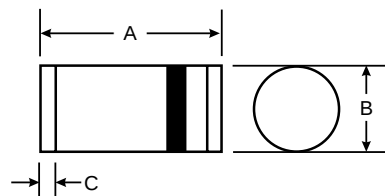


### Features

- Planar Die Construction
- Sealed Glass Case
- Ideally Suited for Automated Insertion
- 2.4V - 75V Nominal Zener Voltages



### Mechanical Data

- Case: MiniMELF, Glass
- Terminals: Solderable per MIL-STD-202, Method 208
- Polarity: Cathode Band
- Approx. Weight: 0.05 grams
- **Lead Free: For RoHS / Lead Free Version**

| MiniMELF             |      |      |
|----------------------|------|------|
| Dim                  | Min  | Max  |
| A                    | 3.30 | 3.70 |
| B                    | 1.30 | 1.60 |
| C                    | 0.28 | 0.50 |
| All Dimensions in mm |      |      |

### Maximum Ratings @ T<sub>A</sub> = 25°C unless otherwise specified

| Characteristic                                       | Symbol                            | Value       | Unit |
|------------------------------------------------------|-----------------------------------|-------------|------|
| Power Dissipation (Note 2)                           | P <sub>d</sub>                    | 500         | mW   |
| Forward Voltage @ I <sub>F</sub> = 200mA             | V <sub>F</sub>                    | 1.5         | V    |
| Thermal Resistance, Junction to Ambient Air (Note 2) | R <sub>θJA</sub>                  | 300         | K/W  |
| Operating and Storage Temperature Range              | T <sub>j</sub> , T <sub>STG</sub> | -55 to +175 | °C   |

- Notes:
1. Tested with Pulses, tp = 20ms.
  2. Valid provided that Electrodes are kept at Ambient Temperature.

### Electrical Characteristics @ $T_A = 25^\circ\text{C}$ unless otherwise specified

| Type Number | Nominal Zener Voltage (Note 1) |      | Zener Voltage Range | Maximum Zener Impedance | Maximum Zener Impedance |      | Maximum Leakage Current @ $V_R$ |                                 |       | Temperature Coefficient |
|-------------|--------------------------------|------|---------------------|-------------------------|-------------------------|------|---------------------------------|---------------------------------|-------|-------------------------|
|             | $V_Z @ I_{ZT}$                 |      | $V_Z @ I_{ZT}$      | $Z_{ZT} @ I_{ZT}$       | $Z_{ZK} @ I_{ZK}$       |      | $I_R @ T_J = 25^\circ\text{C}$  | $I_R @ T_J = 150^\circ\text{C}$ | $V_R$ |                         |
|             | (V)                            | (mA) | (V)                 | ( $\Omega$ )            | ( $\Omega$ )            | (mA) | ( $\mu\text{A}$ )               | ( $\mu\text{A}$ )               | (V)   |                         |
| ZMM2V4      | 2.4                            | 5.0  | 2.28 to 2.56        | 85                      | 600                     | 1.0  | 50                              | 100                             | 1.0   | -0.09 to -0.06          |
| ZMM2V7      | 2.7                            | 5.0  | 2.5 to 2.9          | 85                      | 600                     | 1.0  | 10                              | 50                              | 1.0   | -0.09 to -0.06          |
| ZMM3V0      | 3.0                            | 5.0  | 2.8 to 3.2          | 90                      | 600                     | 1.0  | 4.0                             | 40                              | 1.0   | -0.08 to -0.05          |
| ZMM3V3      | 3.3                            | 5.0  | 3.1 to 3.5          | 90                      | 600                     | 1.0  | 2.0                             | 40                              | 1.0   | -0.08 to -0.05          |
| ZMM3V6      | 3.6                            | 5.0  | 3.4 to 3.8          | 90                      | 600                     | 1.0  | 2.0                             | 40                              | 1.0   | -0.08 to -0.05          |
| ZMM3V9      | 3.9                            | 5.0  | 3.7 to 4.1          | 90                      | 600                     | 1.0  | 2.0                             | 40                              | 1.0   | -0.08 to -0.05          |
| ZMM4V3      | 4.3                            | 5.0  | 4.0 to 4.6          | 90                      | 600                     | 1.0  | 1.0                             | 20                              | 1.0   | -0.06 to -0.03          |
| ZMM4V7      | 4.7                            | 5.0  | 4.4 to 5.0          | 80                      | 600                     | 1.0  | 0.5                             | 10                              | 1.0   | -0.05 to +0.02          |
| ZMM5V1      | 5.1                            | 5.0  | 4.8 to 5.4          | 60                      | 550                     | 1.0  | 0.1                             | 2.0                             | 1.0   | -0.02 to +0.02          |
| ZMM5V6      | 5.6                            | 5.0  | 5.2 to 6.0          | 40                      | 450                     | 1.0  | 0.1                             | 2.0                             | 1.0   | -0.05 to +0.05          |
| ZMM6V2      | 6.2                            | 5.0  | 5.8 to 6.6          | 10                      | 200                     | 1.0  | 0.1                             | 2.0                             | 2.0   | 0.03 to 0.06            |
| ZMM6V8      | 6.8                            | 5.0  | 6.4 to 7.2          | 8.0                     | 150                     | 1.0  | 0.1                             | 2.0                             | 3.0   | 0.03 to 0.07            |
| ZMM7V5      | 7.5                            | 5.0  | 7.0 to 7.9          | 7.0                     | 50                      | 1.0  | 0.1                             | 2.0                             | 5.0   | 0.03 to 0.07            |
| ZMM8V2      | 8.2                            | 5.0  | 7.7 to 8.7          | 7.0                     | 50                      | 1.0  | 0.1                             | 2.0                             | 6.2   | 0.03 to 0.08            |
| ZMM9V1      | 9.1                            | 5.0  | 8.5 to 9.6          | 10                      | 50                      | 1.0  | 0.1                             | 2.0                             | 6.8   | 0.03 to 0.09            |
| ZMM10       | 10                             | 5.0  | 9.4 to 10.6         | 15                      | 70                      | 1.0  | 0.1                             | 2.0                             | 7.5   | 0.03 to 0.10            |
| ZMM11       | 11                             | 5.0  | 10.4 to 11.6        | 20                      | 70                      | 1.0  | 0.1                             | 2.0                             | 8.2   | 0.03 to 0.11            |
| ZMM12       | 12                             | 5.0  | 11.4 to 12.7        | 20                      | 90                      | 1.0  | 0.1                             | 2.0                             | 9.1   | 0.03 to 0.11            |
| ZMM13       | 13                             | 5.0  | 12.4 to 14.1        | 26                      | 110                     | 1.0  | 0.1                             | 2.0                             | 10    | 0.03 to 0.11            |
| ZMM15       | 15                             | 5.0  | 13.8 to 15.6        | 30                      | 110                     | 1.0  | 0.1                             | 2.0                             | 11    | 0.03 to 0.11            |
| ZMM16       | 16                             | 5.0  | 15.3 to 17.1        | 40                      | 170                     | 1.0  | 0.1                             | 2.0                             | 12    | 0.03 to 0.11            |
| ZMM18       | 18                             | 5.0  | 16.8 to 19.1        | 50                      | 170                     | 1.0  | 0.1                             | 2.0                             | 13    | 0.03 to 0.11            |
| ZMM20       | 20                             | 5.0  | 18.8 to 21.2        | 55                      | 220                     | 1.0  | 0.1                             | 2.0                             | 15    | 0.03 to 0.11            |
| ZMM22       | 22                             | 5.0  | 20.8 to 23.3        | 55                      | 220                     | 1.0  | 0.1                             | 2.0                             | 16    | 0.04 to 0.12            |
| ZMM24       | 24                             | 5.0  | 22.8 to 25.6        | 80                      | 220                     | 1.0  | 0.1                             | 2.0                             | 18    | 0.04 to 0.12            |
| ZMM27       | 27                             | 5.0  | 25.1 to 28.9        | 80                      | 220                     | 1.0  | 0.1                             | 2.0                             | 20    | 0.04 to 0.12            |
| ZMM30       | 30                             | 5.0  | 28 to 32            | 80                      | 220                     | 1.0  | 0.1                             | 2.0                             | 22    | 0.04 to 0.12            |
| ZMM33       | 33                             | 5.0  | 31 to 35            | 80                      | 220                     | 1.0  | 0.1                             | 2.0                             | 24    | 0.04 to 0.12            |
| ZMM36       | 36                             | 5.0  | 34 to 38            | 80                      | 220                     | 1.0  | 0.1                             | 2.0                             | 27    | 0.04 to 0.12            |
| ZMM39       | 39                             | 2.5  | 37 to 41            | 90                      | 500                     | 0.5  | 0.1                             | 5.0                             | 30    | 0.04 to 0.12            |
| ZMM43       | 43                             | 2.5  | 40 to 46            | 90                      | 600                     | 0.5  | 0.1                             | 5.0                             | 33    | 0.04 to 0.12            |
| ZMM47       | 47                             | 2.5  | 44 to 50            | 110                     | 700                     | 0.5  | 0.1                             | 5.0                             | 36    | 0.04 to 0.12            |
| ZMM51       | 51                             | 2.5  | 48 to 54            | 125                     | 700                     | 0.5  | 0.1                             | 10                              | 39    | 0.04 to 0.12            |
| ZMM56       | 56                             | 2.5  | 52 to 60            | 135                     | 1000                    | 0.5  | 0.1                             | 10                              | 43    | 0.04 to 0.12            |
| ZMM62       | 62                             | 2.5  | 58 to 66            | 150                     | 1000                    | 0.5  | 0.1                             | 10                              | 47    | 0.04 to 0.12            |
| ZMM68       | 68                             | 2.5  | 64 to 72            | 200                     | 1000                    | 0.5  | 0.1                             | 10                              | 51    | 0.04 to 0.12            |
| ZMM75       | 75                             | 2.5  | 70 to 79            | 250                     | 1500                    | 0.5  | 0.1                             | 10                              | 56    | 0.04 to 0.12            |

Notes: 1. Tested with pulses  $t_p = 20$  ms.  
2. Valid provided that electrodes are kept at ambient temperature.

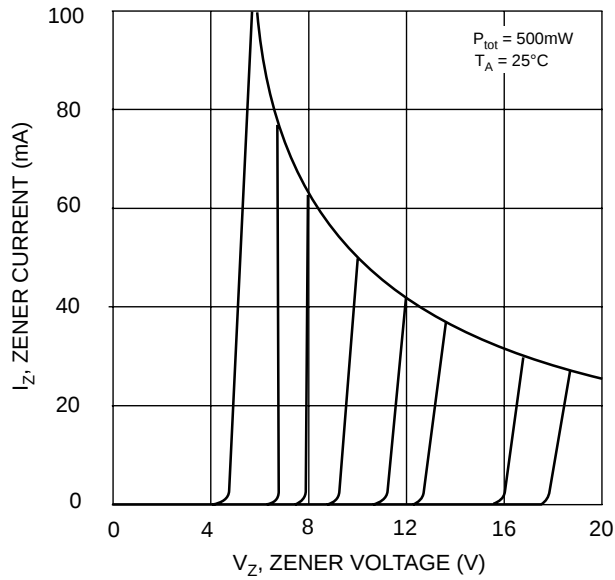


Fig. 1, Zener Current vs Zener Voltage

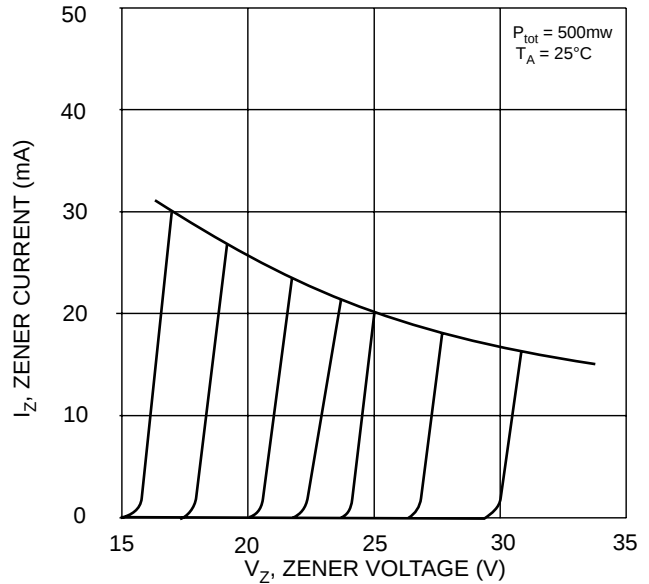


Fig. 8, Zener Current vs Zener Voltage

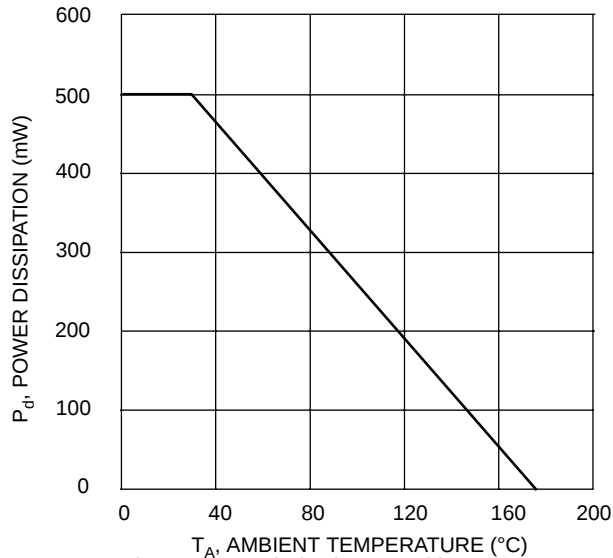


Fig. 3, Power Dissipation vs Ambient Temperature

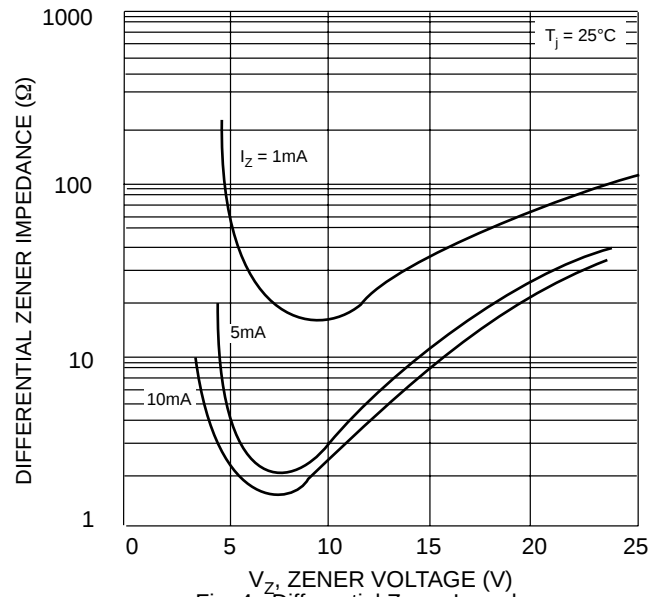


Fig. 4, Differential Zener Impedance

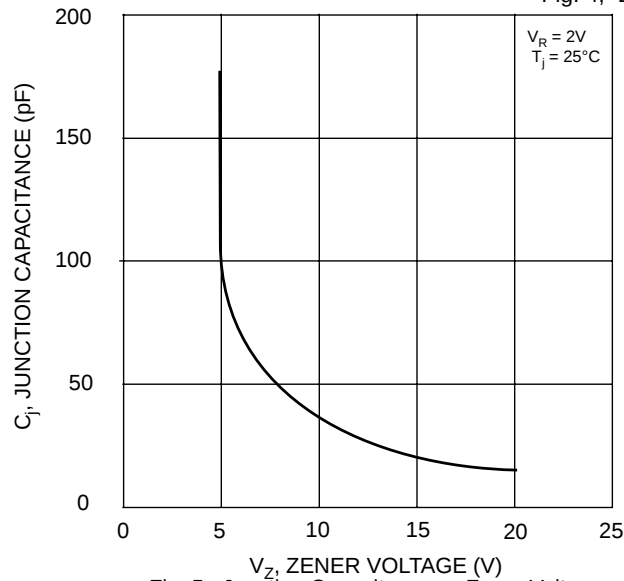


Fig. 5, Junction Capacitance vs Zener Voltage