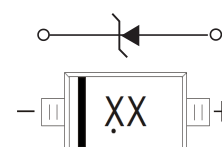


### SOD-323



### FEATURES

- Planar Die Construction
- Ultra-Small Surface Mount Package
- General purpose, Medium Current
- Ideally Suited for Automated Assembly Processes

### Maximum Ratings( $T_a=25^{\circ}\text{C}$ unless otherwise specified)

| Characteristic                                   | Symbol          | Value    | Unit                        |
|--------------------------------------------------|-----------------|----------|-----------------------------|
| Forward Voltage (Note 2) @ $I_F = 10\text{mA}$   | $V_F$           | 0.9      | V                           |
| Power Dissipation(Note 1)                        | $P_D$           | 200      | mW                          |
| Thermal Resistance, Junction to Ambient Air      | $R_{\theta JA}$ | 625      | $^{\circ}\text{C}/\text{W}$ |
| Operation Junction and Storage Temperature Range | $T_J, T_{stg}$  | -55~+150 | $^{\circ}\text{C}$          |

Notes:1. Device mounted on ceramic PCBS; 7.6 mm x 9.4 mm x 0.87 mm with pad areas 25 mm<sup>2</sup>.

2. Tested with pulses,  $T_p \leq 1.0\text{ms}$ .

## ELECTRICAL CHARACTERISTICS

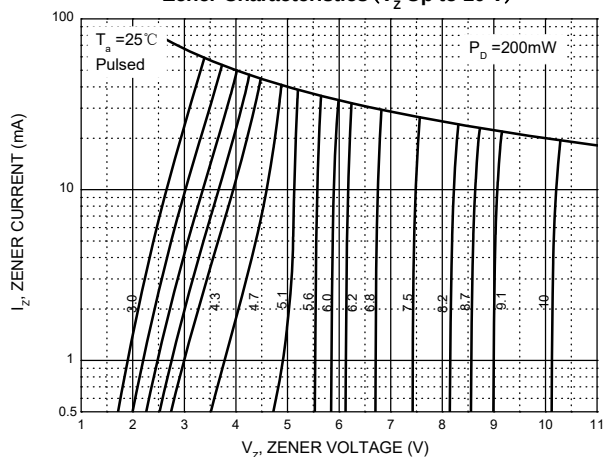
$T_a=25^{\circ}\text{C}$  unless otherwise specified

| Part Number | Marking | Zener Voltage Range |        |        |          | Zener Impedance |                 |          | Reverse Current |       |
|-------------|---------|---------------------|--------|--------|----------|-----------------|-----------------|----------|-----------------|-------|
|             |         | $V_Z@I_{ZT}$        |        |        | $I_{ZT}$ | $Z_{ZT}@I_{ZT}$ | $Z_{ZK}@I_{ZK}$ | $I_{ZK}$ | $I_R$           | $V_R$ |
|             |         | Nom(V)              | Min(V) | Max(V) | mA       | $\Omega$        |                 | mA       | $\mu\text{A}$   | V     |
| MMSZ5221BS  | C1      | 2.4                 | 2.28   | 2.52   | 20       | 30              | 1200            | 0.25     | 100             | 1.0   |
| MMSZ5223BS  | C3      | 2.7                 | 2.57   | 2.84   | 20       | 30              | 1300            | 0.25     | 75              | 1.0   |
| MMSZ5225BS  | C5      | 3.0                 | 2.85   | 3.15   | 20       | 30              | 1600            | 0.25     | 50              | 1.0   |
| MMSZ5226BS  | G1      | 3.3                 | 3.14   | 3.47   | 20       | 28              | 1600            | 0.25     | 25              | 1.0   |
| MMSZ5227BS  | G2      | 3.6                 | 3.42   | 3.78   | 20       | 24              | 1700            | 0.25     | 15              | 1.0   |
| MMSZ5228BS  | G3      | 3.9                 | 3.71   | 4.10   | 20       | 23              | 1900            | 0.25     | 10              | 1.0   |
| MMSZ5229BS  | G4      | 4.3                 | 4.09   | 4.52   | 20       | 22              | 2000            | 0.25     | 5               | 1.0   |
| MMSZ5230BS  | G5      | 4.7                 | 4.47   | 4.94   | 20       | 19              | 1900            | 0.25     | 5               | 2.0   |
| MMSZ5231BS  | E1      | 5.1                 | 4.85   | 5.36   | 20       | 17              | 1600            | 0.25     | 5               | 2.0   |
| MMSZ5232BS  | E2      | 5.6                 | 5.32   | 5.88   | 20       | 11              | 1600            | 0.25     | 5               | 3.0   |
| MMSZ5233BS  | E3      | 6.0                 | 5.70   | 6.30   | 20       | 7               | 1600            | 0.25     | 5               | 3.5   |
| MMSZ5234BS  | E4      | 6.2                 | 5.89   | 6.51   | 20       | 7               | 1000            | 0.25     | 5               | 4.0   |
| MMSZ5235BS  | E5      | 6.8                 | 6.46   | 7.14   | 20       | 5               | 750             | 0.25     | 3               | 5.0   |
| MMSZ5236BS  | F1      | 7.5                 | 7.13   | 7.88   | 20       | 6               | 500             | 0.25     | 3               | 6.0   |
| MMSZ5237BS  | F2      | 8.2                 | 7.79   | 8.61   | 20       | 8               | 500             | 0.25     | 3               | 6.5   |
| MMSZ5238BS  | F3      | 8.7                 | 8.27   | 9.14   | 20       | 8               | 600             | 0.25     | 3               | 6.5   |
| MMSZ5239BS  | F4      | 9.1                 | 8.65   | 9.56   | 20       | 10              | 600             | 0.25     | 3               | 7.0   |
| MMSZ5240BS  | F5      | 10                  | 9.50   | 10.50  | 20       | 17              | 600             | 0.25     | 3               | 8.0   |
| MMSZ5241BS  | H1      | 11                  | 10.45  | 11.55  | 20       | 22              | 600             | 0.25     | 2.0             | 8.4   |
| MMSZ5242BS  | H2      | 12                  | 11.40  | 12.60  | 20       | 30              | 600             | 0.25     | 1.0             | 9.1   |
| MMSZ5243BS  | H3      | 13                  | 12.35  | 13.65  | 9.5      | 13              | 600             | 0.25     | 0.5             | 9.9   |
| MMSZ5244BS  | H4      | 14                  | 13.30  | 14.70  | 9.0      | 15              | 600             | 0.25     | 0.1             | 10    |
| MMSZ5245BS  | H5      | 15                  | 14.25  | 15.75  | 8.5      | 16              | 600             | 0.25     | 0.1             | 11    |
| MMSZ5246BS  | J1      | 16                  | 15.20  | 16.80  | 7.8      | 17              | 600             | 0.25     | 0.1             | 12    |
| MMSZ5248BS  | J3      | 18                  | 17.10  | 18.90  | 7.0      | 21              | 600             | 0.25     | 0.1             | 14    |
| MMSZ5250BS  | J5      | 20                  | 19.00  | 21.00  | 6.2      | 25              | 600             | 0.25     | 0.1             | 15    |
| MMSZ5251BS  | K1      | 22                  | 20.90  | 23.10  | 5.6      | 29              | 600             | 0.25     | 0.1             | 17    |
| MMSZ5252BS  | K2      | 24                  | 22.80  | 25.20  | 5.2      | 33              | 600             | 0.25     | 0.1             | 18    |
| MMSZ5253BS  | K3      | 25                  | 23.75  | 26.25  | 5.0      | 35              | 600             | 0.25     | 0.1             | 19    |
| MMSZ5254BS  | K4      | 27                  | 25.65  | 28.35  | 5.0      | 41              | 600             | 0.25     | 0.1             | 21    |
| MMSZ5255BS  | K5      | 28                  | 26.60  | 29.40  | 4.5      | 44              | 600             | 0.25     | 0.1             | 21    |
| MMSZ5256BS  | M1      | 30                  | 28.50  | 31.50  | 4.2      | 49              | 600             | 0.25     | 0.1             | 23    |
| MMSZ5257BS  | M2      | 33                  | 31.35  | 34.65  | 3.8      | 58              | 700             | 0.25     | 0.1             | 25    |
| MMSZ5258BS  | M3      | 36                  | 34.20  | 37.80  | 3.4      | 70              | 700             | 0.25     | 0.1             | 27    |
| MMSZ5259BS  | M4      | 39                  | 37.05  | 40.95  | 3.2      | 80              | 800             | 0.25     | 0.1             | 30    |

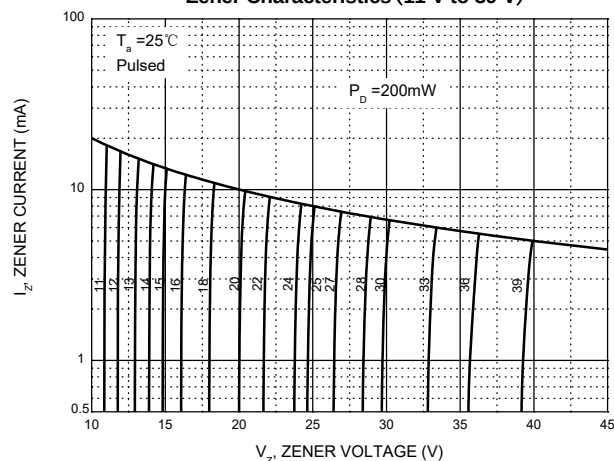
## Typical Characteristics

Notes: Our company currently provide 3.0V-39V products only

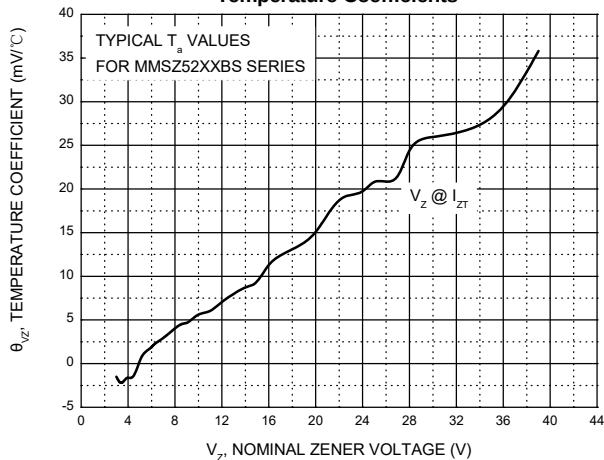
Zener Characteristics ( $V_z$  Up to 10 V)



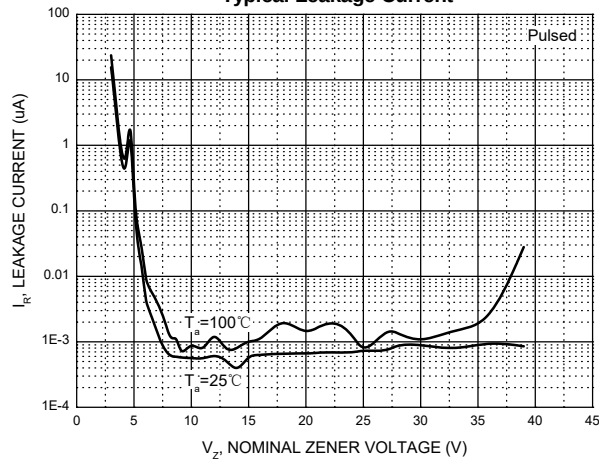
Zener Characteristics (11 V to 39 V)



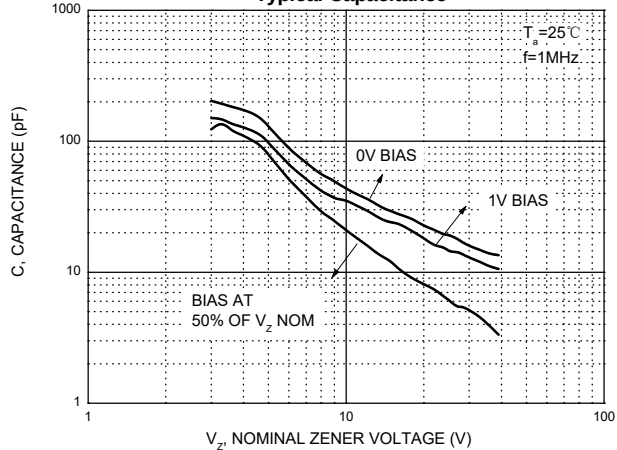
Temperature Coefficients



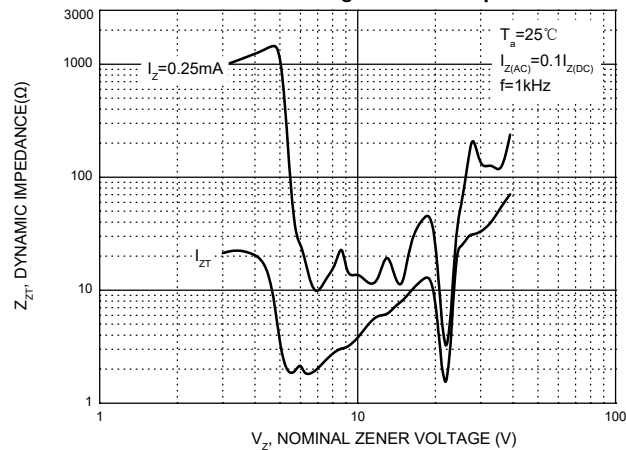
Typical Leakage Current



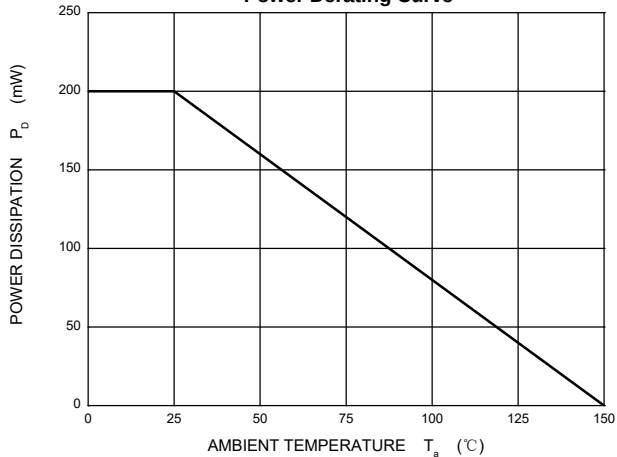
Typical Capacitance



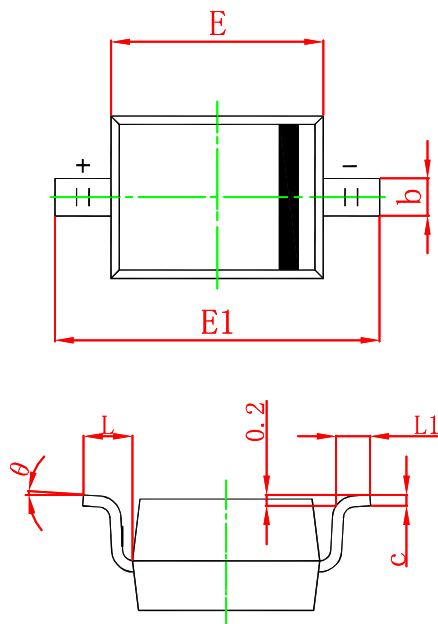
Effect of Zener Voltage on Zener Impedance



Power Derating Curve

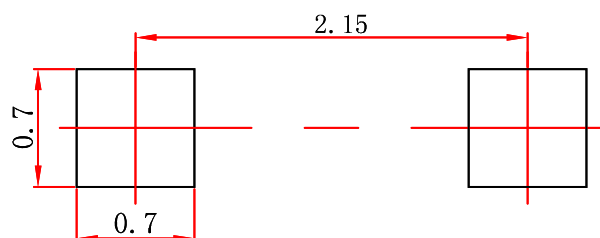


## SOD-323 Package Outline Dimensions



| Symbol | Dimensions in Millimeters |       | Dimensions in Inches |       |
|--------|---------------------------|-------|----------------------|-------|
|        | Min                       | Max   | Min                  | Max   |
| A      |                           | 1.100 |                      | 0.043 |
| A1     | 0.000                     | 0.100 | 0.000                | 0.004 |
| A2     | 0.800                     | 1.000 | 0.031                | 0.039 |
| b      | 0.250                     | 0.350 | 0.010                | 0.014 |
| c      | 0.080                     | 0.150 | 0.003                | 0.006 |
| D      | 1.200                     | 1.400 | 0.047                | 0.055 |
| E      | 1.600                     | 1.800 | 0.063                | 0.071 |
| E1     | 2.500                     | 2.750 | 0.098                | 0.108 |
| L      | 0.475 REF                 |       | 0.019 REF            |       |
| L1     | 0.250                     | 0.400 | 0.010                | 0.016 |
| θ      | 0°                        | 8°    | 0°                   | 8°    |

## SOD-323 Suggested Pad Layout



### Note:

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