



# ZMM5225 THRU ZMM5262

## SILICON PLANAR ZENER DIODES

### Features

#### Silicon Planar Zener Diodes

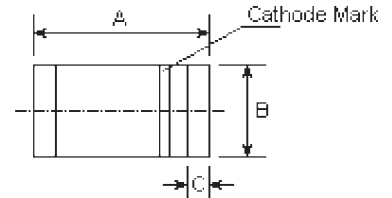
Standard Zener voltage tolerance is  $\pm 20\%$ . Add suffix "A" for  $\pm 10\%$  tolerance and suffix "B" for  $\pm 5\%$  tolerance. Other tolerances, non standard and higher Zener voltages upon request.

These diodes are also available in DO-35 case with the type designation 1N5225 thru 1N5262.

These diodes are delivered typed.  
Details see "Taping".

Weight approx. : 0.13g

### MiniMELF



| DIMENSIONS |        |       |      |      |      |
|------------|--------|-------|------|------|------|
| DIM        | inches |       | mm   |      | Note |
|            | Min.   | Max.  | Min. | Max. |      |
| A          | 0.134  | 0.142 | 3.4  | 3.6  |      |
| B          | 0.055  | 0.059 | 1.40 | 1.50 | φ    |
| C          | 0.008  | 0.016 | 0.2  | 0.4  |      |

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

|                                                 | Symbols   | Values             | Units            |
|-------------------------------------------------|-----------|--------------------|------------------|
| Zener current see Table "Characteristics"       |           |                    |                  |
| Power dissipation at $T_{amb}=75^\circ\text{C}$ | $P_{tot}$ | 500 <sup>(1)</sup> | mW               |
| Junction temperature                            | $T_j$     | 175                | $^\circ\text{C}$ |
| Storage temperature range                       | $T_s$     | -65 to +175        | $^\circ\text{C}$ |

Note:

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

### Characteristics at $T_{amb}=25^\circ\text{C}$

|                                            | Symbols   | Min. | Typ. | Max.               | Units |
|--------------------------------------------|-----------|------|------|--------------------|-------|
| Thermal resistance junction to ambient Air | $R_{thA}$ | -    | -    | 0.3 <sup>(1)</sup> | K/mW  |
| Forward voltage at $I_F=200\text{mA}$      | $V_F$     | -    | -    | 1.1                | V     |

Note:

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

| Type    | Nominal Zener voltage <sup>3)</sup> | Test current | Maximum Zener Impedance <sup>1)</sup> |                                | Maximum reverse leakage current |                                        |         | Maximum regulator current <sup>2)</sup> | Typical temperature coefficient |
|---------|-------------------------------------|--------------|---------------------------------------|--------------------------------|---------------------------------|----------------------------------------|---------|-----------------------------------------|---------------------------------|
|         | at $I_{ZT}$                         | $I_{ZT}$     | at $I_{ZT}$                           | at $I_{ZK}=0.25mA$<br>$Z_{ZK}$ | $I_R$                           | Test voltage<br>Suffix A      Suffix B |         | $I_{ZM}$                                | $\alpha_{VZ}$                   |
|         | V                                   | mA           | $\Omega$                              | $\Omega$                       | $\mu A$                         | $V_R$ V                                | $V_R$ V | mA                                      | %/K                             |
| ZMM5225 | 3.0                                 | 20           | 29                                    | 1600                           | 50                              | 0.95                                   | 1.0     | 152                                     | -0.075                          |
| ZMM5226 | 3.3                                 | 20           | 28                                    | 1600                           | 25                              | 0.95                                   | 1.0     | 138                                     | -0.070                          |
| ZMM5227 | 3.6                                 | 20           | 24                                    | 1700                           | 15                              | 0.95                                   | 1.0     | 126                                     | -0.065                          |
| ZMM5228 | 3.9                                 | 20           | 23                                    | 1900                           | 10                              | 0.95                                   | 1.0     | 115                                     | -0.060                          |
| ZMM5229 | 4.3                                 | 20           | 22                                    | 2000                           | 5                               | 0.95                                   | 1.0     | 106                                     | -0.055                          |
| ZMM5230 | 4.7                                 | 20           | 19                                    | 1900                           | 5                               | 1.9                                    | 2.0     | 97                                      | $\pm 0.030$                     |
| ZMM5231 | 5.1                                 | 20           | 17                                    | 1600                           | 5                               | 1.9                                    | 2.0     | 89                                      | $\pm 0.030$                     |
| ZMM5232 | 5.6                                 | 20           | 11                                    | 1600                           | 5                               | 2.9                                    | 3.0     | 81                                      | +0.038                          |
| ZMM5233 | 6.0                                 | 20           | 7                                     | 1600                           | 5                               | 3.3                                    | 3.5     | 76                                      | +0.038                          |
| ZMM5234 | 6.2                                 | 20           | 7                                     | 1000                           | 5                               | 3.8                                    | 4.0     | 73                                      | +0.045                          |
| ZMM5235 | 6.8                                 | 20           | 5                                     | 750                            | 3                               | 4.8                                    | 5.0     | 67                                      | +0.050                          |
| ZMM5236 | 7.5                                 | 20           | 6                                     | 500                            | 3                               | 5.7                                    | 6.0     | 61                                      | +0.058                          |
| ZMM5237 | 8.2                                 | 20           | 8                                     | 500                            | 3                               | 6.2                                    | 6.5     | 55                                      | +0.062                          |
| ZMM5238 | 8.7                                 | 20           | 8                                     | 600                            | 3                               | 6.2                                    | 6.5     | 52                                      | +0.065                          |
| ZMM5239 | 9.1                                 | 20           | 10                                    | 600                            | 3                               | 6.7                                    | 7.0     | 50                                      | +0.068                          |
| ZMM5240 | 10                                  | 20           | 17                                    | 600                            | 3                               | 7.6                                    | 8.0     | 45                                      | +0.075                          |
| ZMM5241 | 11                                  | 20           | 22                                    | 600                            | 2                               | 8.0                                    | 8.4     | 41                                      | +0.076                          |
| ZMM5242 | 12                                  | 20           | 30                                    | 600                            | 1                               | 8.7                                    | 9.1     | 38                                      | +0.077                          |
| ZMM5243 | 13                                  | 9.5          | 13                                    | 600                            | 0.5                             | 9.4                                    | 9.9     | 35                                      | +0.079                          |
| ZMM5244 | 14                                  | 9.0          | 15                                    | 600                            | 0.1                             | 9.5                                    | 10      | 32                                      | +0.082                          |
| ZMM5245 | 15                                  | 8.5          | 16                                    | 600                            | 0.1                             | 10.5                                   | 11      | 30                                      | +0.082                          |
| ZMM5246 | 16                                  | 7.8          | 17                                    | 600                            | 0.1                             | 11.4                                   | 12      | 28                                      | +0.083                          |
| ZMM5247 | 17                                  | 7.4          | 19                                    | 600                            | 0.1                             | 12.4                                   | 13      | 27                                      | +0.084                          |
| ZMM5248 | 18                                  | 7.0          | 21                                    | 600                            | 0.1                             | 13.3                                   | 14      | 25                                      | +0.085                          |
| ZMM5249 | 19                                  | 6.6          | 23                                    | 600                            | 0.1                             | 13.3                                   | 14      | 24                                      | +0.086                          |
| ZMM5250 | 20                                  | 6.2          | 25                                    | 600                            | 0.1                             | 14.3                                   | 15      | 23                                      | +0.086                          |
| ZMM5251 | 22                                  | 5.6          | 29                                    | 600                            | 0.1                             | 16.2                                   | 17      | 21                                      | +0.087                          |
| ZMM5252 | 24                                  | 5.2          | 33                                    | 600                            | 0.1                             | 17.1                                   | 18      | 19.1                                    | +0.087                          |
| ZMM5253 | 25                                  | 5.0          | 35                                    | 600                            | 0.1                             | 18.1                                   | 19      | 18.2                                    | +0.089                          |
| ZMM5254 | 27                                  | 4.6          | 41                                    | 600                            | 0.1                             | 20                                     | 21      | 16.8                                    | +0.090                          |
| ZMM5255 | 28                                  | 4.5          | 44                                    | 600                            | 0.1                             | 20                                     | 21      | 16.2                                    | +0.091                          |
| ZMM5256 | 30                                  | 4.2          | 49                                    | 600                            | 0.1                             | 22                                     | 23      | 15.1                                    | +0.091                          |
| ZMM5257 | 33                                  | 3.8          | 58                                    | 700                            | 0.1                             | 24                                     | 25      | 13.8                                    | +0.092                          |
| ZMM5258 | 36                                  | 3.4          | 70                                    | 700                            | 0.1                             | 26                                     | 27      | 12.6                                    | +0.093                          |
| ZMM5259 | 39                                  | 3.2          | 80                                    | 800                            | 0.1                             | 29                                     | 30      | 11.6                                    | +0.094                          |
| ZMM5260 | 43                                  | 3.0          | 93                                    | 900                            | 0.1                             | 31                                     | 33      | 10.6                                    | +0.095                          |
| ZMM5261 | 47                                  | 2.7          | 105                                   | 1000                           | 0.1                             | 34                                     | 36      | 9.7                                     | +0.095                          |
| ZMM5262 | 51                                  | 2.5          | 125                                   | 1100                           | 0.1                             | 37                                     | 39      | 8.9                                     | +0.096                          |

Notes:

- (1) The Zener Impedance is derived from the 60Hz AC voltage which results when an AC current having an RMS value equal to 10% of the Zener current ( $I_{ZT}$  or  $I_{ZK}$ ) is superimposed on  $I_{ZT}$  or  $I_{ZK}$ . 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) Measured under thermal equilibrium and DC test conditions.

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## RATINGS AND CHARACTERISTIC CURVES

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### Admissible power dissipation versus ambient temperature

Valid provided that electrodes are kept  
at ambient temperature

