

FEATURES


- 300mW Power Dissipation
- Zener Voltages from 2.0V - 75V
- Ideally Suited for Automated Assembly Processes

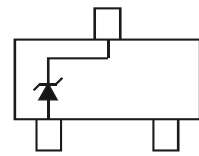
VOLTAGE RANGE

2.0 to 75 Volts

300 mW

MECHANICAL DATA

- Case: SOT23
- Case Material: Molded Plastic "Green" Molding Compound.
UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Solderable per MIL-STD-202, Method 208 Lead-Free Plating (Matte Tin Finish Annealed over Alloy 42 Leadframe). 
- Polarity: See Diagram



Device Schematic

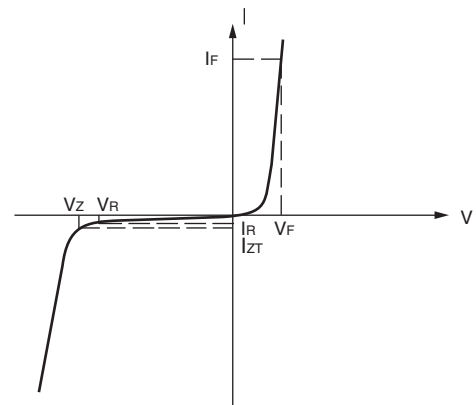
MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Rating 25°C ambient temperature unless otherwise specified.
Single phase half wave, 60Hz, resistive or inductive load.
For capacitive load, derate current by 20%.

| Parameters | Symbols | Value | Units |
|---|------------------|-------------|-------|
| Total Power dissipation | PD | 300 | mW |
| Thermal Resistance, Junction to Ambient ¹⁾ | R _{θJA} | 417 | °C/W |
| Junction temperature | T _J | -55 to +150 | °C |
| Storage temperature range | T _{STG} | -55 to +150 | °C |
| 1) Alumina=0.4×0.3×0.024 in,99.5% alumina | | | |

ELECTRICAL CHARACTERISTICS

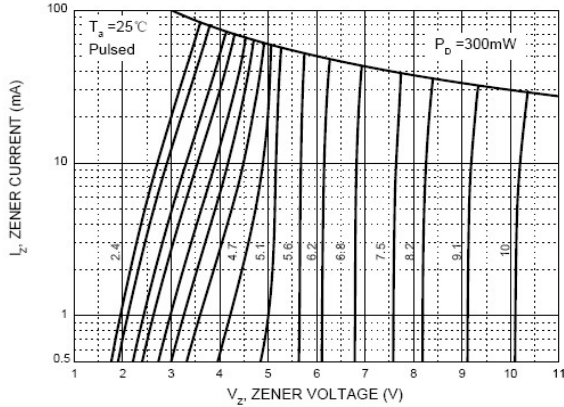
| SYMBOL | PARAMETER |
|-----------------|--|
| V _Z | Reverse Zener voltage at I _{ZT} |
| I _{ZT} | Reverse current |
| Z _{ZT} | Maximum Zener impedance at I _{ZT} |
| I _{ZK} | Reverse current |
| Z _{ZK} | Maximum Zener impedance at I _{ZK} |
| I _R | Reverse leakage current at V _R |
| V _R | Reverse voltage |
| I _F | Forward current |
| V _F | Forward voltage at I _F |
| I _{ZM} | Maximum DC Zener current |



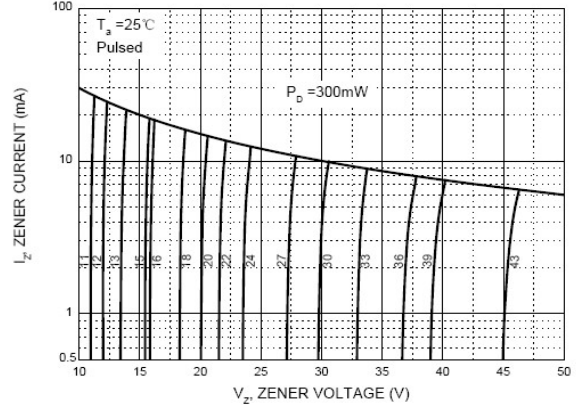
Zener Voltage Regulator

RATING AND CHARACTERISTIC CURVES

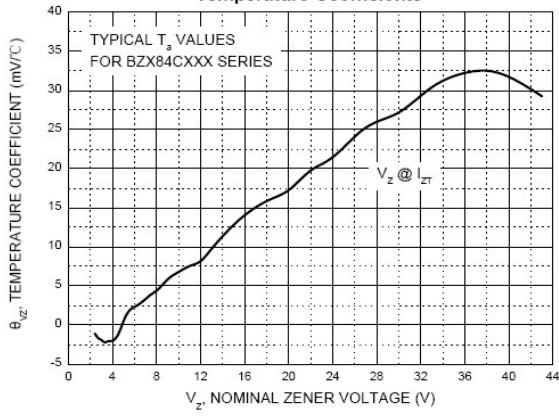
Zener Characteristics (V_z Up to 10 V)



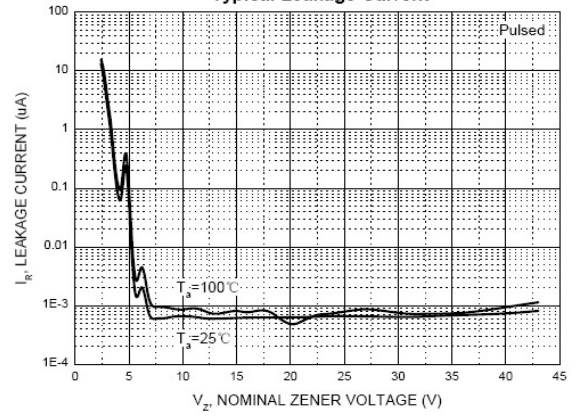
Zener Characteristics (11 V to 43 V)



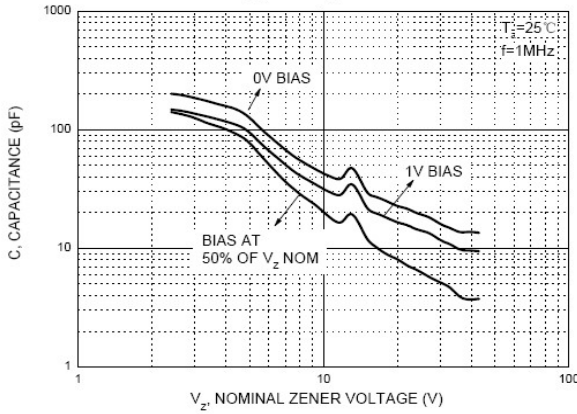
Temperature Coefficients



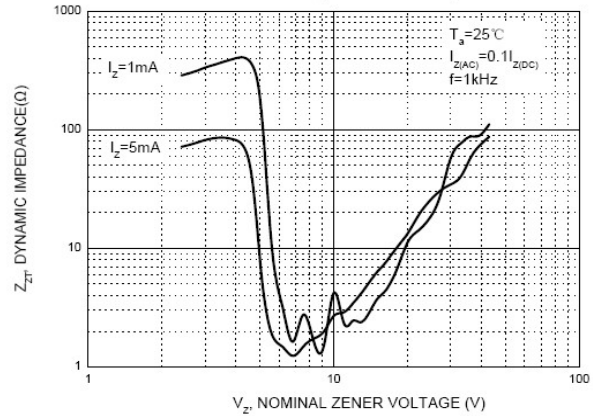
Typical Leakage Current



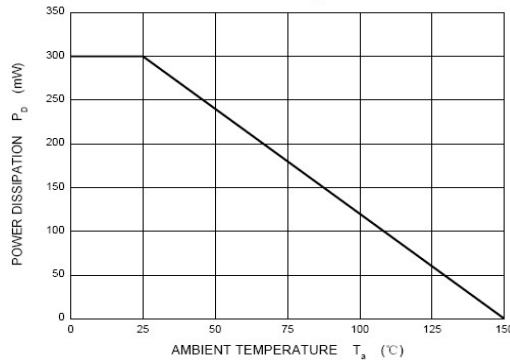
Typical Capacitance



Effect of Zener Voltage on Zener Impedance



Power Derating Curve



Characteristics at Ta = 25°C

| Device | Marking | Zener Voltage Range Vz | | | Maximum Zener Impedance | | | Reverse Current Ir | | Temperature Coefficient of Zener voltage @Izt=5mA mV/°C | |
|------------|---------|------------------------|-------|-----|-------------------------|------|-----|--------------------|------|---|------|
| | | Min | Max | Izt | Zzt | Zzk | | Max | VR | Min | Max |
| | | (V) | (V) | mA | Max | Max | Izk | uA | V | | |
| BZX84C 2V4 | Z11 | 2.20 | 2.60 | 5 | 100 | 600 | 1.0 | 50.0 | 1.0 | -3.5 | 0.0 |
| BZX84C 2V7 | Z12 | 2.50 | 2.90 | 5 | 100 | 600 | 1.0 | 20.0 | 1.0 | -3.5 | 0.0 |
| BZX84C 3V0 | Z13 | 2.80 | 3.20 | 5 | 95 | 600 | 1.0 | 10.0 | 1.0 | -3.5 | 0.0 |
| BZX84C 3V3 | Z14 | 3.10 | 3.50 | 5 | 95 | 600 | 1.0 | 5.0 | 1.0 | -3.5 | 0.0 |
| BZX84C 3V6 | Z15 | 3.40 | 3.80 | 5 | 90 | 600 | 1.0 | 5.0 | 1.0 | -3.5 | 0.0 |
| BZX84C 3V9 | Z16 | 3.70 | 4.10 | 5 | 90 | 600 | 1.0 | 3.0 | 1.0 | -3.5 | 0.0 |
| BZX84C 4V3 | Z17 | 4.00 | 4.60 | 5 | 90 | 600 | 1.0 | 3.0 | 1.0 | -3.5 | 0.0 |
| BZX84C 4V7 | Z1 | 4.40 | 5.00 | 5 | 80 | 500 | 1.0 | 3.0 | 2.0 | -3.5 | 0.2 |
| BZX84C 5V1 | Z2 | 4.80 | 5.40 | 5 | 60 | 480 | 1.0 | 2.0 | 2.0 | -2.7 | 1.2 |
| BZX84C 5V6 | Z3 | 5.20 | 6.00 | 5 | 40 | 400 | 1.0 | 1.0 | 2.0 | -2.0 | 2.5 |
| BZX84C 6V2 | Z4 | 5.80 | 6.60 | 5 | 10 | 150 | 1.0 | 3.0 | 4.0 | 0.4 | 3.7 |
| BZX84C 6V8 | Z5 | 6.40 | 7.20 | 5 | 15 | 80 | 1.0 | 2.0 | 4.0 | 1.2 | 4.5 |
| BZX84C 7V5 | Z6 | 7.00 | 7.90 | 5 | 15 | 80 | 1.0 | 1.0 | 5.0 | 2.5 | 5.3 |
| BZX84C 8V2 | Z7 | 7.70 | 8.70 | 5 | 15 | 80 | 1.0 | 0.7 | 5.0 | 3.2 | 6.2 |
| BZX84C 9V1 | Z8 | 8.50 | 9.60 | 5 | 15 | 100 | 1.0 | 0.5 | 6.0 | 3.8 | 7.0 |
| BZX84C 10 | Z9 | 9.40 | 10.60 | 5 | 20 | 150 | 1.0 | 0.2 | 7.0 | 4.5 | 8.0 |
| BZX84C 11 | Y1• | 10.40 | 11.60 | 5 | 20 | 150 | 1.0 | 0.1 | 8.0 | 5.4 | 9.0 |
| BZX84C 12 | Y2• | 11.40 | 12.70 | 5 | 25 | 150 | 1.0 | 0.1 | 8.0 | 6.0 | 10.0 |
| BZX84C 13 | Y3 | 12.40 | 14.10 | 5 | 30 | 170 | 1.0 | 0.1 | 8.0 | 7.0 | 11.0 |
| BZX84C 15 | Y4 | 13.80 | 15.60 | 5 | 30 | 200 | 1.0 | 0.1 | 10.5 | 9.2 | 13.0 |
| BZX84C 16 | Y5 | 15.30 | 17.10 | 5 | 40 | 200 | 1.0 | 0.1 | 11.2 | 10.4 | 14.0 |
| BZX84C 18 | Y6• | 16.80 | 19.10 | 5 | 45 | 225 | 1.0 | 0.1 | 12.6 | 12.4 | 16.0 |
| BZX84C 20 | Y7 | 18.80 | 21.20 | 5 | 55 | 225 | 1.0 | 0.1 | 14.0 | 14.4 | 18.0 |
| BZX84C 22 | Y8 | 20.80 | 23.30 | 5 | 55 | 250 | 1.0 | 0.1 | 15.4 | 16.4 | 20.0 |
| BZX84C 24 | Y9 | 22.80 | 25.60 | 5 | 70 | 250 | 1.0 | 0.1 | 16.8 | 18.4 | 22.0 |
| BZX84C 27 | Y10 | 25.10 | 28.90 | 2 | 80 | 300 | 0.5 | 0.1 | 18.9 | 21.4 | 25.3 |
| BZX84C 30 | Y11• | 28.00 | 32.00 | 2 | 80 | 300 | 0.5 | 0.1 | 21.0 | 24.4 | 29.4 |
| BZX84C 33 | Y12 | 31.00 | 35.00 | 2 | 80 | 325 | 0.5 | 0.1 | 23.1 | 27.1 | 33.4 |
| BZX84C 36 | Y13 | 34.00 | 38.00 | 2 | 90 | 350 | 0.5 | 0.1 | 25.2 | 30.4 | 37.4 |
| BZX84C 39 | Y14 | 37.00 | 41.00 | 2 | 130 | 350 | 0.5 | 0.1 | 27.3 | 33.4 | 41.2 |
| BZX84C 43 | Y15 | 40.00 | 46.00 | 2 | 100 | 700 | 1.0 | 0.1 | 32.0 | 10.0 | 12.0 |
| BZX84C 47 | Y16 | 44.00 | 50.00 | 2 | 100 | 750 | 1.0 | 0.1 | 35.0 | 10.0 | 12.0 |
| BZX84C 51 | Y17 | 48.00 | 54.00 | 2 | 125 | 750 | 1.0 | 0.1 | 38.0 | 10.0 | 12.0 |
| BZX84C 56 | Y18 | 52.00 | 60.00 | 2 | 135 | 700 | 1.0 | 0.1 | 39.0 | 10.0 | 12.0 |
| BZX84C 62 | Y19 | 58.00 | 66.00 | 2 | 200 | 1000 | 1.0 | 0.2 | 47.0 | 10.0 | 12.0 |
| BZX84C 68 | Y20 | 64.00 | 72.00 | 2 | 250 | 1000 | 1.0 | 0.2 | 52.0 | 10.0 | 12.0 |
| BZX84C 75 | Y21• | 70.00 | 79.00 | 2 | 300 | 1000 | 1.0 | 0.2 | 57.0 | 10.0 | 12.0 |

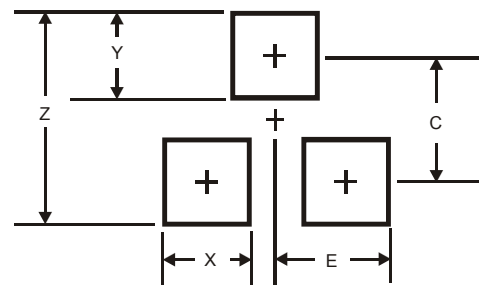
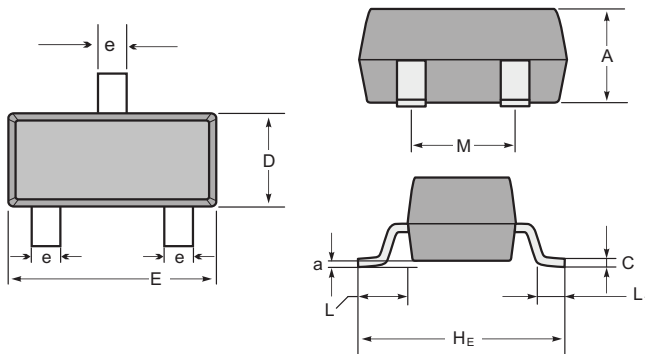
Soldering parameters

| Reflow Condition | | Pb-Free assembly (see as below) |
|---|-----------------------------------|------------------------------------|
| Pre Heat | -Temperature Min ($T_{s(min)}$) | +150 °C |
| | -Temperature Max($T_{s(max)}$) | +200 °C |
| | -Time (Min to Max) (ts) | 60-180 secs. |
| Average ramp up rate (Liquid us Temp (T_L) to peak) | | 3 °C/sec. Max |
| $T_{s(max)}$ to T_L - Ramp-up Rate | | 3 °C/sec. Max |
| Reflow | -Temperature(T_L)(Liquid us) | +217 °C |
| | -Temperature(t_L) | 60-150 secs. |
| Peak Temp (T_P) | | +260(+0/-5) °C |
| Time within 5 °C of actual Peak Temp (t_p) | | 30 secs. Max |
| Ramp-down Rate | | 6 °C/sec. Max |
| Time 25 °C to Peak Temp (T_P) | | 8 min. Max |
| Do not exceed | | +260 °C |



Package Dimensions & Suggested Pad Layout

SOT23



SOT-23 mechanical data

| UNIT | | A | C | D | E | HE | e | M | L | L1 | a |
|------|-----|-----|------|-----|-----|-----|-----|------|------------|------------|------|
| mm | max | 1.1 | 0.15 | 1.4 | 3.0 | 2.6 | 0.5 | 1.95 | 0.55 (ref) | 0.36 (ref) | 0.0 |
| | min | 0.9 | 0.08 | 1.2 | 2.8 | 2.2 | 0.3 | 1.7 | | | 0.15 |
| mil | max | 43 | 6 | 55 | 118 | 102 | 20 | 77 | 22 (ref) | 14 (ref) | 0.0 |
| | min | 35 | 3 | 47 | 110 | 87 | 12 | 67 | | | 6 |

| Dimensions | SOT23 |
|------------|-------|
| Z | 2.9 |
| X | 0.8 |
| Y | 0.9 |
| C | 2.0 |
| E | 1.35 |

Tape & reel specification

| Tape | | Symbol | Dimension (mm) |
|-------------------|----------|--------|----------------|
| | | P0 | 4.00±0.10 |
| | | P1 | 4.00±0.10 |
| | | P2 | 2.00±0.10 |
| | | D0 | 1.55±0.10 |
| | | D1 | 1.05±0.10 |
| | | E | 1.55±0.10 |
| | | F | 3.60±0.10 |
| | | W | 8.00±0.10 |
| | | A0 | 3.80±0.20 |
| | | B0 | 3.25±0.20 |
| | | K0 | 1.45±0.10 |
| | | T | 0.25±0.05 |
| | | D2 | 178.0±3.0 |
| | | D3 | 55Min. |
| | | D4 | R24.0±3.0 |
| | | G | R82.0±3.0 |
| | | I | 13.0±2.0 |
| W1 | 11.0±3.0 | | |
| Quantity: 3000PCS | | | |

| 7" Reel | |
|---------|--|
| | |