



Micro Commercial Components

Micro Commercial Components  
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# BZX84C2V4 THRU BZX84C(B)51

## Silicon 350 mWatt Zener Diodes

### Features

- Planar Die construction
- 350mW Power Dissipation
- Zener Voltages from 2.4V - 51V
- Ideally Suited for Automated Assembly Processes

### Mechanical Data

- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0 and MSL Rating 1
- Lead Free Finish/RoHS Compliant ("P" Suffix designates RoHS Compliant. See ordering information)
- Weight: 0.008 grams (approx.)

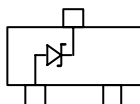
#### Maximum Ratings @ 25°C Unless Otherwise Specified

|                                     |                                   |                 |       |
|-------------------------------------|-----------------------------------|-----------------|-------|
| Maximum Forward Voltage@IF=10mA     | V <sub>F</sub>                    | 0.9             | V     |
| Power Dissipation (Note A)          | P <sub>(AV)</sub>                 | 350             | mWatt |
| Operation And Storage Temperature   | T <sub>J</sub> , T <sub>STG</sub> | -55°C to +150°C |       |
| Peak Forward Surge Current (Note B) | I <sub>FSM</sub>                  | 2.0             | A     |
| Thermal Resistance (Note C)         | R <sub>thja</sub>                 | 357             | °C/W  |

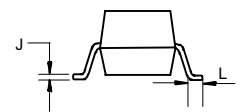
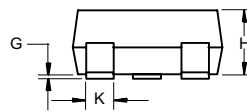
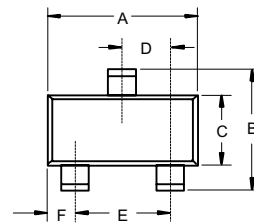
#### NOTES:

- A. Mounted on 5.0mm<sup>2</sup> (.013mm thick) land areas.  
 B. Measured on 8.3ms, single half sine-wave or equivalent square wave, duty cycle = 4 pulses per minute maximum.  
 C. Valid provided the terminals are kept at ambient temperature

\*Pin Configuration - Top View

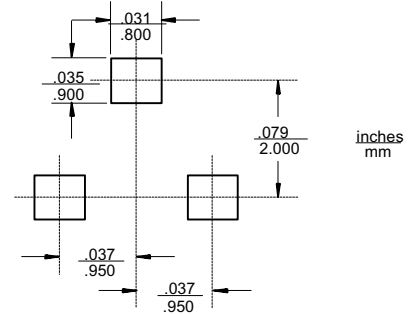


### SOT-23



| DIM | INCHES |       | MM   |      | NOTE |
|-----|--------|-------|------|------|------|
|     | MIN    | MAX   | MIN  | MAX  |      |
| A   | .110   | .120  | 2.80 | 3.04 |      |
| B   | .083   | .098  | 2.10 | 2.64 |      |
| C   | .047   | .055  | 1.20 | 1.40 |      |
| D   | .035   | .041  | .89  | 1.03 |      |
| E   | .070   | .081  | 1.78 | 2.05 |      |
| F   | .018   | .024  | .45  | .60  |      |
| G   | .0005  | .0039 | .013 | .100 |      |
| H   | .035   | .044  | .89  | 1.12 |      |
| J   | .003   | .007  | .085 | .180 |      |
| K   | .015   | .020  | .37  | .51  |      |
| L   | .007   | .020  | .20  | .50  |      |

#### Suggested Solder Pad Layout



# BZX84C2V4 thru BZX84C51

ELECTRICAL CHARACTERISTICS (Ta=25°C unless otherwise noted)

| Part Number | Marking | Nominal Zener Voltage   |       |       | Max. Zener Impedance              |    |                                   |    | Max.Reverse Leakage Current |       |
|-------------|---------|-------------------------|-------|-------|-----------------------------------|----|-----------------------------------|----|-----------------------------|-------|
|             |         | Vz(V) @ I <sub>ZT</sub> |       |       | Z <sub>ZT</sub> @ I <sub>ZT</sub> |    | Z <sub>ZK</sub> @ I <sub>ZK</sub> |    | IR @ VR                     |       |
|             |         | Nom.                    | Min.  | Max.  | Ohm                               | mA | Ohm                               | mA | µA                          | V     |
| BZX84C2V4   | W1/Z11  | 2.4                     | 2.28  | 2.52  | 100                               | 5  | 600                               | 1  | 50                          | 1.0   |
| BZX84C2V7   | W2/Z12  | 2.7                     | 2.5   | 2.9   | 100                               | 5  | 600                               | 1  | 20                          | 1.0   |
| BZX84C3V0   | W3/Z13  | 3                       | 2.8   | 3.2   | 95                                | 5  | 600                               | 1  | 10                          | 1.0   |
| BZX84C3V3   | W4/Z14  | 3.3                     | 3.1   | 3.5   | 95                                | 5  | 600                               | 1  | 5                           | 1.0   |
| BZX84C3V6   | W5/Z15  | 3.6                     | 3.4   | 3.8   | 90                                | 5  | 600                               | 1  | 5                           | 1.0   |
| BZX84C3V9   | W6/Z16  | 3.9                     | 3.7   | 4.1   | 90                                | 5  | 600                               | 1  | 3                           | 1.0   |
| BZX84C4V3   | W7/Z17  | 4.3                     | 4     | 4.6   | 90                                | 5  | 600                               | 1  | 3                           | 1.0   |
| BZX84C4V7   | W8/Z1   | 4.7                     | 4.4   | 5     | 80                                | 5  | 500                               | 1  | 3                           | 2.0   |
| BZX84C5V1   | W9/Z2   | 5.1                     | 4.8   | 5.4   | 60                                | 5  | 480                               | 1  | 2                           | 2.0   |
| BZX84C5V6   | WA/Z3   | 5.6                     | 5.2   | 6     | 40                                | 5  | 400                               | 1  | 1                           | 2.0   |
| BZX84C6V2   | WB/Z4   | 6.2                     | 5.8   | 6.6   | 10                                | 5  | 150                               | 1  | 3                           | 4.0   |
| BZX84C6V8   | WC/Z5   | 6.8                     | 6.4   | 7.2   | 15                                | 5  | 80                                | 1  | 2                           | 4.0   |
| BZX84C7V5   | WD/Z6   | 7.5                     | 7     | 7.9   | 15                                | 5  | 80                                | 1  | 1                           | 5.0   |
| BZX84C8V2   | WE/Z7   | 8.2                     | 7.7   | 8.7   | 15                                | 5  | 80                                | 1  | 0.7                         | 5.0   |
| BZX84C9V1   | WF/Z8   | 9.1                     | 8.5   | 9.6   | 15                                | 5  | 100                               | 1  | 0.5                         | 6.0   |
| BZX84C10    | WG/Z9   | 10                      | 9.4   | 10.6  | 20                                | 5  | 150                               | 1  | 0.2                         | 7.0   |
| BZX84C11    | WH/Y1   | 11                      | 10.4  | 11.6  | 20                                | 5  | 150                               | 1  | 0.1                         | 8.0   |
| BZX84C12    | WI/Y2   | 12                      | 11.4  | 12.7  | 25                                | 5  | 150                               | 1  | 0.1                         | 8.0   |
| BZX84C13    | WK/Y3   | 13                      | 12.4  | 14.1  | 30                                | 5  | 170                               | 1  | 0.1                         | 8.0   |
| BZX84C15    | WL/Y4   | 15                      | 13.8  | 15.6  | 30                                | 5  | 200                               | 1  | 0.1                         | 10.5  |
| BZX84C16    | WM /Y5  | 16                      | 15.3  | 17.1  | 40                                | 5  | 200                               | 1  | 0.1                         | 11.2  |
| BZX84C18    | WN/Y6   | 18                      | 16.8  | 19.1  | 45                                | 5  | 225                               | 1  | 0.1                         | 12.6  |
| BZX84C20    | WO/Y7   | 20                      | 18.8  | 21.2  | 55                                | 5  | 225                               | 1  | 0.1                         | 14.0  |
| BZX84C22    | WP/Y8   | 22                      | 20.8  | 23.3  | 55                                | 5  | 250                               | 1  | 0.1                         | 15.4  |
| BZX84C24    | WR/Y9   | 24                      | 22.8  | 25.6  | 70                                | 5  | 250                               | 1  | 0.1                         | 16.8  |
| BZX84C27    | WS/Y10  | 27                      | 25.1  | 28.9  | 80                                | 2  | 300                               | 1  | 0.1                         | 18.9  |
| BZX84C30    | WT /Y11 | 30                      | 28    | 32    | 80                                | 2  | 300                               | 1  | 0.1                         | 21.0  |
| BZX84C33    | WU/Y12  | 33                      | 31    | 35    | 80                                | 2  | 325                               | 1  | 0.1                         | 23.1  |
| BZX84C36    | WW/Y13  | 36                      | 34    | 38    | 90                                | 2  | 350                               | 1  | 0.1                         | 25.2  |
| BZX84C39    | WX/Y14  | 39                      | 37    | 41    | 130                               | 2  | 350                               | 1  | 0.1                         | 27.3  |
| BZX84C43    | WY      | 43                      | 40.85 | 45.15 | 150                               | 5  | 375                               | 1  | 0.1                         | 30.10 |
| BZX84C47    | WZ      | 47                      | 44.65 | 49.35 | 170                               | 5  | 375                               | 1  | 0.1                         | 32.90 |
| BZX84C51    | XA      | 51                      | 48.45 | 53.55 | 100                               | 5  | 400                               | 1  | 0.1                         | 35.70 |

NOTE:

- Standard zener voltage tolerance is +/- 5% with a 'C' suffix from BZX84C2V4-BZX84C51, suffix 'B' is +/- 2% tolerance from BZX84B4V3-BZX84B51.
- Zener Voltage (Vz) Measurement. Guarantees the zener voltage when measured at 90 seconds while maintaining the lead temperature (TL) AT 30 °C, from the diode body.
- Zener Impedance (Zz) Derivation. The zener impedance is derived from the 60 cycle ac voltage, which results when an AC current having an rms value equal to 10% of the dc zener current (Izt or Izk) is superimposed on Izt or Izk.
- Surge Current (IR) Non-Repetitive. The rating listed in the electrical characteristics table is maximum peak, non-repetitive, reverse surge current of 1/2 square wave or equivalent sine wave pulse of 1/120 second duration superimposed on the test current, Izt, per JEDEC registration; however, actual device capability is as described in Figure 5.

# BZX84B4V3 thru BZX84B51

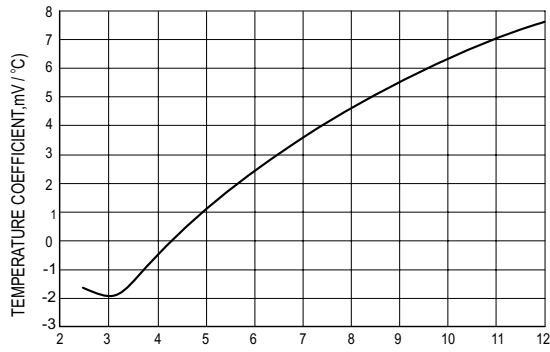
ELECTRICAL CHARACTERISTICS (Ta=25°C unless otherwise noted)

| Part Number | Marking | Nominal Zener Voltage   |       |       | Max. Zener Impedance              |    |                                   |    | Max.Reverse Leakage Current |      |
|-------------|---------|-------------------------|-------|-------|-----------------------------------|----|-----------------------------------|----|-----------------------------|------|
|             |         | Vz(V) @ I <sub>ZT</sub> |       |       | Z <sub>ZT</sub> @ I <sub>ZT</sub> |    | Z <sub>ZK</sub> @ I <sub>ZK</sub> |    | IR @ VR                     |      |
|             |         | Nom.                    | Min.  | Max.  | Ohm                               | mA | Ohm                               | mA | µA                          | V    |
| BZX84B4V3   | W7      | 4.3                     | 4.21  | 4.39  | 90                                | 5  | 600                               | 1  | 3.0                         | 1.0  |
| BZX84B4V7   | W8/Z1   | 4.7                     | 4.61  | 4.79  | 80                                | 5  | 500                               | 1  | 3.0                         | 2.0  |
| BZX84B5V1   | W9/Z2   | 5.1                     | 5.00  | 5.20  | 60                                | 5  | 480                               | 1  | 2.0                         | 2.0  |
| BZX84B5V6   | WA/Z3   | 5.6                     | 5.49  | 5.71  | 40                                | 5  | 400                               | 1  | 1.0                         | 2.0  |
| BZX84B6V2   | WB/Z4   | 6.2                     | 6.08  | 6.32  | 10                                | 5  | 150                               | 1  | 3.0                         | 4.0  |
| BZX84B6V8   | WC/Z5   | 6.8                     | 6.66  | 6.94  | 15                                | 5  | 80                                | 1  | 2.0                         | 4.0  |
| BZX84B7V5   | WD/Z6   | 7.5                     | 7.35  | 7.65  | 15                                | 5  | 80                                | 1  | 1.0                         | 5.0  |
| BZX84B8V2   | WE/Z7   | 8.2                     | 8.04  | 8.36  | 15                                | 5  | 80                                | 1  | 0.7                         | 5.0  |
| BZX84B9V1   | WF/Z8   | 9.1                     | 8.92  | 9.28  | 15                                | 5  | 100                               | 1  | 0.5                         | 6.0  |
| BZX84B10    | WG/Z9   | 10                      | 9.80  | 10.20 | 20                                | 5  | 150                               | 1  | 0.2                         | 7.0  |
| BZX84B11    | WH/Y1   | 11                      | 10.78 | 11.22 | 20                                | 5  | 150                               | 1  | 0.1                         | 8.0  |
| BZX84B12    | WI/Y2   | 12                      | 11.76 | 12.24 | 25                                | 5  | 150                               | 1  | 0.1                         | 8.0  |
| BZX84B13    | WK/Y3   | 13                      | 12.74 | 13.26 | 30                                | 5  | 170                               | 1  | 0.1                         | 8.0  |
| BZX84B15    | WL/Y4   | 15                      | 14.70 | 15.30 | 30                                | 5  | 200                               | 1  | 0.1                         | 10.5 |
| BZX84B16    | WM/Y5   | 16                      | 15.68 | 16.32 | 40                                | 5  | 200                               | 1  | 0.1                         | 11.2 |
| BZX84B18    | WN/Y6   | 18                      | 17.64 | 18.36 | 45                                | 5  | 225                               | 1  | 0.1                         | 12.6 |
| BZX84B20    | WO/Y7   | 20                      | 19.60 | 20.40 | 55                                | 5  | 225                               | 1  | 0.1                         | 14.0 |
| BZX84B22    | WP/Y8   | 22                      | 21.56 | 22.44 | 55                                | 5  | 250                               | 1  | 0.1                         | 15.4 |
| BZX84B24    | WR/Y9   | 24                      | 23.52 | 24.48 | 70                                | 5  | 250                               | 1  | 0.1                         | 16.8 |
| BZX84B27    | WS/Y10  | 27                      | 26.46 | 27.54 | 80                                | 5  | 300                               | 1  | 0.1                         | 18.9 |
| BZX84B30    | WT/Y11  | 30                      | 29.40 | 30.60 | 80                                | 5  | 300                               | 1  | 0.1                         | 21.0 |
| BZX84B33    | WU/Y12  | 33                      | 32.34 | 33.66 | 80                                | 5  | 325                               | 1  | 0.1                         | 23.1 |
| BZX84B36    | WW/Y13  | 36                      | 35.28 | 36.72 | 90                                | 5  | 350                               | 1  | 0.1                         | 25.2 |
| BZX84B39    | WX/Y14  | 39                      | 38.22 | 39.78 | 130                               | 5  | 350                               | 1  | 0.1                         | 27.3 |
| BZX84B43    | WY      | 43                      | 42.14 | 43.86 | 150                               | 5  | 375                               | 1  | 0.1                         | 30.1 |
| BZX84B47    | WZ      | 47                      | 46.06 | 47.94 | 170                               | 5  | 375                               | 1  | 0.1                         | 32.9 |
| BZX84B51    | XA      | 51                      | 49.98 | 52.02 | 100                               | 5  | 750                               | 1  | 0.1                         | 38.0 |

NOTE:

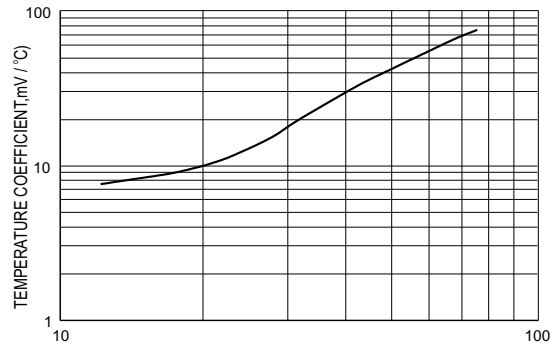
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- Surge Current (IR) Non-Repetitive. The rating listed in the electrical characteristics table is maximum peak, non-repetitive, reverse surge current of 1/2 square wave or equivalent sine wave pulse of 1/120 second duration superimposed on the test current, Izt, per JEDEC registration; however, actual device capability is as described in Figure 5.

# BZX84 Series



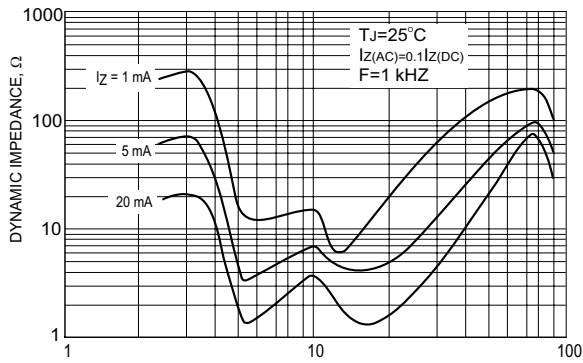
NOMINAL ZENER VOLTAGE, Volts

**TYPICAL REVERSE CURRENT**



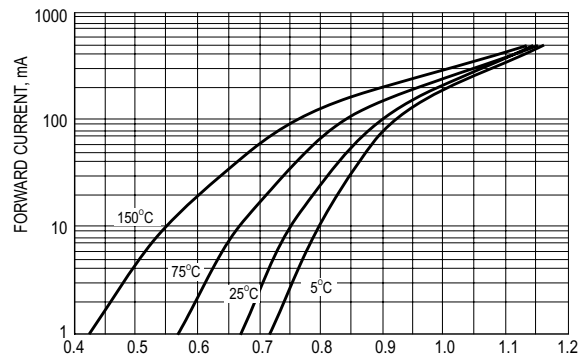
NOMINAL ZENER VOLTAGE, Volts

**TEMPERATURE COEFFICIENTS**



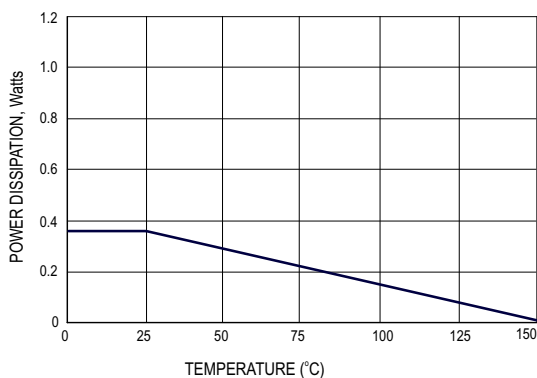
NORMAL ZENER VOLTAGE, Volts

**EFFECT OF ZENER VOLTAGE ON ZENER IMPEDANCE**



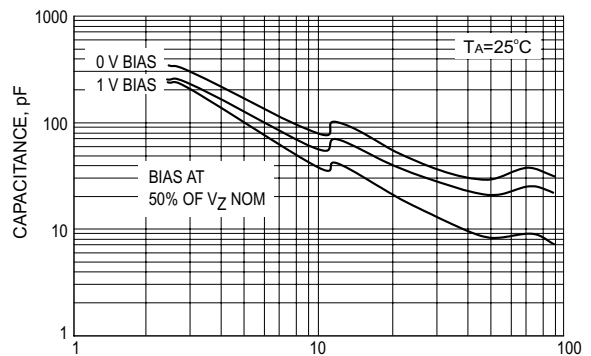
FORWARD VOLTAGE, Volts

**TYPICAL FORWARD VOLTAGE**



TEMPERATURE (°C)

**STEADY STATE POWER DERATING**



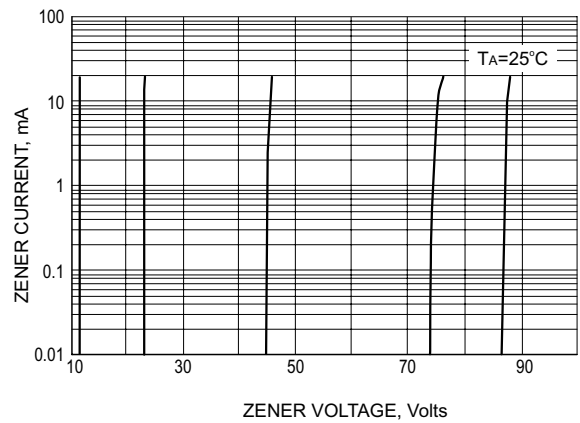
NOMINAL ZENER VOLTAGE, Volts

**TYPICAL CAPACITANCE**

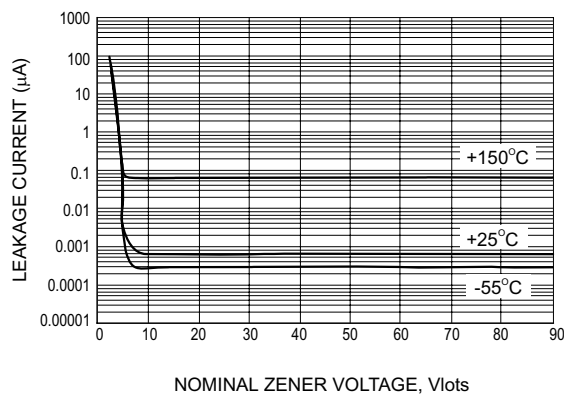
# BZX84 Series



**ZENER VOLTAGE V.S. ZENER CURRENT**



**ZENER VOLTAGE V.S. ZENER CURRENT**



**TYPICAL LEAKAGE CURRENT**



Micro Commercial Components

## Ordering Information

| Device           | Packing              |
|------------------|----------------------|
| (Part Number)-TP | Tape&Reel;3Kpcs/Reel |

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