

## Features

- Planar Die Construction
- Zener Voltages from 2.4V - 62V
- Ideally Suited for Automated Assembly Processes
- Halogen Free Available Upon Request By Adding Suffix "-HF"
- Moisture Sensitivity Level 1
- Epoxy Meets UL 94 V-0 Flammability Rating
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

**350 mWatt  
Zener Diodes  
2.4 to 62 Volts**

## Maximum Ratings

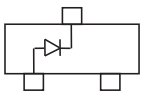
- Operating Junction Temperature Range: -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance : 357°C/W Junction to Ambient

| Parameter                  | Symbol    | Rating | Conditions |
|----------------------------|-----------|--------|------------|
| Power Dissipation          | $P_D$     | 350mW  | Note 1     |
| Peak Forward Surge Current | $I_{FSM}$ | 2.0A   | Note 2     |
| Maximum Forward Voltage    | $V_F$     | 0.9V   | $I_F=10mA$ |

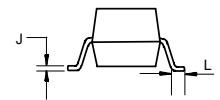
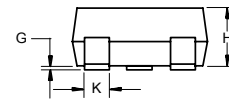
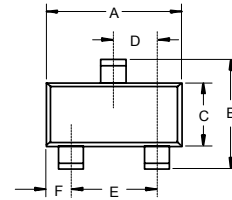
Note:

1. Mounted on 5.0mm<sup>2</sup> (.013mm thick) Land Areas.
2. Measured on 8.3ms, Single Half Sine-wave or Equivalent Square Wave

## Internal Structure



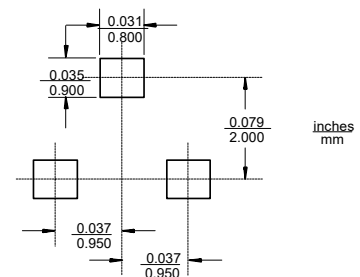
## SOT-23



### DIMENSIONS

| DIM | INCHES |       | MM   |      | NOTE |
|-----|--------|-------|------|------|------|
|     | MIN    | MAX   | MIN  | MAX  |      |
| A   | 0.110  | 0.120 | 2.80 | 3.04 |      |
| B   | 0.083  | 0.104 | 2.10 | 2.64 |      |
| C   | 0.047  | 0.055 | 1.20 | 1.40 |      |
| D   | 0.034  | 0.041 | 0.85 | 1.05 |      |
| E   | 0.067  | 0.083 | 1.70 | 2.10 |      |
| F   | 0.018  | 0.024 | 0.45 | 0.60 |      |
| G   | 0.0004 | 0.006 | 0.01 | 0.15 |      |
| H   | 0.035  | 0.043 | 0.90 | 1.10 |      |
| J   | 0.003  | 0.007 | 0.08 | 0.18 |      |
| K   | 0.012  | 0.020 | 0.30 | 0.51 |      |
| L   | 0.007  | 0.020 | 0.20 | 0.50 |      |

### Suggested Solder Pad Layout



Electrical Characteristics @ 25°C Unless Otherwise Specified

| MCC<br>Part Number | Zener Voltage <sup>(3,4)</sup>   |        |         | Maximum Zener Impedance <sup>(5)</sup> |                                   |                 |                                   | Maximum<br>Reverse Current<br>I <sub>R</sub> @ V <sub>R</sub> |                | Marking Code |
|--------------------|----------------------------------|--------|---------|----------------------------------------|-----------------------------------|-----------------|-----------------------------------|---------------------------------------------------------------|----------------|--------------|
|                    | V <sub>Z</sub> @ I <sub>ZT</sub> |        |         | I <sub>ZT</sub>                        | Z <sub>ZT</sub> @ I <sub>ZT</sub> | I <sub>ZK</sub> | Z <sub>ZK</sub> @ I <sub>ZK</sub> | I <sub>R</sub>                                                | V <sub>R</sub> |              |
|                    | Min.(V)                          | Nom(V) | Max.(V) | mA                                     | Ω                                 | mA              | Ω                                 | μA                                                            | V              |              |
| BZX84C2V4          | 2.28                             | 2.40   | 2.52    | 5                                      | 100                               | 1               | 600                               | 50                                                            | 1.0            | W1/Z11       |
| BZX84C2V7          | 2.50                             | 2.70   | 2.90    | 5                                      | 100                               | 1               | 600                               | 20                                                            | 1.0            | W2/Z12       |
| BZX84C3V0          | 2.80                             | 3.00   | 3.20    | 5                                      | 95                                | 1               | 600                               | 10                                                            | 1.0            | W3/Z13       |
| BZX84C3V3          | 3.10                             | 3.30   | 3.50    | 5                                      | 95                                | 1               | 600                               | 5                                                             | 1.0            | W4/Z14       |
| BZX84C3V6          | 3.40                             | 3.60   | 3.80    | 5                                      | 90                                | 1               | 600                               | 5                                                             | 1.0            | W5/Z15       |
| BZX84C3V9          | 3.70                             | 3.90   | 4.10    | 5                                      | 90                                | 1               | 600                               | 3                                                             | 1.0            | W6/Z16       |
| BZX84C4V3          | 4.00                             | 4.30   | 4.60    | 5                                      | 90                                | 1               | 600                               | 3                                                             | 1.0            | W7/Z17       |
| BZX84C4V7          | 4.40                             | 4.70   | 5.00    | 5                                      | 80                                | 1               | 500                               | 3                                                             | 2.0            | W8/Z1        |
| BZX84C5V1          | 4.80                             | 5.10   | 5.40    | 5                                      | 60                                | 1               | 480                               | 2                                                             | 2.0            | W9/Z2        |
| BZX84C5V6          | 5.20                             | 5.60   | 6.00    | 5                                      | 40                                | 1               | 400                               | 1                                                             | 2.0            | WA/Z3        |
| BZX84C6V2          | 5.80                             | 6.20   | 6.60    | 5                                      | 10                                | 1               | 150                               | 3                                                             | 4.0            | WB/Z4        |
| BZX84C6V8          | 6.40                             | 6.80   | 7.20    | 5                                      | 15                                | 1               | 80                                | 2                                                             | 4.0            | WC/Z5        |
| BZX84C7V5          | 7.00                             | 7.50   | 7.90    | 5                                      | 15                                | 1               | 80                                | 1                                                             | 5.0            | WD/Z6        |
| BZX84C8V2          | 7.70                             | 8.20   | 8.70    | 5                                      | 15                                | 1               | 80                                | 0.7                                                           | 5.0            | WE/Z7        |
| BZX84C9V1          | 8.50                             | 9.10   | 9.60    | 5                                      | 15                                | 1               | 100                               | 0.5                                                           | 6.0            | WF/Z8        |
| BZX84C10           | 9.40                             | 10.00  | 10.60   | 5                                      | 20                                | 1               | 150                               | 0.2                                                           | 7.0            | WG/Z9        |
| BZX84C11           | 10.40                            | 11.00  | 11.60   | 5                                      | 20                                | 1               | 150                               | 0.1                                                           | 8.0            | WH/Y1        |
| BZX84C12           | 11.40                            | 12.00  | 12.70   | 5                                      | 25                                | 1               | 150                               | 0.1                                                           | 8.0            | WI/Y2        |
| BZX84C13           | 12.40                            | 13.00  | 14.10   | 5                                      | 30                                | 1               | 170                               | 0.1                                                           | 8.0            | WK/Y3        |
| BZX84C15           | 13.80                            | 15.00  | 15.60   | 5                                      | 30                                | 1               | 200                               | 0.1                                                           | 10.5           | WL/Y4        |
| BZX84C16           | 15.30                            | 16.00  | 17.10   | 5                                      | 40                                | 1               | 200                               | 0.1                                                           | 11.2           | WM/Y5        |
| BZX84C18           | 16.80                            | 18.00  | 19.10   | 5                                      | 45                                | 1               | 225                               | 0.1                                                           | 12.6           | WN/Y6        |
| BZX84C20           | 18.80                            | 20.00  | 21.20   | 5                                      | 55                                | 1               | 225                               | 0.1                                                           | 14.0           | WO/Y7        |
| BZX84C22           | 20.80                            | 22.00  | 23.30   | 5                                      | 55                                | 1               | 250                               | 0.1                                                           | 15.4           | WP/Y8        |
| BZX84C24           | 22.80                            | 24.00  | 25.60   | 5                                      | 70                                | 1               | 250                               | 0.1                                                           | 16.8           | WR/Y9        |
| BZX84C27           | 25.10                            | 27.00  | 28.90   | 2                                      | 80                                | 1               | 300                               | 0.1                                                           | 18.9           | WS/Y10       |
| BZX84C30           | 28.00                            | 30.00  | 32.00   | 2                                      | 80                                | 1               | 300                               | 0.1                                                           | 21.0           | WT/Y11       |
| BZX84C33           | 31.00                            | 33.00  | 35.00   | 2                                      | 80                                | 1               | 325                               | 0.1                                                           | 23.1           | WU/Y12       |
| BZX84C36           | 34.00                            | 36.00  | 38.00   | 2                                      | 90                                | 1               | 350                               | 0.1                                                           | 25.2           | WW/Y13       |
| BZX84C39           | 37.00                            | 39.00  | 41.00   | 2                                      | 130                               | 1               | 350                               | 0.1                                                           | 27.3           | WX/Y14       |
| BZX84C43           | 40.85                            | 43.00  | 45.15   | 5                                      | 150                               | 1               | 375                               | 0.1                                                           | 30.10          | WY/Y15       |
| BZX84C47           | 44.65                            | 47.00  | 49.35   | 5                                      | 170                               | 1               | 375                               | 0.1                                                           | 32.90          | WZ/Y16       |
| BZX84C51           | 48.45                            | 51.00  | 53.55   | 5                                      | 100                               | 1               | 400                               | 0.1                                                           | 35.70          | XA/Y17       |
| BZX84C62           | 58.00                            | 62.00  | 66.00   | 2                                      | 215                               | 0.5             | 450                               | 0.05                                                          | 43.40          | Y19          |

Note :

- Standard zener voltage tolerance is +/- 5% with a 'C' suffix from BZX84C2V4~BZX84C62 , suffix 'B' is +/- 2% tolerance from BZX84B4V3~BZX84B51.
- Zener Voltage (V<sub>Z</sub>) Measurement. Guarantess the Zener Voltage When Measured at 90 Seconds While Maintaining the Lead Temperature (T<sub>L</sub>) at 25°C from the Diode Body.
- Zener Impedance (Z<sub>Z</sub>) 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 (I<sub>ZT</sub> or I<sub>ZK</sub>) is Superimposed on I<sub>ZT</sub> or I<sub>ZK</sub>.

Electrical Characteristics @ 25°C Unless Otherwise Specified

| MCC Part Number | Zener Voltage <sup>(3,4)</sup> |        |         | Maximum Zener Impedance <sup>(5)</sup> |                   |          |                   | Maximum Reverse Current $I_R(\text{Max}) @ V_R$ |       | Marking Code |
|-----------------|--------------------------------|--------|---------|----------------------------------------|-------------------|----------|-------------------|-------------------------------------------------|-------|--------------|
|                 | $V_Z @ I_{ZT}$                 |        |         | $I_{ZT}$                               | $Z_{ZT} @ I_{ZT}$ | $I_{ZK}$ | $Z_{ZK} @ I_{ZK}$ | $I_R$                                           | $V_R$ |              |
|                 | Min.(V)                        | Nom(V) | Max.(V) | mA                                     | $\Omega$          | mA       | $\Omega$          | $\mu\text{A}$                                   | V     |              |
| BZX84B4V3       | 4.21                           | 4.30   | 4.39    | 5                                      | 90                | 1        | 600               | 3.0                                             | 1.0   | W7           |
| BZX84B4V7       | 4.61                           | 4.70   | 4.79    | 5                                      | 80                | 1        | 500               | 3.0                                             | 2.0   | W8/Z1        |
| BZX84B5V1       | 5.00                           | 5.10   | 5.20    | 5                                      | 60                | 1        | 480               | 2.0                                             | 2.0   | W9/Z22       |
| BZX84B5V6       | 5.49                           | 5.60   | 5.71    | 5                                      | 40                | 1        | 400               | 1.0                                             | 2.0   | WA/Z23       |
| BZX84B6V2       | 6.08                           | 6.20   | 6.32    | 5                                      | 10                | 1        | 150               | 3.0                                             | 4.0   | WB/Z24       |
| BZX84B6V8       | 6.66                           | 6.80   | 6.94    | 5                                      | 15                | 1        | 80                | 2.0                                             | 4.0   | WC/Z25       |
| BZX84B7V5       | 7.35                           | 7.50   | 7.65    | 5                                      | 15                | 1        | 80                | 1.0                                             | 5.0   | WD/Z26       |
| BZX84B8V2       | 8.04                           | 8.20   | 8.36    | 5                                      | 15                | 1        | 80                | 0.7                                             | 5.0   | WE/Z27       |
| BZX84B9V1       | 8.92                           | 9.10   | 9.28    | 5                                      | 15                | 1        | 100               | 0.5                                             | 6.0   | WF/Z28       |
| BZX84B10        | 9.80                           | 10.00  | 10.20   | 5                                      | 20                | 1        | 150               | 0.2                                             | 7.0   | WG/Z29       |
| BZX84B11        | 10.78                          | 11.00  | 11.22   | 5                                      | 20                | 1        | 150               | 0.1                                             | 8.0   | WH/Y1        |
| BZX84B12        | 11.76                          | 12.00  | 12.24   | 5                                      | 25                | 1        | 150               | 0.1                                             | 8.0   | WI/Y2        |
| BZX84B13        | 12.74                          | 13.00  | 13.26   | 5                                      | 30                | 1        | 170               | 0.1                                             | 8.0   | WK/Y3        |
| BZX84B15        | 14.70                          | 15.00  | 15.30   | 5                                      | 30                | 1        | 200               | 0.1                                             | 10.5  | WL/Y4        |
| BZX84B16        | 15.68                          | 16.00  | 16.32   | 5                                      | 40                | 1        | 200               | 0.1                                             | 11.2  | WM/Y5        |
| BZX84B18        | 17.64                          | 18.00  | 18.36   | 5                                      | 45                | 1        | 225               | 0.1                                             | 12.6  | WN/Y6        |
| BZX84B20        | 19.60                          | 20.00  | 20.40   | 5                                      | 55                | 1        | 225               | 0.1                                             | 14.0  | WO/Y7        |
| BZX84B22        | 21.56                          | 22.00  | 22.44   | 5                                      | 55                | 1        | 250               | 0.1                                             | 15.4  | WP/Y8        |
| BZX84B24        | 23.52                          | 24.00  | 24.48   | 5                                      | 70                | 1        | 250               | 0.1                                             | 16.8  | WR/Y9        |
| BZX84B27        | 26.46                          | 27.00  | 27.54   | 5                                      | 80                | 1        | 300               | 0.1                                             | 18.9  | WS/Y10       |
| BZX84B30        | 29.40                          | 30.00  | 30.60   | 5                                      | 80                | 1        | 300               | 0.1                                             | 21.0  | WT/Y11       |
| BZX84B33        | 32.34                          | 33.00  | 33.66   | 5                                      | 80                | 1        | 325               | 0.1                                             | 23.1  | WU/Y12       |
| BZX84B36        | 35.28                          | 36.00  | 36.72   | 5                                      | 90                | 1        | 350               | 0.1                                             | 25.2  | WW/Y13       |
| BZX84B39        | 38.22                          | 39.00  | 39.78   | 5                                      | 130               | 1        | 350               | 0.1                                             | 27.3  | WX/Y14       |
| BZX84B43        | 42.14                          | 43.00  | 43.86   | 5                                      | 150               | 1        | 375               | 0.1                                             | 30.1  | WY           |
| BZX84B47        | 46.06                          | 47.00  | 47.94   | 5                                      | 170               | 1        | 375               | 0.1                                             | 32.9  | WZ           |
| BZX84B51        | 49.98                          | 51.00  | 52.02   | 5                                      | 100               | 1        | 750               | 0.1                                             | 38.0  | XA           |

Note :

- Standard zener voltage tolerance is +/- 5% with a 'C' suffix from BZX84C2V4~BZX84C62 , suffix 'B' is +/- 2% tolerance from BZX84B4V3~BZX84B51.
- Zener Voltage ( $V_Z$ ) Measurement. Guarantess the Zener Voltage When Measured at 90 Seconds While Maintaining the Lead Temperature ( $T_L$ ) at 25°C from the Diode Body.
- Zener Impedance ( $Z_Z$ ) 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 ( $I_{ZT}$  or  $I_{ZK}$ ) is Superimposed on  $I_{ZT}$  or  $I_{ZK}$ .

**Curve Characteristics**

Fig. 1 - Power Derating Curve

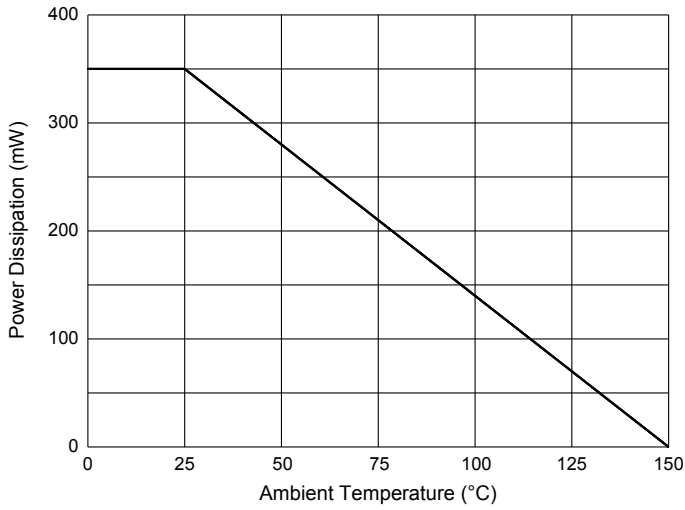


Fig. 2 - Typical Zener Breakdown Characteristics

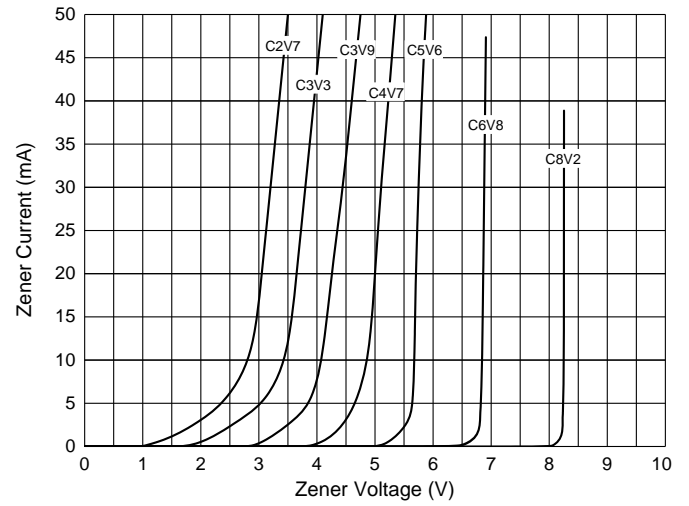
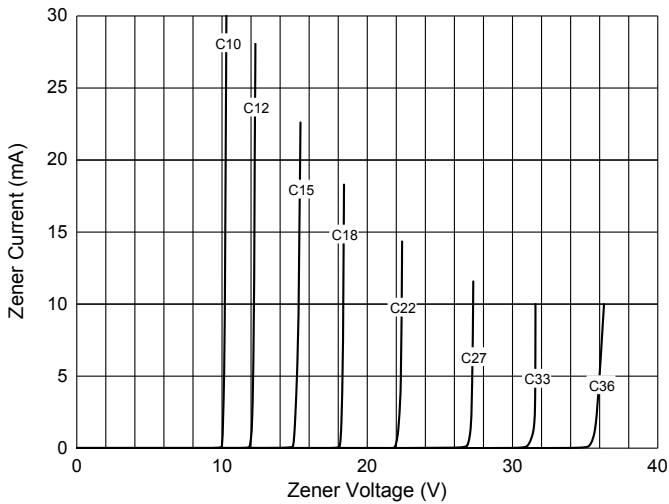


Fig. 3 - Typical Zener Breakdown Characteristics



## Ordering Information

| Device         | Packing              |
|----------------|----------------------|
| Part Number-TP | Tape&Reel:3Kpcs/Reel |

Note : Adding "-HF" Suffix For Halogen Free, eg. Part Number-TP-HF

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