

SuperDiode – 500mW SOD-123 Plastic-Encapsulate Zener Diode


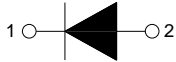
1. Features

- Low zener impedance
- Power dissipation of 500mW
- High stability and high reliability

2. Mechanical Data

- SOD-123 Small Outline Plastic Package
- Polarity: Color band denotes cathode end
- Epoxy UL: 94V-0

3. Marking and Circuit

| Marking | Circuit |
|---|---|
|  |  |

4. Specification

Absolute Maximum Rating & Thermal Characteristics

Ratings at 25 °C ambient temperature unless otherwise specified.

| Parameters | Symbol | Value | Unit |
|--|-----------|-------------------|-------------------|
| Power dissipation | P_D | 500 ¹⁾ | mW |
| Forward voltage @ $I_F=10mA$ | V_F | 0.9 ²⁾ | V |
| Storage temperature range | T_S | -65~150 | °C |
| Thermal resistance junction to ambient | R_{thA} | 400 | K/W ¹⁾ |

1) Device mounted on ceramic PCB: 7.6mm x 9.4mm x 0.87mm with pad areas 25mm²

2) Short duration test pulse used to minimize self-heating effect

3) f=1KHz

Electrical Characteristics (At TA = 25°C unless otherwise specified)

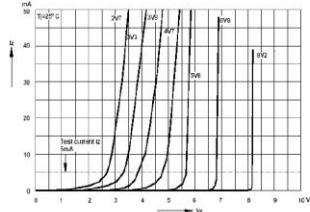
| Device | Marking | Zener Voltage Range | | | | Maximum Zener Impedance | | | Maximum Reverse Current | | Typical Temperature coefficient @IZTC=mV/°C | | Test Current IZTC |
|-----------|---------|---------------------|--------|--------|-----|-------------------------|----------|-----|-------------------------|------|---|------|-------------------|
| | | Vz@Izt | | | Izt | Zzt @Izt | Zzk @Izk | Izk | IR | VR | Min | Max | |
| | | Nom(V) | Min(V) | Max(V) | mA | Ω | | mA | uA | V | | | |
| BZT52C2V0 | WY | 2 | 1.8 | 2.15 | 5 | 150 | 600 | 1 | 100 | 1 | -3.5 | 0 | 5 |
| BZT52C2V4 | WX | 2.4 | 2.2 | 2.6 | 5 | 100 | 600 | 1 | 50 | 1 | -3.5 | 0 | 5 |
| BZT52C2V7 | W1 | 2.7 | 2.5 | 2.9 | 5 | 100 | 600 | 1 | 20 | 1 | -3.5 | 0 | 5 |
| BZT52C3V0 | W2 | 3 | 2.8 | 3.2 | 5 | 95 | 600 | 1 | 10 | 1 | -3.5 | 0 | 5 |
| BZT52C3V3 | W3 | 3.3 | 3.1 | 3.5 | 5 | 95 | 600 | 1 | 5 | 1 | -3.5 | 0 | 5 |
| BZT52C3V6 | W4 | 3.6 | 3.4 | 3.8 | 5 | 90 | 600 | 1 | 5 | 1 | -3.5 | 0 | 5 |
| BZT52C3V9 | W5 | 3.9 | 3.7 | 4.1 | 5 | 90 | 600 | 1 | 3 | 1 | -3.5 | 0 | 5 |
| BZT52C4V3 | W6 | 4.3 | 4 | 4.6 | 5 | 90 | 600 | 1 | 3 | 1 | -3.5 | 0 | 5 |
| BZT52C4V7 | W7 | 4.7 | 4.4 | 5 | 5 | 80 | 500 | 1 | 3 | 2 | -3.5 | 0.2 | 5 |
| BZT52C5V1 | W8 | 5.1 | 4.8 | 5.4 | 5 | 60 | 480 | 1 | 2 | 2 | -2.7 | 1.2 | 5 |
| BZT52C5V6 | W9 | 5.6 | 5.2 | 6 | 5 | 40 | 400 | 1 | 1 | 2 | -2 | 2.5 | 5 |
| BZT52C6V2 | WA | 6.2 | 5.8 | 6.6 | 5 | 10 | 150 | 1 | 3 | 4 | 0.4 | 3.7 | 5 |
| BZT52C6V8 | WB | 6.8 | 6.4 | 7.2 | 5 | 15 | 80 | 1 | 2 | 4 | 1.2 | 4.5 | 5 |
| BZT52C7V5 | WC | 7.5 | 7 | 7.9 | 5 | 15 | 80 | 1 | 1 | 5 | 2.5 | 5.3 | 5 |
| BZT52C8V2 | WD | 8.2 | 7.7 | 8.7 | 5 | 15 | 80 | 1 | 0.7 | 5 | 3.2 | 6.2 | 5 |
| BZT52C9V1 | WE | 9.1 | 8.5 | 9.6 | 5 | 15 | 100 | 1 | 0.5 | 6 | 3.8 | 7 | 5 |
| BZT52C10 | WF | 10 | 9.4 | 10.6 | 5 | 20 | 150 | 1 | 0.2 | 7 | 4.5 | 8 | 5 |
| BZT52C11 | WG | 11 | 10.4 | 11.6 | 5 | 20 | 150 | 1 | 0.1 | 8 | 5.4 | 9 | 5 |
| BZT52C12 | WH | 12 | 11.4 | 12.7 | 5 | 25 | 150 | 1 | 0.1 | 8 | 6 | 10 | 5 |
| BZT52C13 | WI | 13 | 12.4 | 14.1 | 5 | 30 | 170 | 1 | 0.1 | 8 | 7 | 11 | 5 |
| BZT52C15 | WJ | 15 | 13.8 | 15.6 | 5 | 30 | 200 | 1 | 0.1 | 10.5 | 9.2 | 13 | 5 |
| BZT52C16 | WK | 16 | 15.3 | 17.1 | 5 | 40 | 200 | 1 | 0.1 | 11.2 | 10.4 | 14 | 5 |
| BZT52C18 | WL | 18 | 16.8 | 19.1 | 5 | 45 | 225 | 1 | 0.1 | 12.6 | 12.4 | 16 | 5 |
| BZT52C20 | WM | 20 | 18.8 | 21.2 | 5 | 55 | 225 | 1 | 0.1 | 14 | 14.4 | 18 | 5 |
| BZT52C22 | WN | 22 | 20.8 | 23.3 | 5 | 55 | 250 | 1 | 0.1 | 15.4 | 16.4 | 20 | 5 |
| BZT52C24 | WO | 24 | 22.8 | 25.6 | 5 | 70 | 250 | 1 | 0.1 | 16.8 | 18.4 | 22 | 5 |
| BZT52C27 | WP | 27 | 25.1 | 28.9 | 2 | 80 | 300 | 0.5 | 0.1 | 18.9 | 21.4 | 25.3 | 2 |
| BZT52C30 | WQ | 30 | 28 | 32 | 2 | 80 | 300 | 0.5 | 0.1 | 21 | 24.4 | 29.4 | 2 |
| BZT52C33 | WR | 33 | 31 | 35 | 2 | 80 | 325 | 0.5 | 0.1 | 23.1 | 27.4 | 33.4 | 2 |
| BZT52C36 | WS | 36 | 34 | 38 | 2 | 90 | 350 | 0.5 | 0.1 | 25.2 | 30.4 | 37.4 | 2 |
| BZT52C39 | WT | 39 | 37 | 41 | 2 | 130 | 350 | 0.5 | 0.1 | 27.3 | 33.4 | 41.2 | 2 |

| Device | Marking | Zener Voltage Range | | | | Maximum Zener Impedance | | | Maximum Reverse Current | | Typical Temperature coefficient @IZTC=mV/°C | | Test Current IZTC |
|----------|---------|---------------------|--------|--------|-----|-------------------------|----------|-----|-------------------------|----|---|-----|-------------------|
| | | Vz@Izt | | | Izt | Zzt @Izt | Zzk @Izk | Izk | IR | VR | Min | Max | |
| | | Nom(V) | Min(V) | Max(V) | mA | Ω | | mA | uA | V | | | |
| BZT52C43 | WU | 43 | 40 | 46 | 2 | 100 | 700 | 1 | 0.1 | 32 | 10 | 12 | 5 |
| BZT52C47 | WV | 47 | 44 | 50 | 2 | 100 | 750 | 1 | 0.1 | 35 | 10 | 12 | 5 |
| BZT52C51 | WW | 51 | 48 | 54 | 2 | 125 | 750 | 1 | 0.1 | 38 | 10 | 12 | 5 |
| BZT52C56 | XW | 56 | 52 | 60 | 2 | 135 | 700 | 1 | 0.1 | 39 | 10 | 12 | 5 |
| BZT52C62 | 6E | 62 | 58 | 66 | 2 | 200 | 1000 | 1 | 0.2 | 47 | 10 | 12 | 5 |
| BZT52C68 | 6F | 68 | 64 | 72 | 2 | 250 | 1000 | 1 | 0.2 | 52 | 10 | 12 | 5 |
| BZT52C75 | 6H | 75 | 70 | 79 | 2 | 300 | 1000 | 1 | 0.2 | 57 | 10 | 12 | 5 |

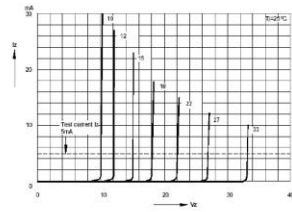
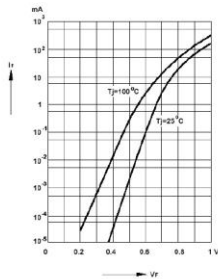
BZT52Cxx SERIES

Rev-1.1

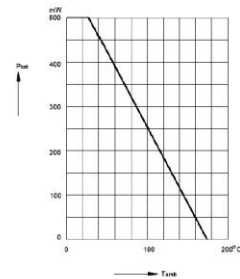
5. Typical Characteristic



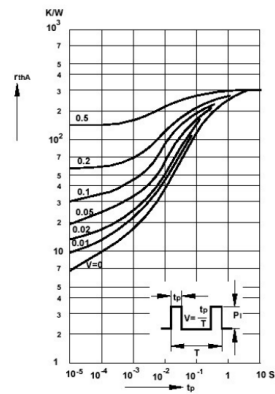
Forward characteristics



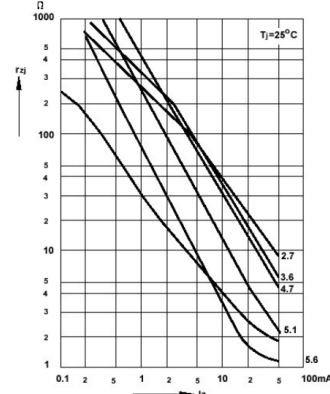
Admissible power dissipation versus ambient temperature



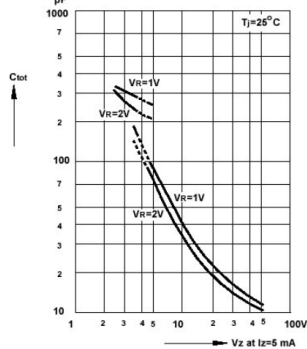
Pulse thermal resistance versus pulse duration



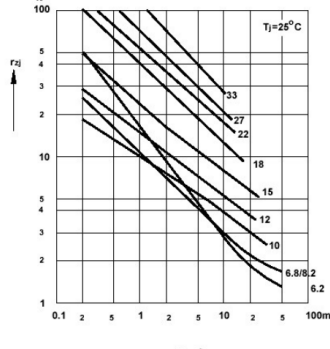
Dynamic resistance versus Zener current



Capacitance versus Zener voltage



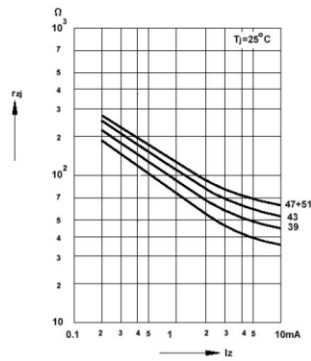
Dynamic resistance versus Zener current



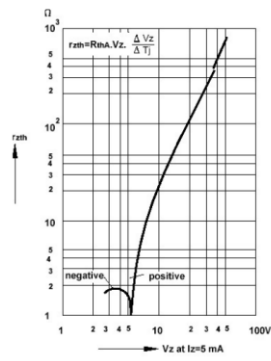
BZT52Cxx SERIES

Rev-1.1

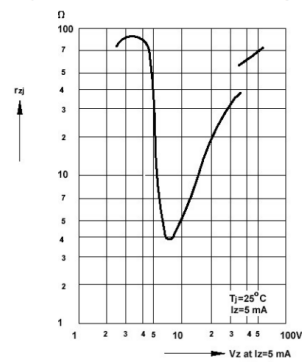
Dynamic resistance versus Zener current



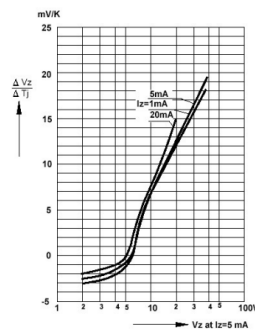
Thermal differential resistance versus Zener voltage



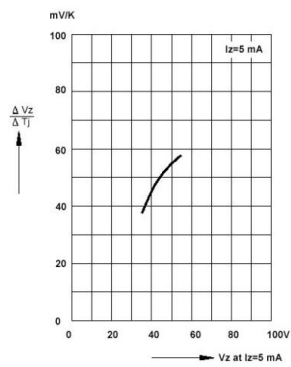
Dynamic resistance versus Zener voltage



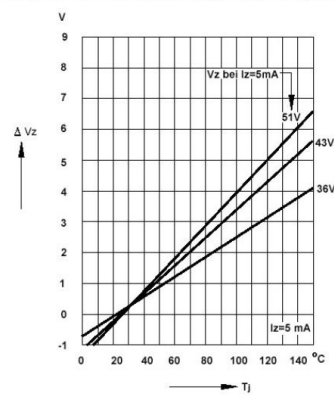
Temperature dependence of Zener voltage versus Zener voltage



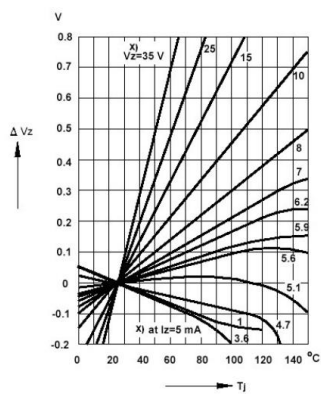
Temperature dependence of Zener voltage versus Zener voltage



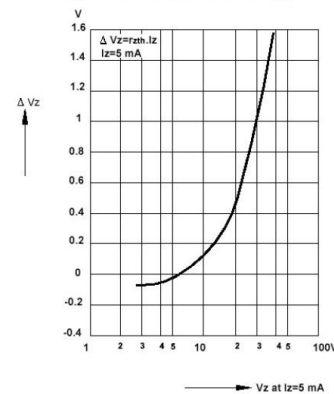
Change of Zener voltage versus junction temperature



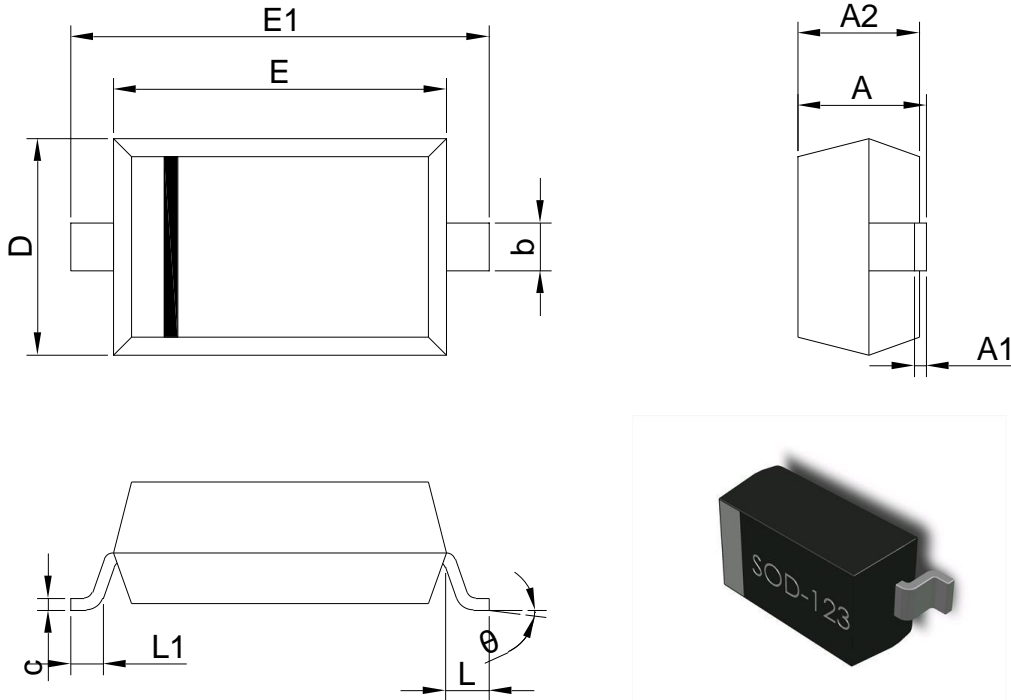
Change of Zener voltage versus junction temperature



Change of Zener voltage from turn-on up to the point of thermal equilibrium versus Zener voltage

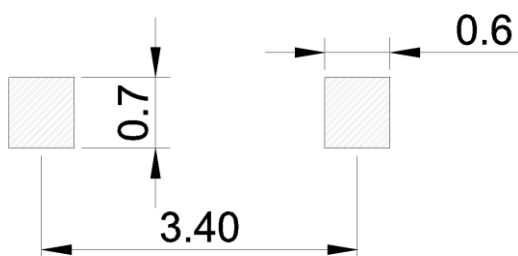


6. Dimension and Patterns (SOD-123)



Units: mm

| Symbol | Min. | Max. | Symbol | Min. | Max. |
|--------|------|------|--------|---------|------|
| A | 1.05 | 1.25 | E | 2.60 | 2.80 |
| A1 | 0.00 | 0.10 | E1 | 3.55 | 3.85 |
| A2 | 1.05 | 1.15 | L | 0.50REF | |
| b | 0.45 | 0.65 | L1 | 0.25 | 0.45 |
| c | 0.08 | 0.15 | θ | 0° | 8° |
| D | 1.50 | 1.70 | | | |



Note:

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

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