

SOD123 Plastic-Encapsulate Diodes

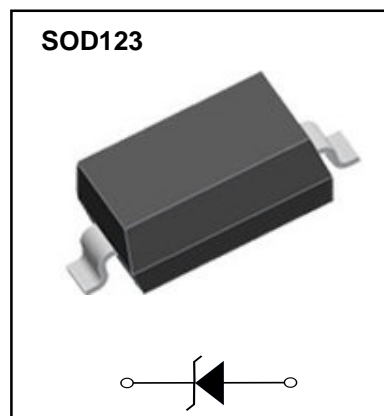
Zener Diodes

Features

- P_d 500mW
- V_z 2.4V- 43V

Applications

- Stabilizing Voltage



Limiting Values (Absolute Maximum Rating)

| Item | Symbol | Unit | Conditions | Max |
|------------------------------|-----------|------------------|------------------------|-------------|
| Power dissipation | P_d | mW | $T_A=25^\circ\text{C}$ | 500 |
| Zener current | I_z | mA | | P_v / V_z |
| Maximum junction temperature | T_j | $^\circ\text{C}$ | | -65 to +150 |
| Storage temperature range | T_{stg} | $^\circ\text{C}$ | | -65 to +150 |

Electrical Characteristics ($T_A=25^\circ\text{C}$ Unless otherwise specified)

| Item | Symbol | Unit | Conditions | Max |
|--------------------|-----------------|--------------------|------------------------------|-----|
| Thermal resistance | $R_{\theta JA}$ | $^\circ\text{C/W}$ | Between junction and ambient | 340 |
| Forward voltage | V_F | V | $I_F = 10\text{mA}$ | 0.9 |

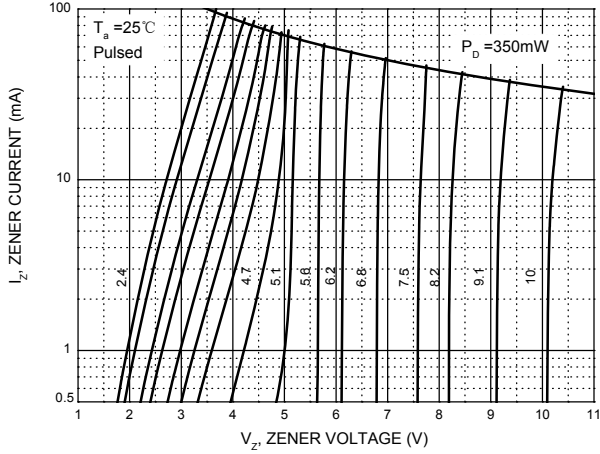
Electrical Characteristics ($T_A=25^\circ\text{C}$ unless otherwise noted)

| Type | Marking Code | Zener Voltage Range ¹⁾ | | | Dynamic Impedance | | | | Reverse Leakage Current | |
|-----------|--------------|-----------------------------------|-------------|-------------|-------------------|-------------|-------------------|-------------|-------------------------|----------|
| | | V_{znom} | V_{ZT} | at I_{ZT} | Z_{ZT} | at I_{ZT} | Z_{ZK} | at I_{ZK} | I_R | at V_R |
| | | V | V | mA | Max. (Ω) | mA | Max. (Ω) | mA | Max. (μA) | V |
| BZT52C2V4 | WX | 2.4 | 2.2...2.6 | 5 | 100 | 5 | 600 | 1 | 50 | 1 |
| BZT52C2V7 | W1 | 2.7 | 2.5...2.9 | 5 | 100 | 5 | 600 | 1 | 20 | 1 |
| BZT52C3V0 | W2 | 3.0 | 2.8...3.2 | 5 | 95 | 5 | 600 | 1 | 10 | 1 |
| BZT52C3V3 | W3 | 3.3 | 3.1...3.5 | 5 | 95 | 5 | 600 | 1 | 5 | 1 |
| BZT52C3V6 | W4 | 3.6 | 3.4...3.8 | 5 | 90 | 5 | 600 | 1 | 5 | 1 |
| BZT52C3V9 | W5 | 3.9 | 3.7...4.1 | 5 | 90 | 5 | 600 | 1 | 3 | 1 |
| BZT52C4V3 | W6 | 4.3 | 4...4.6 | 5 | 90 | 5 | 600 | 1 | 3 | 1 |
| BZT52C4V7 | W7 | 4.7 | 4.4...5 | 5 | 80 | 5 | 500 | 1 | 3 | 2 |
| BZT52C5V1 | W8 | 5.1 | 4.8...5.4 | 5 | 60 | 5 | 480 | 1 | 2 | 2 |
| BZT52C5V6 | W9 | 5.6 | 5.2...6 | 5 | 40 | 5 | 400 | 1 | 1 | 2 |
| BZT52C6V2 | WA | 6.2 | 5.8...6.6 | 5 | 10 | 5 | 150 | 1 | 3 | 4 |
| BZT52C6V8 | WB | 6.8 | 6.4...7.2 | 5 | 15 | 5 | 80 | 1 | 2 | 4 |
| BZT52C7V5 | WC | 7.5 | 7...7.9 | 5 | 15 | 5 | 80 | 1 | 1 | 5 |
| BZT52C8V2 | WD | 8.2 | 7.7...8.7 | 5 | 15 | 5 | 80 | 1 | 0.7 | 5 |
| BZT52C9V1 | WE | 9.1 | 8.5...9.6 | 5 | 15 | 5 | 100 | 1 | 0.5 | 6 |
| BZT52C10 | WF | 10 | 9.4...10.6 | 5 | 20 | 5 | 150 | 1 | 0.2 | 7 |
| BZT52C11 | WG | 11 | 10.4...11.6 | 5 | 20 | 5 | 150 | 1 | 0.1 | 8 |
| BZT52C12 | WH | 12 | 11.4...12.7 | 5 | 25 | 5 | 150 | 1 | 0.1 | 8 |
| BZT52C13 | WI | 13 | 12.4...14.1 | 5 | 30 | 5 | 170 | 1 | 0.1 | 8 |
| BZT52C15 | WJ | 15 | 13.8...15.6 | 5 | 30 | 5 | 200 | 1 | 0.1 | 10.5 |
| BZT52C16 | WK | 16 | 15.3...17.1 | 5 | 40 | 5 | 200 | 1 | 0.1 | 11.2 |
| BZT52C18 | WL | 18 | 16.8...19.1 | 5 | 45 | 5 | 225 | 1 | 0.1 | 12.6 |
| BZT52C20 | WM | 20 | 18.8...21.2 | 5 | 55 | 5 | 225 | 1 | 0.1 | 14 |
| BZT52C22 | WN | 22 | 20.8...23.3 | 5 | 55 | 5 | 250 | 1 | 0.1 | 15.4 |
| BZT52C24 | WO | 24 | 22.8...25.6 | 5 | 70 | 5 | 250 | 1 | 0.1 | 16.8 |
| BZT52C27 | WP | 27 | 25.1...28.9 | 2 | 80 | 2 | 300 | 0.5 | 0.1 | 18.9 |
| BZT52C30 | WQ | 30 | 28...32 | 2 | 80 | 2 | 300 | 0.5 | 0.1 | 21 |
| BZT52C33 | WR | 33 | 31...35 | 2 | 80 | 2 | 325 | 0.5 | 0.1 | 23.1 |
| BZT52C36 | WS | 36 | 34...38 | 2 | 90 | 2 | 350 | 0.5 | 0.1 | 25.2 |
| BZT52C39 | WT | 39 | 37...41 | 2 | 130 | 2 | 350 | 0.5 | 0.1 | 27.3 |
| BZT52C43 | WU | 43 | 40...46 | 2.5 | 130 | 2 | 500 | 1 | 2 | 33 |

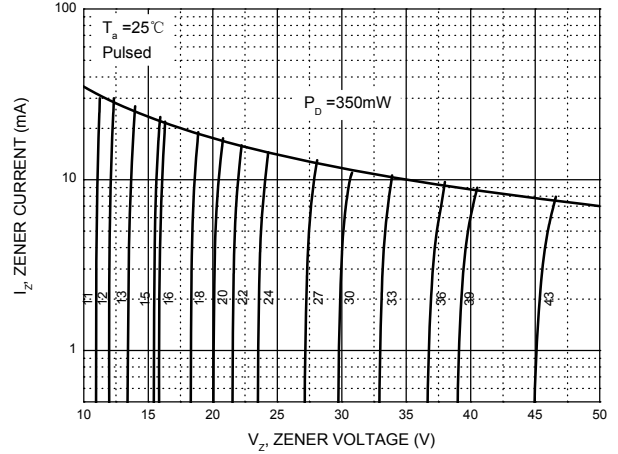
¹⁾ V_{ZT} is tested with pulses (20 ms).

Typical Characteristics

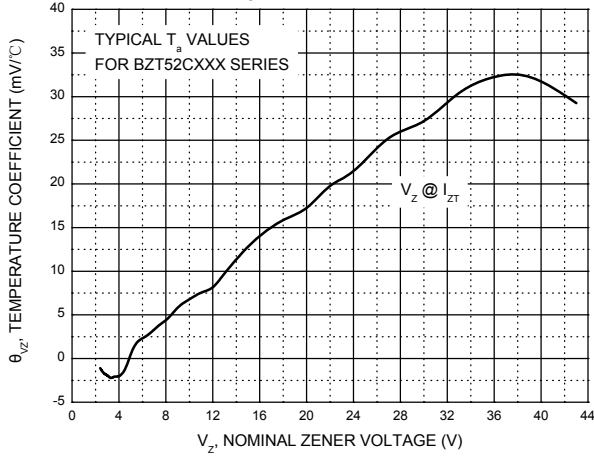
Zener Characteristics (V_z Up to 10 V)



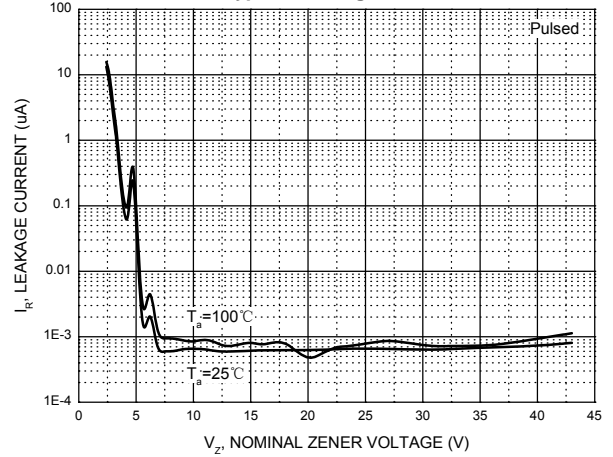
Zener Characteristics (11 V to 43 V)



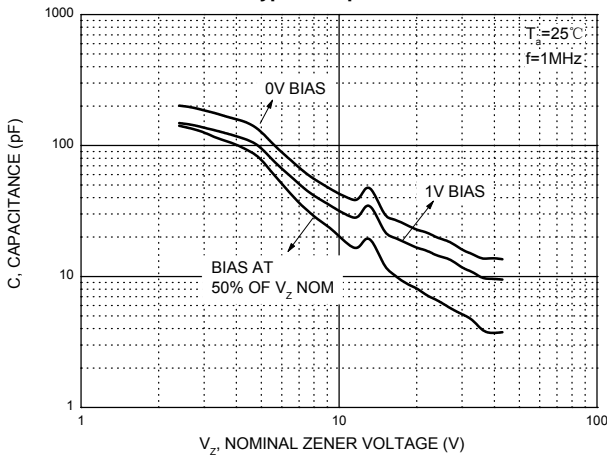
Temperature Coefficients



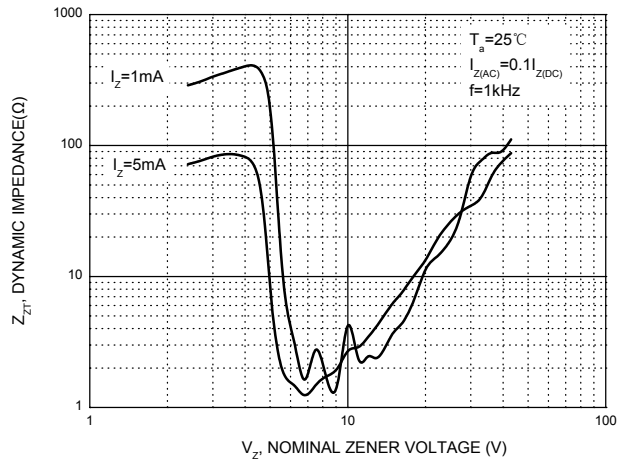
Typical Leakage Current



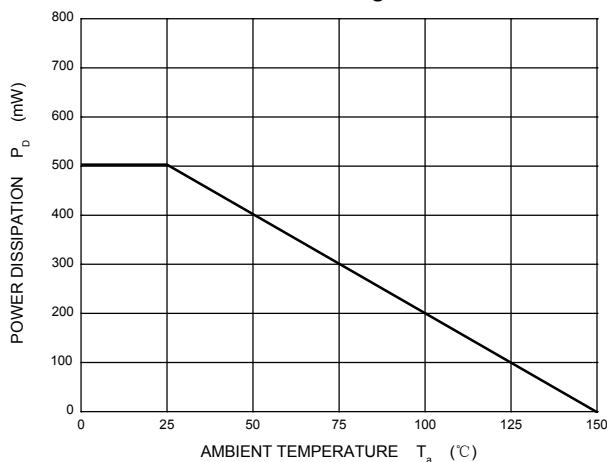
Typical Capacitance



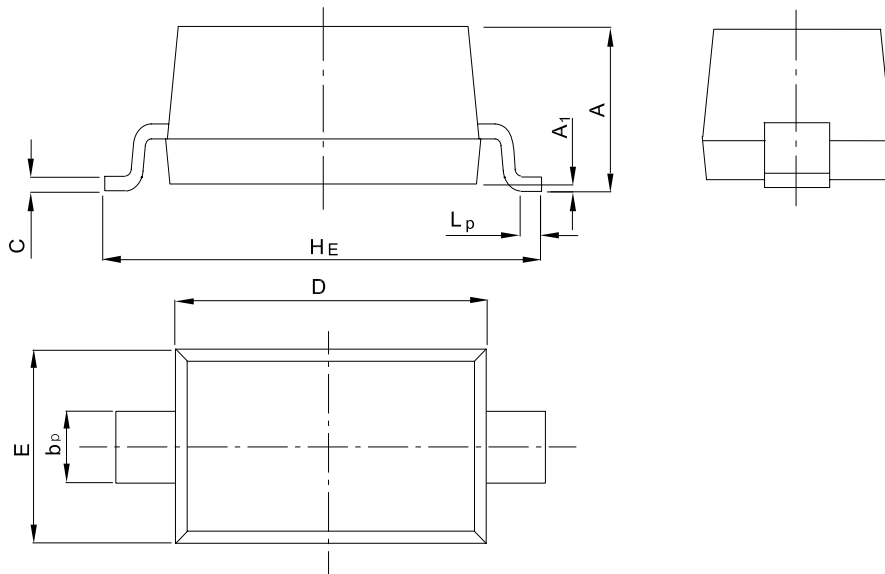
Effect of Zener Voltage on Zener Impedance



Power Derating Curve

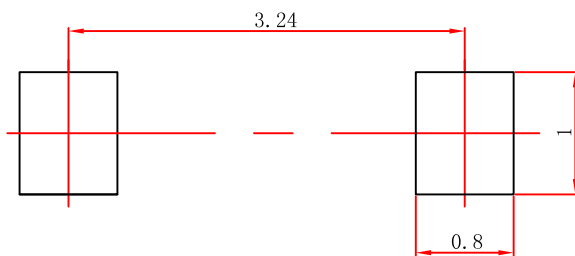


SOD-123 Package Outline Dimensions



| UNIT | A | bp | C | D | E | HE | A1 | Lp |
|------|--------------|--------------|----------------|--------------|--------------|--------------|--------------|--------------|
| mm | 1.20 0.90 | 0.60 0.50 | 0.135 0.100 | 2.75 2.55 | 1.65 1.55 | 3.85 3.55 | 0.10 0.01 | 0.50 0.20 |

SOD-123 Suggested Pad Layout



Note:

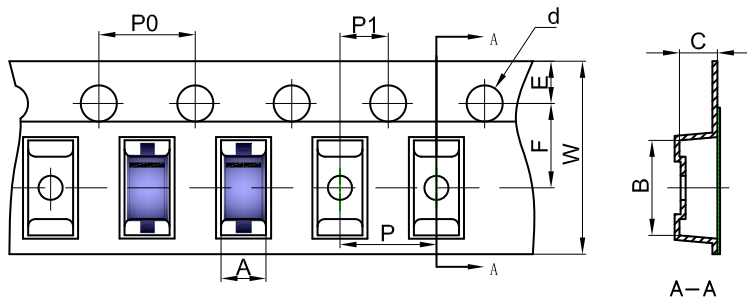
1. Controlling dimension: in millimeters.
2. General tolerance: ± 0.05 mm.
3. The pad layout is for reference purposes only.

NOTICE

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Reel Taping Specifications For Surface Mount Devices-SOD123

SOD-123 Embossed Carrier Tape



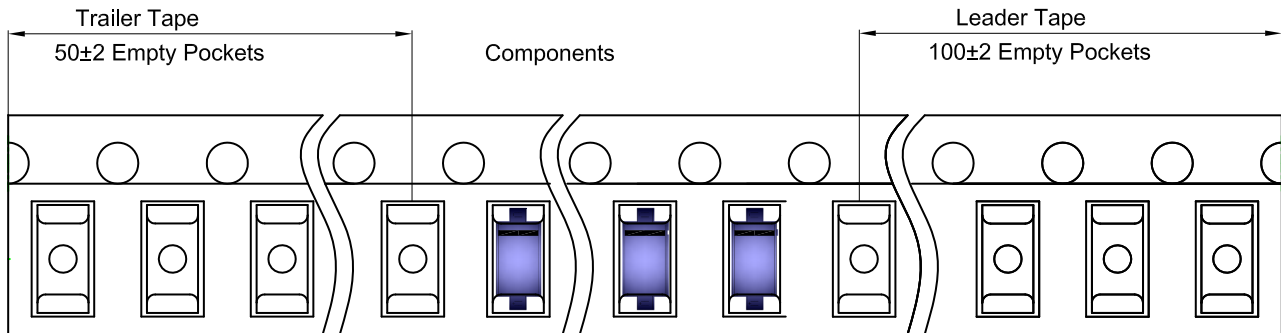
Packaging Description:

SOD-123 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).

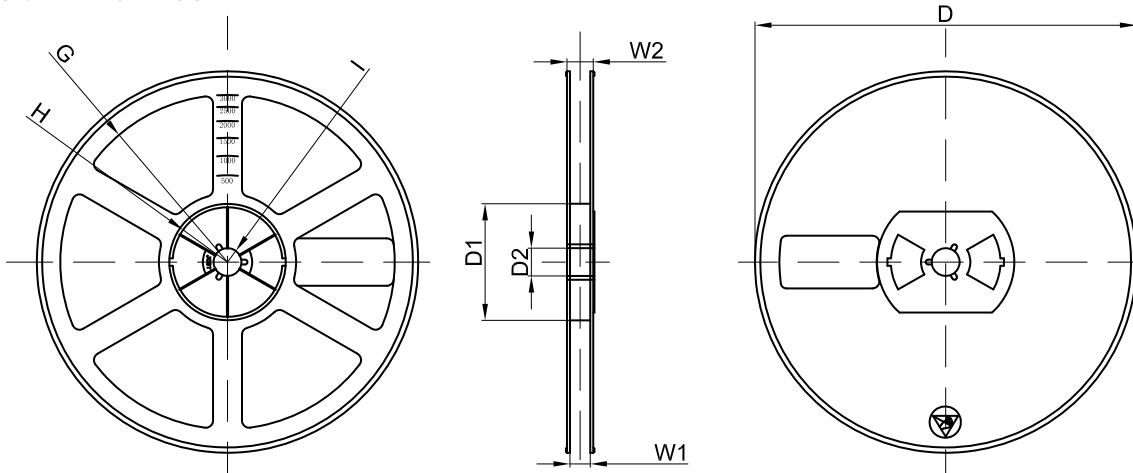
Dimensions are in millimeter

| Pkg type | A | B | C | d | E | F | P0 | P | P1 | W |
|----------|------|------|------|-------|------|------|------|------|------|------|
| SOD-123 | 1.85 | 3.95 | 1.57 | Ø1.55 | 1.75 | 3.50 | 4.00 | 4.00 | 2.00 | 8.00 |

SOD-123 Tape Leader and Trailer



SOD-123 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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