

# TDSEMIC

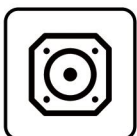
## 拓電半導體

自主封測 品質把控 售後保障

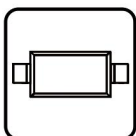
WEB | [WWW.TDSEMIC.COM](http://WWW.TDSEMIC.COM)



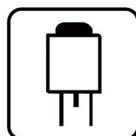
電源管理



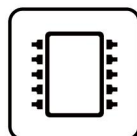
顯示驅動



二三極管



LDO穩壓器



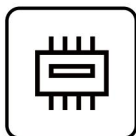
觸摸芯片



MOS管



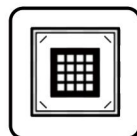
運算放大器



存儲芯片



MCU



串口通信

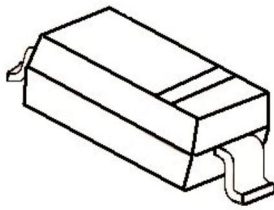
BZT52C20

WM

產品規格說明書

### SOD-123 Plastic-Encapsulate Zener Diode

#### SOD-123



#### Features

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

#### Mechanical Data

- Flat Lead SOD-123 Small Outline Plastic Package
- Polarity: Color band denotes cathode end
- 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

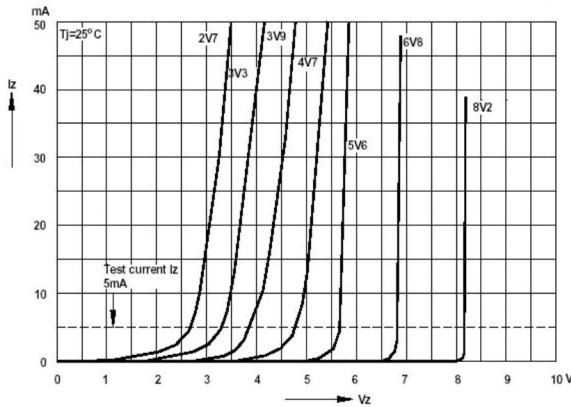
3) f=1KHz

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

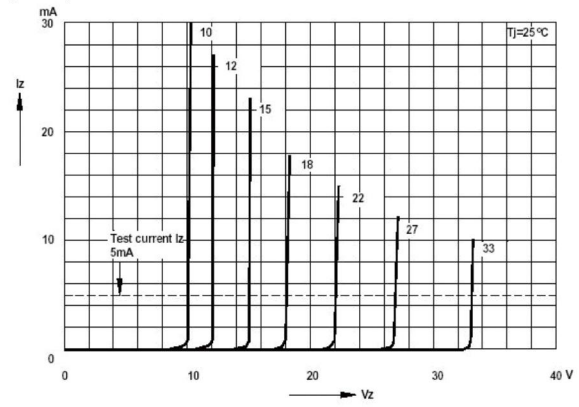
| Device    | Marking | Zener Voltage Range |        |        |     | Maximum Zener Impedance |          |     | Maximum Reverse Current |      | Typical Temperature coefficient @ IZTC=mV/°C |      | Test Current IZTC |
|-----------|---------|---------------------|--------|--------|-----|-------------------------|----------|-----|-------------------------|------|----------------------------------------------|------|-------------------|
|           |         | Vz@Izt              |        |        | Izt | Zzt @Izt                | Zzk @Izk | Izk | IR                      | VR   | Min                                          | Max  |                   |
|           |         | Nom(V)              | Min(V) | Max(V) | mA  | Ω                       |          | mA  | uA                      | 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                 |
| 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                 |

### Typical Electrical and Thermal Characteristics (Curves)

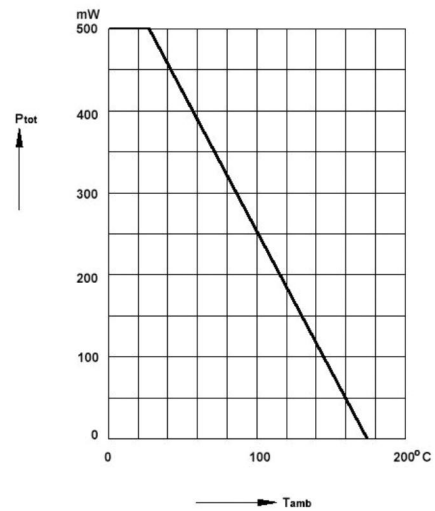
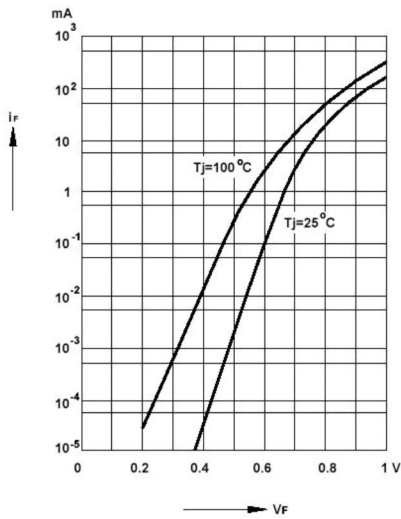
**Breakdown characteristics**  
at  $T_J = \text{constant}$  (pulsed)



Forward characteristics

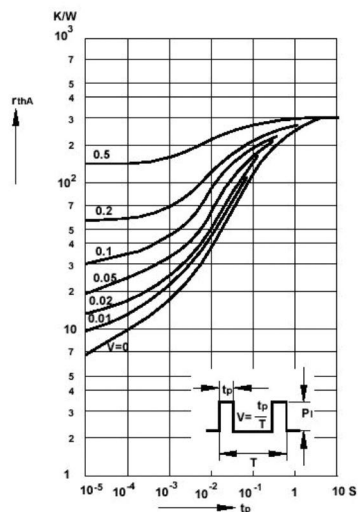


Admissible power dissipation versus ambient temperature

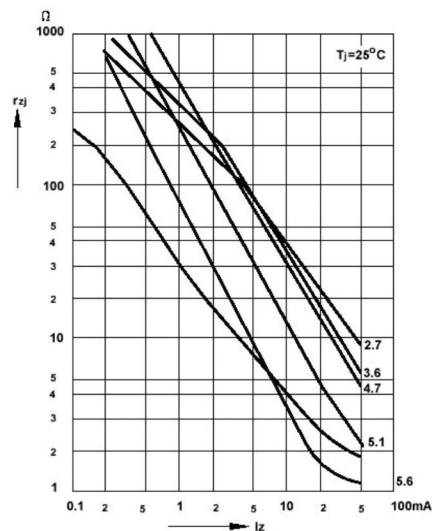


### Typical Electrical and Thermal Characteristics (Curves)

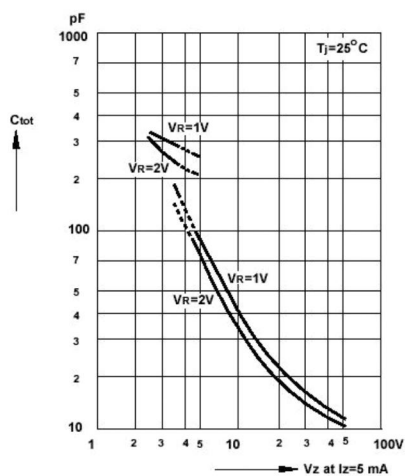
Pulse thermal resistance versus pulse duration



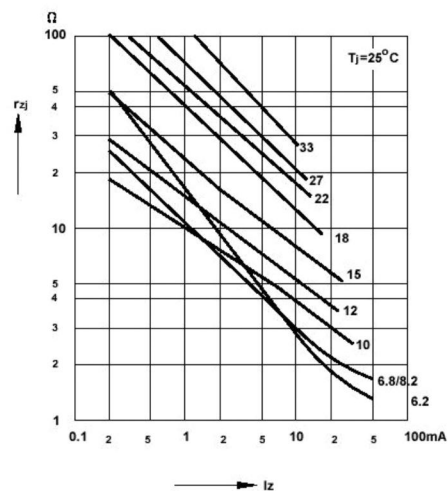
Dynamic resistance versus Zener current



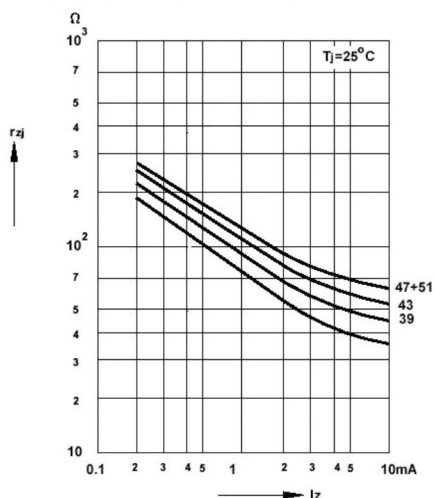
Capacitance versus Zener voltage



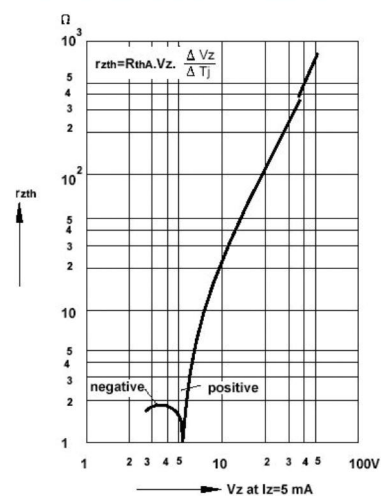
Dynamic resistance versus Zener current



Dynamic resistance versus Zener current

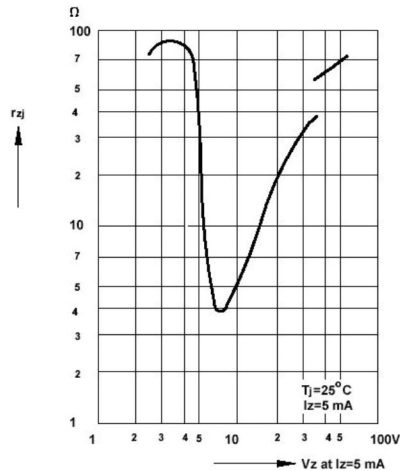


Thermal differential resistance versus Zener voltage

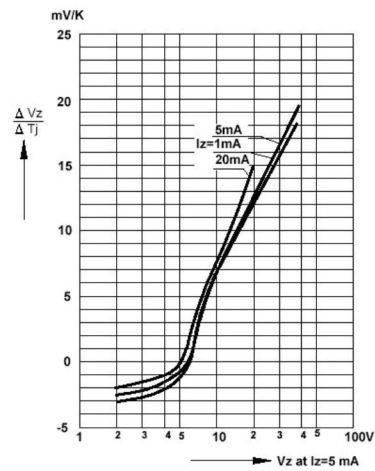


### Typical Electrical and Thermal Characteristics (Curves)

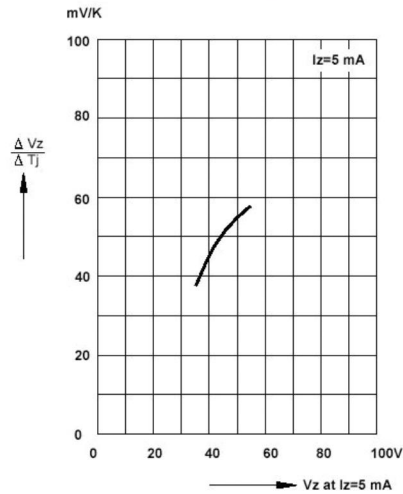
Dynamic resistance versus Zener voltage



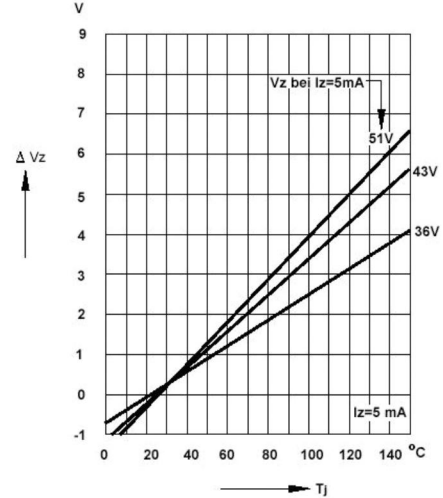
Temperature dependence of Zener voltage versus Zener voltage



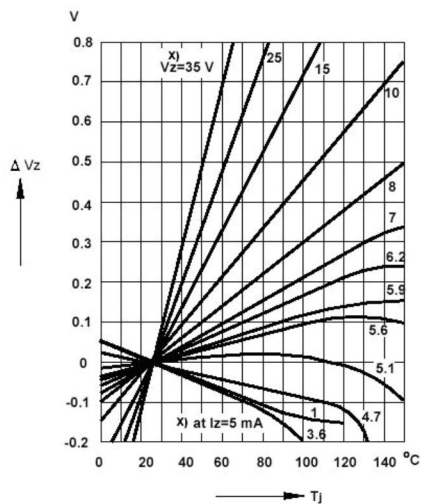
Temperature dependence of Zener voltage versus Zener voltage



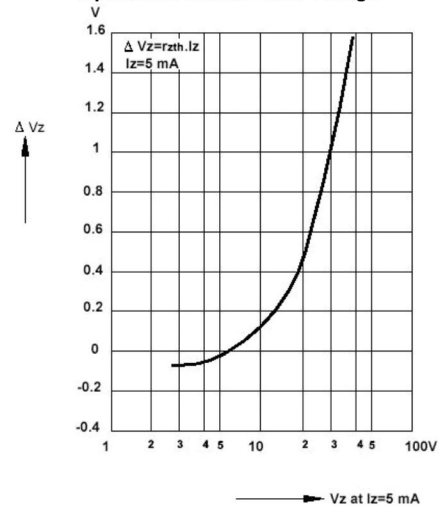
Change of Zener voltage versus junction temperature



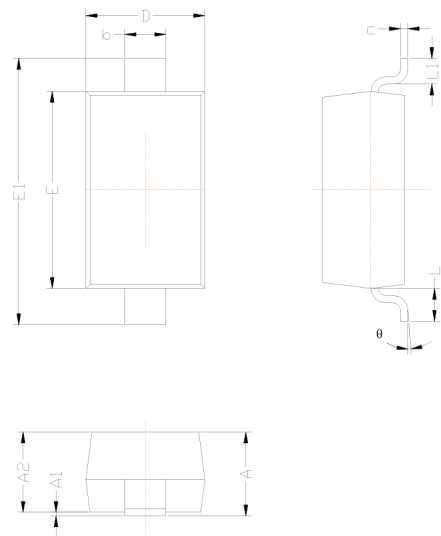
Change of Zener voltage versus junction temperature



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



SOD-123 PACKAGE OUTLINEPlastic surface mounted package



| SYMBOL   | DIMENSIONS |       |
|----------|------------|-------|
|          | MIN.       | MAX.  |
| A        | 1.050      | 1.250 |
| A1       | 0.000      | 0.100 |
| A2       | 1.050      | 1.150 |
| b        | 0.450      | 0.650 |
| c        | 0.080      | 0.150 |
| D        | 1.500      | 1.700 |
| E        | 2.600      | 2.800 |
| E1       | 3.550      | 3.850 |
| L        | 0.500REF   |       |
| L1       | 0.250      | 0.450 |
| $\theta$ | 0°         | 8°    |

Precautions: PCB Design  
Recommended land dimensions for SOD-123 diode. Electrode patterns for PCBs

