

## TZMC Series

$V_Z$  : 2.4 to 75V

$P_D$  : 500mW

### FEATURES :

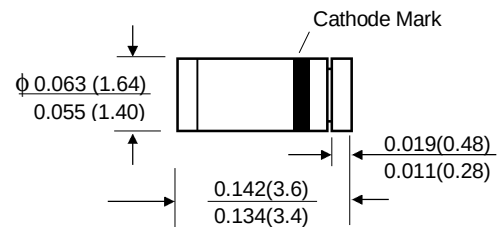
- Silicon planar zener diodes
- Very sharp reverse characteristic
- Low reverse current level
- Available with tighter tolerance
- Very high stability
- Low noise
- Pb / RoHS Free

### MECHANICAL DATA :

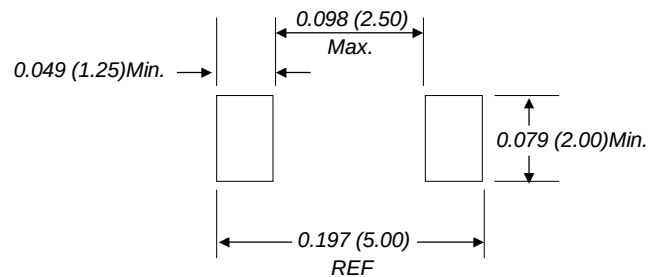
- \* Case : MiniMELF Glass Case (SOD-80C)
- \* Weight : 0.05 gram (approximately)

## ZENER DIODES

### MiniMELF (SOD-80C)



### Mounting Pad Layout



Dimensions in inches and ( millimeters )

## Maximum Ratings and Thermal Characteristics

Rating at 25 °C ambient temperature unless otherwise specified.

| Parameter                                                  | Symbol          | Value        | Unit  |
|------------------------------------------------------------|-----------------|--------------|-------|
| Power Dissipation ( $R_{\theta JA} \leq 300 \text{ K/W}$ ) | $P_D$           | 500          | mW    |
| Zener Current                                              | $I_Z$           | $P_D / V_Z$  | mA    |
| Junction temperature                                       | $T_J$           | 175          | °C    |
| Storage temperature range                                  | $T_{STG}$       | -65 to + 175 | °C    |
| Thermal Resistance Junction to Ambient (Note 1)            | $R_{\theta JA}$ | 500          | K / W |
| Maximum Forward Voltage at $I_F = 200 \text{ mA}$ .        | $V_F$           | 1.5          | V     |

### Note:

- (1) Mounted on PC board substrate 50mm x 50mm x 1.6mm

## ELECTRICAL CHARACTERISTICS

(Ta = 25 °C unless otherwise noted)

| Type    | Zener Voltage<br>V <sub>Z</sub> @ I <sub>ZT</sub> |                         |                                       | Maximum Zener<br>Impedance               |                                          |                         | Maximum Reverse<br>Leakage Current |                                       |                   | Temp. coefficient<br>of Zener Voltage<br><br>α <sub>vz</sub> (% / K) |
|---------|---------------------------------------------------|-------------------------|---------------------------------------|------------------------------------------|------------------------------------------|-------------------------|------------------------------------|---------------------------------------|-------------------|----------------------------------------------------------------------|
|         | Nom<br>(V)                                        | I <sub>ZT</sub><br>(mA) | V <sub>ZT</sub><br>(V) <sup>(1)</sup> | Z <sub>ZT</sub> @ I <sub>ZT</sub><br>(Ω) | Z <sub>Zk</sub> @ I <sub>ZK</sub><br>(Ω) | I <sub>ZK</sub><br>(mA) | I <sub>R</sub><br>(μA)             | I <sub>R</sub> <sup>(2)</sup><br>(μA) | at V <sub>R</sub> |                                                                      |
|         |                                                   |                         |                                       |                                          |                                          |                         |                                    |                                       | (V)               |                                                                      |
| TZMC2V4 | 2.4                                               | 5                       | 2.28 to 2.56                          | < 85                                     | < 600                                    | 1                       | < 50                               | < 100                                 | 1                 | -0.09...-0.06                                                        |
| TZMC2V7 | 2.7                                               | 5                       | 2.5 to 2.9                            | < 85                                     | < 600                                    | 1                       | < 10                               | < 50                                  | 1                 | -0.09...-0.06                                                        |
| TZMC3V0 | 3.0                                               | 5                       | 2.8 to 3.2                            | < 90                                     | < 600                                    | 1                       | < 4                                | < 40                                  | 1                 | -0.08...-0.05                                                        |
| TZMC3V3 | 3.3                                               | 5                       | 3.1 to 3.5                            | < 90                                     | < 600                                    | 1                       | < 2                                | < 40                                  | 1                 | -0.08...-0.05                                                        |
| TZMC3V6 | 3.6                                               | 5                       | 3.4 to 3.8                            | < 90                                     | < 600                                    | 1                       | < 2                                | < 40                                  | 1                 | -0.08...-0.05                                                        |
| TZMC3V9 | 3.9                                               | 5                       | 3.7 to 4.1                            | < 90                                     | < 600                                    | 1                       | < 2                                | < 40                                  | 1                 | -0.08...-0.05                                                        |
| TZMC4V3 | 4.3                                               | 5                       | 4.0 to 4.6                            | < 90                                     | < 600                                    | 1                       | < 1                                | < 20                                  | 1                 | -0.06...-0.03                                                        |
| TZMC4V7 | 4.7                                               | 5                       | 4.4 to 5.0                            | < 80                                     | < 600                                    | 1                       | < 0.5                              | < 10                                  | 1                 | -0.05...-0.02                                                        |
| TZMC5V1 | 5.1                                               | 5                       | 4.8 to 5.4                            | < 60                                     | < 550                                    | 1                       | < 0.1                              | < 2                                   | 1                 | -0.02...+0.02                                                        |
| TZMC5V6 | 5.6                                               | 5                       | 5.2 to6.0                             | < 40                                     | < 450                                    | 1                       | < 0.1                              | < 2                                   | 1                 | -0.05...+0.05                                                        |
| TZMC6V2 | 6.2                                               | 5                       | 5.8 to 6.6                            | < 10                                     | < 200                                    | 1                       | < 0.1                              | < 2                                   | 2                 | -0.03...+0.06                                                        |
| TZMC6V8 | 6.8                                               | 5                       | 6.4 to 7.2                            | < 8                                      | < 150                                    | 1                       | < 0.1                              | < 2                                   | 3                 | 0.03...0.07                                                          |
| TZMC7V5 | 7.5                                               | 5                       | 7.0 to 7.9                            | < 7                                      | < 50                                     | 1                       | < 0.1                              | < 2                                   | 5                 | 0.03...0.07                                                          |
| TZMC8V2 | 8.2                                               | 5                       | 7.7 to8.7                             | < 7                                      | < 50                                     | 1                       | < 0.1                              | < 2                                   | 6.2               | 0.03...0.08                                                          |
| TZMC9V1 | 9.1                                               | 5                       | 8.5 to 9.6                            | < 10                                     | < 50                                     | 1                       | < 0.1                              | < 2                                   | 6.8               | 0.03...0.09                                                          |
| TZMC10  | 10                                                | 5                       | 9.4 to 10.6                           | < 15                                     | < 70                                     | 1                       | < 0.1                              | < 2                                   | 7.5               | 0.03...0.10                                                          |
| TZMC11  | 11                                                | 5                       | 10.4 to 11.6                          | < 20                                     | < 70                                     | 1                       | < 0.1                              | < 2                                   | 8.2               | 0.03...0.11                                                          |
| TZMC12  | 12                                                | 5                       | 11.4 to 12.7                          | < 20                                     | < 90                                     | 1                       | < 0.1                              | < 2                                   | 9.1               | 0.03...0.11                                                          |
| TZMC13  | 13                                                | 5                       | 12.4 to 14.1                          | < 26                                     | < 110                                    | 1                       | < 0.1                              | < 2                                   | 10                | 0.03...0.11                                                          |
| TZMC15  | 15                                                | 5                       | 13.8 to 15.6                          | < 30                                     | < 110                                    | 1                       | < 0.1                              | < 2                                   | 11                | 0.03...0.11                                                          |
| TZMC16  | 16                                                | 5                       | 15.3 to 17.1                          | < 40                                     | < 170                                    | 1                       | < 0.1                              | < 2                                   | 12                | 0.03...0.11                                                          |
| TZMC18  | 18                                                | 5                       | 16.8 to 19.1                          | < 50                                     | < 170                                    | 1                       | < 0.1                              | < 2                                   | 13                | 0.03...0.11                                                          |
| TZMC20  | 20                                                | 5                       | 18.8 to 21.2                          | < 55                                     | < 220                                    | 1                       | < 0.1                              | < 2                                   | 15                | 0.03...0.11                                                          |
| TZMC22  | 22                                                | 5                       | 20.8 to 23.3                          | < 55                                     | < 220                                    | 1                       | < 0.1                              | < 2                                   | 16                | 0.04...0.12                                                          |
| TZMC24  | 24                                                | 5                       | 22.8 to 25.6                          | < 80                                     | < 220                                    | 1                       | < 0.1                              | < 2                                   | 18                | 0.04...0.12                                                          |
| TZMC27  | 27                                                | 5                       | 25.1 to 28.9                          | < 80                                     | < 220                                    | 1                       | < 0.1                              | < 2                                   | 20                | 0.04...0.12                                                          |
| TZMC30  | 30                                                | 5                       | 28 to 32                              | < 80                                     | < 220                                    | 1                       | < 0.1                              | < 2                                   | 22                | 0.04...0.12                                                          |
| TZMC33  | 33                                                | 5                       | 31 to 35                              | < 80                                     | < 220                                    | 1                       | < 0.1                              | < 2                                   | 24                | 0.04...0.12                                                          |
| TZMC36  | 36                                                | 5                       | 34 to 38                              | < 80                                     | < 220                                    | 1                       | < 0.1                              | < 2                                   | 27                | 0.04...0.12                                                          |
| TZMC39  | 39                                                | 2.5                     | 37 to 41                              | < 90                                     | < 500                                    | 1                       | < 0.1                              | < 5                                   | 30                | 0.04...0.12                                                          |
| TZMC43  | 43                                                | 2.5                     | 40 to 46                              | < 90                                     | < 600                                    | 0.5                     | < 0.1                              | < 5                                   | 33                | 0.04...0.12                                                          |
| TZMC47  | 47                                                | 2.5                     | 44 to 50                              | < 110                                    | < 700                                    | 0.5                     | < 0.1                              | < 5                                   | 36                | 0.04...0.12                                                          |
| TZMC51  | 51                                                | 2.5                     | 48 to 54                              | < 125                                    | < 700                                    | 0.5                     | < 0.1                              | < 10                                  | 39                | 0.04...0.12                                                          |
| TZMC56  | 56                                                | 2.5                     | 52 to 60                              | < 135                                    | < 1000                                   | 0.5                     | < 0.1                              | < 10                                  | 43                | 0.04...0.12                                                          |
| TZMC62  | 62                                                | 2.5                     | 58 to 66                              | < 150                                    | < 1000                                   | 0.5                     | < 0.1                              | < 10                                  | 47                | 0.04...0.12                                                          |
| TZMC68  | 68                                                | 2.5                     | 64 to 72                              | < 200                                    | < 1000                                   | 0.5                     | < 0.1                              | < 10                                  | 51                | 0.04...0.12                                                          |
| TZMC75  | 75                                                | 2.5                     | 70 to 79                              | < 250                                    | < 1500                                   | 0.5                     | < 0.1                              | < 10                                  | 56                | 0.04...0.12                                                          |

Notes : 1) Tighter tolerances available on request:

TZMA...  $\pm 1\%$  of V<sub>Znom</sub>

TZMB...  $\pm 2\%$  of V<sub>Znom</sub>

TZMF...  $\pm 3\%$  of V<sub>Znom</sub>

2) at T<sub>j</sub> = 150 °C