

# MMSZ5221B - MMSZ5268B

$V_Z$  : 2.4 to 82 V

$P_D$  : 500 mW

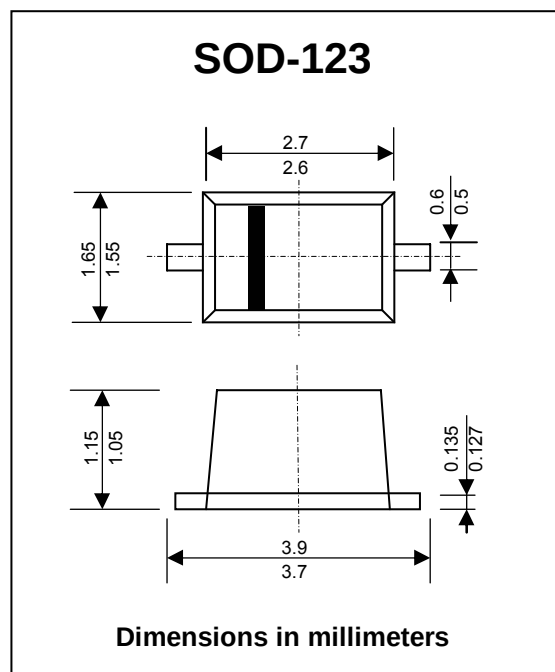
## FEATURES :

- \* Total Power Dissipation 500 mW on FR-4 or FR-5 Board
- \* Wide Zener Reverse Voltage Range 2.4 V to 82 V
- \* Package Designed for Optimal Automated Board Assembly
- \* Small Package Size for High Density Applications
- \* General Purpose, Medium Current
- \* Pb / RoHS Free

## MECHANICAL DATA :

- \* Case : SOD-123
- \* Weight : 0.01 gram (approximately)

## ZENER DIODES



## Maximum Ratings and Thermal Characteristics

Rating at 25 °C ambient temperature unless otherwise specific.

| Parameter                                                          | Symbol          | Value              | Unit  |
|--------------------------------------------------------------------|-----------------|--------------------|-------|
| Zener Current see Table "Characteristics"                          |                 |                    |       |
| Total Power Dissipation on FR-5 Board, at $T_L = 75^\circ\text{C}$ | $P_D$           | 500 <sup>(1)</sup> | mW    |
| Derated above 75°C                                                 |                 | 6.7                | mW/°C |
| Maximum Forward Voltage at $I_F = 10\text{ mA}$                    | $V_F$           | 0.9                | V     |
| Thermal Resistance Junction to Ambient                             | $R_{\theta JA}$ | 340                | °C/W  |
| Thermal Resistance Junction to Lead                                | $R_{\theta JL}$ | 150                | °C/W  |
| Junction Temperature Range                                         | $T_J$           | -55 to + 150       | °C    |
| Storage Temperature Range                                          | $T_{STG}$       | -55 to + 150       | °C    |

### Note :

(1) FR-5 = 3.5 x 1.5 inches, using the minimum recommended footprint

# ELECTRICAL CHARACTERISTICS (Ta=25 °C unless otherwise noted )

| Type No.   | Marking | Zener Voltage <sup>(1,2)</sup>       |      |       | Test Current | Maximum Zener Impedance <sup>(3)</sup> |                                   | Test Current | Maximum Reverse Leakage Current   |                 |                                 |
|------------|---------|--------------------------------------|------|-------|--------------|----------------------------------------|-----------------------------------|--------------|-----------------------------------|-----------------|---------------------------------|
|            |         | V <sub>Z</sub> @ I <sub>ZT</sub> (V) |      |       |              | I <sub>ZT</sub>                        | Z <sub>ZT</sub> @ I <sub>ZT</sub> |              | Z <sub>ZT</sub> @ I <sub>ZK</sub> | I <sub>ZK</sub> | I <sub>R</sub> @ V <sub>R</sub> |
|            |         | Min.                                 | Nom. | Max.  |              | (mA)                                   | (Ω)                               |              | (Ω)                               | (mA)            | (μA)                            |
| MMSZ 5221B | A4      | 2.28                                 | 2.4  | 2.52  | 20           | 30                                     | 1200                              | 0.25         | 100                               | 1.0             |                                 |
| MMSZ 5222B | AB      | 2.38                                 | 2.5  | 2.63  | 20           | 30                                     | 1250                              | 0.25         | 100                               | 1.0             |                                 |
| MMSZ 5223B | B4      | 2.57                                 | 2.7  | 2.84  | 20           | 30                                     | 1300                              | 0.25         | 75                                | 1.0             |                                 |
| MMSZ 5224B | AC      | 2.66                                 | 2.8  | 2.94  | 20           | 30                                     | 1400                              | 0.25         | 75                                | 1.0             |                                 |
| MMSZ 5225B | C4      | 2.85                                 | 3.0  | 3.15  | 20           | 29                                     | 1600                              | 0.25         | 50                                | 1.0             |                                 |
| MMSZ 5226B | D4      | 3.14                                 | 3.3  | 3.47  | 20           | 28                                     | 1600                              | 0.25         | 25                                | 1.0             |                                 |
| MMSZ 5227B | E4      | 3.42                                 | 3.6  | 3.78  | 20           | 24                                     | 1700                              | 0.25         | 15                                | 1.0             |                                 |
| MMSZ 5228B | F4      | 3.71                                 | 3.9  | 4.10  | 20           | 23                                     | 1900                              | 0.25         | 10                                | 1.0             |                                 |
| MMSZ 5229B | H4      | 4.09                                 | 4.3  | 4.52  | 20           | 22                                     | 2000                              | 0.25         | 5                                 | 1.0             |                                 |
| MMSZ 5230B | J4      | 4.47                                 | 4.7  | 4.94  | 20           | 19                                     | 1900                              | 0.25         | 5                                 | 2.0             |                                 |
| MMSZ 5231B | K4      | 4.85                                 | 5.1  | 5.36  | 20           | 17                                     | 1600                              | 0.25         | 5                                 | 2.0             |                                 |
| MMSZ 5232B | M4      | 5.32                                 | 5.6  | 5.88  | 20           | 11                                     | 1600                              | 0.25         | 5                                 | 3.0             |                                 |
| MMSZ 5233B | AD      | 5.70                                 | 6.0  | 6.30  | 20           | 7                                      | 1600                              | 0.25         | 5                                 | 3.5             |                                 |
| MMSZ 5234B | N4      | 5.89                                 | 6.2  | 6.51  | 20           | 7                                      | 1000                              | 0.25         | 5                                 | 4.0             |                                 |
| MMSZ 5235B | P4      | 6.46                                 | 6.8  | 7.14  | 20           | 5                                      | 750                               | 0.25         | 3                                 | 5.0             |                                 |
| MMSZ 5236B | R4      | 7.13                                 | 7.5  | 7.88  | 20           | 6                                      | 500                               | 0.25         | 3                                 | 6.0             |                                 |
| MMSZ 5237B | X4      | 7.79                                 | 8.2  | 8.61  | 20           | 8                                      | 500                               | 0.25         | 3                                 | 6.5             |                                 |
| MMSZ 5238B | AE      | 8.27                                 | 8.7  | 9.14  | 20           | 8                                      | 600                               | 0.25         | 3                                 | 6.5             |                                 |
| MMSZ 5239B | Y4      | 8.65                                 | 9.1  | 9.56  | 20           | 10                                     | 600                               | 0.25         | 3                                 | 7.0             |                                 |
| MMSZ 5240B | Z4      | 9.50                                 | 10   | 10.50 | 20           | 17                                     | 600                               | 0.25         | 3                                 | 8.0             |                                 |
| MMSZ 5241B | A5      | 10.45                                | 11   | 11.50 | 20           | 22                                     | 600                               | 0.25         | 2                                 | 8.4             |                                 |
| MMSZ 5242B | B5      | 11.40                                | 12   | 12.60 | 20           | 30                                     | 600                               | 0.25         | 1                                 | 9.1             |                                 |
| MMSZ 5243B | C5      | 12.35                                | 13   | 13.65 | 9.5          | 13                                     | 600                               | 0.25         | 0.5                               | 9.9             |                                 |
| MMSZ 5244B | AF      | 13.30                                | 14   | 14.70 | 9.0          | 15                                     | 600                               | 0.25         | 0.1                               | 10              |                                 |
| MMSZ 5245B | D5      | 14.25                                | 15   | 15.75 | 8.5          | 16                                     | 600                               | 0.25         | 0.1                               | 11              |                                 |
| MMSZ 5246B | E5      | 15.20                                | 16   | 16.80 | 7.8          | 17                                     | 600                               | 0.25         | 0.1                               | 12              |                                 |
| MMSZ 5247B | AH      | 16.15                                | 17   | 17.85 | 7.4          | 19                                     | 600                               | 0.25         | 0.1                               | 13              |                                 |
| MMSZ 5248B | F5      | 17.10                                | 18   | 18.90 | 7.0          | 21                                     | 600                               | 0.25         | 0.1                               | 14              |                                 |
| MMSZ 5249B | K9      | 18.05                                | 19   | 19.95 | 6.6          | 23                                     | 600                               | 0.25         | 0.1                               | 14              |                                 |
| MMSZ 5250B | H5      | 19.00                                | 20   | 21.00 | 6.2          | 25                                     | 600                               | 0.25         | 0.1                               | 15              |                                 |
| MMSZ 5251B | J5      | 20.90                                | 22   | 23.10 | 5.6          | 29                                     | 600                               | 0.25         | 0.1                               | 17              |                                 |
| MMSZ 5252B | K5      | 22.80                                | 24   | 25.20 | 5.2          | 33                                     | 600                               | 0.25         | 0.1                               | 18              |                                 |
| MMSZ 5253B | M9      | 23.75                                | 25   | 26.25 | 5.0          | 35                                     | 600                               | 0.25         | 0.1                               | 19              |                                 |
| MMSZ 5254B | M5      | 25.65                                | 27   | 28.35 | 4.6          | 41                                     | 600                               | 0.25         | 0.1                               | 21              |                                 |
| MMSZ 5255B | AJ      | 26.60                                | 28   | 29.40 | 4.5          | 44                                     | 600                               | 0.25         | 0.1                               | 21              |                                 |
| MMSZ 5256B | N5      | 28.50                                | 30   | 31.50 | 4.2          | 49                                     | 600                               | 0.25         | 0.1                               | 23              |                                 |
| MMSZ 5257B | P5      | 31.35                                | 33   | 34.65 | 3.8          | 58                                     | 700                               | 0.25         | 0.1                               | 25              |                                 |
| MMSZ 5258B | R5      | 34.20                                | 36   | 37.80 | 3.4          | 70                                     | 700                               | 0.25         | 0.1                               | 27              |                                 |
| MMSZ 5259B | X5      | 37.05                                | 39   | 40.95 | 3.2          | 80                                     | 800                               | 0.25         | 0.1                               | 30              |                                 |
| MMSZ 5260B | Y5      | 40.85                                | 43   | 45.15 | 3.0          | 93                                     | 900                               | 0.25         | 0.1                               | 33              |                                 |
| MMSZ 5261B | Z5      | 44.65                                | 47   | 49.35 | 2.7          | 105                                    | 1000                              | 0.25         | 0.1                               | 36              |                                 |
| MMSZ 5262B | A6      | 48.45                                | 51   | 53.55 | 2.5          | 125                                    | 1100                              | 0.25         | 0.1                               | 39              |                                 |
| MMSZ 5263B | B6      | 53.20                                | 56   | 58.80 | 2.2          | 150                                    | 1300                              | 0.25         | 0.1                               | 43              |                                 |
| MMSZ 5264B | AK      | 57.00                                | 60   | 63.00 | 2.1          | 170                                    | 1400                              | 0.25         | 0.1                               | 46              |                                 |
| MMSZ 5265B | C6      | 58.90                                | 62   | 65.10 | 2.0          | 185                                    | 1400                              | 0.25         | 0.1                               | 47              |                                 |
| MMSZ 5266B | D6      | 64.60                                | 68   | 71.40 | 1.8          | 230                                    | 1600                              | 0.25         | 0.1                               | 52              |                                 |
| MMSZ 5267B | E6      | 71.25                                | 75   | 78.75 | 1.7          | 270                                    | 1700                              | 0.25         | 0.1                               | 56              |                                 |
| MMSZ 5268B | F6      | 77.90                                | 82   | 86.10 | 1.5          | 330                                    | 2000                              | 0.25         | 0.1                               | 62              |                                 |

## Notes :

- The type numbers shown have a standard tolerance of  $\pm 5\%$  on the nominal Zener voltage.
- Nominal Zener voltage is measured with the device junction in thermal equilibrium at  $T_L = 30^\circ\text{C} \pm 1^\circ\text{C}$
- $Z_{ZT}$  and  $Z_{ZK}$  are measured by device drop across the device by the AC current apply  
The specified limits are for  $I_{Z(AC)} = 0.1 I_{Z(DC)}$  with the AC frequency 1 KHz