

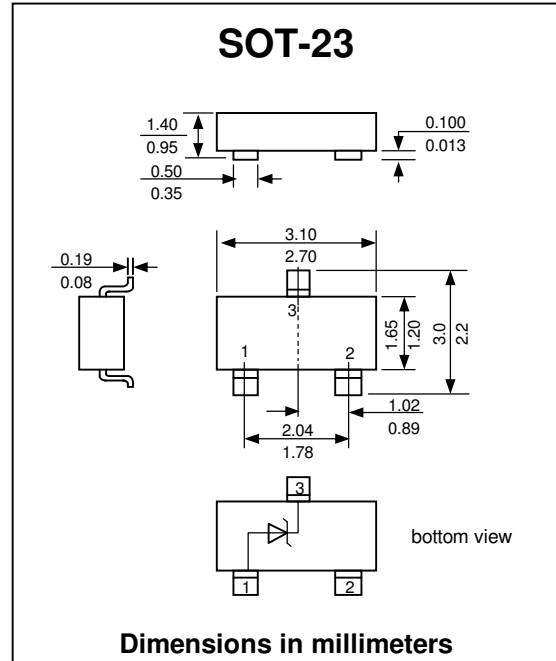
## BZX84C Series

This series of Zener diodes is offered in the convenient, surface mount plastic SOT-23 package. These devices are designed to provide voltage regulation with minimum space requirement. They are well suited for applications such as cellular phones, hand held portables, and high density PC boards.

### FEATURES :

- \* 225 mW Rating on FR-4 or FR-5 Board
- \* Zener Breakdown Voltage Range 2.4 V to 75 V
- \* Package Designed for Optimal Automated Board Assembly
- \* Small Package Size for High Density Applications
- \* ESD Rating of Class 3 (>16 KV) per Human Body Model
- \* Pb / RoHS Free

## ZENER VOLTAGE REGULATORS



### Absolute Maximum Ratings (Ta = 25 °C)

| RATING                                                                 | SYMBOL                            | VALUE         | UNIT  |
|------------------------------------------------------------------------|-----------------------------------|---------------|-------|
| Total Power Dissipation on FR-5 Board,<br>(Note 1) @ Ta = 25 °C        | P <sub>D</sub>                    | 225           | mW    |
| Derated above 25 °C                                                    |                                   | 1.8           | mW/°C |
| Thermal Resistance ( Junction to Ambient)                              | R <sub>θJA</sub>                  | 556           | °C/W  |
| Total Power Dissipation on Alumina Substrate,<br>(Note 2) @ Ta = 25 °C | P <sub>D</sub>                    | 300           | mW    |
| Derated above 25 °C                                                    |                                   | 2.4           | mW/°C |
| Thermal Resistance ( Junction to Ambient)                              | R <sub>θJA</sub>                  | 417           | °C/W  |
| Junction and Storage Temperature Range                                 | T <sub>J</sub> , T <sub>STG</sub> | - 65 to + 150 | °C    |

#### Notes :

- (1) FR-5 = 1 x 0.75 x 0.62 in.  
(2) Alumina = 0.4 x 0.3 x 0.24 in, 99.5% alumina

## ELECTRICAL CHARACTERISTICS

( $T_a = 25\text{ }^{\circ}\text{C}$  unless otherwise noted,  $V_F = 0.90\text{ V Max.}$  @  $I_F = 10\text{ mA}$ )

| TYPE NO.  | Marking | V <sub>Z1</sub><br>@ I <sub>ZT1</sub> = 5 mA<br>(Note 1)       |     |      | Z <sub>ZT1</sub><br>@ I <sub>ZT1</sub> =<br>5 mA          | V <sub>Z2</sub><br>@ I <sub>ZT2</sub> = 1 mA<br>(Note 1)         |      | Z <sub>ZT2</sub><br>@ I <sub>ZT2</sub> =<br>1 mA            | V <sub>Z3</sub><br>@ I <sub>ZT1</sub> = 20 mA<br>(Note 1)       |      | Z <sub>ZT3</sub><br>@ I <sub>ZT3</sub> =<br>20 mA          | Max. Reverse<br>Leakage<br>Current |      | Θ <sub>VZ</sub><br>(mV/k)<br>@ I <sub>ZT1</sub> = 5 mA       |      | C (pF)<br>@ V <sub>R</sub> = 0<br>f = 1 MHz |
|-----------|---------|----------------------------------------------------------------|-----|------|-----------------------------------------------------------|------------------------------------------------------------------|------|-------------------------------------------------------------|-----------------------------------------------------------------|------|------------------------------------------------------------|------------------------------------|------|--------------------------------------------------------------|------|---------------------------------------------|
|           |         | (V)                                                            |     |      | (Ω)                                                       | (V)                                                              |      | (Ω)                                                         | (V)                                                             |      | (Ω)                                                        | I <sub>R</sub> @ V <sub>R</sub>    |      | Min                                                          | Max  |                                             |
|           |         | Min                                                            | Nom | Max  |                                                           | (μA)                                                             | (V)  |                                                             |                                                                 |      |                                                            |                                    |      |                                                              |      |                                             |
|           |         |                                                                |     |      |                                                           |                                                                  |      |                                                             |                                                                 |      |                                                            |                                    |      |                                                              |      |                                             |
| BZX84C2V4 | C8      | 2.2                                                            | 2.4 | 2.6  | 100                                                       | 1.7                                                              | 2.1  | 600                                                         | 2.6                                                             | 3.2  | 50                                                         | 50                                 | 1.0  | -3.5                                                         | 0    | 450                                         |
| BZX84C2V7 | D8      | 2.5                                                            | 2.7 | 2.9  | 100                                                       | 1.9                                                              | 2.4  | 600                                                         | 3.0                                                             | 3.6  | 50                                                         | 20                                 | 1.0  | -3.5                                                         | 0    | 450                                         |
| BZX84C3V0 | E8      | 2.8                                                            | 3.0 | 3.2  | 95                                                        | 2.1                                                              | 2.7  | 600                                                         | 3.3                                                             | 3.9  | 50                                                         | 10                                 | 1.0  | -3.5                                                         | 0    | 450                                         |
| BZX84C3V3 | F8      | 3.1                                                            | 3.3 | 3.5  | 95                                                        | 2.3                                                              | 2.9  | 600                                                         | 3.6                                                             | 4.2  | 40                                                         | 5                                  | 1.0  | -3.5                                                         | 0    | 450                                         |
| BZX84C3V6 | H8      | 3.4                                                            | 3.6 | 3.8  | 90                                                        | 2.7                                                              | 3.3  | 600                                                         | 3.9                                                             | 4.5  | 40                                                         | 5                                  | 1.0  | -3.5                                                         | 0    | 450                                         |
| BZX84C3V9 | J8      | 3.7                                                            | 3.9 | 4.1  | 90                                                        | 2.9                                                              | 3.5  | 600                                                         | 4.1                                                             | 4.7  | 30                                                         | 3                                  | 1.0  | -3.5                                                         | -2.5 | 450                                         |
| BZX84C4V3 | K8      | 4.0                                                            | 4.3 | 4.6  | 90                                                        | 3.3                                                              | 4.0  | 600                                                         | 4.4                                                             | 5.1  | 30                                                         | 3                                  | 1.0  | -3.5                                                         | 0    | 450                                         |
| BZX84C4V7 | M8      | 4.4                                                            | 4.7 | 5.0  | 80                                                        | 3.7                                                              | 4.7  | 500                                                         | 4.5                                                             | 5.4  | 15                                                         | 3                                  | 2.0  | -3.5                                                         | 0.2  | 260                                         |
| BZX84C5V1 | N8      | 4.8                                                            | 5.1 | 5.4  | 60                                                        | 4.2                                                              | 5.3  | 480                                                         | 5.0                                                             | 5.9  | 15                                                         | 2                                  | 2.0  | -2.7                                                         | 1.2  | 225                                         |
| BZX84C5V6 | P8      | 5.2                                                            | 5.6 | 6.0  | 40                                                        | 4.8                                                              | 6.0  | 400                                                         | 5.2                                                             | 6.3  | 10                                                         | 1                                  | 2.0  | -2.0                                                         | 2.5  | 200                                         |
| BZX84C6V2 | R8      | 5.8                                                            | 6.2 | 6.6  | 10                                                        | 5.6                                                              | 6.6  | 150                                                         | 5.8                                                             | 6.8  | 6                                                          | 3                                  | 4.0  | 0.4                                                          | 3.7  | 185                                         |
| BZX84C6V8 | X8      | 6.4                                                            | 6.8 | 7.2  | 15                                                        | 6.3                                                              | 7.2  | 80                                                          | 6.4                                                             | 7.4  | 6                                                          | 2                                  | 4.0  | 1.2                                                          | 4.5  | 155                                         |
| BZX84C7V5 | Y8      | 7.0                                                            | 7.5 | 7.9  | 15                                                        | 6.9                                                              | 7.9  | 80                                                          | 7.0                                                             | 8.0  | 6                                                          | 1                                  | 5.0  | 2.5                                                          | 5.3  | 140                                         |
| BZX84C8V2 | Z8      | 7.7                                                            | 8.2 | 8.7  | 15                                                        | 7.6                                                              | 8.7  | 80                                                          | 7.7                                                             | 8.8  | 6                                                          | 0.7                                | 5.0  | 3.2                                                          | 6.2  | 135                                         |
| BZX84C9V1 | A9      | 8.5                                                            | 9.1 | 9.6  | 15                                                        | 8.4                                                              | 9.6  | 100                                                         | 8.5                                                             | 9.7  | 8                                                          | 0.5                                | 6.0  | 3.8                                                          | 7.0  | 130                                         |
| BZX84C10  | B9      | 9.4                                                            | 10  | 10.6 | 20                                                        | 9.3                                                              | 10.6 | 150                                                         | 9.4                                                             | 10.7 | 10                                                         | 0.2                                | 7.0  | 4.5                                                          | 8.0  | 130                                         |
| BZX84C11  | C9      | 10.4                                                           | 11  | 11.6 | 20                                                        | 10.2                                                             | 11.6 | 150                                                         | 10.4                                                            | 11.8 | 10                                                         | 0.1                                | 8.0  | 5.4                                                          | 9.0  | 130                                         |
| BZX84C12  | D9      | 11.4                                                           | 12  | 12.7 | 25                                                        | 11.2                                                             | 12.7 | 150                                                         | 11.4                                                            | 12.9 | 10                                                         | 0.1                                | 8.0  | 6.0                                                          | 10.0 | 130                                         |
| BZX84C13  | E9      | 12.4                                                           | 13  | 14.1 | 30                                                        | 12.3                                                             | 14.0 | 170                                                         | 12.5                                                            | 14.2 | 15                                                         | 0.1                                | 8.0  | 7.0                                                          | 11.0 | 120                                         |
| BZX84C15  | F9      | 13.8                                                           | 15  | 15.6 | 30                                                        | 13.7                                                             | 15.5 | 200                                                         | 13.9                                                            | 15.7 | 20                                                         | 0.05                               | 10.5 | 9.2                                                          | 13.0 | 110                                         |
| BZX84C16  | H9      | 15.3                                                           | 16  | 17.1 | 40                                                        | 15.2                                                             | 17.0 | 200                                                         | 15.4                                                            | 17.2 | 20                                                         | 0.05                               | 11.2 | 10.4                                                         | 14.0 | 105                                         |
| BZX84C18  | J9      | 16.8                                                           | 18  | 19.1 | 45                                                        | 16.7                                                             | 19.0 | 225                                                         | 16.9                                                            | 19.2 | 20                                                         | 0.05                               | 12.6 | 12.4                                                         | 16.0 | 100                                         |
| BZX84C20  | K9      | 18.8                                                           | 20  | 21.2 | 55                                                        | 18.7                                                             | 21.1 | 225                                                         | 18.9                                                            | 21.4 | 20                                                         | 0.05                               | 14.0 | 14.4                                                         | 18.0 | 85                                          |
| BZX84C22  | M9      | 20.8                                                           | 22  | 23.3 | 55                                                        | 20.7                                                             | 23.2 | 250                                                         | 20.9                                                            | 23.4 | 25                                                         | 0.05                               | 15.4 | 16.4                                                         | 20.0 | 85                                          |
| BZX84C24  | N9      | 22.8                                                           | 24  | 25.6 | 70                                                        | 22.7                                                             | 25.5 | 250                                                         | 22.9                                                            | 25.7 | 25                                                         | 0.05                               | 16.8 | 18.4                                                         | 22.0 | 80                                          |
| TYPE NO.  | Marking | V <sub>Z1</sub> Below<br>@ I <sub>ZT1</sub> = 2 mA<br>(Note 1) |     |      | Z <sub>ZT1</sub><br>Below<br>@ I <sub>ZT1</sub> =<br>2 mA | V <sub>Z2</sub> Below<br>@ I <sub>ZT2</sub> = 0.1 mA<br>(Note 1) |      | Z <sub>ZT2</sub><br>Below<br>@ I <sub>ZT2</sub> =<br>0.5 mA | V <sub>Z3</sub> Below<br>@ I <sub>ZT1</sub> = 10 mA<br>(Note 1) |      | Z <sub>ZT3</sub><br>Below<br>@ I <sub>ZT3</sub> =<br>10 mA | Max. Reverse<br>Leakage<br>Current |      | Θ <sub>VZ</sub><br>(mV/k) Below<br>@ I <sub>ZT1</sub> = 2 mA |      | C (pF)<br>@ V <sub>R</sub> = 0<br>f = 1 MHz |
|           |         | (V)                                                            |     |      | (Ω)                                                       | (V)                                                              |      | (Ω)                                                         | (V)                                                             |      | (Ω)                                                        | I <sub>R</sub> @ V <sub>R</sub>    |      | Min                                                          | Max  |                                             |
|           |         | Min                                                            | Nom | Max  |                                                           | (μA)                                                             | (V)  |                                                             |                                                                 |      |                                                            |                                    |      |                                                              |      |                                             |
| BZX84C27  | P9      | 25.1                                                           | 27  | 28.9 | 80                                                        | 25                                                               | 28.9 | 300                                                         | 25.2                                                            | 29.3 | 45                                                         | 0.05                               | 18.9 | 21.4                                                         | 25.3 | 70                                          |
| BZX84C30  | R9      | 28                                                             | 30  | 32   | 80                                                        | 27.8                                                             | 32   | 300                                                         | 28.1                                                            | 32.4 | 50                                                         | 0.05                               | 21.0 | 24.4                                                         | 29.4 | 70                                          |
| BZX84C33  | X9      | 31                                                             | 33  | 35   | 80                                                        | 30.8                                                             | 35   | 325                                                         | 31.1                                                            | 35.4 | 55                                                         | 0.05                               | 23.1 | 27.4                                                         | 33.4 | 70                                          |
| BZX84C36  | Y9      | 34                                                             | 36  | 38   | 90                                                        | 33.8                                                             | 38   | 350                                                         | 34.1                                                            | 38.4 | 60                                                         | 0.05                               | 25.2 | 30.4                                                         | 37.4 | 70                                          |
| BZX84C39  | Z9      | 37                                                             | 39  | 41   | 130                                                       | 36.7                                                             | 41   | 35                                                          | 37.1                                                            | 41.5 | 70                                                         | 0.05                               | 27.3 | 33.4                                                         | 41.2 | 45                                          |
| BZX84C43  | A0      | 40                                                             | 43  | 46   | 150                                                       | 39.7                                                             | 46   | 375                                                         | 40.1                                                            | 46.5 | 80                                                         | 0.05                               | 30.1 | 37.6                                                         | 46.6 | 40                                          |
| BZX84C47  | B0      | 44                                                             | 47  | 50   | 170                                                       | 43.7                                                             | 50   | 375                                                         | 44.1                                                            | 50.5 | 90                                                         | 0.05                               | 32.9 | 42.0                                                         | 51.8 | 40                                          |
| BZX84C51  | C0      | 48                                                             | 51  | 54   | 180                                                       | 47.6                                                             | 54   | 400                                                         | 48.1                                                            | 54.6 | 100                                                        | 0.05                               | 35.7 | 46.6                                                         | 57.2 | 40                                          |
| BZX84C56  | D0      | 52                                                             | 56  | 60   | 200                                                       | 51.5                                                             | 60   | 425                                                         | 52.1                                                            | 60.8 | 110                                                        | 0.05                               | 39.2 | 52.2                                                         | 63.8 | 40                                          |
| BZX84C62  | E0      | 58                                                             | 62  | 66   | 215                                                       | 57.4                                                             | 66   | 450                                                         | 58.2                                                            | 67.0 | 120                                                        | 0.05                               | 43.4 | 58.8                                                         | 71.6 | 35                                          |
| BZX84C68  | F0      | 64                                                             | 68  | 72   | 240                                                       | 63.4                                                             | 72   | 475                                                         | 64.2                                                            | 73.2 | 130                                                        | 0.05                               | 47.6 | 65.6                                                         | 79.8 | 35                                          |
| BZX84C75  | H0      | 70                                                             | 75  | 79   | 255                                                       | 69.4                                                             | 79   | 500                                                         | 70.3                                                            | 80.2 | 140                                                        | 0.05                               | 52.5 | 73.4                                                         | 88.6 | 35                                          |

Note :

(1) Zener voltage is measured with pulse test current  $I_Z$  at an ambient temperature of  $25\text{ }^{\circ}\text{C}$