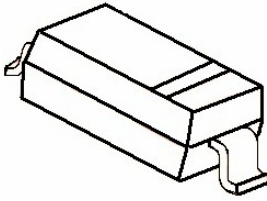


**SOD-123**

**Features**

- Low Zener Impedance
- Power Dissipation of 500mW
- High Stability and High Reliability

**Mechanical Data**

- SOD-123 Small Outline Plastic Package
- Polarity: Color band denotes cathode end
- EpoxyUL:94V-0
- Mounting Position: Any

**Maximum Ratings & Thermal Characteristics**

(Ratings at 25°C ambient temperature unless otherwise specified.)

| Parameters                | Symbol | Value             | Unit |
|---------------------------|--------|-------------------|------|
| Power Dissipation         | Pd     | 500 <sup>1)</sup> | mW   |
| Forward Voltage @IF=10mA  | Vf     | 0.9 <sup>2)</sup> | V    |
| Storage temperature range | Ts     | -65-+150          | °C   |

- 1) Device mounted on ceramic PCB: 7.6mm x 9.4mm x 0.87mm with pad areas 25mm<sup>2</sup>
- 2) Short duration test pulse used to minimize self-heating effect
- 3) f=1KHz

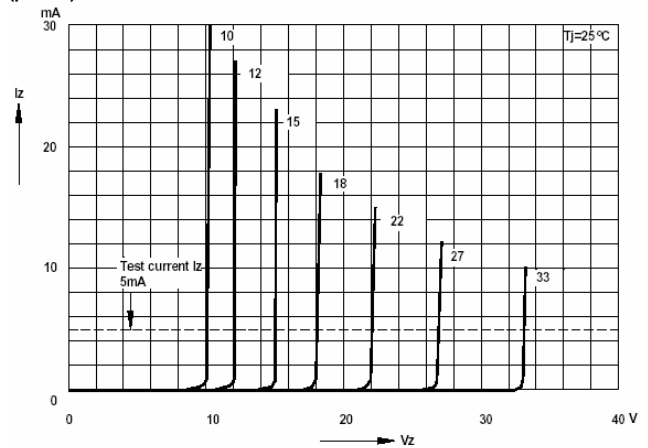
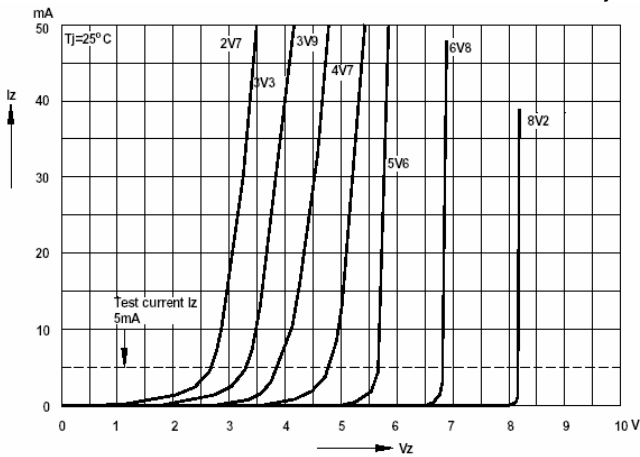
**Electrical Characteristics**

(Ratings at 25°C ambient temperature unless otherwise specified.)

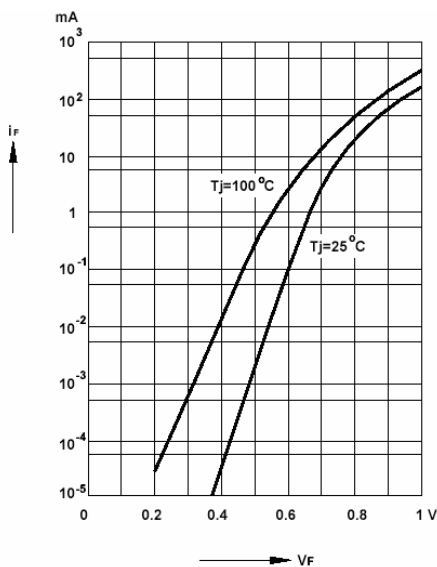
| Device    | Marking | Zener Voltage Range |        |        |     | Maximum Zener Impedance |          |     | Maximum Reverse Current |     | Typical Temperature coefficient @ IZTC=mV/°C |      | Test Current IZTC |
|-----------|---------|---------------------|--------|--------|-----|-------------------------|----------|-----|-------------------------|-----|--|------|-------------------|
|           |         | Vz@Izt              |        |        | Izt | Zzt @Izt                | Zzk @Izk | Izk | IR                      | VR  | Min  | Max  |                   |
|           |         | Nom(V)              | Min(V) | Max(V) |     |                         |          |     |                         |     |  |      |                   |
| BZT52C2V4 | WX      | 2.4                 | 2.2    | 2.6    | 5   | 100                     | 600      | 1.0 | 50                      | 1.0 | -3.5   | 0    | 5                 |
| BZT52C2V7 | W1      | 2.7                 | 2.5    | 2.9    | 5   | 100                     | 600      | 1.0 | 20                      | 1.0 | -3.5   | 0    | 5                 |
| BZT52C3V0 | W2      | 3.0                 | 2.8    | 3.2    | 5   | 95                      | 600      | 1.0 | 10                      | 1.0 | -3.5   | 0    | 5                 |
| BZT52C3V3 | W3      | 3.3                 | 3.1    | 3.5    | 5   | 95                      | 600      | 1.0 | 5                       | 1.0 | -3.5   | 0    | 5                 |
| BZT52C3V6 | W4      | 3.6                 | 3.4    | 3.8    | 5   | 90                      | 600      | 1.0 | 5                       | 1.0 | -3.5   | 0    | 5                 |
| BZT52C3V9 | W5      | 3.9                 | 3.7    | 4.1    | 5   | 90                      | 600      | 1.0 | 3                       | 1.0 | -3.5   | 0    | 5                 |
| BZT52C4V3 | W6      | 4.3                 | 4.0    | 4.6    | 5   | 90                      | 600      | 1.0 | 3                       | 1.0 | -3.5   | 0    | 5                 |
| BZT52C4V7 | W7      | 4.7                 | 4.4    | 5.0    | 5   | 80                      | 500      | 1.0 | 3                       | 2.0 | -3.5   | 0.2  | 5                 |
| BZT52C5V1 | W8      | 5.1                 | 4.8    | 5.4    | 5   | 60                      | 480      | 1.0 | 2                       | 2.0 | -2.7   | 1.2  | 5                 |
| BZT52C5V6 | W9      | 5.6                 | 5.2    | 6.0    | 5   | 40                      | 400      | 1.0 | 1                       | 2.0 | -2.0   | 2.5  | 5                 |
| BZT52C6V2 | WA      | 6.2                 | 5.8    | 6.6    | 5   | 10                      | 150      | 1.0 | 3                       | 4.0 | 0.4  | 3.7  | 5                 |
| BZT52C6V8 | WB      | 6.8                 | 6.4    | 7.2    | 5   | 15                      | 80       | 1.0 | 2                       | 4.0 | 1.2  | 4.5  | 5                 |
| BZT52C7V5 | WC      | 7.5                 | 7.0    | 7.9    | 5   | 15                      | 80       | 1.0 | 1                       | 5.0 | 2.5  | 5.3  | 5                 |
| BZT52C8V2 | WD      | 8.2                 | 7.7    | 8.7    | 5   | 15                      | 80       | 1.0 | 0.7                     | 5.0 | 3.2  | 6.2  | 5                 |
| BZT52C9V1 | WE      | 9.1                 | 8.5    | 9.6    | 5   | 15                      | 100      | 1.0 | 0.5                     | 6.0 | 3.8  | 7.0  | 5                 |
| BZT52C10  | WF      | 10                  | 9.4    | 10.6   | 5   | 20                      | 150      | 1.0 | 0.2                     | 7.0 | 4.5  | 8.0  | 5                 |
| BZT52C11  | WG      | 11                  | 10.4   | 11.6   | 5   | 20                      | 150      | 1.0 | 0.1                     | 8.0 | 5.4  | 9.0  | 5                 |
| BZT52C12  | WH      | 12                  | 11.4   | 12.7   | 5   | 25                      | 150      | 1.0 | 0.1                     | 8.0 | 6.0  | 10.0 | 5                 |
| BZT52C13  | WI      | 13                  | 12.4   | 14.1   | 5   | 30                      | 170      | 1.0 | 0.1                     | 8.0 | 7.0  | 11.0 | 5                 |

| 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) |     |                         |          |     |                         |      |  |      |                   |
| BZT52C15 | WJ      | 15                  | 13.8   | 15.6   | 5   | 30                      | 200      | 1.0 | 0.1                     | 10.5 | 9.2  | 13.0 | 5                 |
| BZT52C16 | WK      | 16                  | 15.3   | 17.1   | 5   | 40                      | 200      | 1.0 | 0.1                     | 11.2 | 10.4   | 14.0 | 5                 |
| BZT52C18 | WL      | 18                  | 16.8   | 19.1   | 5   | 45                      | 225      | 1.0 | 0.1                     | 12.6 | 12.4   | 16.0 | 5                 |
| BZT52C20 | WM      | 20                  | 18.8   | 21.2   | 5   | 55                      | 225      | 1.0 | 0.1                     | 14.0 | 14.4   | 18.0 | 5                 |
| BZT52C22 | WN      | 22                  | 20.8   | 23.3   | 5   | 55                      | 250      | 1.0 | 0.1                     | 15.4 | 16.4   | 20.0 | 5                 |
| BZT52C24 | WO      | 24                  | 22.8   | 25.6   | 5   | 70                      | 250      | 1.0 | 0.1                     | 16.8 | 18.4   | 22.0 | 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                  | 28.0   | 32.0   | 2   | 80                      | 300      | 0.5 | 0.1                     | 21.0 | 24.4   | 29.4 | 2                 |
| BZT52C33 | WR      | 33                  | 31.0   | 35.0   | 2   | 80                      | 325      | 0.5 | 0.1                     | 23.1 | 27.4   | 33.4 | 2                 |
| BZT52C36 | WS      | 36                  | 34.0   | 38.0   | 2   | 90                      | 350      | 0.5 | 0.1                     | 25.2 | 30.4   | 37.4 | 2                 |
| BZT52C39 | WT      | 39                  | 37.0   | 41.0   | 2   | 130                     | 350      | 0.5 | 0.1                     | 27.3 | 33.4   | 41.2 | 2                 |
| BZT52C43 | WU      | 43                  | 40.0   | 46.0   | 2   | 100                     | 700      | 1.0 | 0.1                     | 32.0 | 10.0   | 12.0 | 5                 |
| BZT52C47 | WV      | 47                  | 44.0   | 50.0   | 2   | 100                     | 750      | 1.0 | 0.1                     | 35.0 | 10.0   | 12.0 | 5                 |
| BZT52C51 | WW      | 51                  | 48.0   | 54.0   | 2   | 100                     | 750      | 1.0 | 0.1                     | 38.0 | 10.0   | 12.0 | 5                 |

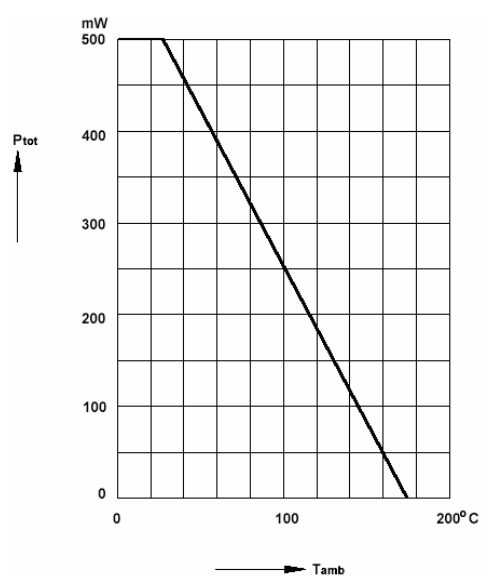
at Tj=constant (pulsed)



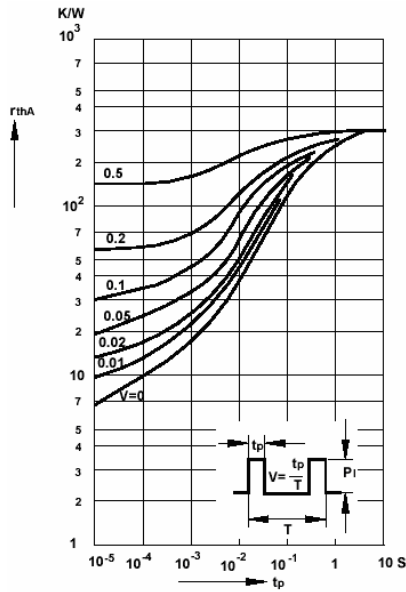
Forward characteristics



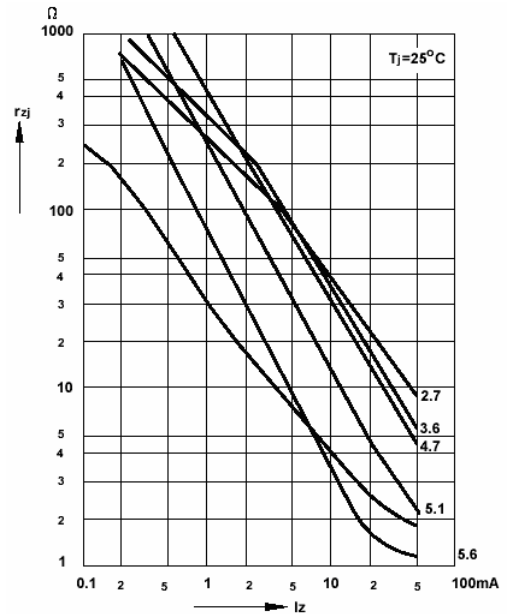
Admissible power dissipation versus ambient temperature



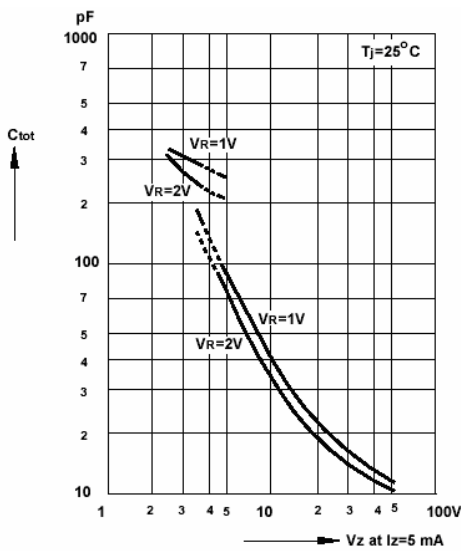
**Pulse thermal resistance versus pulse duration**



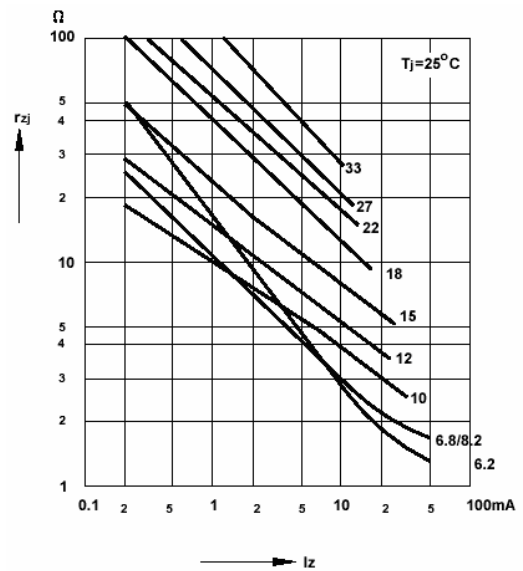
**Dynamic resistance versus Zener current**



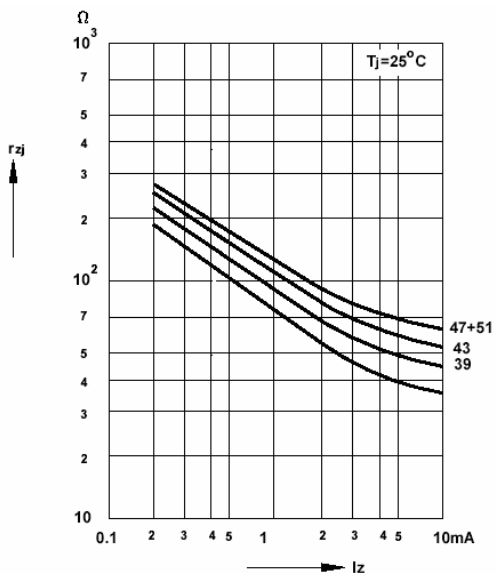
**Capacitance versus Zener voltage**



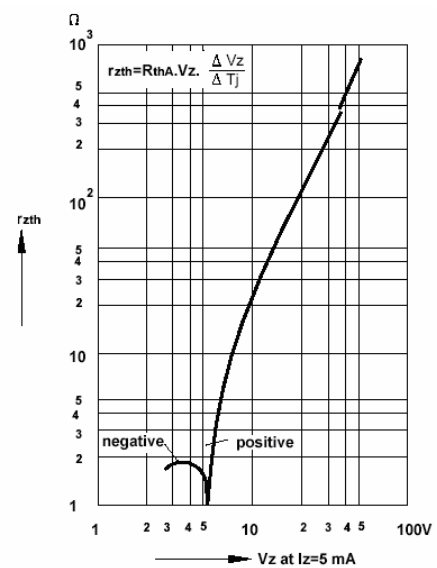
**Dynamic resistance versus Zener current**



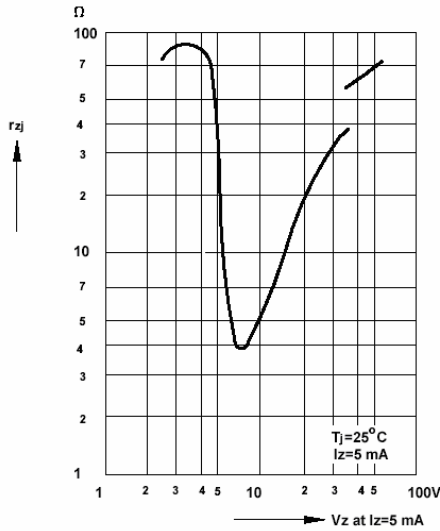
**Dynamic resistance versus Zener current**



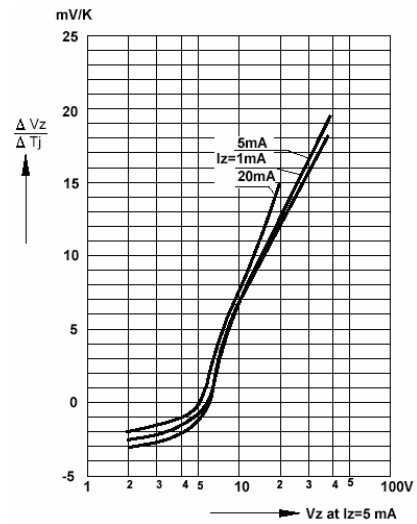
**Thermal differential resistance versus Zener voltage**



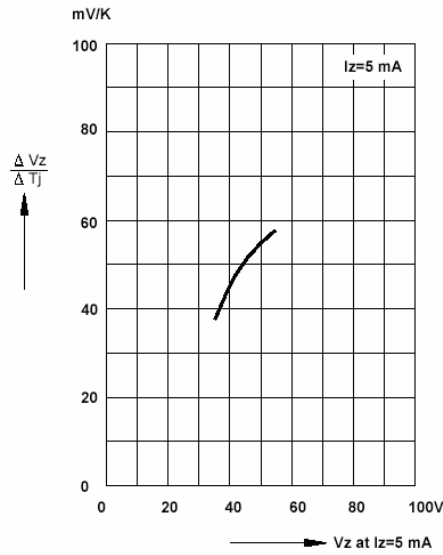
**Dynamic resistance versus Zener voltage**



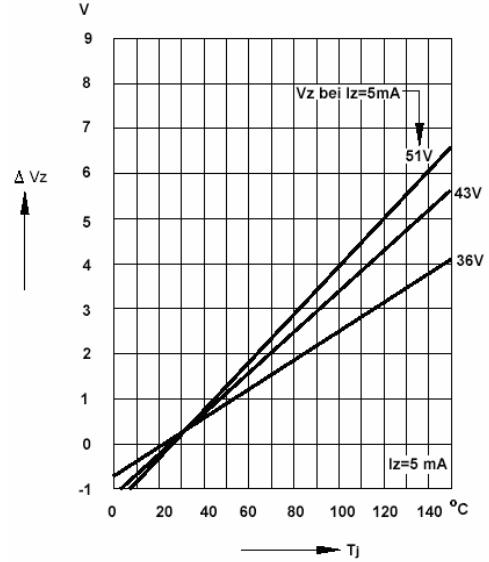
**Temperature dependence of Zener voltage versus Zener voltage**



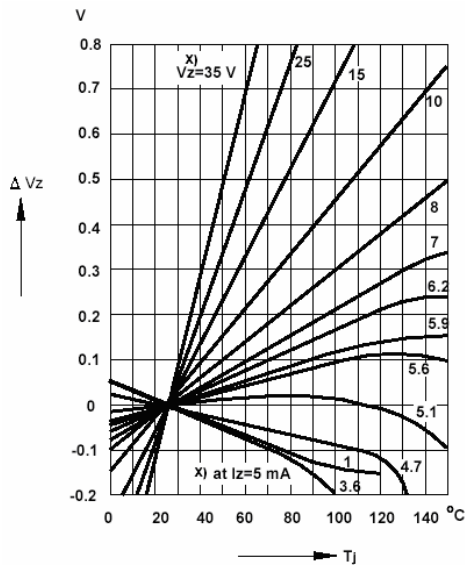
**Temperature dependence of Zener voltage versus Zener voltage**



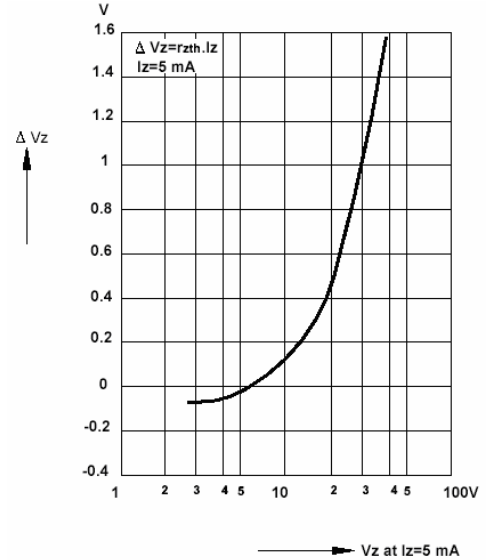
**Change of Zener voltage versus junction temperature**

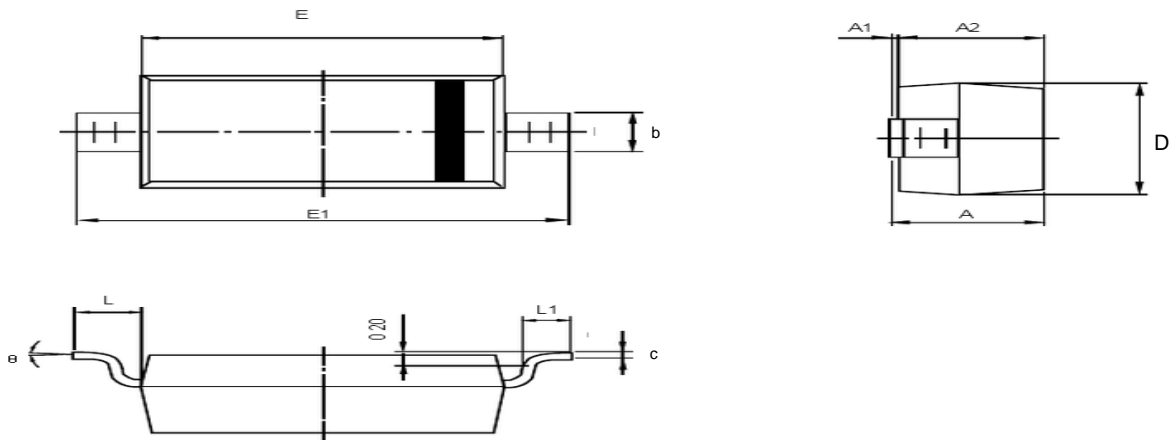


**Change of Zener voltage versus junction temperature**



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



**SOD-123 PACKAGE OUTLINE** Plastic surface mounted package


| Symbol | Dimensions In Millimeters |       | Dimensions In Inches |       |
|--------|---------------------------|-------|----------------------|-------|
|        | Min                       | Max   | Min                  | Max   |
| A      | 1.050                     | 1.250 | 0.041                | 0.049 |
| A1     | 0.000                     | 0.100 | 0.000                | 0.004 |
| A2     | 1.050                     | 1.150 | 0.041                | 0.045 |
| b      | 0.450                     | 0.650 | 0.018                | 0.026 |
| c      | 0.080                     | 0.150 | 0.003                | 0.006 |
| D      | 1.500                     | 1.700 | 0.059                | 0.067 |
| E      | 2.600                     | 2.800 | 0.102                | 0.110 |
| E1     | 3.550                     | 3.850 | 0.140                | 0.152 |
| L      | 0.500REF                  |       | 0.020REF             |       |
| L1     | 0.250                     | 0.450 | 0.010                | 0.018 |
| θ      | 0°                        | 8°    | 0°                   | 8°    |

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