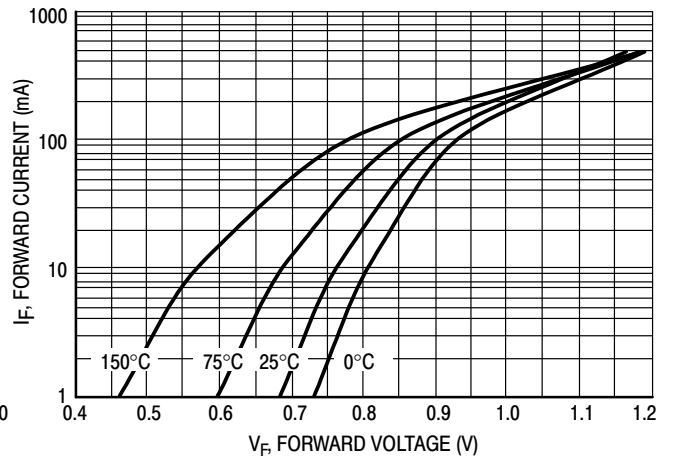


Figure 4. Typical Forward Voltage

LBZX84C2V4LT1G Series S-LBZX84C2V4LT1G Series

TYPICAL CHARACTERISTICS

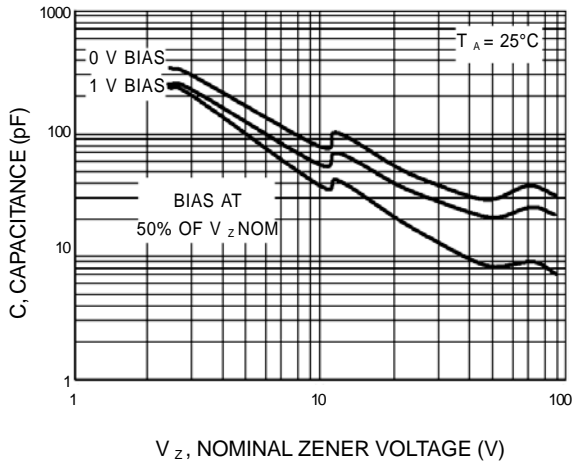


Figure 5. Typical Capacitance

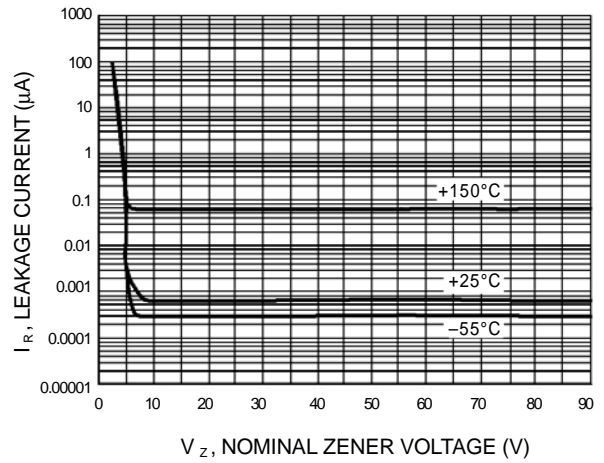


Figure 6. Typical Leakage Current

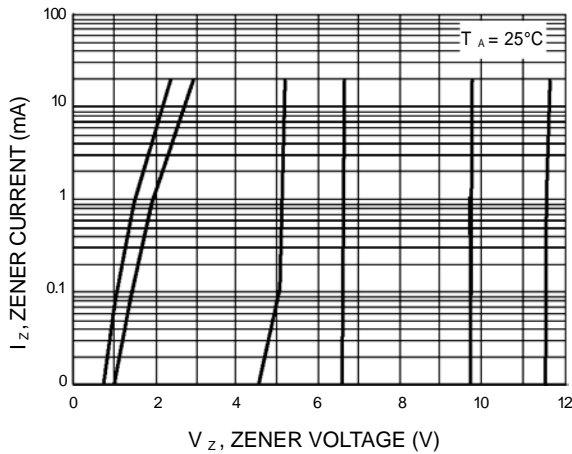


Figure 7. Zener Voltage versus Zener Current (Vz Up to 12 V)

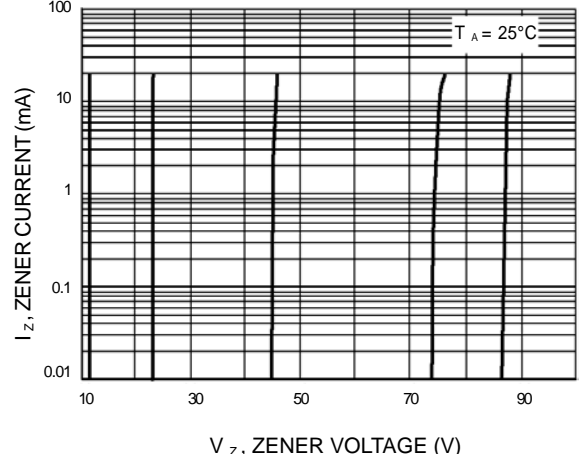
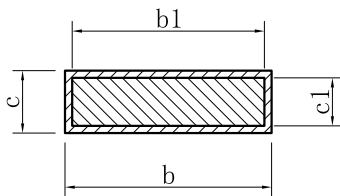
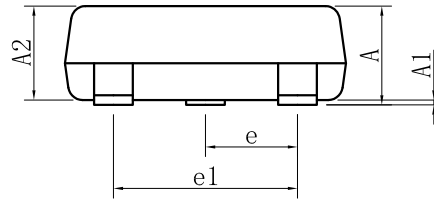
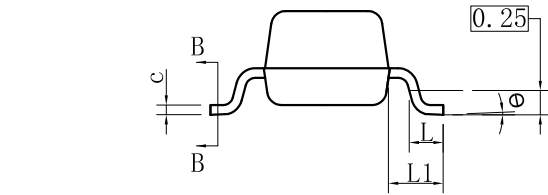


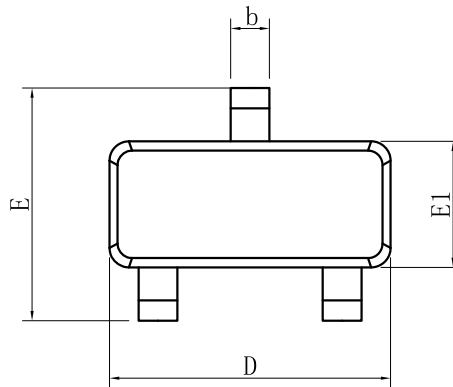
Figure 8. Zener Voltage versus Zener Current (12 V to 91 V)

**LBZX84C2V4LT1G Series S-LBZX84C2V4LT1G Series**

**OUTLINE AND DIMENSIONS**



SECTION B-B

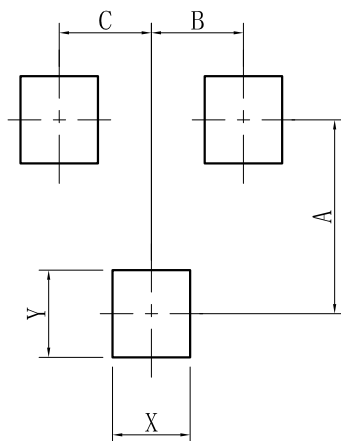


| SOT23                |         |      |      |
|----------------------|---------|------|------|
| DIM                  | MIN     | NOR  | MAX  |
| A                    | 0.89    | -    | 1.12 |
| A1                   | 0.01    | -    | 0.10 |
| A2                   | 0.88    | 0.95 | 1.02 |
| b                    | 0.30    | -    | 0.50 |
| b1                   | 0.30    | 0.40 | 0.45 |
| c                    | 0.08    | -    | 0.20 |
| c1                   | 0.08    | 0.10 | 0.16 |
| D                    | 2.80    | 2.90 | 3.04 |
| E                    | 2.10    | -    | 2.64 |
| E1                   | 1.20    | 1.30 | 1.40 |
| e                    | 0.95BSC |      |      |
| e1                   | 1.90BSC |      |      |
| L                    | 0.40    | 0.46 | 0.60 |
| L1                   | 0.54REF |      |      |
| θ                    | 0°      | -    | 8°   |
| All Dimensions in mm |         |      |      |

**GENERAL NOTES**

1. Top package surface finish Ra0.4±0.2um
2. Bottom package surface finish Ra0.7±0.2um
3. Side package surface finish Ra0.4±0.2um

**SOLDERING FOOTPRINT**



| SOT-23 |      |
|--------|------|
| DIM    | (mm) |
| X      | 0.80 |
| Y      | 0.90 |
| A      | 2.00 |
| B      | 0.95 |
| C      | 0.95 |

**DISCLAIMER**

- Curve guarantee in the specification. The curve of test items with electric parameter is used as quality guarantee. The curve of test items without electric parameter is used as reference only.
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