

# ZMM5221B - ZMM5267B

## ZENER DIODES

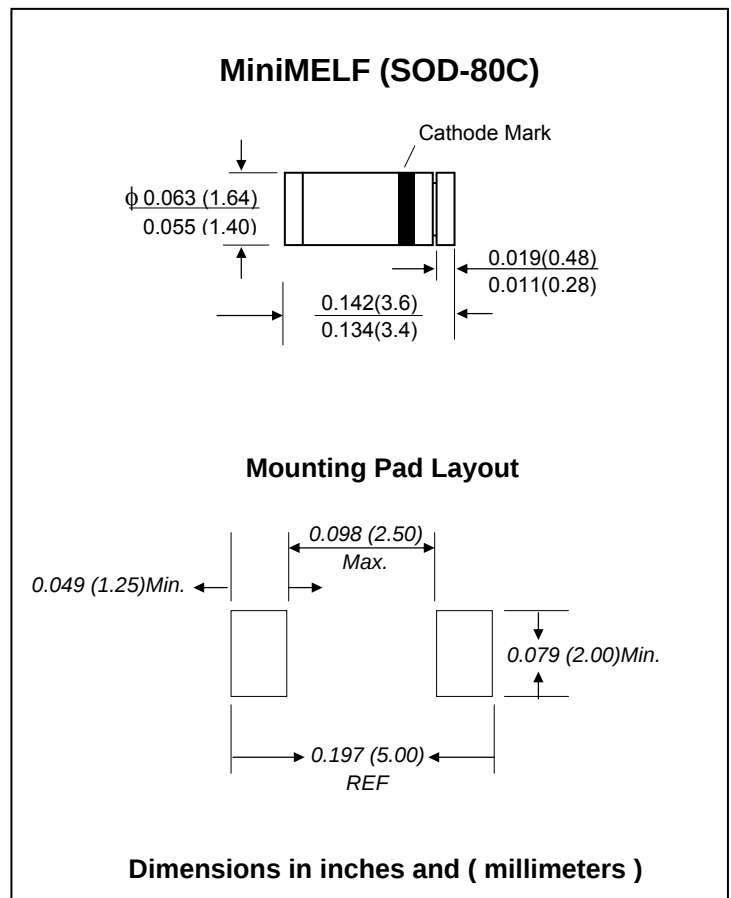
 $V_Z : 2.4 \text{ to } 75 \text{ V}$ 
 $P_D : 500 \text{ mW}$ 

### FEATURES :

- Silicon planar zener diodes
- Standard Zener voltage tolerance is  $\pm 5\%$
- Other tolerances are available upon request.
- These diodes are also available in the DO-35 case with the type designation 1N5221B ... 1N5267B,
- Pb / RoHS Free

### MECHANICAL DATA :

- \* Case : MiniMELF Glass Case (SOD-80C)
- \* Weight : 0.05 gram (approximately)



### Maximum Ratings and Thermal Characteristics

Rating at 25 °C ambient temperature unless otherwise specific.

| Parameter                                           | Symbol          | Value              | Unit |
|-----------------------------------------------------|-----------------|--------------------|------|
| Zener Current see Table "Characteristics"           |                 |                    |      |
| Maximum Forward Voltage at $I_F = 200 \text{ mA}$ . | $V_F$           | 1.1                | V    |
| Power Dissipation at $T_a = 75 \text{ °C}$          | $P_D$           | 500 <sup>(1)</sup> | mW   |
| Thermal Resistance Junction to Ambient Air          | $R_{\theta JA}$ | 300 <sup>(1)</sup> | °C/W |
| Junction temperature                                | $T_J$           | 175                | °C   |
| Storage temperature range                           | $T_{STG}$       | -65 to + 150       | °C   |

Note: (1) Valid provided that electrodes are kept at ambient temperature

## ELECTRICAL CHARACTERISTICS

Rating at 25 °C ambient temperature unless otherwise specified

| Type     | Nominal Zener Voltage <sup>(3)</sup> | Test Current    | Maximum Zener Impedance <sup>(1)</sup> |                                            | Maximum Reverse Leakage Current |     | Typical Temperature Coefficient | Maximum Regulator Current <sup>(2)</sup> |
|----------|--------------------------------------|-----------------|----------------------------------------|--------------------------------------------|---------------------------------|-----|---------------------------------|------------------------------------------|
|          | V <sub>Z</sub> @ I <sub>ZT</sub>     | I <sub>ZT</sub> | Z <sub>ZT</sub> @ I <sub>ZT</sub>      | Z <sub>ZK</sub> @ I <sub>ZK</sub> = 0.25mA | I <sub>R</sub> @ V <sub>R</sub> |     | α <sub>VZ</sub> (%/ °C)         | I <sub>ZM</sub>                          |
|          | (V)                                  | (mA)            | (Ω)                                    | (Ω)                                        | (μA)                            | (V) |                                 | (mA)                                     |
| ZMM5221B | 2.4                                  | 20              | 30                                     | 1200                                       | 100                             | 1.0 | -0.085                          | 190                                      |
| ZMM5222B | 2.5                                  | 20              | 30                                     | 1250                                       | 100                             | 1.0 | -0.085                          | 182                                      |
| ZMM5223B | 2.7                                  | 20              | 30                                     | 1300                                       | 75                              | 1.0 | -0.080                          | 168                                      |
| ZMM5224B | 2.8                                  | 20              | 30                                     | 1400                                       | 75                              | 1.0 | -0.080                          | 162                                      |
| ZMM5225B | 3.0                                  | 20              | 29                                     | 1600                                       | 50                              | 1.0 | -0.075                          | 152                                      |
| ZMM5226B | 3.3                                  | 20              | 28                                     | 1600                                       | 25                              | 1.0 | -0.070                          | 138                                      |
| ZMM5227B | 3.6                                  | 20              | 24                                     | 1700                                       | 15                              | 1.0 | -0.065                          | 126                                      |
| ZMM5228B | 3.9                                  | 20              | 23                                     | 1900                                       | 10                              | 1.0 | -0.060                          | 115                                      |
| ZMM5229B | 4.3                                  | 20              | 22                                     | 2000                                       | 5.0                             | 1.0 | ± 0.055                         | 106                                      |
| ZMM5230B | 4.7                                  | 20              | 19                                     | 1900                                       | 5.0                             | 2.0 | ± 0.030                         | 97                                       |
| ZMM5231B | 5.1                                  | 20              | 17                                     | 1600                                       | 5.0                             | 2.0 | ± 0.030                         | 89                                       |
| ZMM5232B | 5.6                                  | 20              | 11                                     | 1600                                       | 5.0                             | 3.0 | +0.038                          | 81                                       |
| ZMM5233B | 6.0                                  | 20              | 7                                      | 1600                                       | 5.0                             | 3.5 | +0.038                          | 76                                       |
| ZMM5234B | 6.2                                  | 20              | 7                                      | 1000                                       | 5.0                             | 4.0 | +0.045                          | 73                                       |
| ZMM5235B | 6.8                                  | 20              | 5                                      | 750                                        | 3.0                             | 5.0 | +0.050                          | 67                                       |
| ZMM5236B | 7.5                                  | 20              | 6                                      | 500                                        | 3.0                             | 6.0 | +0.058                          | 61                                       |
| ZMM5237B | 8.2                                  | 20              | 8                                      | 500                                        | 3.0                             | 6.5 | +0.062                          | 55                                       |
| ZMM5238B | 8.7                                  | 20              | 8                                      | 600                                        | 3.0                             | 6.5 | +0.065                          | 52                                       |
| ZMM5239B | 9.1                                  | 20              | 10                                     | 600                                        | 3.0                             | 7.0 | +0.068                          | 50                                       |
| ZMM5240B | 10                                   | 20              | 17                                     | 600                                        | 3.0                             | 8.0 | +0.075                          | 45                                       |
| ZMM5241B | 11                                   | 20              | 22                                     | 600                                        | 2.0                             | 8.4 | +0.076                          | 41                                       |
| ZMM5242B | 12                                   | 20              | 30                                     | 600                                        | 1.0                             | 9.1 | +0.077                          | 38                                       |
| ZMM5243B | 13                                   | 9.5             | 13                                     | 600                                        | 0.5                             | 9.9 | +0.079                          | 35                                       |
| ZMM5244B | 14                                   | 9.0             | 15                                     | 600                                        | 0.1                             | 10  | +0.082                          | 32                                       |
| ZMM5245B | 15                                   | 8.5             | 16                                     | 600                                        | 0.1                             | 11  | +0.082                          | 30                                       |
| ZMM5246B | 16                                   | 7.8             | 17                                     | 600                                        | 0.1                             | 12  | +0.083                          | 28                                       |
| ZMM5247B | 17                                   | 7.4             | 19                                     | 600                                        | 0.1                             | 13  | +0.084                          | 27                                       |
| ZMM5248B | 18                                   | 7.0             | 21                                     | 600                                        | 0.1                             | 14  | +0.085                          | 25                                       |
| ZMM5249B | 19                                   | 6.6             | 23                                     | 600                                        | 0.1                             | 14  | +0.086                          | 24                                       |
| ZMM5250B | 20                                   | 6.2             | 25                                     | 600                                        | 0.1                             | 15  | +0.086                          | 23                                       |
| ZMM5251B | 22                                   | 5.6             | 29                                     | 600                                        | 0.1                             | 17  | +0.087                          | 21                                       |
| ZMM5252B | 24                                   | 5.2             | 33                                     | 600                                        | 0.1                             | 18  | +0.088                          | 19.1                                     |
| ZMM5253B | 25                                   | 5.0             | 35                                     | 600                                        | 0.1                             | 19  | +0.089                          | 18.2                                     |
| ZMM5254B | 27                                   | 4.6             | 41                                     | 600                                        | 0.1                             | 21  | +0.090                          | 16.8                                     |
| ZMM5255B | 28                                   | 4.5             | 44                                     | 600                                        | 0.1                             | 21  | +0.091                          | 16.2                                     |
| ZMM5256B | 30                                   | 4.2             | 49                                     | 600                                        | 0.1                             | 23  | +0.091                          | 15.1                                     |
| ZMM5257B | 33                                   | 3.8             | 58                                     | 700                                        | 0.1                             | 25  | +0.092                          | 13.8                                     |
| ZMM5258B | 36                                   | 3.4             | 70                                     | 700                                        | 0.1                             | 27  | +0.093                          | 12.6                                     |
| ZMM5259B | 39                                   | 3.2             | 80                                     | 800                                        | 0.1                             | 30  | +0.094                          | 11.6                                     |
| ZMM5260B | 43                                   | 3.0             | 93                                     | 900                                        | 0.1                             | 33  | +0.095                          | 10.6                                     |
| ZMM5261B | 47                                   | 2.7             | 105                                    | 1000                                       | 0.1                             | 36  | +0.095                          | 9.7                                      |
| ZMM5262B | 51                                   | 2.5             | 125                                    | 1100                                       | 0.1                             | 39  | +0.096                          | 8.9                                      |
| ZMM5263B | 56                                   | 2.2             | 150                                    | 1300                                       | 0.1                             | 43  | +0.096                          | -                                        |
| ZMM5264B | 60                                   | 2.1             | 170                                    | 1400                                       | 0.1                             | 46  | +0.097                          | -                                        |
| ZMM5265B | 62                                   | 2.0             | 185                                    | 1400                                       | 0.1                             | 47  | +0.097                          | -                                        |
| ZMM5266B | 68                                   | 1.8             | 230                                    | 1600                                       | 0.1                             | 52  | +0.097                          | -                                        |
| ZMM5267B | 75                                   | 1.7             | 270                                    | 1700                                       | 0.1                             | 56  | +0.098                          | -                                        |

### Notes :

- (1) The Zener impedance is derived from the 1kHz AC voltage which results when an AC current having an RMS value equal to 10% of the Zener current (I<sub>ZT</sub> or I<sub>ZK</sub>) is superimposed on I<sub>ZT</sub> or I<sub>ZK</sub>. Zener impedance is measured at two points to insure a sharp knee on the breakdown curve and to eliminate unstable units
- (2) Valid provided that electrodes are kept at ambient temperature
- (3) Standard Zener voltage tolerance is ± 5% tolerance