

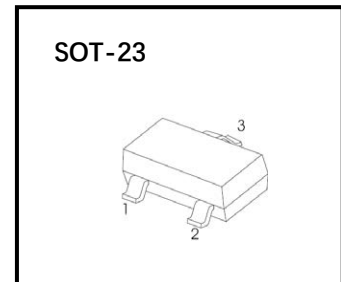


AD-BZX84C Series Plastic-Encapsulated Diode

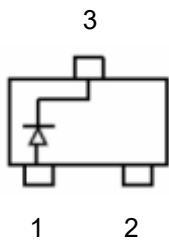
AD-BZX84C series Zener diode

FEATURES

- Planar die construction
- Zener voltages from 2.4V - 43V
- Ultra-small surface mount package with 300mW power dissipation
- AEC-Q101 qualified



EQUIVALENT CIRCUIT



MAXIMUM RATINGS (T_j = 25°C unless otherwise specified)

| Parameter | Symbol | Value | Unit |
|--|-----------------------------------|-----------|------|
| Forward voltage @ I _F = 10mA | V _F ¹⁾ | 0.9 | V |
| Power dissipation | P _D | 300 | mW |
| Thermal resistance from junction to ambient | R _{θJA} ²⁾ | 417 | °C/W |
| Operating junction and storage temperature range | T _j , T _{stg} | -55 ~ 150 | °C |

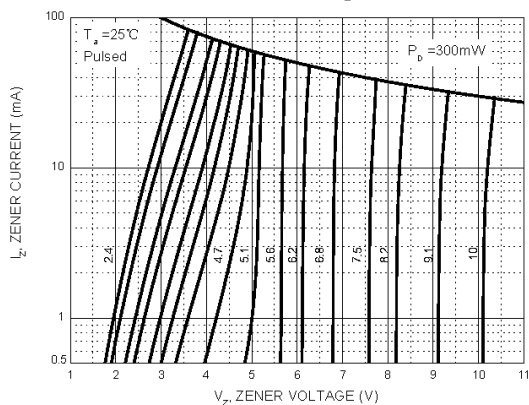
ELECTRICAL CHARACTERISTICS ($T_j = 25^\circ\text{C}$ unless otherwise specified)

| Type number | Marking | Zener voltage range ¹⁾ | | | | Maximum Zener impedance ³⁾ | | | Maximum reverse current | | Temperature coefficient of Zener voltage @ $I_{ZT} = 5\text{mA}$ (mV/°C) | |
|--------------|--------------------|-----------------------------------|------|------|---------------|---------------------------------------|--------------------------------|---------------|-------------------------|-----------|--|------|
| | | $V_Z @ I_{ZT}$ (V) | | | I_{ZT} (mA) | $Z_{ZT} @ I_{ZT}$ (Ω) | $Z_{ZK} @ I_{ZK}$ (Ω) | I_{ZK} (mA) | I_R (μA) | V_R (V) | Min | Max |
| | | Min | Norm | Max | | | | | | | | |
| AD-BZX84C2V4 | $\bar{Z}11$ | 2.2 | 2.4 | 2.6 | 5 | 100 | 600 | 1.0 | 50 | 1.0 | -3.5 | 0 |
| AD-BZX84C2V7 | $\bar{Z}12$ | 2.5 | 2.7 | 2.9 | 5 | 100 | 600 | 1.0 | 20 | 1.0 | -3.5 | 0 |
| AD-BZX84C3V0 | $\bar{Z}13$ | 2.8 | 3.0 | 3.2 | 5 | 95 | 600 | 1.0 | 10 | 1.0 | -3.5 | 0 |
| AD-BZX84C3V3 | $\bar{Z}14$ | 3.1 | 3.3 | 3.5 | 5 | 95 | 600 | 1.0 | 5 | 1.0 | -3.5 | 0 |
| AD-BZX84C3V6 | $\bar{Z}15$ | 3.4 | 3.6 | 3.8 | 5 | 90 | 600 | 1.0 | 5 | 1.0 | -3.5 | 0 |
| AD-BZX84C3V9 | $\bar{Z}16$ | 3.7 | 3.9 | 4.1 | 5 | 90 | 600 | 1.0 | 3 | 1.0 | -3.5 | 0 |
| AD-BZX84C4V3 | $\bar{Z}17$ | 4.0 | 4.3 | 4.6 | 5 | 90 | 600 | 1.0 | 3 | 1.0 | -3.5 | 0 |
| AD-BZX84C4V7 | $\bar{Z}1$ | 4.4 | 4.7 | 5.0 | 5 | 80 | 500 | 1.0 | 3 | 2.0 | -3.5 | 0.2 |
| AD-BZX84C5V1 | $\bar{Z}2$ | 4.8 | 5.1 | 5.4 | 5 | 60 | 480 | 1.0 | 2 | 2.0 | -2.7 | 1.2 |
| AD-BZX84C5V6 | $\bar{Z}3$ | 5.2 | 5.6 | 6.0 | 5 | 40 | 400 | 1.0 | 1 | 2.0 | -2.0 | 2.5 |
| AD-BZX84C6V2 | $\bar{Z}4$ | 5.8 | 6.2 | 6.6 | 5 | 10 | 150 | 1.0 | 3 | 4.0 | 0.4 | 3.7 |
| AD-BZX84C6V8 | $\bar{Z}5$ | 6.4 | 6.8 | 7.2 | 5 | 15 | 80 | 1.0 | 2 | 4.0 | 1.2 | 4.5 |
| AD-BZX84C7V5 | $\bar{Z}6$ | 7.0 | 7.5 | 7.9 | 5 | 15 | 80 | 1.0 | 1 | 5.0 | 2.5 | 5.3 |
| AD-BZX84C8V2 | $\bar{Z}7$ | 7.7 | 8.2 | 8.7 | 5 | 15 | 80 | 1.0 | 0.7 | 5.0 | 3.2 | 6.2 |
| AD-BZX84C9V1 | $\bar{Z}8$ | 8.5 | 9.1 | 9.6 | 5 | 15 | 100 | 1.0 | 0.5 | 6.0 | 3.8 | 7.0 |
| AD-BZX84C10 | $\bar{Z}9$ | 9.4 | 10 | 10.6 | 5 | 20 | 150 | 1.0 | 0.2 | 7.0 | 4.5 | 8.0 |
| AD-BZX84C11 | $\bar{Y}1\bullet$ | 10.4 | 11 | 11.6 | 5 | 20 | 150 | 1.0 | 0.1 | 8.0 | 5.4 | 9.0 |
| AD-BZX84C12 | $\bar{Y}2\bullet$ | 11.4 | 12 | 12.7 | 5 | 25 | 150 | 1.0 | 0.1 | 8.0 | 6.0 | 10.0 |
| AD-BZX84C13 | $\bar{Y}3$ | 12.4 | 13 | 14.1 | 5 | 30 | 170 | 1.0 | 0.1 | 8.0 | 7.0 | 11.0 |
| AD-BZX84C15 | $\bar{Y}4$ | 13.8 | 15 | 15.6 | 5 | 30 | 200 | 1.0 | 0.1 | 10.5 | 9.2 | 13.0 |
| AD-BZX84C16 | $\bar{Y}5$ | 15.3 | 16 | 17.1 | 5 | 40 | 200 | 1.0 | 0.1 | 11.2 | 10.4 | 14.0 |
| AD-BZX84C18 | $\bar{Y}6\bullet$ | 16.8 | 18 | 19.1 | 5 | 45 | 225 | 1.0 | 0.1 | 12.6 | 12.4 | 16.0 |
| AD-BZX84C20 | $\bar{Y}7$ | 18.8 | 20 | 21.2 | 5 | 55 | 225 | 1.0 | 0.1 | 14.0 | 14.4 | 18.0 |
| AD-BZX84C22 | $\bar{Y}8$ | 20.8 | 22 | 23.3 | 5 | 55 | 250 | 1.0 | 0.1 | 15.4 | 16.4 | 20.0 |
| AD-BZX84C24 | $\bar{Y}9$ | 22.8 | 24 | 25.6 | 5 | 70 | 250 | 1.0 | 0.1 | 16.8 | 18.4 | 22.0 |
| AD-BZX84C27 | $\bar{Y}10$ | 25.1 | 27 | 28.9 | 2 | 80 | 300 | 0.5 | 0.1 | 18.9 | 21.4 | 25.3 |
| AD-BZX84C30 | $\bar{Y}11\bullet$ | 28.0 | 30 | 32.0 | 2 | 80 | 300 | 0.5 | 0.1 | 21.0 | 24.4 | 29.4 |
| AD-BZX84C33 | $\bar{Y}12$ | 31.0 | 33 | 35.0 | 2 | 80 | 325 | 0.5 | 0.1 | 23.1 | 27.4 | 33.4 |
| AD-BZX84C36 | $\bar{Y}13$ | 34.0 | 36 | 38.0 | 2 | 90 | 350 | 0.5 | 0.1 | 25.2 | 30.4 | 37.4 |
| AD-BZX84C39 | $\bar{Y}14$ | 37.0 | 39 | 41.0 | 2 | 130 | 350 | 0.5 | 0.1 | 27.3 | 33.4 | 41.2 |

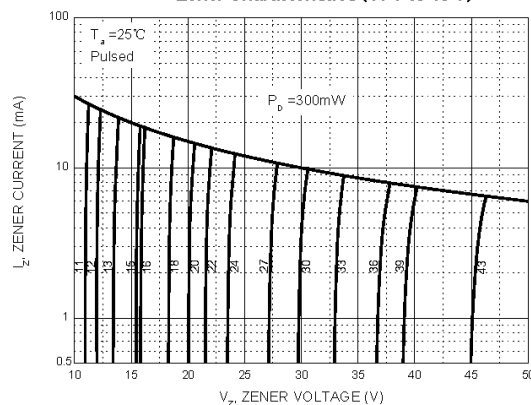
1) Tested with pulses, period = 5ms, pulse width = 300 μs .2) Measured with the device mounted on 1 inch² FR-4 board with 1oz. single-side copper, in a still air environment with $T_a = 25^\circ\text{C}$.3) $f = 1\text{kHz}$.

TYPICAL CHARACTERISTICS

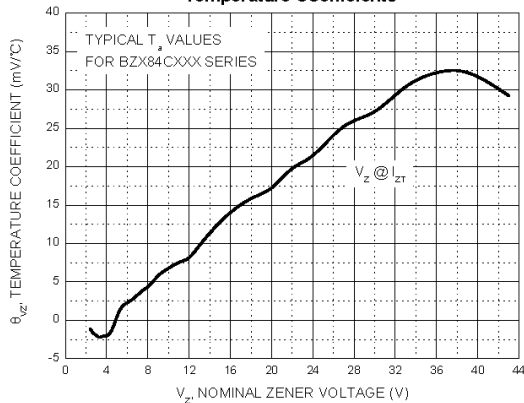
Zener Characteristics (V_z Up to 10 V)



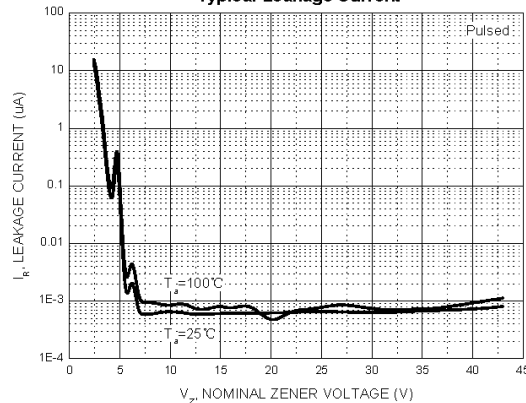
Zener Characteristics (11 V to 43 V)



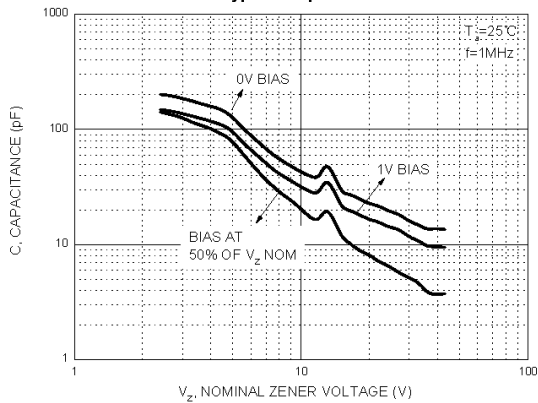
Temperature Coefficients



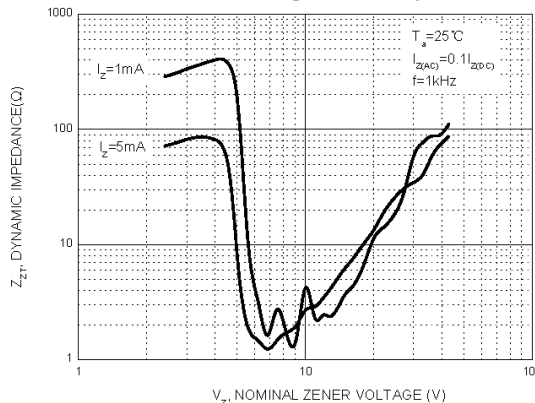
Typical Leakage Current



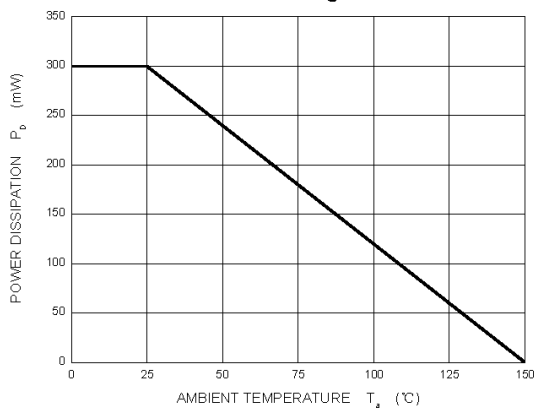
Typical Capacitance



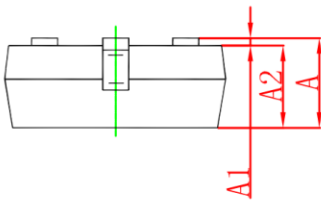
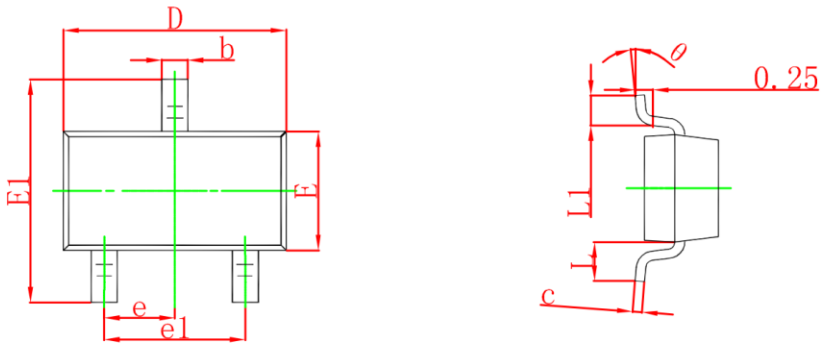
Effect of Zener Voltage on Zener Impedance



Power Derating Curve

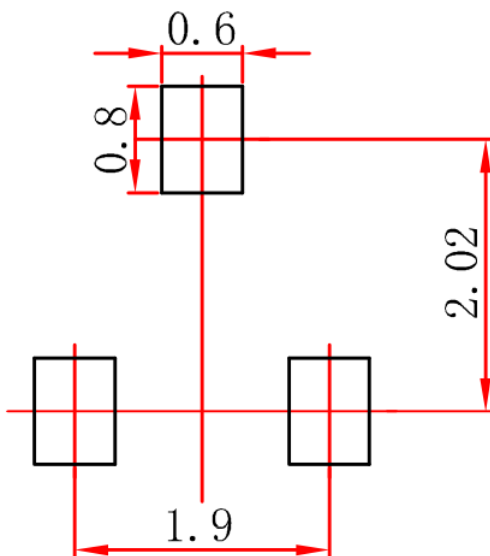


SOT-23 PACKAGE OUTLINE DIMENSIONS



| 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

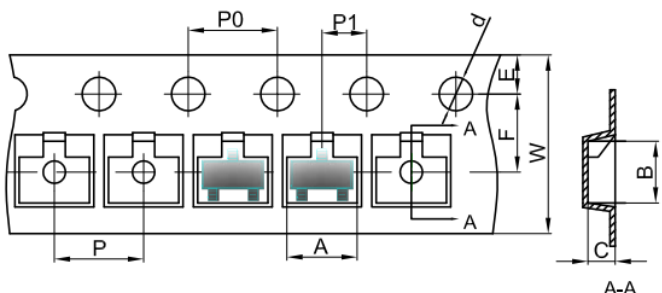


Note:

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

SOT-23 TAPE AND REEL

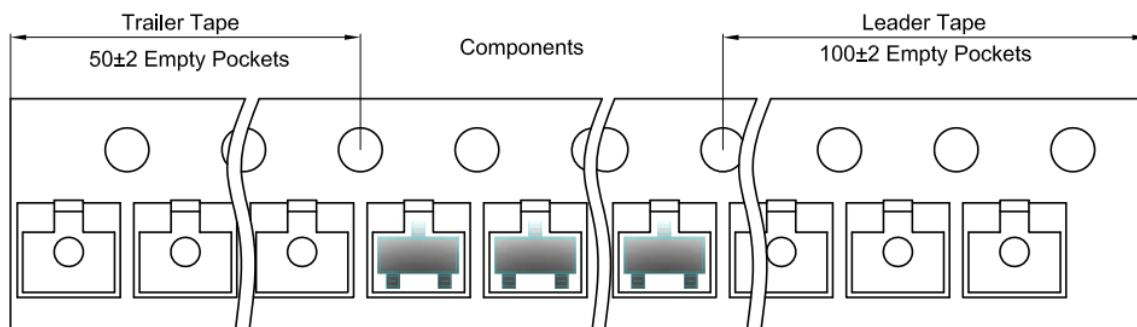
SOT-23 Embossed Carrier Tape



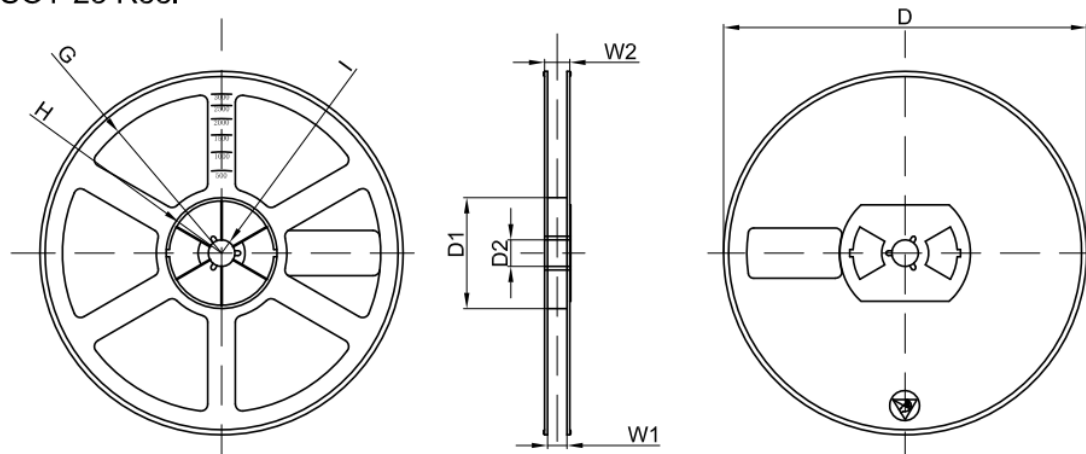
Packaging Description:
 SOT-23 parts are shipped in tape. The carrier tape is made from a dissipative (carbon filled) polycarbonate resin. The cover tape is a multilayer film (Heat Activated Adhesive in nature) primarily composed of polyester film, adhesive layer, sealant, and anti-static sprayed agent. These reeled parts in standard option are shipped with 3,000 units per 7" or 17.8cm diameter reel. The reels are clear in color and is made of polystyrene plastic (anti-static coated).

| Dimensions are in millimeter | | | | | | | | | | |
|------------------------------|------|------|------|-------|------|------|------|------|------|------|
| Pkg type | A | B | C | d | E | F | P0 | P | P1 | W |
| SOT-23 | 3.15 | 2.77 | 1.22 | Ø1.50 | 1.75 | 3.50 | 4.00 | 4.00 | 2.00 | 8.00 |

SOT-23 Tape Leader and Trailer



SOT-23 Reel



| Dimensions are in millimeter | | | | | | | | |
|------------------------------|---------|-------|-------|--------|--------|-------|------|-------|
| Reel Option | D | D1 | D2 | G | H | I | W1 | W2 |
| 7" Dia | Ø178.00 | 54.40 | 13.00 | R78.00 | R25.60 | R6.50 | 9.50 | 12.30 |

| REEL | Reel Size | Box | Box Size(mm) | Carton | Carton Size(mm) | G.W.(kg) |
|----------|-----------|------------|--------------|-------------|-----------------|----------|
| 3000 pcs | 7 inch | 45,000 pcs | 203×203×195 | 180,000 pcs | 438×438×220 | |

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