# ZMM1-ZMM75
## Silicon Epitaxial Planar Zener Diodes

### Features

MiniMELF case especially for automatic insertion. The Zener voltages are graded according to theinternational E24 standard. Smaller voltage tolerancesand higher Zener voltages are upon request. These diodes are also available in DO-35 case withthe type designation BZX55C.

LL-34

### Absolute Maximum Ratings ($T_a$ = 25℃)

| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| Power Dissipation [1)] | $P_{tot}$ | 500 | mW |
| Junction Temperature | $T_j$ | 175 | ℃ |
| Storage Temperature Range | $T_{stg}$ | - 55 to + 175 | ℃ |

### Thermal Characteristics

| Parameter | Symbol | Max. | Unit |
|---|---|---|---|
| Thermal Resistance Junction to Ambient [1)] | $R_{\theta JA}$ | 300 | ℃/W |

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

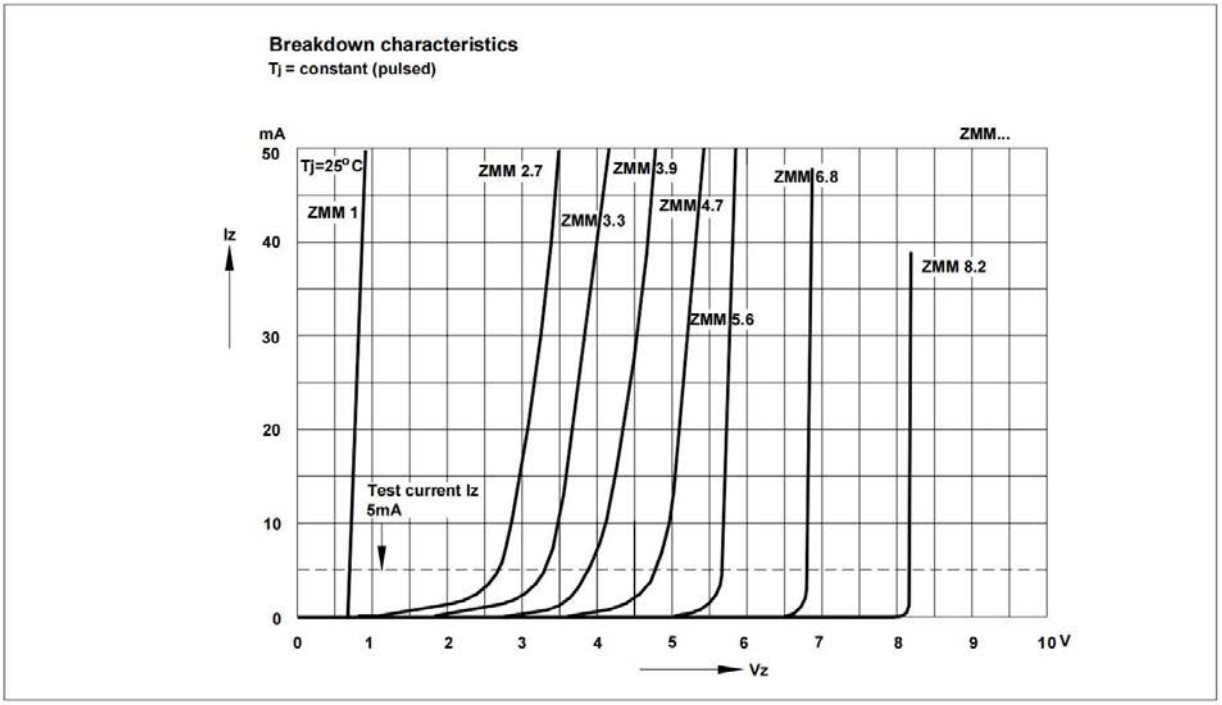
## Characteristics at $T_a$ = 25 °C

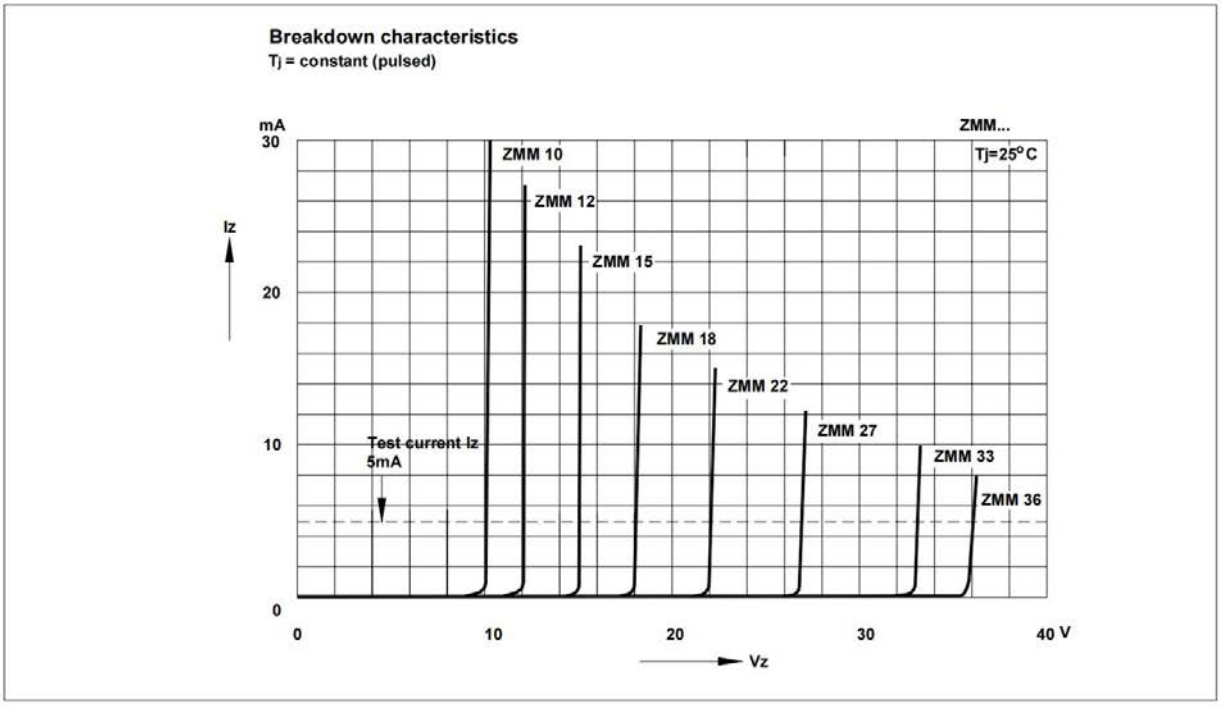
| Type | Zener Voltage Range [1] | | | Dynamic Resistance | | | Reverse Leakage Current | | | Temp. Coefficient of Zener Voltage |
|---|---|---|---|---|---|---|---|---|---|---|
| | $V_{Znom}$ | $V_{ZT}$ | at $I_{ZT}$ | $Z_{ZT}$ at $I_{ZT}$ | $Z_{ZK}$ | at $I_{ZK}$ | $T_a$ = 25°C | $T_a$ = 125°C | at $V_R$ | |
| | (V) | (V) | (mA) | Max. (Ω) | Max. (Ω) | (mA) | Max. (µA) | Max. (µA) | (V) | TKvz (%/K) |
| ZMM1[2] | 0.75 | 0.7...0.8 | 5 | 8 | 50 | 1 | - | - | - | -0.26...-0.23 |
| ZMM2V0 | 2 | 1.8...2.15 | 5 | 85 | 600 | 1 | 100 | 200 | 1 | -0.09...-0.06 |
| ZMM2V2 | 2.2 | 2.08...2.33 | 5 | 85 | 600 | 1 | 75 | 160 | 1 | -0.09...-0.06 |
| ZMM2V4 | 2.4 | 2.28...2.56 | 5 | 85 | 600 | 1 | 50 | 100 | 1 | -0.09...-0.06 |
| ZMM2V7 | 2.7 | 2.5...2.9 | 5 | 85 | 600 | 1 | 10 | 50 | 1 | -0.09...-0.06 |
| ZMM3V0 | 3 | 2.8...3.2 | 5 | 85 | 600 | 1 | 4 | 40 | 1 | -0.08...-0.05 |
| ZMM3V3 | 3.3 | 3.1...3.5 | 5 | 85 | 600 | 1 | 2 | 40 | 1 | -0.08...-0.05 |
| ZMM3V6 | 3.6 | 3.4...3.8 | 5 | 85 | 600 | 1 | 2 | 40 | 1 | -0.08...-0.05 |
| ZMM3V9 | 3.9 | 3.7...4.1 | 5 | 85 | 600 | 1 | 2 | 40 | 1 | -0.08...-0.05 |
| ZMM4V3 | 4.3 | 4...4.6 | 5 | 75 | 600 | 1 | 1 | 20 | 1 | -0.06...-0.03 |
| ZMM4V7 | 4.7 | 4.4...5 | 5 | 60 | 600 | 1 | 0.5 | 10 | 1 | -0.05...+0.02 |
| ZMM5V1 | 5.1 | 4.8...5.4 | 5 | 35 | 550 | 1 | 0.1 | 2 | 1 | -0.02...+0.02 |
| ZMM5V6 | 5.6 | 5.2...6 | 5 | 25 | 450 | 1 | 0.1 | 2 | 1 | -0.05...+0.05 |
| ZMM6V2 | 6.2 | 5.8...6.6 | 5 | 10 | 200 | 1 | 0.1 | 2 | 2 | 0.03...0.06 |
| ZMM6V8 | 6.8 | 6.4...7.2 | 5 | 8 | 150 | 1 | 0.1 | 2 | 3 | 0.03...0.07 |
| ZMM7V5 | 7.5 | 7...7.9 | 5 | 7 | 50 | 1 | 0.1 | 2 | 5 | 0.03...0.07 |
| ZMM8V2 | 8.2 | 7.7...8.7 | 5 | 7 | 50 | 1 | 0.1 | 2 | 6.2 | 0.03...0.08 |
| ZMM9V1 | 9.1 | 8.5...9.6 | 5 | 10 | 50 | 1 | 0.1 | 2 | 6.8 | 0.03...0.09 |
| ZMM10 | 10 | 9.4...10.6 | 5 | 15 | 70 | 1 | 0.1 | 2 | 7.5 | 0.03...0.1 |
| ZMM11 | 11 | 10.4...11.6 | 5 | 20 | 70 | 1 | 0.1 | 2 | 8.2 | 0.03...0.11 |
| ZMM12 | 12 | 11.4...12.7 | 5 | 20 | 90 | 1 | 0.1 | 2 | 9.1 | 0.03...0.11 |
| ZMM13 | 13 | 12.4...14.1 | 5 | 26 | 110 | 1 | 0.1 | 2 | 10 | 0.03...0.11 |
| ZMM15 | 15 | 13.8...15.6 | 5 | 30 | 110 | 1 | 0.1 | 2 | 11 | 0.03...0.11 |
| ZMM16 | 16 | 15.3...17.1 | 5 | 40 | 170 | 1 | 0.1 | 2 | 12 | 0.03...0.11 |
| ZMM18 | 18 | 16.8...19.1 | 5 | 50 | 170 | 1 | 0.1 | 2 | 13 | 0.03...0.11 |
| ZMM20 | 20 | 18.8...21.2 | 5 | 55 | 220 | 1 | 0.1 | 2 | 15 | 0.03...0.11 |
| ZMM22 | 22 | 20.8...23.3 | 5 | 55 | 220 | 1 | 0.1 | 2 | 16 | 0.04...0.12 |
| ZMM24 | 24 | 22.8...25.6 | 5 | 80 | 220 | 1 | 0.1 | 2 | 18 | 0.04...0.12 |
| ZMM27 | 27 | 25.1...28.9 | 5 | 80 | 220 | 1 | 0.1 | 2 | 20 | 0.04...0.12 |
| ZMM30 | 30 | 28...32 | 5 | 80 | 220 | 1 | 0.1 | 2 | 22 | 0.04...0.12 |
| ZMM33 | 33 | 31...35 | 5 | 80 | 220 | 1 | 0.1 | 2 | 24 | 0.04...0.12 |
| ZMM36 | 36 | 34...38 | 5 | 80 | 220 | 1 | 0.1 | 2 | 27 | 0.04...0.12 |
| ZMM39 | 39 | 37...41 | 2.5 | 90 | 500 | 0.5 | 0.1 | 5 | 30 | 0.04...0.12 |
| ZMM43 | 43 | 40...46 | 2.5 | 90 | 500 | 0.5 | 0.1 | 5 | 33 | 0.04...0.12 |
| ZMM47 | 47 | 44...50 | 2.5 | 110 | 600 | 0.5 | 0.1 | 5 | 36 | 0.04...0.12 |
| ZMM51 | 51 | 48...54 | 2.5 | 125 | 700 | 0.5 | 0.1 | 10 | 39 | 0.04...0.12 |
| ZMM56 | 56 | 52...60 | 2.5 | 135 | 700 | 0.5 | 0.1 | 10 | 43 | 0.04...0.12 |
| ZMM62 | 62 | 58...66 | 2.5 | 150 | 1000 | 0.5 | 0.1 | 10 | 47 | 0.04...0.12 |
| ZMM68 | 68 | 64...72 | 2.5 | 200 | 1000 | 0.5 | 0.1 | 10 | 51 | 0.04...0.12 |
| ZMM75 | 75 | 70...79 | 2.5 | 250 | 1000 | 0.5 | 0.1 | 10 | 56 | 0.04...0.12 |

[1] Tested with pulses $t_p$ = 20 ms.

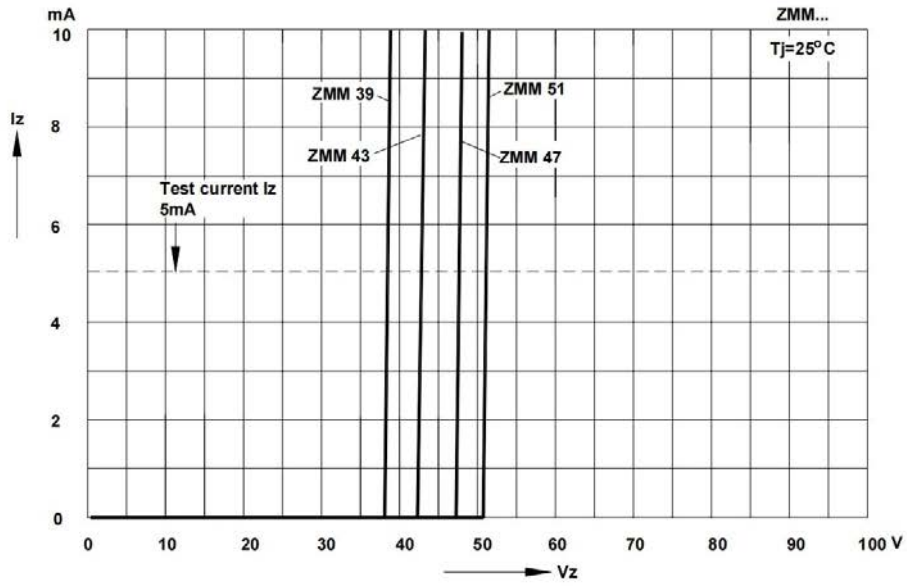
[2] The ZMM1 is a silicon diode with operation in forward direction. Hence, the index of all parameters should be "F" instead of "Z". Connect the cathode electrode to the negative pole.

**Typical Characteristics**

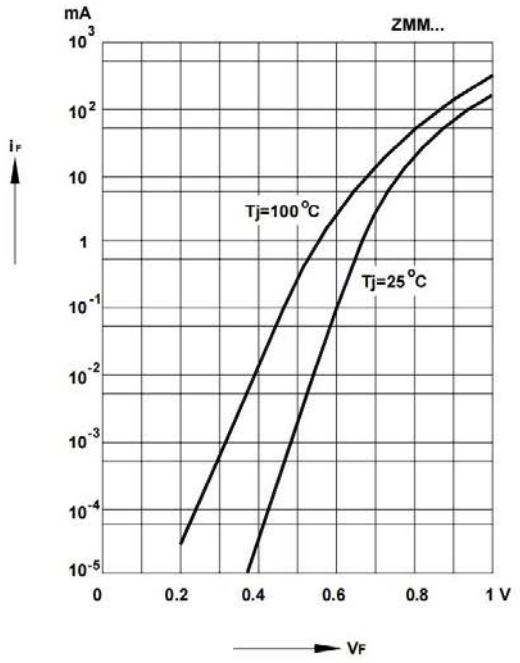


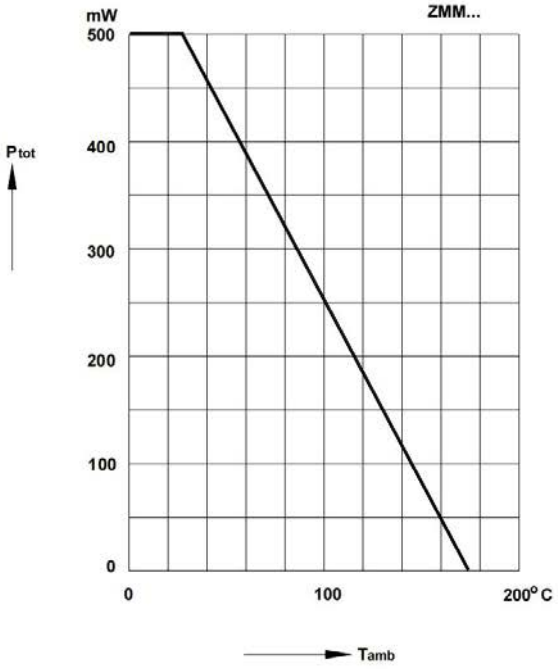
**Breakdown characteristics**
$T_j$ = constant (pulsed)



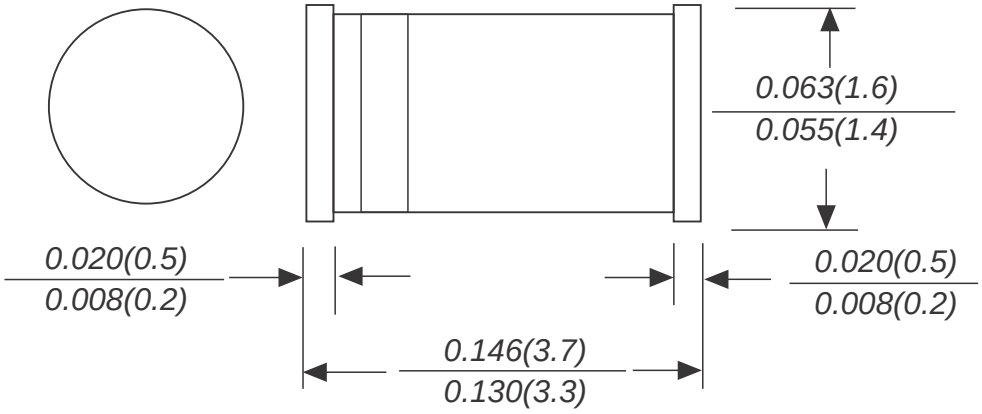

**Forward characteristics**




**Admissible power dissipation versus ambient temperature**
Valid provided that electrodes are kept at ambient temperature.



## LL-34 Package Information




*Dimensions in inches and (millimeters)*

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