



## Zener Diode

### ■ Features

- PD 500mW
- Vz 2.4V-75V

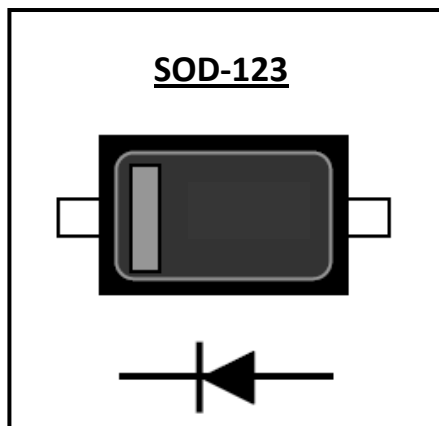
### ■ Applications

- Stabilizing Voltage

### ■ Marking

- see table2

### ■ External and internal structure



### ■ Limiting Values (Absolute Maximum Rating)

| Item                        | Symbol | Unit | Conditions | Limit       |
|-----------------------------|--------|------|------------|-------------|
| Power Dissipation           | PD     | mW   |            | 500         |
| Storage Temperature Range   | TSTG   | °C   |            | -65 to +150 |
| Operating Temperature Range | TOPR   | °C   |            | -65 to +150 |

### ■ Electrical Characteristics (Ta=25°C Unless otherwise specified)

| Item            | Symbol | Unit | Conditions | Min | Max |
|-----------------|--------|------|------------|-----|-----|
| Forward Voltage | VF     | V    | IF=10mA    |     | 0.9 |


**■ Electrical Characteristics ( $T_A=25^\circ\text{C}$  unless otherwise noted)**

| Part Number | Marking | $V_Z$ at $I_{ZT}$ |     |       | $I_{ZT}$<br>mA | $Z_{ZT}$ at $I_{ZT}$ | $I_{ZK}$<br>mA | $Z_{ZK}$ at $I_{ZK}$ | IR @ $V_R$<br>uA | $V_R$<br>V |
|-------------|---------|-------------------|-----|-------|----------------|----------------------|----------------|----------------------|------------------|------------|
|             |         | Min               | Nom | Max   |                | $\Omega$<br>Max      |                | $\Omega$<br>Max      |                  |            |
| MMSZ5221BW  | 2V4B    | 2.35              | 2.4 | 2.45  | 5              | 100                  | 1              | 564                  | 45               | 1          |
| MMSZ5223BW  | 2V7B    | 2.65              | 2.7 | 2.75  | 5              | 100                  | 1              | 564                  | 18               | 1          |
| MMSZ5225BW  | 3V0B    | 2.94              | 3   | 3.06  | 5              | 100                  | 1              | 564                  | 9                | 1          |
| MMSZ5226BW  | 3V3B    | 3.23              | 3.3 | 3.37  | 5              | 95                   | 1              | 564                  | 4.5              | 1          |
| MMSZ5227BW  | 3V6B    | 3.53              | 3.6 | 3.67  | 5              | 90                   | 1              | 564                  | 4.5              | 1          |
| MMSZ5228BW  | 3V9B    | 3.82              | 3.9 | 3.98  | 5              | 90                   | 1              | 564                  | 2.7              | 1          |
| MMSZ5229BW  | 4V3B    | 4.21              | 4.3 | 4.39  | 5              | 90                   | 1              | 564                  | 2.7              | 1          |
| MMSZ5230BW  | 4V7B    | 4.61              | 4.7 | 4.79  | 5              | 80                   | 1              | 470                  | 2.7              | 2          |
| MMSZ5231BW  | 5V1B    | 5                 | 5.1 | 5.2   | 5              | 60                   | 1              | 451                  | 1.8              | 2          |
| MMSZ5232BW  | 5V6B    | 5.49              | 5.6 | 5.71  | 5              | 40                   | 1              | 376                  | 0.9              | 2          |
| MMSZ5234BW  | 6V2B    | 6.08              | 6.2 | 6.32  | 5              | 10                   | 1              | 141                  | 2.7              | 4          |
| MMSZ5235BW  | 6V8B    | 6.66              | 6.8 | 6.94  | 5              | 15                   | 1              | 75                   | 1.8              | 4          |
| MMSZ5236BW  | 7V5B    | 7.35              | 7.5 | 7.65  | 5              | 15                   | 1              | 75                   | 0.9              | 5          |
| MMSZ5237BW  | 8V2B    | 8.04              | 8.2 | 8.36  | 5              | 15                   | 1              | 75                   | 0.63             | 5          |
| MMSZ5239BW  | 9V1B    | 8.92              | 9.1 | 9.28  | 5              | 15                   | 1              | 94                   | 0.45             | 6          |
| MMSZ5240BW  | 10VB    | 9.8               | 10  | 10.2  | 5              | 20                   | 1              | 141                  | 0.18             | 7          |
| MMSZ5241BW  | 11VB    | 10.78             | 11  | 11.22 | 5              | 20                   | 1              | 141                  | 0.09             | 8          |
| MMSZ5242BW  | 12VB    | 11.76             | 12  | 12.24 | 5              | 25                   | 1              | 141                  | 0.09             | 8          |
| MMSZ5243BW  | 13VB    | 12.74             | 13  | 13.26 | 5              | 30                   | 1              | 160                  | 0.09             | 8          |
| MMSZ5245BW  | 15VB    | 14.7              | 15  | 15.3  | 5              | 30                   | 1              | 188                  | 0.045            | 10.5       |
| MMSZ5246BW  | 16VB    | 15.68             | 16  | 16.32 | 5              | 40                   | 1              | 188                  | 0.045            | 11.2       |
| MMSZ5248BW  | 18VB    | 17.64             | 18  | 18.36 | 5              | 45                   | 1              | 212                  | 0.045            | 12.6       |
| MMSZ5250BW  | 20VB    | 19.6              | 20  | 20.4  | 5              | 55                   | 1              | 212                  | 0.045            | 14         |
| MMSZ5251BW  | 22VB    | 21.56             | 22  | 22.44 | 5              | 55                   | 1              | 235                  | 0.045            | 15.4       |
| MMSZ5252BW  | 24VB    | 23.52             | 24  | 24.48 | 5              | 70                   | 1              | 235                  | 0.045            | 16.8       |
| MMSZ5254BW  | 27VB    | 26.46             | 27  | 27.54 | 2              | 80                   | 0.5            | 282                  | 0.045            | 18.9       |
| MMSZ5256BW  | 30VB    | 29.4              | 30  | 30.6  | 2              | 80                   | 0.5            | 282                  | 0.045            | 21         |
| MMSZ5257BW  | 33VB    | 32.34             | 33  | 33.66 | 2              | 80                   | 0.5            | 306                  | 0.045            | 23         |
| MMSZ5258BW  | 36VB    | 35.28             | 36  | 36.72 | 2              | 90                   | 0.5            | 329                  | 0.045            | 25.2       |
| MMSZ5259BW  | 39VB    | 38.22             | 39  | 39.78 | 2              | 130                  | 0.5            | 329                  | 0.045            | 27.3       |
| MMSZ5260BW  | 43VB    | 42.14             | 43  | 43.86 | 2              | 150                  | 0.5            | 353                  | 0.045            | 30.1       |
| MMSZ5261BW  | 47VB    | 46.06             | 47  | 47.94 | 2              | 170                  | 0.5            | 353                  | 0.045            | 33         |
| MMSZ5262BW  | 51VB    | 49.98             | 51  | 52.02 | 2              | 180                  | 0.5            | 376                  | 0.045            | 35.7       |
| MMSZ5263BW  | 56VB    | 54.88             | 56  | 57.12 | 2              | 200                  | 0.5            | 400                  | 0.045            | 39.2       |
| MMSZ5265BW  | 62VB    | 60.76             | 62  | 63.24 | 2              | 215                  | 0.5            | 423                  | 0.045            | 43.4       |
| MMSZ5266BW  | 68VB    | 66.64             | 68  | 69.36 | 2              | 240                  | 0.5            | 447                  | 0.045            | 47.6       |
| MMSZ5267BW  | 75VB    | 73.5              | 75  | 76.5  | 2              | 255                  | 0.5            | 470                  | 0.045            | 52.5       |

**Notes:**

1. The Zener Voltage ( $V_Z$ ) is tested under pulse condition of 10mS.
2. The device numbers listed have a standard tolerance on the nominal zener voltage of  $\pm 2\%$ .
3. For detailed information on price, availability and delivery of nominal zener voltages between the voltages shown and tighter voltage tolerances, contact your nearest Tak Cheong Electronics representative.
4. The zener impedance is derived from the 60-cycle ac voltage, which results when an ac current having an rms value equal to 10% of the dc zener current ( $I_{ZT}$  or  $I_{ZK}$ ) is superimposed to  $I_{ZT}$  or  $I_{ZK}$ .



## ■ Characteristics(Typical)

Fig.1 Typical Forward Voltage

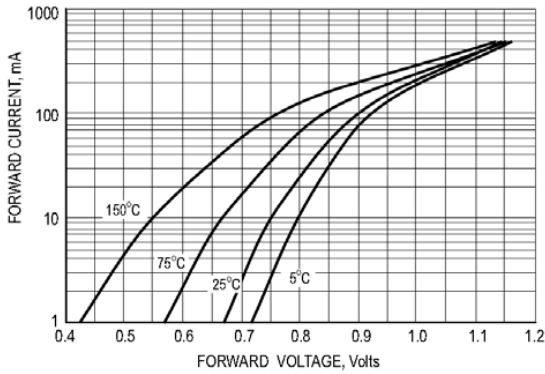


Fig.2 Effect of Zener Voltage on Zener Impedance

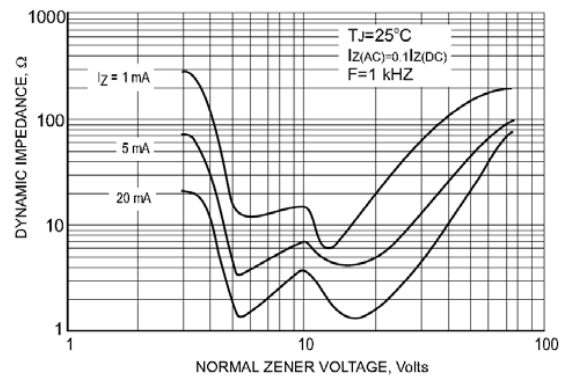


Fig.3 Power Dissipation VS Ambient Temp

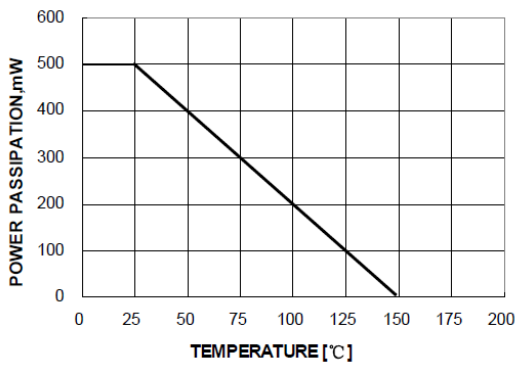


Fig.4 Typical Capacitance

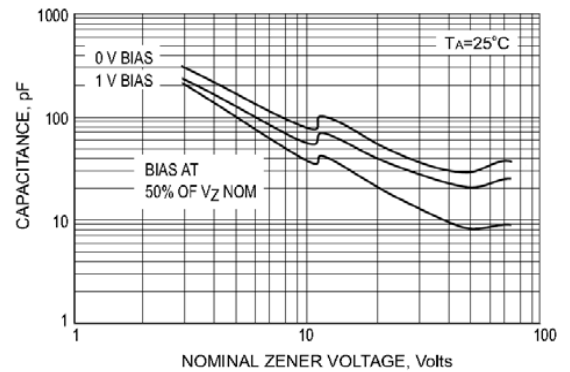


Fig.5 Zener Breakdown Characteristics

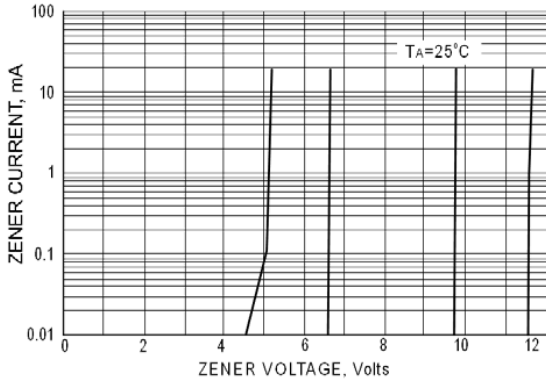


Fig.6 Zener Breakdown Characteristics

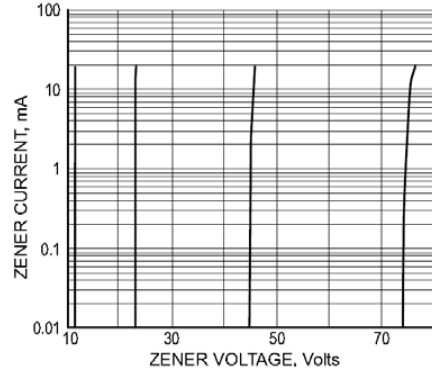
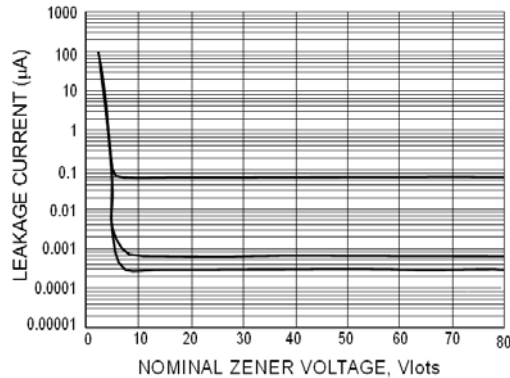
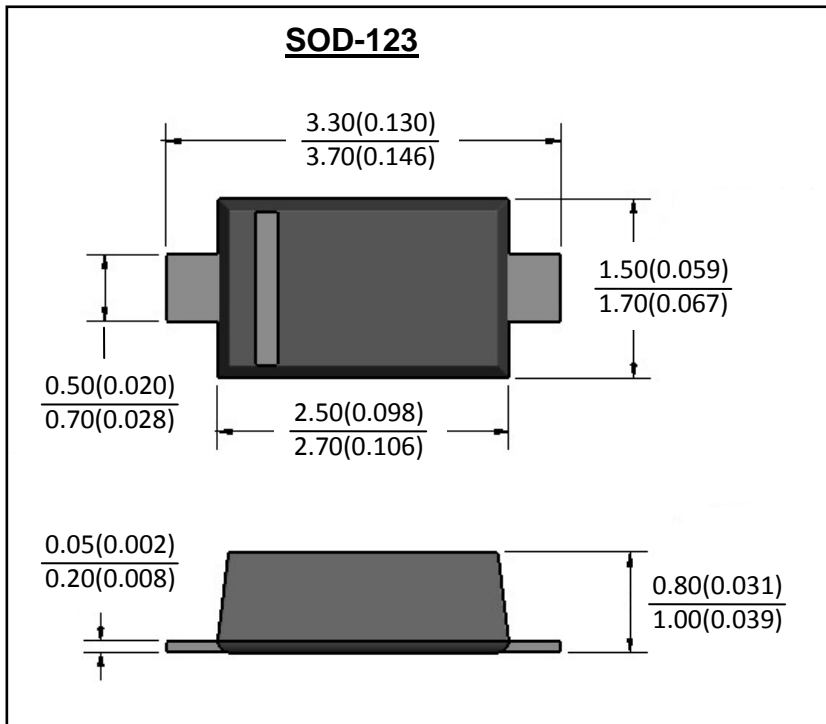


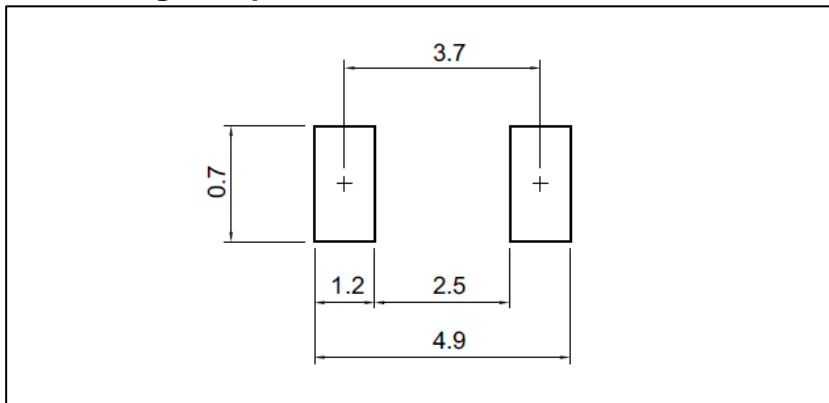
Fig.7 Typical Leakage Current



■ Plastic surface mounted package



■ Soldering Footprint



■ Packing Information

| Device                     | Package | Shipping       |
|----------------------------|---------|----------------|
| MMSZ5221BW THRU MMSZ5267BW | SOD-123 | 3000/Tape&Reel |