

### Features

- Low Zener Impedance
- 300mW; Power Dissipation of 300mW
- High Stability and High Reliability

### Mechanical Data

- Package: SOD-523 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     | 300 <sup>1)</sup> | mW   |
| Forward Voltage @IF=10mA                | Vf     | 0.9 <sup>2)</sup> | V    |
| Storage temperature range               | Ts     | -55-+150          | °C   |
| Thermal Resistance, Junction to Ambient | RθJA   | 390               | °C/W |

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

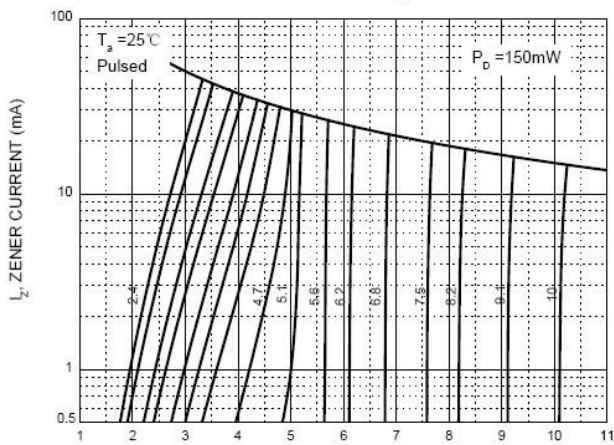
### Electrical Characteristics (Ratings at 25°C ambient temperature unless otherwise specified.)

| Device   | Marking | Zener Voltage Range |        |        |     | Maximum Zener Impedance <sup>3)</sup> |          |     | 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   |                                              |      | mA                |
| MM5Z 2V4 | 00      | 2.4                 | 2.2    | 2.6    | 5   | 100                                   | 600      | 1.0 | 50                      | 1.0 | -3.5                                         | 0    | 5                 |
| MM5Z 2V7 | 01      | 2.7                 | 2.5    | 2.9    | 5   | 100                                   | 600      | 1.0 | 20                      | 1.0 | -3.5                                         | 0    | 5                 |
| MM5Z 3V0 | 02      | 3.0                 | 2.8    | 3.2    | 5   | 95                                    | 600      | 1.0 | 10                      | 1.0 | -3.5                                         | 0    | 5                 |
| MM5Z 3V3 | 05      | 3.3                 | 3.1    | 3.5    | 5   | 95                                    | 600      | 1.0 | 5                       | 1.0 | -3.5                                         | 0    | 5                 |
| MM5Z 3V6 | 06      | 3.6                 | 3.4    | 3.8    | 5   | 90                                    | 600      | 1.0 | 5                       | 1.0 | -3.5                                         | 0    | 5                 |
| MM5Z 3V9 | 07      | 3.9                 | 3.7    | 4.1    | 5   | 90                                    | 600      | 1.0 | 3                       | 1.0 | -3.5                                         | 0    | 5                 |
| MM5Z 4V3 | 08      | 4.3                 | 4.0    | 4.6    | 5   | 90                                    | 600      | 1.0 | 3                       | 1.0 | -3.5                                         | 0    | 5                 |
| MM5Z 4V7 | 09      | 4.7                 | 4.4    | 5.0    | 5   | 80                                    | 500      | 1.0 | 3                       | 2.0 | -3.5                                         | 0.2  | 5                 |
| MM5Z 5V1 | 0A      | 5.1                 | 4.8    | 5.4    | 5   | 60                                    | 480      | 1.0 | 2                       | 2.0 | -2.7                                         | 1.2  | 5                 |
| MM5Z 5V6 | 0C      | 5.6                 | 5.2    | 6.0    | 5   | 40                                    | 400      | 1.0 | 1                       | 2.0 | -2.0                                         | 2.5  | 5                 |
| MM5Z 6V2 | 0E      | 6.2                 | 5.8    | 6.6    | 5   | 10                                    | 150      | 1.0 | 3                       | 4.0 | 0.4                                          | 3.7  | 5                 |
| MM5Z 6V8 | 0F      | 6.8                 | 6.4    | 7.2    | 5   | 15                                    | 80       | 1.0 | 2                       | 4.0 | 1.2                                          | 4.5  | 5                 |
| MM5Z 7V5 | 0G      | 7.5                 | 7.0    | 7.9    | 5   | 15                                    | 80       | 1.0 | 1                       | 5.0 | 2.5                                          | 5.3  | 5                 |
| MM5Z 8V2 | 0H      | 8.2                 | 7.7    | 8.7    | 5   | 15                                    | 80       | 1.0 | 0.7                     | 5.0 | 3.2                                          | 6.2  | 5                 |
| MM5Z 9V1 | 0K      | 9.1                 | 8.5    | 9.6    | 5   | 15                                    | 100      | 1.0 | 0.5                     | 6.0 | 3.8                                          | 7.0  | 5                 |
| MM5Z 10  | 0L      | 10                  | 9.4    | 10.6   | 5   | 20                                    | 150      | 1.0 | 0.2                     | 7.0 | 4.5                                          | 8.0  | 5                 |
| MM5Z 11  | 0M      | 11                  | 10.4   | 11.6   | 5   | 20                                    | 150      | 1.0 | 0.1                     | 8.0 | 5.4                                          | 9.0  | 5                 |
| MM5Z 12  | 0N      | 12                  | 11.4   | 12.7   | 5   | 25                                    | 150      | 1.0 | 0.1                     | 8.0 | 6.0                                          | 10.0 | 5                 |
| MM5Z 13  | 0P      | 13                  | 12.4   | 14.1   | 5   | 30                                    | 170      | 1.0 | 0.1                     | 8.0 | 7.0                                          | 11.0 | 5                 |

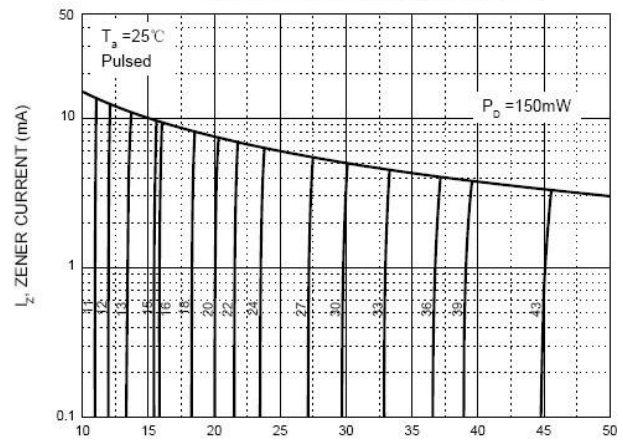
| Device  | Marking | Zener Voltage Range |        |        |     | Maximum Zener Impedance |          |     | Maximum Reverse Current |      | Typical Temperature coefficient @ IZTC=mV/°C |      | Test Current IZTC |
|---------|---------|---------------------|--------|--------|-----|-------------------------|----------|-----|-------------------------|------|----------------------------------------------|------|-------------------|
|         |         | Vz@Izt              |        |        | Izt | Zzt @Izt                | Zzk @Izk | Izk | IR                      | VR   | Min                                          | Max  |                   |
|         |         | Nom(V)              | Min(V) | Max(V) | mA  | Ω                       |          | mA  | uA                      | V    |                                              |      |                   |
| MM5Z 15 | 0T      | 15                  | 13.8   | 15.6   | 5   | 30                      | 200      | 1.0 | 0.1                     | 10.5 | 9.2                                          | 13.0 | 5                 |
| MM5Z 16 | 0U      | 16                  | 15.3   | 17.1   | 5   | 40                      | 200      | 1.0 | 0.1                     | 11.2 | 10.4                                         | 14.0 | 5                 |
| MM5Z 18 | 0W      | 18                  | 16.8   | 19.1   | 5   | 45                      | 225      | 1.0 | 0.1                     | 12.6 | 12.4                                         | 16.0 | 5                 |
| MM5Z 20 | 0Z      | 20                  | 18.8   | 21.2   | 5   | 55                      | 225      | 1.0 | 0.1                     | 14.0 | 14.4                                         | 18.0 | 5                 |
| MM5Z 22 | 10      | 22                  | 20.8   | 23.3   | 5   | 55                      | 250      | 1.0 | 0.1                     | 15.4 | 16.4                                         | 20.0 | 5                 |
| MM5Z 24 | 11      | 24                  | 22.8   | 25.6   | 5   | 70                      | 250      | 1.0 | 0.1                     | 16.8 | 18.4                                         | 22.0 | 5                 |
| MM5Z 27 | 12      | 27                  | 25.1   | 28.9   | 2   | 80                      | 300      | 0.5 | 0.1                     | 18.9 | 21.4                                         | 25.3 | 2                 |
| MM5Z 30 | 14      | 30                  | 28.0   | 32.0   | 2   | 80                      | 300      | 0.5 | 0.1                     | 21.0 | 24.4                                         | 29.4 | 2                 |
| MM5Z 33 | 18      | 33                  | 31.0   | 35.0   | 2   | 80                      | 325      | 0.5 | 0.1                     | 23.1 | 27.4                                         | 33.4 | 2                 |
| MM5Z 36 | 19      | 36                  | 34.0   | 38.0   | 2   | 90                      | 350      | 0.5 | 0.1                     | 25.2 | 30.4                                         | 37.4 | 2                 |
| MM5Z 39 | 20      | 39                  | 37.0   | 41.0   | 2   | 130                     | 350      | 0.5 | 0.1                     | 27.3 | 33.4                                         | 41.2 | 2                 |
| MM5Z 43 | 21      | 43                  | 40.0   | 46.0   | 2   | 100                     | 700      | 1.0 | 0.1                     | 32.0 | 10.0                                         | 12.0 | 5                 |

## Typical characteristics

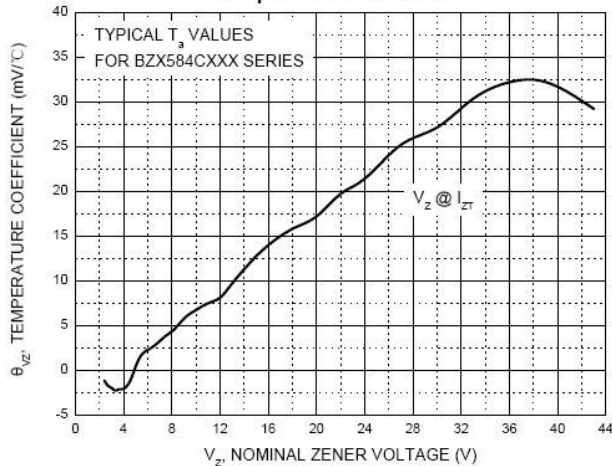
Zener Characteristics ( $V_z$  Up to 10 V)



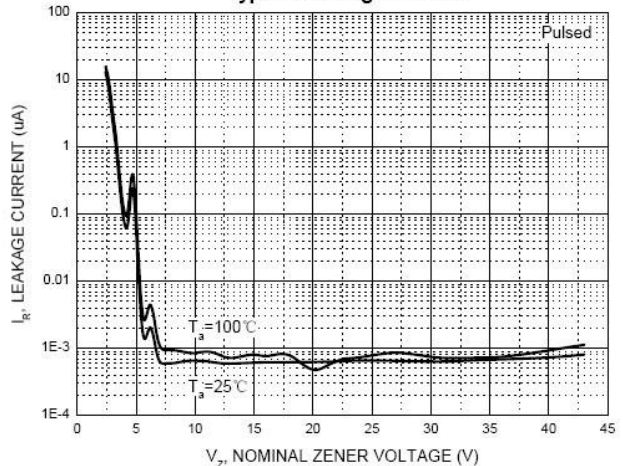
Zener Characteristics (11 V to 43 V)



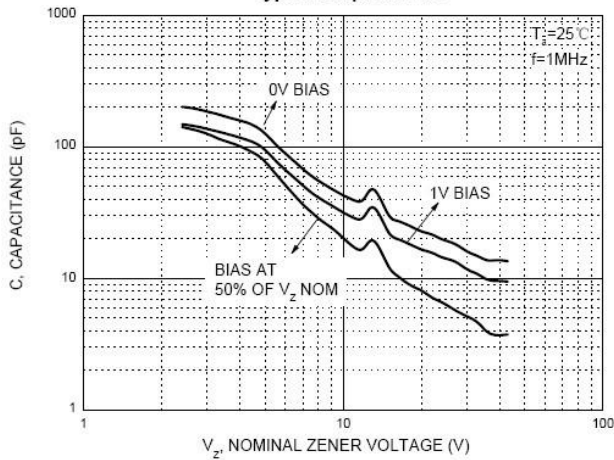
Temperature Coefficients



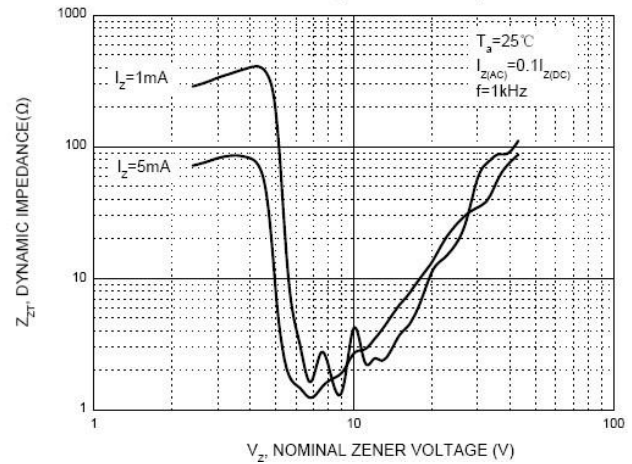
Typical Leakage Current



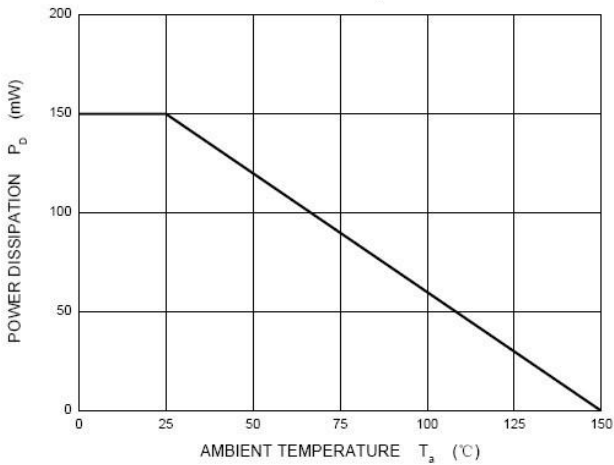
Typical Capacitance



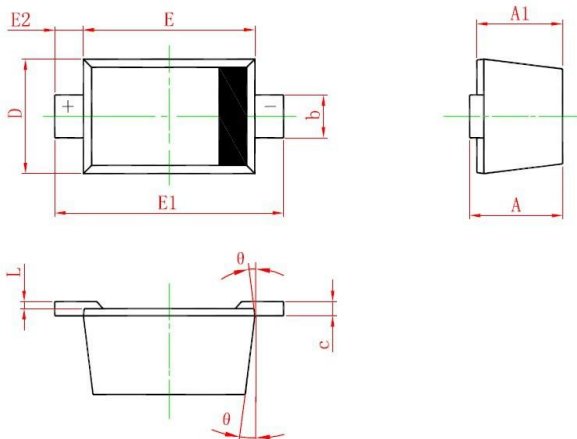
Effect of Zener Voltage on Zener Impedance



Power Derating Curve

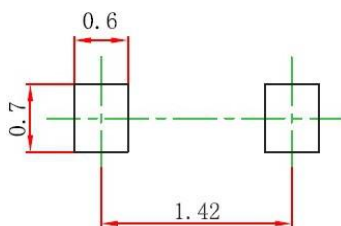


## SOD-523 PACKAGE OUTLINE



| Symbol   | Dimensions In Millimeters |       | Dimensions In Inches |       |
|----------|---------------------------|-------|----------------------|-------|
|          | Min                       | Max   | Min                  | Max   |
| A        | 0.510                     | 0.770 | 0.020                | 0.031 |
| A1       | 0.500                     | 0.700 | 0.020                | 0.028 |
| b        | 0.250                     | 0.350 | 0.010                | 0.014 |
| c        | 0.080                     | 0.150 | 0.003                | 0.006 |
| D        | 0.750                     | 0.850 | 0.030                | 0.033 |
| E        | 1.100                     | 1.300 | 0.043                | 0.051 |
| E1       | 1.500                     | 1.700 | 0.059                | 0.067 |
| E2       | 0.200 REF                 |       | 0.008 REF            |       |
| L        | 0.010                     | 0.070 | 0.001                | 0.003 |
| $\theta$ | 7° REF                    |       | 7° REF               |       |

## SOD-523 Suggested Pad Layout



Note:

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