

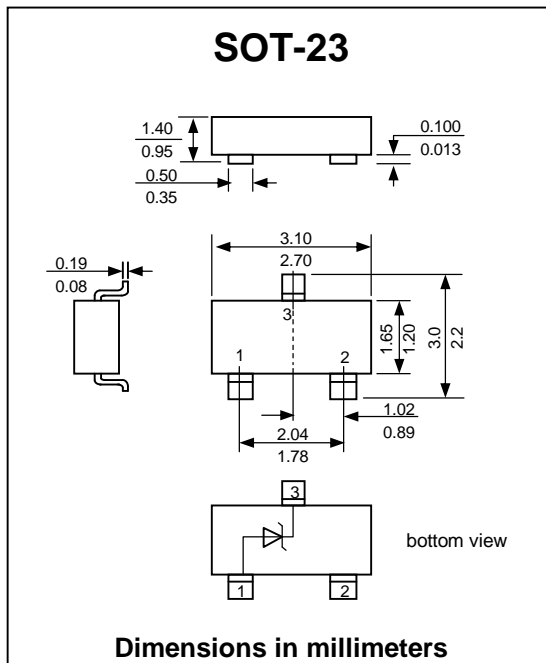
## BZX84C Series

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

( Ta = 25 °C unless otherwise noted, V<sub>F</sub> = 0.90 V Max. @ I<sub>F</sub> = 10 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>ZT3</sub> = 20 mA<br>(Note 1)       |      | Z <sub>ZT3</sub><br>@ I <sub>ZT3</sub> =<br>20 mA | Max. Reverse<br>Leakage<br>Current<br>I <sub>R</sub> @ V <sub>R</sub> |                  | 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)   | (μA) (V)  |                  | Min  | Max  |   |
|           |         | Min  | Nom | Max  |   | Min  | Max  |   | Min   | Max  |   | I <sub>R</sub>  | @ V <sub>R</sub> |  |      |   |
| 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>ZT3</sub> = 10 mA<br>(Note 1) |      | Z <sub>ZT3</sub><br>@ I <sub>ZT3</sub> =<br>10 mA | Max. Reverse<br>Leakage<br>Current<br>I <sub>R</sub> @ V <sub>R</sub> |                  | 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)   | (μA) (V)  |                  | Min  | Max  |   |
|           |         | Min  | Nom | Max  |   | Min  | Max  |   | Min   | Max  |   | I <sub>R</sub>  | @ V <sub>R</sub> |  |      |   |
| 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<sub>Z</sub> at an ambient temperature of 25 °C