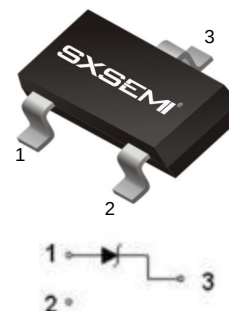


## FEATURES

- ┆ Planar Die Construction
- ┆ 300mW Power Dissipation
- ┆ Zener Voltages from 2.4V - 43V
- ┆ Ultra-Small Surface Mount Package Power Dissipation

**SOT-23**



## Maximum Ratings( $T_a=25^{\circ}\text{C}$ unless otherwise specified)

| Characteristic                                   | Symbol          | Value    | Unit                        |
|--------------------------------------------------|-----------------|----------|-----------------------------|
| Forward Voltage (Note 2) @ $I_F = 10\text{mA}$   | $V_F$           | 0.9      | V                           |
| Power Dissipation(Note 1)                        | $P_d$           | 300      | mW                          |
| Thermal Resistance from Junction to Ambient      | $R_{\theta JA}$ | 417      | $^{\circ}\text{C}/\text{W}$ |
| Operation Junction and Storage Temperature Range | $T_J, T_{stg}$  | -55~+150 | $^{\circ}\text{C}$          |

## ELECTRICAL CHARACTERISTICS

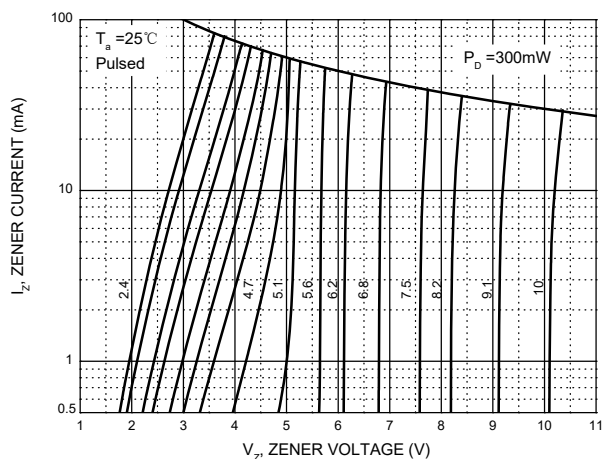
$T_a=25^{\circ}\text{C}$  unless otherwise specified

| Number    | Marking | Zener Voltage Range |        |        |          | Zener Impedance |                 |                   | Reverse Current |       | Temperature Coefficient of Zener voltage |      |
|-----------|---------|---------------------|--------|--------|----------|-----------------|-----------------|-------------------|-----------------|-------|------------------------------------------|------|
|           |         | $V_Z@I_{ZT}$        |        |        | $I_{ZT}$ | $Z_{ZT}@I_{ZT}$ | $Z_{ZK}@I_{ZK}$ | $I_{ZK}$          | $I_R$           | $V_R$ | @ $I_{ZT}=5\text{mA}$ mV/°C              |      |
|           |         | Nom(V)              | Min(V) | Max(V) | (mA)     | ( $\Omega$ )    | (mA)            | ( $\mu\text{A}$ ) | (V)             |       | Min                                      | Max  |
| BZX84C2V4 | Z11     | 2.4                 | 2.20   | 2.60   | 5        | 100             | 600             | 1.0               | 50              | 1.0   | -3.5                                     | 0    |
| BZX84C2V7 | Z12     | 2.7                 | 2.5    | 2.9    | 5        | 100             | 600             | 1.0               | 20              | 1.0   | -3.5                                     | 0    |
| BZX84C3V0 | Z13     | 3.0                 | 2.8    | 3.2    | 5        | 95              | 600             | 1.0               | 10              | 1.0   | -3.5                                     | 0    |
| BZX84C3V3 | Z14     | 3.3                 | 3.1    | 3.5    | 5        | 95              | 600             | 1.0               | 5               | 1.0   | -3.5                                     | 0    |
| BZX84C3V6 | Z15     | 3.6                 | 3.4    | 3.8    | 5        | 90              | 600             | 1.0               | 5               | 1.0   | -3.5                                     | 0    |
| BZX84C3V9 | Z16     | 3.9                 | 3.7    | 4.1    | 5        | 90              | 600             | 1.0               | 3               | 1.0   | -3.5                                     | 0    |
| BZX84C4V3 | Z17     | 4.3                 | 4.0    | 4.6    | 5        | 90              | 600             | 1.0               | 3               | 1.0   | -3.5                                     | 0    |
| BZX84C4V7 | Z1      | 4.7                 | 4.4    | 5.0    | 5        | 80              | 500             | 1.0               | 3               | 2.0   | -3.5                                     | 0.2  |
| BZX84C5V1 | Z2      | 5.1                 | 4.8    | 5.4    | 5        | 60              | 480             | 1.0               | 2               | 2.0   | -2.7                                     | 1.2  |
| BZX84C5V6 | Z3      | 5.6                 | 5.2    | 6.0    | 5        | 40              | 400             | 1.0               | 1               | 2.0   | -2.0                                     | 2.5  |
| BZX84C6V2 | Z4      | 6.2                 | 5.8    | 6.6    | 5        | 10              | 150             | 1.0               | 3               | 4.0   | 0.4                                      | 3.7  |
| BZX84C6V8 | Z5      | 6.8                 | 6.4    | 7.2    | 5        | 15              | 80              | 1.0               | 2               | 4.0   | 1.2                                      | 4.5  |
| BZX84C7V5 | Z6      | 7.5                 | 7.0    | 7.9    | 5        | 15              | 80              | 1.0               | 1               | 5.0   | 2.5                                      | 5.3  |
| BZX84C8V2 | Z7      | 8.2                 | 7.7    | 8.7    | 5        | 15              | 80              | 1.0               | 0.7             | 5.0   | 3.2                                      | 6.2  |
| BZX84C9V1 | Z8      | 9.1                 | 8.5    | 9.6    | 5        | 15              | 100             | 1.0               | 0.5             | 6.0   | 3.8                                      | 7.0  |
| BZX84C10  | Z9      | 10                  | 9.4    | 10.6   | 5        | 20              | 150             | 1.0               | 0.2             | 7.0   | 4.5                                      | 8.0  |
| BZX84C11  | Y1*     | 11                  | 10.4   | 11.6   | 5        | 20              | 150             | 1.0               | 0.1             | 8.0   | 5.4                                      | 9.0  |
| BZX84C12  | Y2*     | 12                  | 11.4   | 12.7   | 5        | 25              | 150             | 1.0               | 0.1             | 8.0   | 6.0                                      | 10.0 |
| BZX84C13  | Y3      | 13                  | 12.4   | 14.1   | 5        | 30              | 170             | 1.0               | 0.1             | 8.0   | 7.0                                      | 11.0 |
| BZX84C15  | Y4      | 15                  | 13.8   | 15.6   | 5        | 30              | 200             | 1.0               | 0.1             | 10.5  | 9.2                                      | 13.0 |
| BZX84C16  | Y5      | 16                  | 15.3   | 17.1   | 5        | 40              | 200             | 1.0               | 0.1             | 11.2  | 10.4                                     | 14.0 |
| BZX84C18  | Y6*     | 18                  | 16.8   | 19.1   | 5        | 45              | 225             | 1.0               | 0.1             | 12.6  | 12.4                                     | 16.0 |
| BZX84C20  | Y7      | 20                  | 18.8   | 21.2   | 5        | 55              | 225             | 1.0               | 0.1             | 14.0  | 14.4                                     | 18.0 |
| BZX84C22  | Y8      | 22                  | 20.8   | 23.3   | 5        | 55              | 250             | 1.0               | 0.1             | 15.4  | 16.4                                     | 20.0 |
| BZX84C24  | Y9      | 24                  | 22.8   | 25.6   | 5        | 70              | 250             | 1.0               | 0.1             | 16.8  | 18.4                                     | 22.0 |
| BZX84C27  | Y10     | 27                  | 25.1   | 28.9   | 2        | 80              | 300             | 0.5               | 0.1             | 18.9  | 21.4                                     | 25.3 |
| BZX84C30  | Y11*    | 30                  | 28.0   | 32.0   | 2        | 80              | 300             | 0.5               | 0.1             | 21.0  | 24.4                                     | 29.4 |
| BZX84C33  | Y12     | 33                  | 31.0   | 35.0   | 2        | 80              | 325             | 0.5               | 0.1             | 23.1  | 27.4                                     | 33.4 |
| BZX84C36  | Y13     | 36                  | 34.0   | 38.0   | 2        | 90              | 350             | 0.5               | 0.1             | 25.2  | 30.4                                     | 37.4 |
| BZX84C39  | Y14     | 39                  | 37.0   | 41.0   | 2        | 130             | 350             | 0.5               | 0.1             | 27.3  | 33.4                                     | 41.2 |
| BZX84C43  | Y15     | 43                  | 40.0   | 46.0   | 2        | 100             | 700             | 1                 | 0.1             | 32    | 10                                       | 12   |

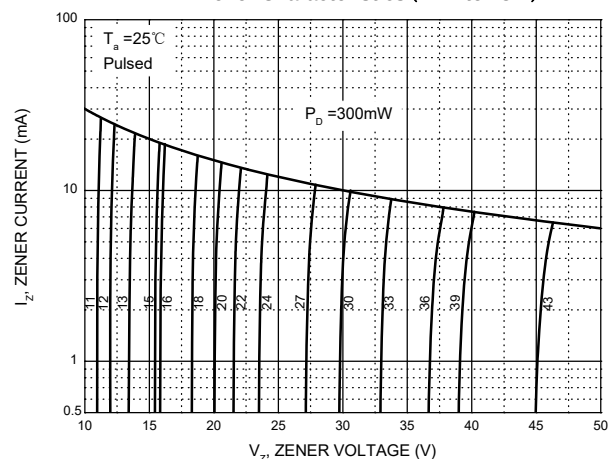
1. Valid provided that device terminals are kept at ambient temperature.
2. Tested with pulses, period=5ms,pulse width =300 $\mu\text{s}$ .
3.  $f = 1\text{kHz}$ .

### Typical Characteristics

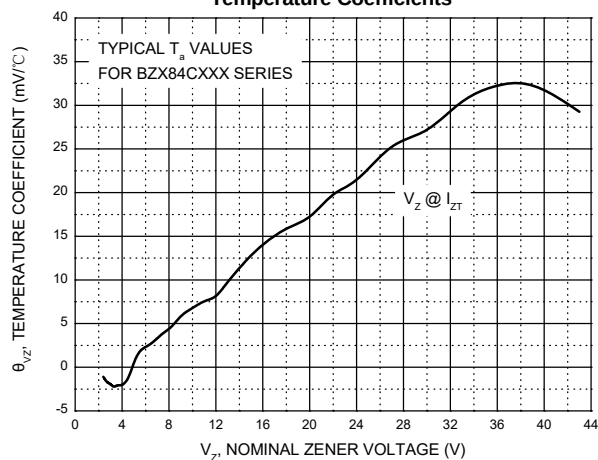
Zener Characteristics ( $V_z$  Up to 10 V)



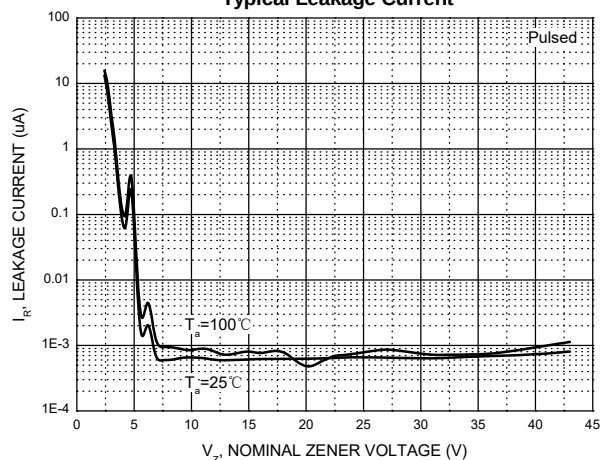
Zener Characteristics (11 V to 43 V)



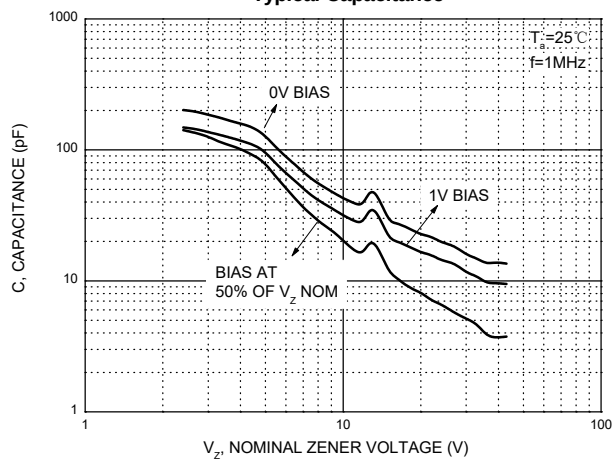
Temperature Coefficients



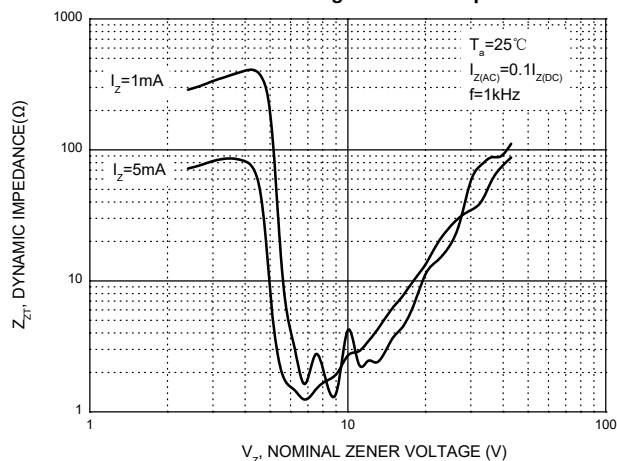
Typical Leakage Current



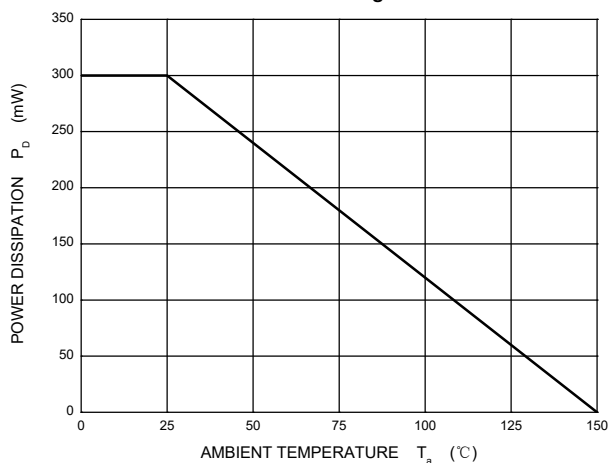
Typical Capacitance



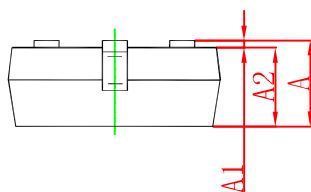
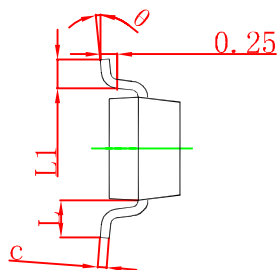
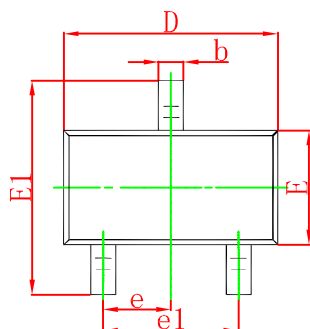
Effect of Zener Voltage on Zener Impedance



Power Derating Curve

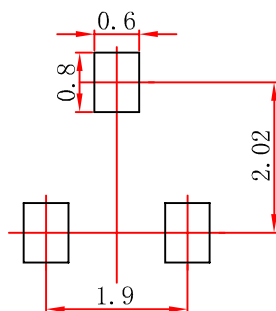


## SOT-23 Package Outline Dimensions



| Symbol | Dimensions In Millimeters |       | Dimensions In Inches |       |
|--------|---------------------------|-------|----------------------|-------|
|        | Min                       | Max   | Min                  | Max   |
| A      | 0.900                     | 1.150 | 0.035                | 0.045 |
| A1     | 0.000                     | 0.100 | 0.000                | 0.004 |
| A2     | 0.900                     | 1.050 | 0.035                | 0.041 |
| b      | 0.300                     | 0.500 | 0.012                | 0.020 |
| c      | 0.080                     | 0.150 | 0.003                | 0.006 |
| D      | 2.800                     | 3.000 | 0.110                | 0.118 |
| E      | 1.200                     | 1.400 | 0.047                | 0.055 |
| E1     | 2.250                     | 2.550 | 0.089                | 0.100 |
| e      | 0.950 TYP                 |       | 0.037 TYP            |       |
| e1     | 1.800                     | 2.000 | 0.071                | 0.079 |
| L      | 0.550 REF                 |       | 0.022 REF            |       |
| L1     | 0.300                     | 0.500 | 0.012                | 0.020 |
| θ      | 0°                        | 8°    | 0°                   | 8°    |

## SOT-23 Suggested Pad Layout



### Note:

1. Controlling dimension: in millimeters.
2. General tolerance:  $\pm 0.05\text{mm}$ .
3. The pad layout is for reference purposes only.