



# Zeners

## BZX84C 3V3 - BZX84C 33

Tolerance: C = 5%

### Absolute Maximum Ratings\*

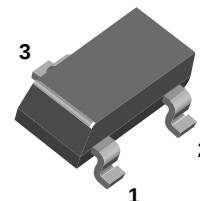
T<sub>A</sub> = 25°C unless otherwise noted

| Symbol           | Parameter                                           | Value       | Units |
|------------------|-----------------------------------------------------|-------------|-------|
| I <sub>FRM</sub> | Repetitive Peak Forward Current (I <sub>FRM</sub> ) | 250         | mA    |
| I <sub>ZRM</sub> | Repetitive Peak Working Current (I <sub>ZRM</sub> ) | 250         | mA    |
| P <sub>D</sub>   | Power Dissipation                                   | 350         | mW    |
| T <sub>STG</sub> | Storage Temperature Range                           | -55 to +150 | °C    |
| T <sub>J</sub>   | Operating Junction Temperature                      | + 150       | °C    |

\*These ratings are limiting values above which the serviceability of the diode may be impaired.

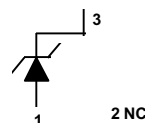
#### NOTES:

- 1) These ratings are based on a maximum junction temperature of 150 degrees C.
- 2) These are steady state limits. The factory should be consulted on applications involving pulsed or low duty cycle operations.



SOT-23

#### CONNECTION DIAGRAM



### Electrical Characteristics

T<sub>A</sub> = 25°C unless otherwise noted

| Device            | Mark | I <sub>Z</sub> = 5.0 mA |      |                    | I <sub>Z</sub> = 1.0 mA |      |                    | I <sub>Z</sub> = 20 mA |      |                    |
|-------------------|------|-------------------------|------|--------------------|-------------------------|------|--------------------|------------------------|------|--------------------|
|                   |      | V <sub>Z</sub> (V)      |      | Z <sub>Z</sub> (Ω) | V <sub>Z</sub> (V)      |      | Z <sub>Z</sub> (Ω) | V <sub>Z</sub> (V)     |      | Z <sub>Z</sub> (Ω) |
|                   |      | MIN                     | MAX  |                    | MIN                     | MAX  |                    | MIN                    | MAX  |                    |
| BZX84C 3V3        | Z14  | 3.1                     | 3.5  | 95                 | 2.3                     | 2.9  | 600                | 3.6                    | 4.2  | 40                 |
| BZX84C 3V6        | Z15  | 3.4                     | 3.8  | 90                 | 2.7                     | 3.3  | 600                | 3.9                    | 4.5  | 40                 |
| BZX84C 3V9        | Z16  | 3.7                     | 4.1  | 90                 | 2.9                     | 3.5  | 600                | 4.1                    | 4.7  | 30                 |
| BZX84C 4V3        | Z17  | 4.0                     | 4.6  | 90                 | 3.3                     | 4.0  | 600                | 4.4                    | 5.1  | 30                 |
| <b>BZX84C 4V7</b> | Z1   | 4.4                     | 5.0  | 80                 | 3.7                     | 4.7  | 500                | 4.5                    | 5.4  | 15                 |
| <b>BZX84C 5V1</b> | Z2   | 4.8                     | 5.4  | 60                 | 4.2                     | 5.3  | 480                | 5.0                    | 5.9  | 15                 |
| <b>BZX84C 5V6</b> | Z3   | 5.2                     | 6.0  | 40                 | 4.8                     | 6.0  | 400                | 5.2                    | 6.3  | 10                 |
| <b>BZX84C 6V2</b> | Z4   | 5.8                     | 6.6  | 10                 | 5.6                     | 6.6  | 150                | 5.8                    | 6.8  | 6                  |
| <b>BZX84C 6V8</b> | Z5   | 6.4                     | 7.2  | 15                 | 6.3                     | 7.2  | 80                 | 6.4                    | 7.4  | 6                  |
| BZX84C 7V5        | Z6   | 7.0                     | 7.9  | 15                 | 6.9                     | 7.9  | 80                 | 7.0                    | 8.0  | 6                  |
| <b>BZX84C 8V2</b> | Z7   | 7.7                     | 8.7  | 15                 | 7.6                     | 8.7  | 80                 | 7.7                    | 8.8  | 6                  |
| <b>BZX84C 9V1</b> | Z8   | 8.5                     | 9.6  | 15                 | 8.4                     | 9.6  | 100                | 8.5                    | 9.7  | 8                  |
| <b>BZX84C 10</b>  | Z9   | 9.4                     | 10.6 | 20                 | 9.3                     | 10.6 | 150                | 9.4                    | 10.7 | 10                 |
| BZX84C 11         | Y1   | 10.4                    | 11.6 | 20                 | 10.2                    | 11.6 | 150                | 10.4                   | 11.8 | 10                 |
| <b>BZX84C 12</b>  | Y2   | 11.4                    | 12.7 | 25                 | 11.2                    | 12.7 | 150                | 11.4                   | 12.9 | 10                 |
| BZX84C 13         | Y3   | 12.4                    | 14.1 | 30                 | 12.3                    | 14.0 | 170                | 12.5                   | 14.2 | 15                 |
| <b>BZX84C 15</b>  | Y4   | 13.8                    | 15.6 | 30                 | 13.7                    | 15.5 | 200                | 13.9                   | 15.7 | 20                 |
| BZX84C 16         | Y5   | 15.3                    | 17.1 | 40                 | 15.2                    | 17   | 200                | 15.4                   | 17.2 | 20                 |
| BZX84C 18         | Y6   | 16.8                    | 19.1 | 45                 | 16.7                    | 19   | 225                | 16.9                   | 19.2 | 20                 |
| BZX84C 20         | Y7   | 18.8                    | 21.2 | 55                 | 18.7                    | 21.1 | 225                | 18.9                   | 21.4 | 20                 |
| BZX84C 22         | Y8   | 20.8                    | 23.3 | 55                 | 20.7                    | 23.2 | 250                | 20.9                   | 23.4 | 25                 |
| BZX84C 24         | Y9   | 22.8                    | 25.6 | 70                 | 22.7                    | 25.5 | 250                | 22.9                   | 25.7 | 25                 |

NOTE: National preferred devices in **BOLD**

# Zeners (BZX84C 3V3 - BZX84C 33)

(continued)

## Electrical Characteristics (continued) TA = 25°C unless otherwise noted

| Device           | Mark | I <sub>Z</sub> = 2.0 mA |      |                    | I <sub>Z</sub> = 100 µA |      |                    | I <sub>Z</sub> = 10 mA |      |                    |
|------------------|------|-------------------------|------|--------------------|-------------------------|------|--------------------|------------------------|------|--------------------|
|                  |      | V <sub>Z</sub> (V)      |      | Z <sub>Z</sub> (Ω) | V <sub>Z</sub> (V)      |      | Z <sub>Z</sub> (Ω) | V <sub>Z</sub> (V)     |      | Z <sub>Z</sub> (Ω) |
|                  |      | MIN                     | MAX  |                    | MIN                     | MAX  |                    | MIN                    | MAX  |                    |
| BZX84C 27        | Y10  | 25.1                    | 28.9 | 80                 | 25                      | 28.9 | 300                | 25.2                   | 29.3 | 45                 |
| <b>BZX84C 30</b> | Y11  | 28                      | 32   | 80                 | 27.8                    | 32   | 300                | 28.1                   | 32.4 | 50                 |
| BZX84C 33        | Y12  | 31                      | 35   | 80                 | 30.8                    | 35   | 325                | 31.1                   | 35.4 | 55                 |

V<sub>F</sub> Forward Voltage = 0.9 V Maximum @ I<sub>F</sub> = 10 mA for all BZX 84 series

| Device     | V <sub>R</sub><br>(V) | I <sub>R</sub><br>(µA) | CAP*<br>(pF) | D <sub>VZ</sub> / D <sub>t</sub> @ 5.0 mA(mV/k) |        |
|------------|-----------------------|------------------------|--------------|-------------------------------------------------|--------|
|            |                       |                        |              | MIN                                             | MAX    |
| BZX84C 3V3 | 1.0                   | 5.0                    | 450          | - 3.5                                           | 0.0    |
| BZX84C 3V6 | 1.0                   | 5.0                    | 450          | - 3.5                                           | 0.0    |
| BZX84C 3V9 | 1.0                   | 5.0                    | 450          | - 3.5                                           | 0.0    |
| BZX84C 4V3 | 1.0                   | 5.0                    | 450          | - 3.5                                           | 0.0    |
| BZX84C 4V7 | 2.0                   | 3                      | 260          | - 3.5                                           | + 0.2  |
| BZX84C 5V1 | 2.0                   | 2                      | 225          | - 2.7                                           | + 1.2  |
| BZX84C 5V6 | 2.0                   | 1                      | 200          | - 2.0                                           | + 2.5  |
| BZX84C 6V2 | 4.0                   | 3                      | 185          | + 0.4                                           | + 3.7  |
| BZX84C 6V8 | 4.0                   | 2                      | 155          | + 1.2                                           | + 4.5  |
| BZX84C 7V5 | 5.0                   | 1                      | 140          | + 2.5                                           | + 5.3  |
| BZX84C 8V2 | 5.0                   | 0.7                    | 135          | + 3.2                                           | + 6.2  |
| BZX84C 9V1 | 6.0                   | 0.5                    | 130          | + 3.8                                           | + 7.0  |
| BZX84C 10  | 7.0                   | 0.2                    | 130          | + 4.5                                           | + 8.0  |
| BZX84C 11  | 8.0                   | 0.1                    | 130          | + 5.4                                           | + 9.0  |
| BZX84C 12  | 8.0                   | 0.1                    | 130          | + 6.0                                           | + 10   |
| BZX84C 13  | 8.0                   | 0.1                    | 120          | + 7.0                                           | + 11   |
| BZX84C 15  | 10.5                  | 0.05                   | 110          | + 9.2                                           | + 13   |
| BZX84C 16  | 11.2                  | 0.05                   | 105          | + 10.4                                          | + 14   |
| BZX84C 18  | 12.6                  | 0.05                   | 100          | + 12.4                                          | + 16   |
| BZX84C 20  | 14                    | 0.05                   | 85           | + 14.4                                          | + 18   |
| BZX84C 22  | 15.4                  | 0.05                   | 85           | + 16.4                                          | + 20   |
| BZX84C 24  | 16.8                  | 0.05                   | 80           | + 18.4                                          | + 22   |
| BZX84C 27  | 18.9                  | 0.05                   | 70           | + 21.4                                          | + 25.3 |
| BZX84C 30  | 21                    | 0.05                   | 70           | + 24.4                                          | + 29.4 |
| BZX84C 33  | 23.1                  | 0.05                   | 70           | + 27.4                                          | + 33.4 |

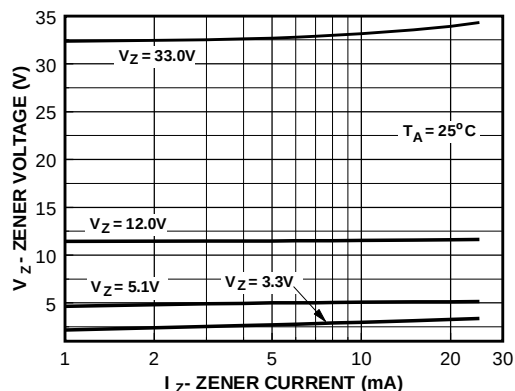
\*Capacitance @ VR = 0.0 volts; Frequency = 1.0 megahertz.

Zeners (BZX84C 3V3 - BZX84C 33)

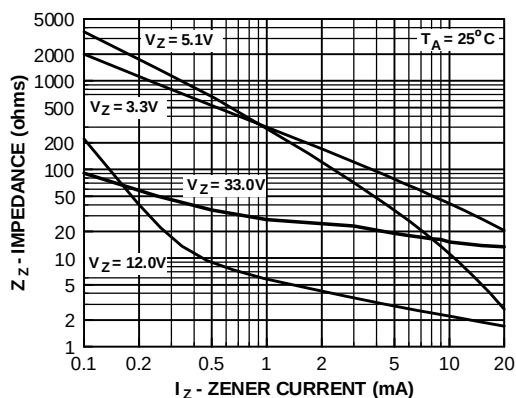
# Zeners (BZX84C 3V3 - BZX84C 33)

(continued)

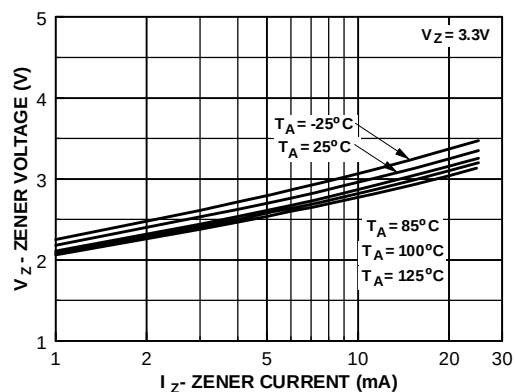
## Typical Characteristics



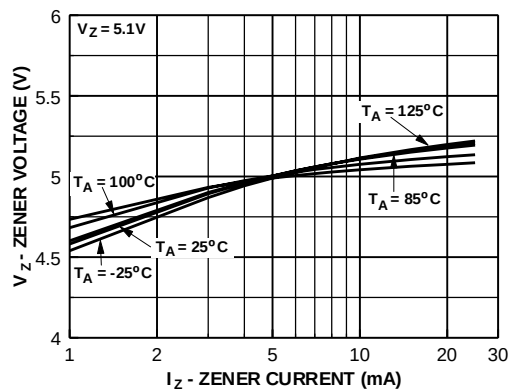
Zener Current vs. Zener Voltage



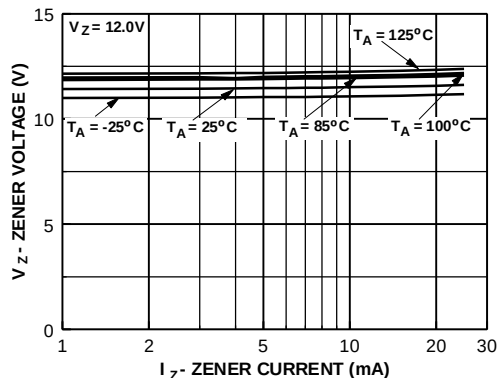
Zener Current vs. Zener Impedance



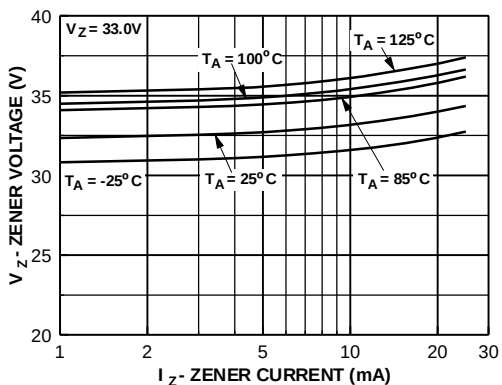
3.3 Zener Voltage vs. Temperature



5.1 Zener Voltage vs. Temperature



12 Zener Voltage vs. Zener Temperature



33 Zener Voltage vs. Zener Temperature

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