



**THE DATASHEET OF  
MMSZ5226B-TP**



## Features

- Zener Voltages from 2.4V - 75V
- $V_Z$  – Tolerance  $\pm 5\%$
- Planar Die Construction
- ESD Rating of 16KV per Human Body Model
- Halogen Free. "Green" Device (Note 1)
- Moisture Sensitivity Level 1
- Epoxy Meets UL 94 V-0 Flammability Rating
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

## Maximum Ratings

- Operating Junction Temperature Range:  $-65^{\circ}\text{C}$  to  $+150^{\circ}\text{C}$
- Storage Temperature Range:  $-65^{\circ}\text{C}$  to  $+150^{\circ}\text{C}$
- Thermal Resistance :  $340^{\circ}\text{C}/\text{W}$  Junction to Ambient(Note 2)

| Parameter               | Symbol | Rating | Conditions        |
|-------------------------|--------|--------|-------------------|
| Power Dissipation       | $P_D$  | 500mW  | Note 3            |
| Maximum Forward Voltage | $V_F$  | 0.9V   | $I_F=10\text{mA}$ |

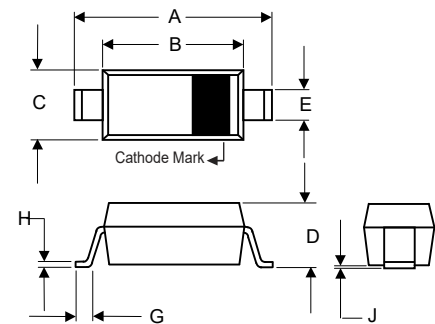
Note: 1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.

Note: 2. On FR - 4 Board With Minimum Recommended Solder Pad Layout

Note: 3. Mounted on 5.0mm<sup>2</sup>(0.013mm Thick) Land Areas.

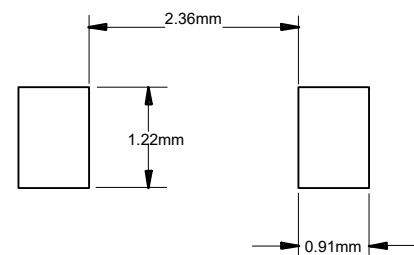
# 500 mW Zener Diode 2.4 to 75 Volts

## SOD-123



| DIM | INCHES |       | MM   |      | NOTE |
|-----|--------|-------|------|------|------|
|     | MIN    | MAX   | MIN  | MAX  |      |
| A   | 0.140  | 0.152 | 3.55 | 3.85 |      |
| B   | 0.100  | 0.112 | 2.55 | 2.85 |      |
| C   | 0.055  | 0.071 | 1.40 | 1.80 |      |
| D   | ----   | 0.053 | ---- | 1.35 |      |
| E   | 0.018  | 0.026 | 0.45 | 0.65 |      |
| G   | 0.006  | ----  | 0.15 | ---- |      |
| H   | ----   | 0.010 | ---- | 0.25 |      |
| J   | ----   | 0.004 | ---- | 0.10 |      |

## SUGGESTED SOLDER PAD LAYOUT



**Electrical Characteristics @ 25°C Unless Otherwise Specified**

| MCC<br>Part Number | Nominal Zener Voltage <sup>(4,5)</sup> |          | Maximum Zener Impedance <sup>(6)</sup> |                   |          | Maximum Reverse Leakage<br>Current |       | Maximum Zener<br>Voltage Temp | Marking Code |
|--------------------|--|----------|--|-------------------|----------|------------------------------------|-------|-------------------------------|--------------|
|                    | $V_Z @ I_{ZT}$                         | $I_{ZT}$ | $Z_{ZT} @ I_{ZT}$                      | $Z_{ZK} @ I_{ZK}$ | $I_{ZK}$ | $I_R$                              | $V_R$ |                               |              |
|                    | V                                      | mA       | $\Omega$                               | $\Omega$          | mA       | $\mu A$                            | V     | %/°C                          |              |
| MMSZ5221B          | 2.4                                    | 20       | 30                                     | 1200              | 0.25     | 100                                | 1.0   | -0.085                        | C1           |
| MMSZ5222B          | 2.5                                    | 20       | 30                                     | 1250              | 0.25     | 100                                | 1.0   | -0.085                        | C2           |
| MMSZ5223B          | 2.7                                    | 20       | 30                                     | 1300              | 0.25     | 75                                 | 1.0   | -0.080                        | C3           |
| MMSZ5225B          | 3.0                                    | 20       | 29                                     | 1600              | 0.25     | 50                                 | 1.0   | -0.075                        | C5           |
| MMSZ5226B          | 3.3                                    | 20       | 28                                     | 1600              | 0.25     | 25                                 | 1.0   | -0.070                        | G1           |
| MMSZ5227B          | 3.6                                    | 20       | 24                                     | 1700              | 0.25     | 15                                 | 1.0   | -0.065                        | G2           |
| MMSZ5228B          | 3.9                                    | 20       | 23                                     | 1900              | 0.25     | 10                                 | 1.0   | -0.060                        | G3           |
| MMSZ5229B          | 4.3                                    | 20       | 22                                     | 2000              | 0.25     | 5.0                                | 1.0   | $\pm 0.055$                   | G4           |
| MMSZ5230B          | 4.7                                    | 20       | 19                                     | 1900              | 0.25     | 5.0                                | 2.0   | $\pm 0.030$                   | G5           |
| MMSZ5231B          | 5.1                                    | 20       | 17                                     | 1600              | 0.25     | 5.0                                | 2.0   | $\pm 0.030$                   | E1           |
| MMSZ5232B          | 5.6                                    | 20       | 11                                     | 1600              | 0.25     | 5.0                                | 3.0   | +0.038                        | E2           |
| MMSZ5233B          | 6.0                                    | 20       | 7.0                                    | 1600              | 0.25     | 5.0                                | 3.5   | +0.040                        | E3           |
| MMSZ5234B          | 6.2                                    | 20       | 7.0                                    | 1000              | 0.25     | 5.0                                | 4.0   | +0.045                        | E4           |
| MMSZ5235B          | 6.8                                    | 20       | 5.0                                    | 750               | 0.25     | 3.0                                | 5.0   | +0.050                        | E5           |
| MMSZ5236B          | 7.5                                    | 20       | 6.0                                    | 500               | 0.25     | 3.0                                | 6.0   | +0.058                        | F1           |
| MMSZ5237B          | 8.2                                    | 20       | 8.0                                    | 500               | 0.25     | 3.0                                | 6.5   | +0.062                        | F2           |
| MMSZ5238B          | 8.7                                    | 20       | 8.0                                    | 600               | 0.25     | 3.0                                | 6.5   | +0.065                        | F3           |
| MMSZ5239B          | 9.1                                    | 20       | 10                                     | 600               | 0.25     | 3.0                                | 7.0   | +0.068                        | F4           |
| MMSZ5240B          | 10                                     | 20       | 17                                     | 600               | 0.25     | 3.0                                | 8.0   | +0.075                        | F5           |
| MMSZ5241B          | 11                                     | 20       | 22                                     | 600               | 0.25     | 2.0                                | 8.4   | +0.076                        | H1           |
| MMSZ5242B          | 12                                     | 20       | 30                                     | 600               | 0.25     | 1.0                                | 9.1   | +0.077                        | H2           |
| MMSZ5243B          | 13                                     | 9.5      | 13                                     | 600               | 0.25     | 0.5                                | 9.9   | +0.079                        | H3           |
| MMSZ5244B          | 14                                     | 9.0      | 15                                     | 600               | 0.25     | 0.1                                | 10.5  | +0.081                        | H4           |
| MMSZ5245B          | 15                                     | 8.5      | 16                                     | 600               | 0.25     | 0.1                                | 11    | +0.082                        | H5           |
| MMSZ5246B          | 16                                     | 7.8      | 17                                     | 600               | 0.25     | 0.1                                | 12    | +0.083                        | J1           |
| MMSZ5248B          | 18                                     | 7.0      | 21                                     | 600               | 0.25     | 0.1                                | 14    | +0.085                        | J3           |
| MMSZ5250B          | 20                                     | 6.2      | 25                                     | 600               | 0.25     | 0.1                                | 15    | +0.086                        | J5           |
| MMSZ5251B          | 22                                     | 5.6      | 29                                     | 600               | 0.25     | 0.1                                | 17    | +0.087                        | K1           |
| MMSZ5252B          | 24                                     | 5.2      | 33                                     | 600               | 0.25     | 0.1                                | 18    | +0.088                        | K2           |
| MMSZ5254B          | 27                                     | 4.6      | 41                                     | 600               | 0.25     | 0.1                                | 21    | +0.090                        | K4           |
| MMSZ5255B          | 28                                     | 4.5      | 44                                     | 600               | 0.25     | 0.1                                | 21    | +0.091                        | K5           |
| MMSZ5256B          | 30                                     | 4.2      | 49                                     | 600               | 0.25     | 0.1                                | 23    | +0.091                        | M1           |
| MMSZ5257B          | 33                                     | 3.8      | 58                                     | 700               | 0.25     | 0.1                                | 25    | +0.092                        | M2           |
| MMSZ5258B          | 36                                     | 3.4      | 70                                     | 700               | 0.25     | 0.1                                | 27    | +0.093                        | M3           |
| MMSZ5259B          | 39                                     | 3.2      | 80                                     | 800               | 0.25     | 0.1                                | 30    | +0.094                        | M4           |
| MMSZ5260B          | 43                                     | 3.0      | 93                                     | 900               | 0.25     | 0.1                                | 33    | +0.095                        | M5           |
| MMSZ5261B          | 47                                     | 2.7      | 105                                    | 1000              | 0.25     | 0.1                                | 36    | +0.095                        | N1           |
| MMSZ5262B          | 51                                     | 2.5      | 125                                    | 1100              | 0.25     | 0.1                                | 39    | +0.096                        | N2           |
| MMSZ5263B          | 56                                     | 2.2      | 150                                    | 1300              | 0.25     | 0.1                                | 43    | +0.097                        | M8           |
| MMSZ5265B          | 62                                     | 2.0      | 185                                    | 1400              | 0.25     | 0.1                                | 47    | +0.098                        | N5           |
| MMSZ5267B          | 75                                     | 1.7      | 270                                    | 1700              | 0.25     | 0.1                                | 56    | +0.099                        | P2           |

NOTE:

Note: 4 Standard Zener Voltage Tolerance is  $\pm 5\%$  With a "B" suffix (e.g.: MMSZ5225B), Suffix "C" is  $\pm 2\%$  Tolerance

Note: 5 Zener Voltage ( $V_Z$ ) Measurement. Guarantees the Zener Voltage When Measured at 90 Seconds While Maintaining the Lead Temperature ( $T_L$ ) at 25°C, From the Diode Body.

Note: 6 Zener Impedance ( $Z_Z$ ) Derivation. 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 on  $I_{ZT}$  or  $I_{ZK}$ .

**Electrical Characteristics @ 25°C Unless Otherwise Specified**

| MCC<br>Part Number | Nominal Zener Voltage <sup>(4,5)</sup> |          | Maximum Zener Impedance <sup>(6)</sup> |                   |          | Maximum Reverse Leakage Current |       | Maximum Zener Voltage Temp | Marking Code |
|--------------------|--|----------|--|-------------------|----------|---------------------------------|-------|----------------------------|--------------|
|                    | $V_Z @ I_{ZT}$                         | $I_{ZT}$ | $Z_{ZT} @ I_{ZT}$                      | $Z_{Zk} @ I_{Zk}$ | $I_{Zk}$ | $I_R$                           | $V_R$ |                            |              |
|                    | V                                      | mA       | $\Omega$                               | $\Omega$          | mA       | $\mu A$                         | V     | %/°C                       |              |
| MMSZ5229C          | 4.3                                    | 20       | 22                                     | 2000              | 0.25     | 5.0                             | 1.0   | ±0.055                     | 2G4          |
| MMSZ5230C          | 4.7                                    | 20       | 19                                     | 1900              | 0.25     | 5.0                             | 2.0   | ±0.030                     | 2G5          |
| MMSZ5231C          | 5.1                                    | 20       | 17                                     | 1600              | 0.25     | 5.0                             | 2.0   | ±0.030                     | 2E1          |
| MMSZ5232C          | 5.6                                    | 20       | 11                                     | 1600              | 0.25     | 5.0                             | 3.0   | +0.038                     | 2E2          |
| MMSZ5233C          | 6.0                                    | 20       | 7.0                                    | 1600              | 0.25     | 5.0                             | 3.5   | +0.040                     | 2E3          |
| MMSZ5234C          | 6.2                                    | 20       | 7.0                                    | 1000              | 0.25     | 5.0                             | 4.0   | +0.045                     | 2E4          |
| MMSZ5235C          | 6.8                                    | 20       | 5.0                                    | 750               | 0.25     | 3.0                             | 5.0   | +0.050                     | 2E5          |
| MMSZ5236C          | 7.5                                    | 20       | 6.0                                    | 500               | 0.25     | 3.0                             | 6.0   | +0.058                     | 2F1          |
| MMSZ5237C          | 8.2                                    | 20       | 8.0                                    | 500               | 0.25     | 3.0                             | 6.0   | +0.062                     | 2F2          |
| MMSZ5238C          | 8.7                                    | 20       | 8.0                                    | 600               | 0.25     | 3.0                             | 6.5   | +0.065                     | 2F3          |
| MMSZ5239C          | 9.1                                    | 20       | 10                                     | 600               | 0.25     | 3.0                             | 6.5   | +0.068                     | 2F4          |
| MMSZ5240C          | 10                                     | 20       | 17                                     | 600               | 0.25     | 3.0                             | 8.0   | +0.075                     | 2F5          |
| MMSZ5241C          | 11                                     | 20       | 22                                     | 600               | 0.25     | 3.0                             | 8.4   | +0.076                     | 2H1          |
| MMSZ5242C          | 12                                     | 20       | 30                                     | 600               | 0.25     | 2.0                             | 9.1   | +0.077                     | 2H2          |
| MMSZ5243C          | 13                                     | 9.5      | 13                                     | 600               | 0.25     | 1.0                             | 9.9   | +0.079                     | 2H3          |
| MMSZ5244C          | 14                                     | 9.0      | 15                                     | 600               | 0.25     | 0.5                             | 10.5  | +0.081                     | 2H4          |
| MMSZ5245C          | 15                                     | 8.5      | 16                                     | 600               | 0.25     | 0.5                             | 11    | +0.082                     | H5           |
| MMSZ5246C          | 16                                     | 7.8      | 17                                     | 600               | 0.25     | 0.1                             | 12    | +0.083                     | 2J1          |
| MMSZ5248C          | 18                                     | 7.0      | 21                                     | 600               | 0.25     | 0.1                             | 14    | +0.085                     | 2J3          |
| MMSZ5250C          | 20                                     | 6.2      | 25                                     | 600               | 0.25     | 0.1                             | 15    | +0.086                     | 2J5          |
| MMSZ5251C          | 22                                     | 5.6      | 29                                     | 600               | 0.25     | 0.1                             | 17    | +0.087                     | 2K1          |
| MMSZ5252C          | 24                                     | 5.2      | 33                                     | 600               | 0.25     | 0.1                             | 18    | +0.088                     | 2K2          |
| MMSZ5254C          | 27                                     | 4.6      | 41                                     | 600               | 0.25     | 0.1                             | 21    | +0.090                     | 2K4          |
| MMSZ5255C          | 28                                     | 4.5      | 44                                     | 600               | 0.25     | 0.1                             | 21    | +0.091                     | 2K5          |
| MMSZ5256C          | 30                                     | 4.2      | 49                                     | 600               | 0.25     | 0.1                             | 23    | +0.091                     | 2M1          |
| MMSZ5257C          | 33                                     | 3.8      | 58                                     | 700               | 0.25     | 0.1                             | 25    | +0.092                     | 2M2          |
| MMSZ5258C          | 36                                     | 3.4      | 70                                     | 700               | 0.25     | 0.1                             | 27    | +0.093                     | M3           |
| MMSZ5259C          | 39                                     | 3.2      | 80                                     | 800               | 0.25     | 0.1                             | 30    | +0.094                     | 2M4          |
| MMSZ5260C          | 43                                     | 3.0      | 93                                     | 900               | 0.25     | 0.1                             | 33    | +0.095                     | M5           |
| MMSZ5261C          | 47                                     | 2.7      | 105                                    | 1000              | 0.25     | 0.1                             | 36    | +0.095                     | N1           |

NOTE:

Note: 4 Standard Zener Voltage Tolerance is ±5% With a "B" suffix (e.g.: MMSZ5225B), Suffix "C" is ±2% Tolerance

Note: 5 Zener Voltage ( $V_Z$ ) Measurement. Guarantees the Zener Voltage When Measured at 90 Seconds While Maintaining the Lead Temperature ( $T_L$ ) at 25°C, From the Diode Body.

Note: 6 Zener Impedance ( $Z_Z$ ) Derivation. 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 on  $I_{ZT}$  or  $I_{Zk}$ .

**Curve Characteristics**

Fig. 1 - Power Derating Curve

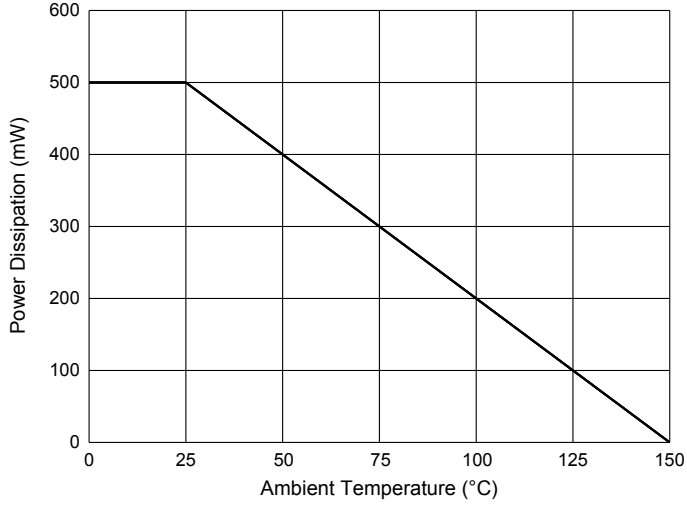


Fig. 2 - Typical Zener Breakdown Characteristics

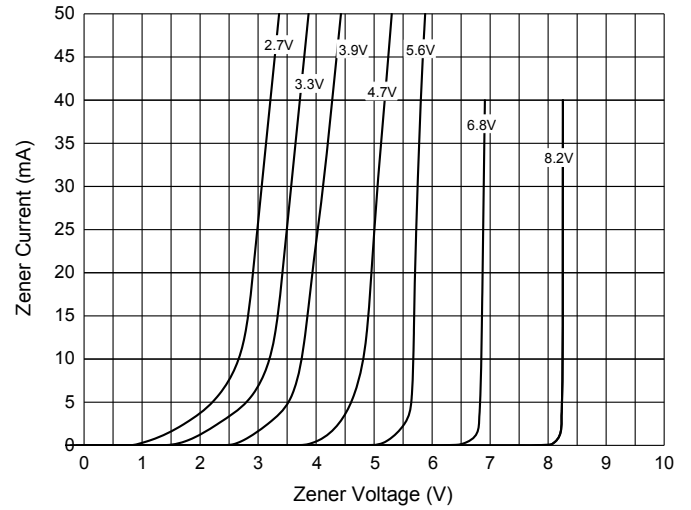


Fig. 3 - Typical Zener Breakdown Characteristics

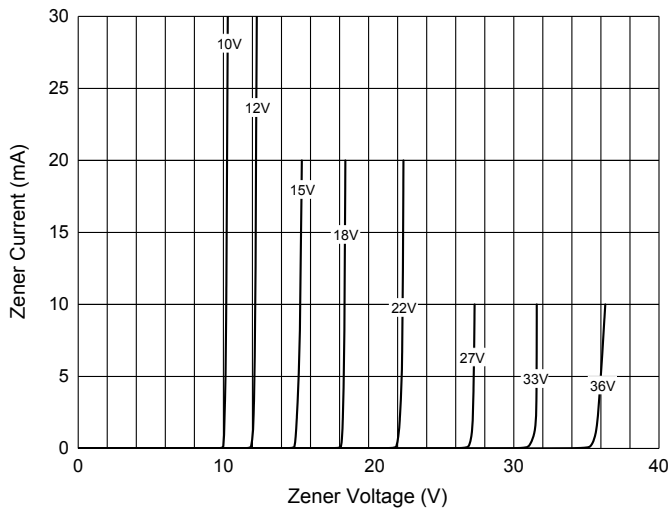
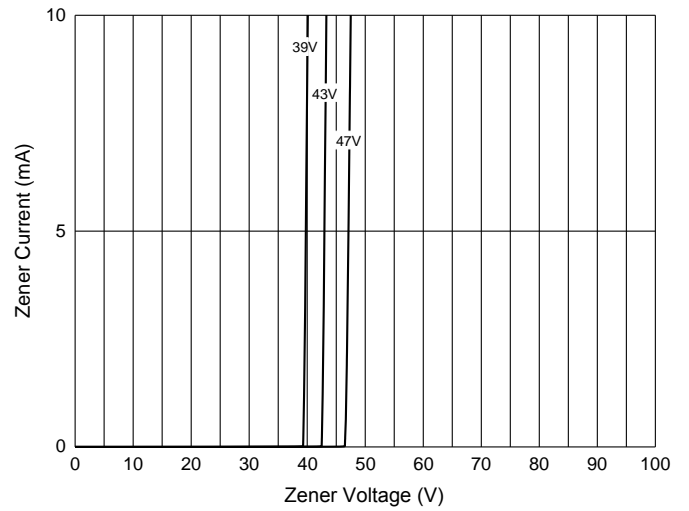


Fig. 4 - Typical Zener Breakdown Characteristics



## Ordering Information

| Device          | Packing               |
|-----------------|-----------------------|
| Part Number-TP  | Tape&Reel:3Kpcs/Reel  |
| Part Number-13P | Tape&Reel:10Kpcs/Reel |

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