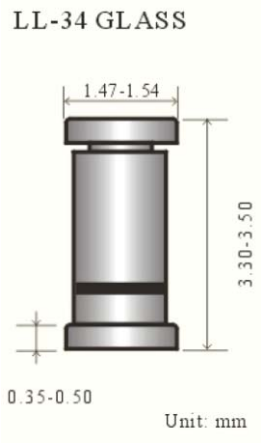
LL-34(Mini-melf) Glass Switching Diode

# ZMM Series

## Features

- •Fast Switching Device (TRR <4.0 nS)
- •Power Dissipation of 500mW
- •High Stability and High Reliability
- •Low reverse leakage




## Mechanical Data

**Case:** LL-34 Glass Case

**Polarity:** Color band denotes cathode end

**Mounting position:** Any

## Maximum Ratings & Thermal Characteristics

(Ratings at 25℃ ambient temperature unless otherwise specified)

| Parameters | Symbol | Value | Unit |
|---|---|---|---|
| Power Dissipation | Pd | 500 [1)] | mW |
| Operating junction temperature | Tj | 175 | ℃ |
| Storage temperature range | Ts | -55-+175 | ℃ |

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

**Electrical Characteristics** (Ratings at 25℃ ambient temperature unless otherwise specified).

| TYPE | Zener Voltage | | | Reverse Carrent | | Dynamic Resistance | |
|---|---|---|---|---|---|---|---|
| | Vz(V) | | Test Condition | Ir(uA) | Test Condition | rd(Ω) | Test Condition |
| | Min. | Max. | Iz(mA) | Max. | Vr(V) | Max. | Iz(mA) |
| ZMM 2V0 | 1.80 | 2.15 | 5.0 | 100 | 1.0 | 85 | 5.0 |
| ZMM 2V2 | 2.08 | 2.33 | 5.0 | 75 | 1.0 | 85 | 5.0 |
| ZMM 2V4 | 2.28 | 2.56 | 5.0 | 50 | 1.0 | 85 | 5.0 |
| ZMM 2V7 | 2.50 | 2.90 | 5.0 | 10 | 1.0 | 85 | 5.0 |
| ZMM 3V0 | 2.80 | 3.20 | 5.0 | 4 | 1.0 | 85 | 5.0 |
| ZMM 3V3 | 3.10 | 3.50 | 5.0 | 2 | 1.0 | 85 | 5.0 |
| ZMM 3V6 | 3.40 | 3.80 | 5.0 | 2 | 1.0 | 85 | 5.0 |
| ZMM 3V9 | 3.70 | 4.10 | 5.0 | 2 | 1.0 | 85 | 5.0 |
| ZMM 4V3 | 4.00 | 4.60 | 5.0 | 1 | 1.0 | 75 | 5.0 |
| ZMM 4V7 | 4.40 | 5.00 | 5.0 | 0.5 | 1.0 | 60 | 5.0 |
| ZMM 5V1 | 4.80 | 5.40 | 5.0 | 0.1 | 1.0 | 35 | 5.0 |
| ZMM 5V6 | 5.20 | 6.00 | 5.0 | 0.1 | 1.0 | 25 | 5.0 |
| ZMM 6V2 | 5.80 | 6.60 | 5.0 | 0.1 | 2.0 | 10 | 5.0 |
| ZMM 6V8 | 6.40 | 7.20 | 5.0 | 0.1 | 3.0 | 8 | 5.0 |
| ZMM 7V5 | 7.00 | 7.90 | 5.0 | 0.1 | 5.0 | 7 | 5.0 |
| ZMM 8V2 | 7.70 | 8.70 | 5.0 | 0.1 | 6.2 | 7 | 5.0 |
| ZMM 9V1 | 8.50 | 9.60 | 5.0 | 0.1 | 6.8 | 10 | 5.0 |
| ZMM 10 | 9.40 | 10.60 | 5.0 | 0.1 | 7.5 | 15 | 5.0 |

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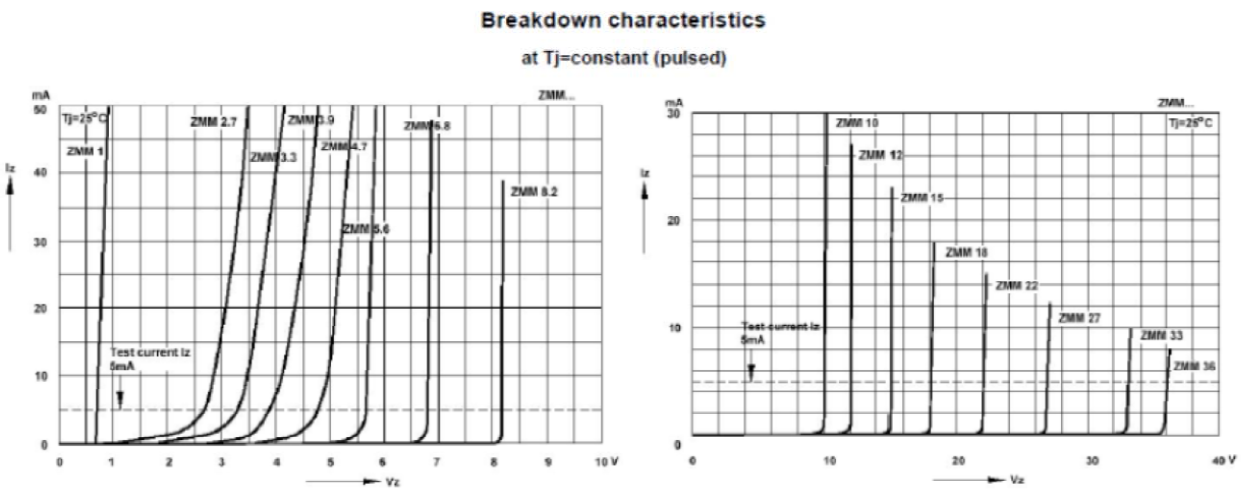
| TYPE | Zener Voltage | | | Reverse Carrent | | Dynamic Resistance | |
|---|---|---|---|---|---|---|---|
| | Vz(V) | | Test Condition | Ir(uA) | Test Condition | rd(Ω) | Test Condition |
| | Min. | Max. | Iz(mA) | Max. | Vr(V) | Max. | Iz(mA) |
| ZMM 11 | 10.40 | 11.60 | 5.0 | 0.1 | 8.2 | 20 | 5.0 |
| ZMM 12 | 11.40 | 12.70 | 5.0 | 0.1 | 9.1 | 20 | 5.0 |
| ZMM 13 | 12.40 | 14.10 | 5.0 | 0.1 | 10.0 | 26 | 5.0 |
| ZMM 14 | 13.30 | 14.70 | 5.0 | 0.1 | 10.0 | 26 | 5.0 |
| ZMM 15 | 13.80 | 15.60 | 5.0 | 0.1 | 11.0 | 30 | 5.0 |
| ZMM 16 | 15.30 | 17.10 | 5.0 | 0.1 | 12.0 | 40 | 5.0 |
| ZMM 18 | 16.80 | 19.10 | 5.0 | 0.1 | 13.0 | 50 | 5.0 |
| ZMM 20 | 18.80 | 21.20 | 5.0 | 0.1 | 15.0 | 55 | 5.0 |
| ZMM 22 | 20.80 | 23.30 | 5.0 | 0.1 | 16.0 | 55 | 5.0 |
| ZMM 24 | 22.80 | 25.60 | 5.0 | 0.1 | 18.0 | 80 | 5.0 |
| ZMM 27 | 25.10 | 28.90 | 5.0 | 0.1 | 20.0 | 80 | 5.0 |
| ZMM 30 | 28.00 | 32.00 | 5.0 | 0.1 | 22.0 | 80 | 5.0 |
| ZMM 33 | 31.00 | 35.00 | 5.0 | 0.1 | 24.0 | 80 | 5.0 |
| ZMM 36 | 34.00 | 38.00 | 5.0 | 0.1 | 27.0 | 80 | 5.0 |
| ZMM 39 | 37.00 | 41.00 | 5.0 | 0.1 | 30.0 | 90 | 2.5 |

**Notes:**

1) Tested with pulses tp = 20ms.
2) VF(Max)=1.20V@ IF=200mA
3) The Zener voltages are graded according to the international E 24 Standard .Smaller voltage tolerances and higher Zener voltages are upon request
4) These diodes are also available in DO-35 case with the type designation BZX55C



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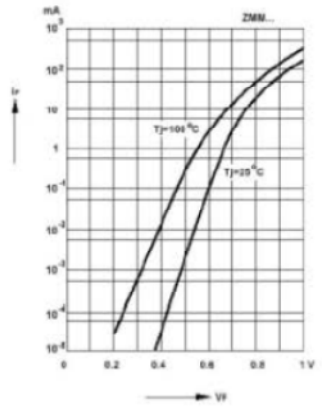
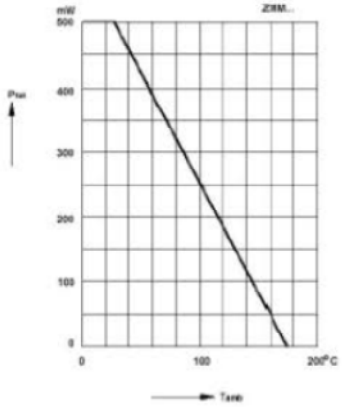
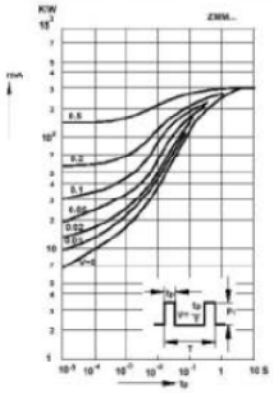
### Forward characteristics



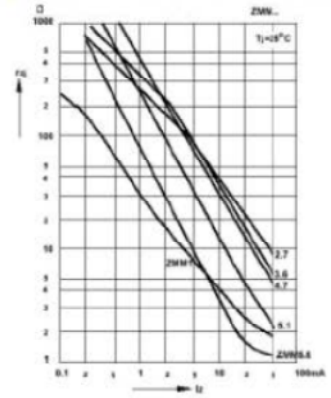
### Admissible power dissipation versus ambient temperature



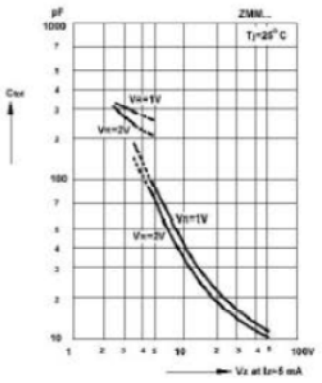
### Pulse thermal resistance versus pulse duration



### Dynamic resistance versus Zener current



### Capacitance versus Zener voltage



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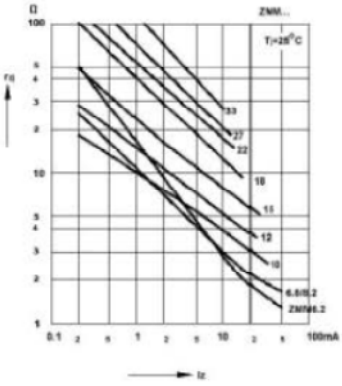

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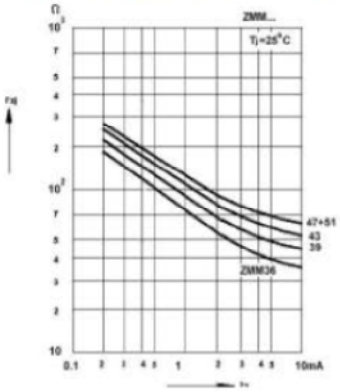
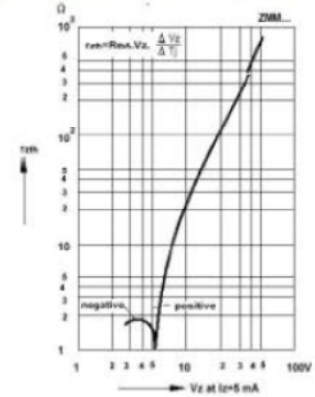
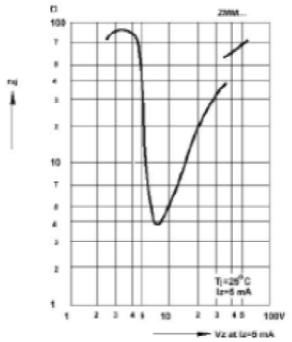


### Thermal differential resistance versus Zener voltage

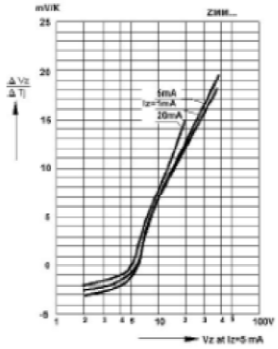


# ZMM Series

Dynamic resistance versus Zener voltage




Temperature dependence of Zener voltage versus Zener voltage

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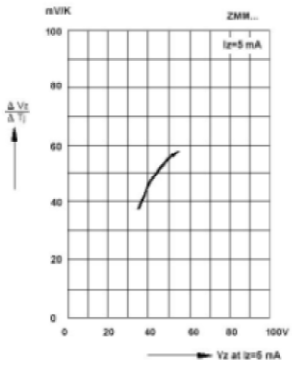
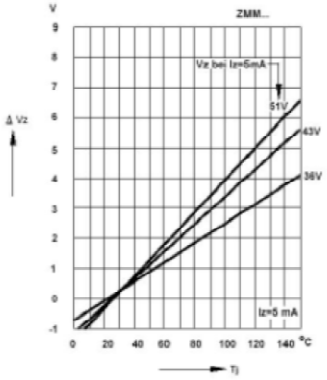



Change of Zener voltage versus junction temperature

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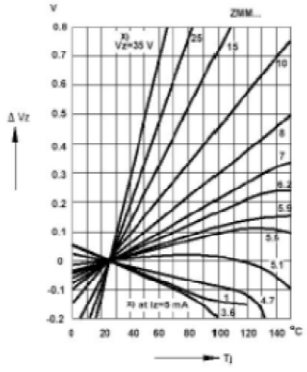
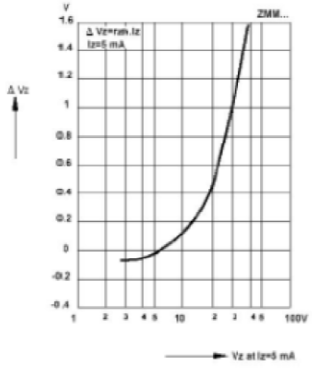
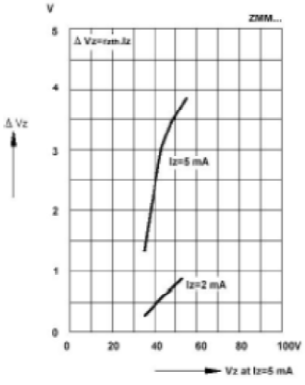


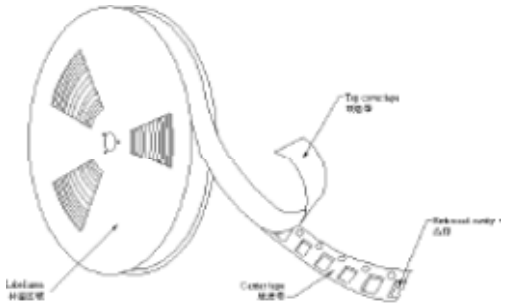

Change of Zener voltge from turn-on up to the point of thermal equilibrium versus Zener voltage



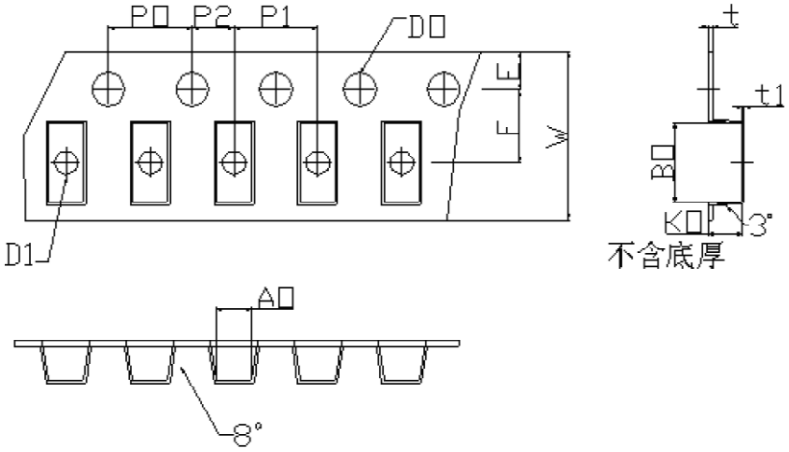

Change of Zener voltge from turn-on up to the point of thermal equilibrium versus Zener voltage



Taping of SMD-Components



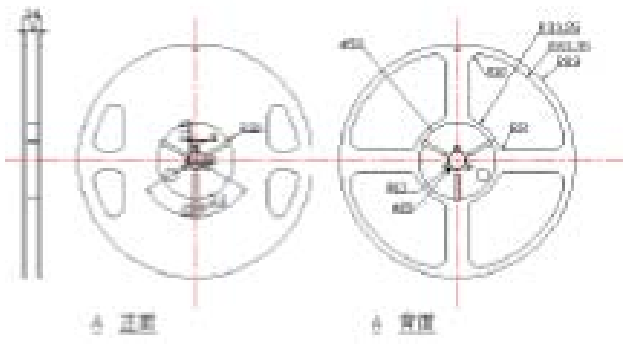
8mm carrier tape for Mini-MELF package dimensions in mm




| 代号 | 规格 |
|---|---|
| W | 8.00±0.10 |
| E | 1.75 0.10 |
| F | 3.50±0.05 |
| D0 | 1.50±0.05 |
| D1 | 1.00±0.00 |
| P0 | 4.0 0.10 |
| P1 | 4.0 0.10 |
| P2 | 2.0 0.05 |
| A0 | 1.6 0.10 |
| B0 | 3.7 0.10 |
| K0 | 1.6 0.10 |
| t | 0.22 0.05 |
| t1 | 0.05 以上 |
| 10*P0 | 40.00±0.20 |

The beginning of the tape comprises a 200mm long lead-in with vacant nests and at the hub end of the tape there are 10 to 20 sealed nests containing no devices. This end of the tap automatically detaches from the hub of the reel at the end of the inreeling procedure (Draft DIN IEC 49(CO)564).

The packaging units for taped devices are

| Type of case | Qty / reel | Reel Φ |
|---|---|---|
| MiniMELF | 2,500 | 178mm |

Reel for 8-mm carrier tapes