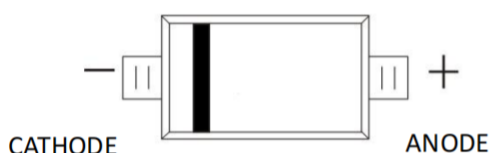


### Features

- Low Zener Impedance
- Power Dissipation of 200mW
- High Stability and High Reliability
- Halogen free and RoHS compliant
- SOD323 surface mount package

### Applications

- General voltage regulation
- Mobile & handheld systems
- Household Electric Appliances
- Industrial automation
- communication field



**SOD323**



**Pin Configuration**

### Maximum Ratings& Thermal Characteristics

(Tamb=25°C unless otherwise specified)

| Parameter                                | Symbol | Value      | Unit |
|------------------------------------------|--------|------------|------|
| Forward Voltage @ IF=10mA                | VF     | 0.9        | V    |
| Power Dissipation                        | PD     | 200        | mW   |
| Thermal Resistance (Junction-to-Ambient) | RθJA   | 556        | °C/W |
| Thermal Resistance (Junction-to-Case)    | RθJC   | 417        | °C/W |
| Junction Temperature Range               | TJ     | 150        | °C   |
| Storage Temperature Range                | TSTG   | -55 ~ +150 | °C   |

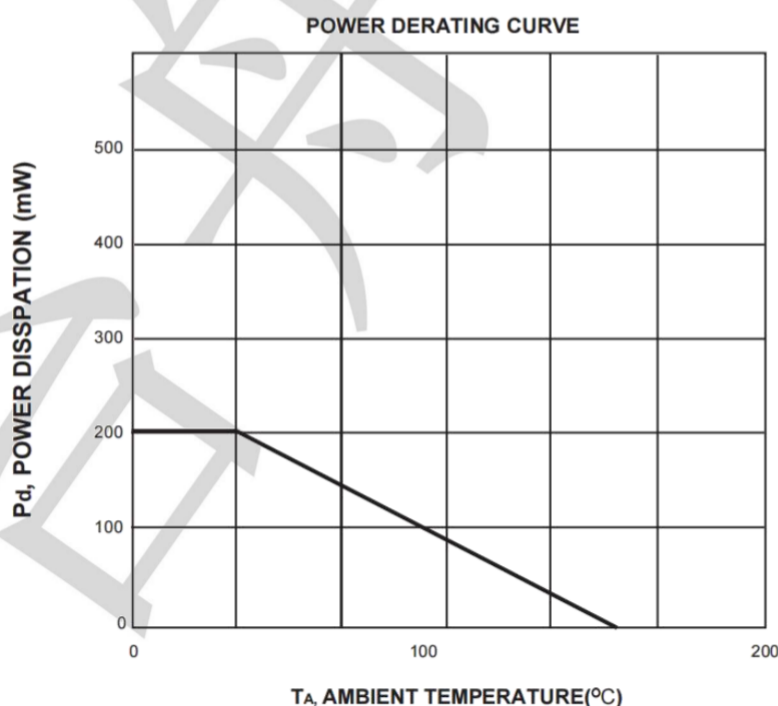
### Electrical Characteristics (TA=25°C unless otherwise specified)

| Device        | Zener Voltage (Note 2) |       |      |                   | Zener Impedance                      |                                   |     | Leakage Current                 |       | ®V <sub>Z</sub> (mV/<br>k)@ I <sub>ZT</sub> |      | C@ V <sub>R</sub><br>= 0<br>f = 1<br>MHz |
|---------------|------------------------|-------|------|-------------------|--------------------------------------|-----------------------------------|-----|---------------------------------|-------|---------------------------------------------|------|------------------------------------------|
|               | V <sub>Z</sub> (Volts) |       |      | @ I <sub>ZT</sub> | Z <sub>ZT</sub> @<br>I <sub>ZT</sub> | Z <sub>ZK</sub> @ I <sub>ZK</sub> |     | I <sub>R</sub> @ V <sub>R</sub> |       |                                             |      |                                          |
|               | Min                    | Nom   | Max  | mA                | Ω                                    | Ω                                 | mA  | μA                              | Volts | Min                                         | Max  |                                          |
| MM3Z2V4T1G-TP | 2.2                    | 2.4   | 2.6  | 5                 | 100                                  | 1000                              | 0.5 | 50                              | 1.0   | -3.5                                        | 0    | 450                                      |
| MM3Z2V7T1G-TP | 2.5                    | 2.7   | 2.9  | 5                 | 100                                  | 1000                              | 0.5 | 20                              | 1.0   | -3.5                                        | 0    | 450                                      |
| MM3Z3V0T1G-TP | 2.8                    | 3.0   | 3.2  | 5                 | 100                                  | 1000                              | 0.5 | 10                              | 1.0   | -3.5                                        | 0    | 450                                      |
| MM3Z3V3T1G-TP | 3.1                    | 3.3   | 3.5  | 5                 | 95                                   | 1000                              | 0.5 | 5                               | 1.0   | -3.5                                        | 0    | 450                                      |
| MM3Z3V6T1G-TP | 3.4                    | 3.6   | 3.8  | 5                 | 90                                   | 1000                              | 0.5 | 5                               | 1.0   | -3.5                                        | 0    | 450                                      |
| MM3Z3V9T1G-TP | 3.7                    | 3.9   | 4.1  | 5                 | 90                                   | 1000                              | 0.5 | 3                               | 1.0   | -3.5                                        | -2.5 | 450                                      |
| MM3Z4V3T1G-TP | 4.0                    | 4.3   | 4.6  | 5                 | 90                                   | 1000                              | 0.5 | 3                               | 1.0   | -3.5                                        | 0    | 450                                      |
| MM3Z4V7T1G-TP | 4.4                    | 4.7   | 5.0  | 5                 | 80                                   | 800                               | 0.5 | 3                               | 2.0   | -3.5                                        | 0.2  | 260                                      |
| MM3Z5V1T1G-TP | 4.8                    | 5.1   | 5.4  | 5                 | 60                                   | 500                               | 0.5 | 2                               | 2.0   | -2.7                                        | 1.2  | 225                                      |
| MM3Z5V6T1G-TP | 5.2                    | 5.6   | 6.0  | 5                 | 40                                   | 200                               | 0.5 | 1                               | 2.0   | -2.0                                        | 2.5  | 200                                      |
| MM3Z6V2T1G-TP | 5.8                    | 6.2   | 6.6  | 5                 | 10                                   | 100                               | 0.5 | 3                               | 4.0   | 0.4                                         | 3.7  | 185                                      |
| MM3Z6V8T1G-TP | 6.4                    | 6.8   | 7.2  | 5                 | 15                                   | 160                               | 0.5 | 2                               | 4.0   | 1.2                                         | 4.5  | 155                                      |
| MM3Z7V5T1G-TP | 7.0                    | 7.5   | 7.9  | 5                 | 15                                   | 160                               | 0.5 | 1                               | 5.0   | 2.5                                         | 5.3  | 140                                      |
| MM3Z8V2T1G-TP | 7.7                    | 8.2   | 8.7  | 5                 | 15                                   | 160                               | 0.5 | 0.7                             | 5.0   | 3.2                                         | 6.2  | 135                                      |
| MM3Z9V1T1G-TP | 8.5                    | 9.1   | 9.6  | 5                 | 15                                   | 160                               | 0.5 | 0.2                             | 7.0   | 3.8                                         | 7.0  | 130                                      |
| MM3Z10VT1G-TP | 9.4                    | 10    | 10.6 | 5                 | 20                                   | 160                               | 0.5 | 0.1                             | 8.0   | 4.5                                         | 8.0  | 130                                      |
| MM3Z11VT1G-TP | 10.4                   | 11    | 11.6 | 5                 | 20                                   | 160                               | 0.5 | 0.1                             | 8.0   | 5.4                                         | 9.0  | 130                                      |
| MM3Z12VT1G-TP | 11.4                   | 12    | 12.7 | 5                 | 25                                   | 80                                | 0.5 | 0.1                             | 8.0   | 6.0                                         | 10   | 130                                      |
| MM3Z13VT1G-TP | 12.4                   | 13.25 | 14.1 | 5                 | 30                                   | 80                                | 0.5 | 0.1                             | 8.0   | 7.0                                         | 11   | 120                                      |
| MM3Z15VT1G-TP | 14.3                   | 15    | 15.8 | 5                 | 30                                   | 80                                | 0.5 | 0.05                            | 10.5  | 9.2                                         | 13   | 110                                      |
| MM3Z16VT1G-TP | 15.3                   | 16.2  | 17.1 | 5                 | 40                                   | 80                                | 0.5 | 0.05                            | 11.2  | 10.4                                        | 14   | 105                                      |
| MM3Z18VT1G-TP | 16.8                   | 18    | 19.1 | 5                 | 45                                   | 80                                | 0.5 | 0.05                            | 12.6  | 12.4                                        | 16   | 100                                      |
| MM3Z20VT1G-TP | 18.8                   | 20    | 21.2 | 5                 | 55                                   | 100                               | 0.5 | 0.05                            | 14.0  | 14.4                                        | 18   | 85                                       |
| MM3Z22VT1G-TP | 20.8                   | 22    | 23.3 | 5                 | 55                                   | 100                               | 0.5 | 0.05                            | 15.4  | 16.4                                        | 20   | 85                                       |
| MM3Z24VT1G-TP | 22.8                   | 24.2  | 25.6 | 5                 | 70                                   | 120                               | 0.5 | 0.05                            | 16.8  | 18.4                                        | 22   | 80                                       |
| MM3Z27VT1G-TP | 25.1                   | 27    | 28.9 | 2                 | 80                                   | 300                               | 0.5 | 0.05                            | 18.9  | 21.4                                        | 25.3 | 70                                       |
| MM3Z30VT1G-TP | 28                     | 30    | 32   | 2                 | 80                                   | 300                               | 0.5 | 0.05                            | 21.0  | 24.4                                        | 29.4 | 70                                       |

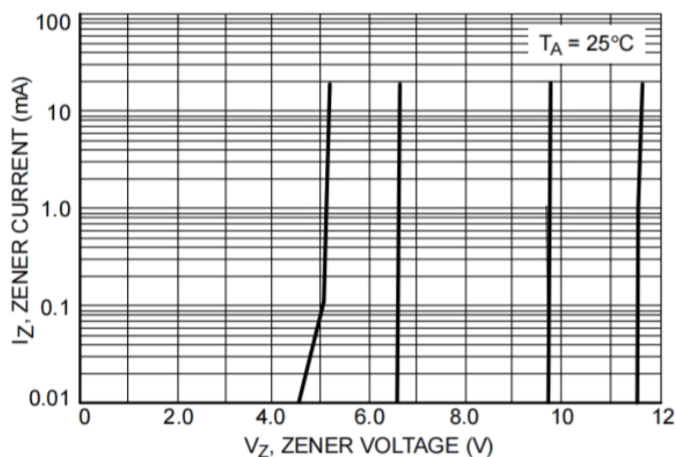
### Electrical Characteristics (TA=25°C unless otherwise specified)

| Device        | Zener Voltage (Note 2) |     |     |                   | Zener Impedance                      |                                   |     | Leakage Current                 |       | ®V <sub>Z</sub> (mV/<br>k)@ I <sub>ZT</sub> |      | C@ V <sub>R</sub><br>= 0<br>f = 1<br>MHz |
|---------------|------------------------|-----|-----|-------------------|--------------------------------------|-----------------------------------|-----|---------------------------------|-------|---------------------------------------------|------|------------------------------------------|
|               | V <sub>Z</sub> (Volts) |     |     | @ I <sub>ZT</sub> | Z <sub>ZT</sub> @<br>I <sub>ZT</sub> | Z <sub>ZK</sub> @ I <sub>ZK</sub> |     | I <sub>R</sub> @ V <sub>R</sub> |       |                                             |      |                                          |
|               | Min                    | Nom | Max | mA                | Ω                                    | Ω                                 | mA  | μA                              | Volts | Min                                         | Max  |                                          |
| MM3Z33VT1G-TP | 31                     | 33  | 35  | 2                 | 80                                   | 300                               | 0.5 | 0.05                            | 23.2  | 27.4                                        | 33.4 | 70                                       |
| MM3Z36VT1G-TP | 34                     | 36  | 38  | 2                 | 90                                   | 500                               | 0.5 | 0.05                            | 25.2  | 30.4                                        | 37.4 | 70                                       |
| MM3Z39VT1G-TP | 37                     | 39  | 41  | 2                 | 130                                  | 500                               | 0.5 | 0.05                            | 27.3  | 33.4                                        | 41.2 | 45                                       |
| MM3Z43VT1G-TP | 40                     | 43  | 46  | 2                 | 150                                  | 500                               | 0.5 | 0.05                            | 30.1  | 37.6                                        | 46.6 | 40                                       |
| MM3Z47VT1G-TP | 44                     | 47  | 50  | 2                 | 170                                  | 500                               | 0.5 | 0.05                            | 32.9  | 42.0                                        | 51.8 | 40                                       |
| MM3Z51VT1G-TP | 48                     | 51  | 54  | 2                 | 180                                  | 500                               | 0.5 | 0.05                            | 35.7  | 46.6                                        | 57.2 | 40                                       |
| MM3Z56VT1G-TP | 52                     | 56  | 60  | 2                 | 200                                  | 500                               | 0.5 | 0.05                            | 39.2  | 52.2                                        | 63.8 | 40                                       |
| MM3Z62VT1G-TP | 58                     | 62  | 66  | 2                 | 215                                  | 500                               | 0.5 | 0.05                            | 43.4  | 58.9                                        | 71.8 | 35                                       |
| MM3Z68VT1G-TP | 64                     | 68  | 72  | 2                 | 240                                  | 500                               | 0.5 | 0.05                            | 47.6  | 65.6                                        | 79.8 | 35                                       |
| MM3Z75VT1G-TP | 70                     | 75  | 79  | 2                 | 255                                  | 500                               | 0.5 | 0.05                            | 52.5  | 73.4                                        | 88.6 | 35                                       |

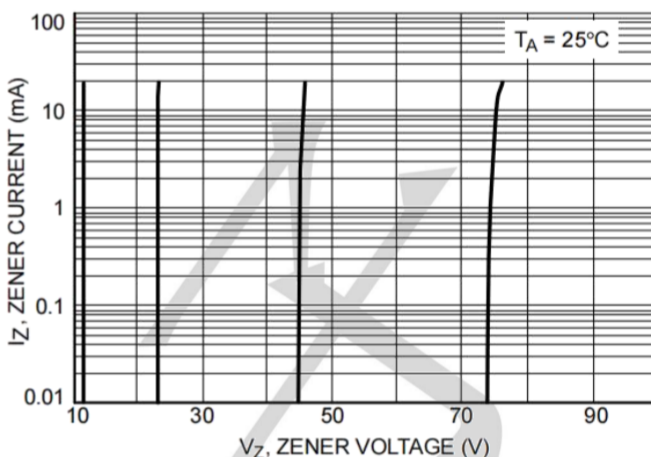
### Typical Characteristics Curves



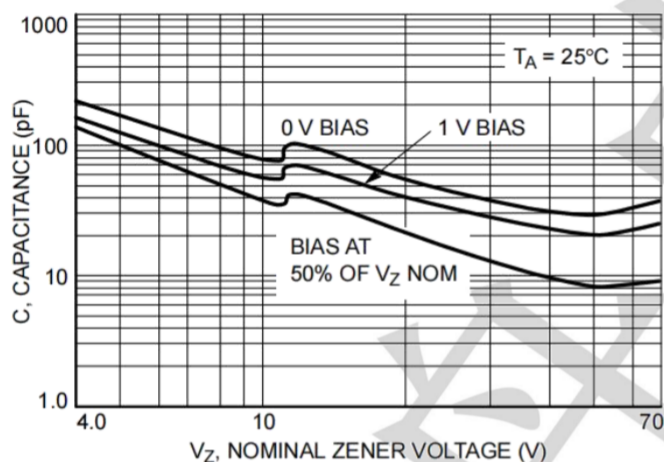
## Typical Characteristics Curves



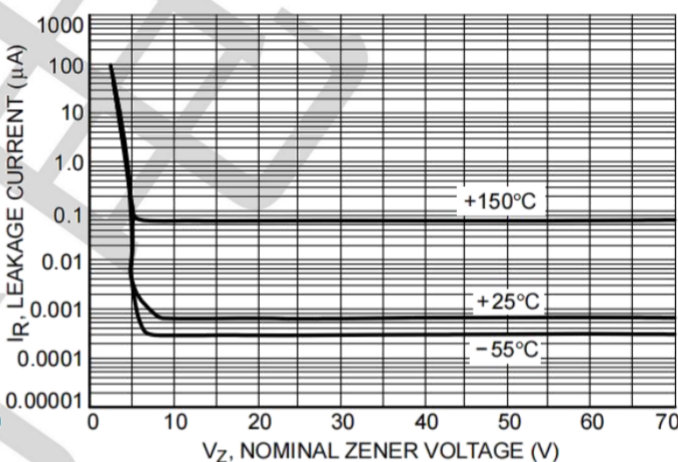
**Zener Voltage versus Zener Current**  
( $V_Z$  Up to 12 V)



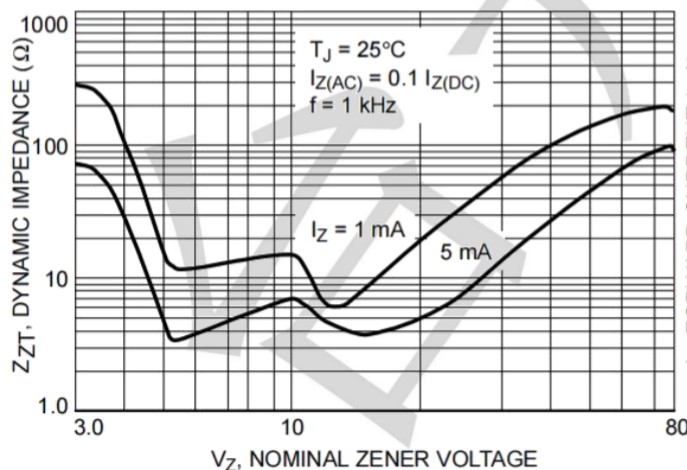
**Zener Voltage versus Zener Current**  
(12 V to 75 V)



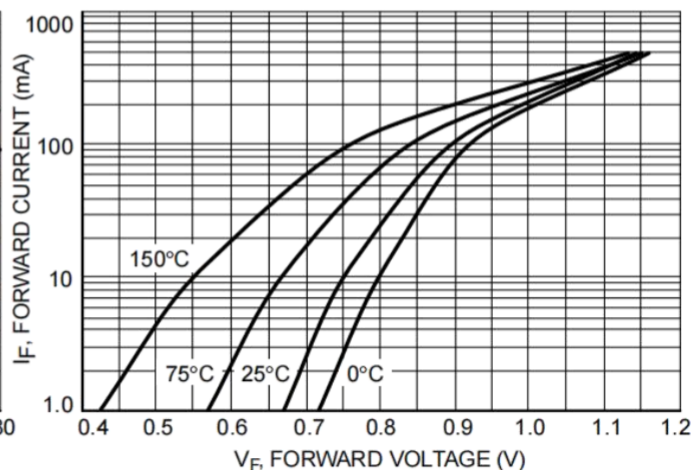
**Typical Capacitance**



**Typical Leakage Current**



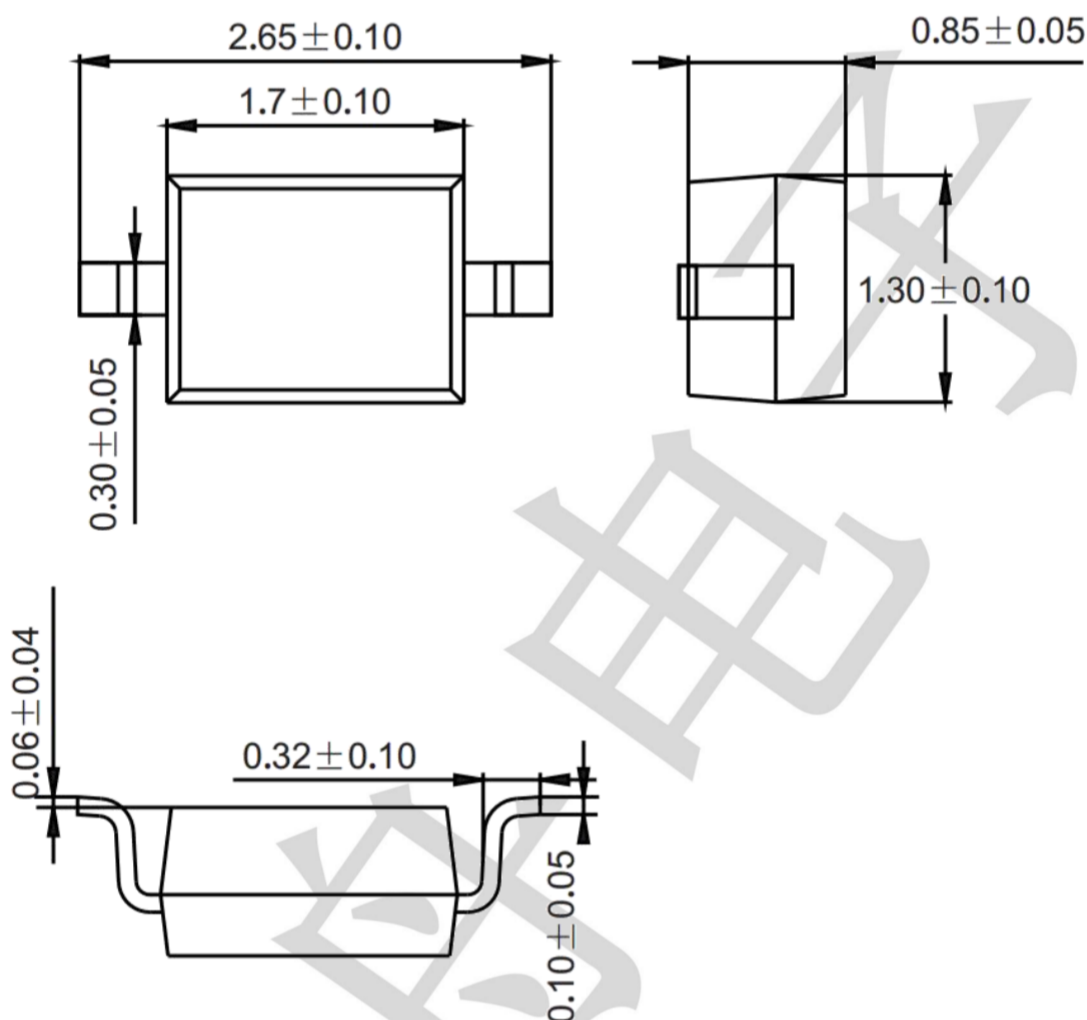
**Effect of Zener Voltage on Zener Impedance**



**Typical Forward Voltage**

**Package Outline Dimensions (unit: mm)**

**SOD323**



**Mounting Pad Layout (unit: mm)**

