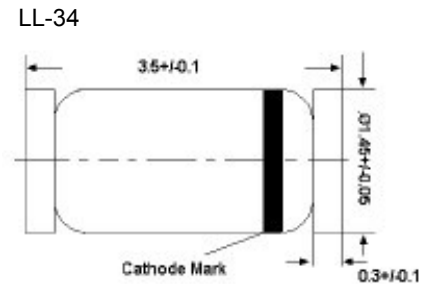


ZMM1...ZMM75 Silicon Epitaxial Planar Zener Diodes

in MiniMELF case especially for automatic insertion. The Zener voltages are graded according to the international E24 standard. Smaller voltage tolerances and higher Zener voltages are upon request.

These diodes are also available in DO-35 case with the type designation BZX55C...



Glass case MiniMELF
Dimensions in mm

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

| Parameter | Symbol | Value | Unit |
|--|------------------|-------------------|------------------|
| Power Dissipation | P_{tot} | 500 ¹⁾ | mW |
| Junction Temperature | T_j | 175 | $^\circ\text{C}$ |
| Storage Temperature Range | T_{stg} | - 55 to + 175 | $^\circ\text{C}$ |
| ¹⁾ Valid provided that electrodes are kept at ambient temperature | | | |

Characteristics at $T_a = 25\text{ }^\circ\text{C}$

| Parameter | Symbol | Max. | Unit |
|--|------------------|-------------------|------|
| Thermal Resistance Junction to Ambient Air | R_{thA} | 0.3 ¹⁾ | K/mW |
| Forward Voltage at $I_F = 100\text{ mA}$ | V_F | 1 | V |
| ¹⁾ Valid provided that electrodes are kept at ambient temperature | | | |



Characteristics at $T_a = 25\text{ }^\circ\text{C}$

| Type | Zener Voltage Range ¹⁾ | | | Dynamic Resistance | | | Reverse Leakage Current | | | Temp. Coefficient of Zener Voltage TKvz (%/K) |
|--------------------|-----------------------------------|-------------|-------------|--------------------|-------------------|-------------|----------------------------------|-----------------------------------|----------|---|
| | V_{Znom} | V_{ZT} | at I_{ZT} | Z_{ZT} | Z_{ZK} | at I_{ZK} | $T_a = 25\text{ }^\circ\text{C}$ | $T_a = 125\text{ }^\circ\text{C}$ | at V_R | |
| | (V) | (V) | (mA) | Max. (Ω) | Max. (Ω) | (mA) | Max. (μA) | Max. (μA) | (V) | |
| 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 |

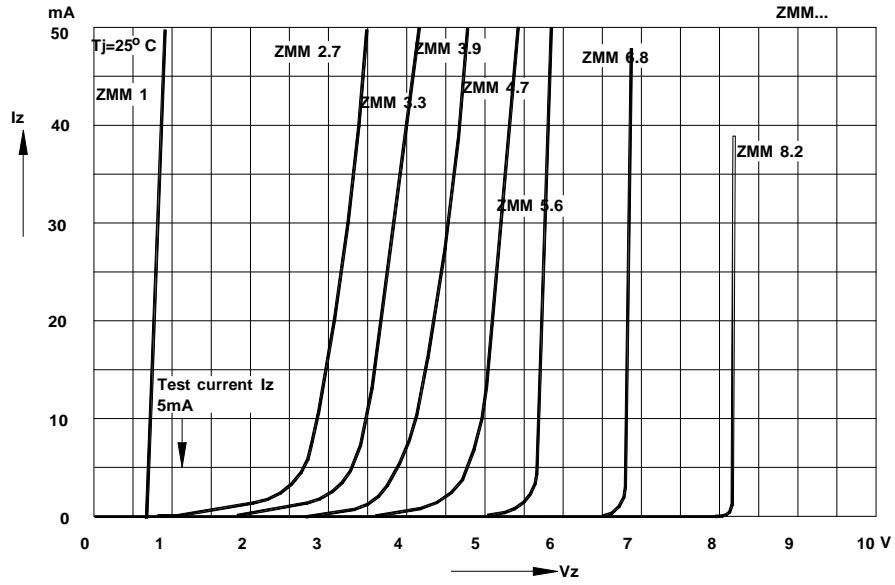
1) Tested with pulses $t_p = 20\text{ ms}$.

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.



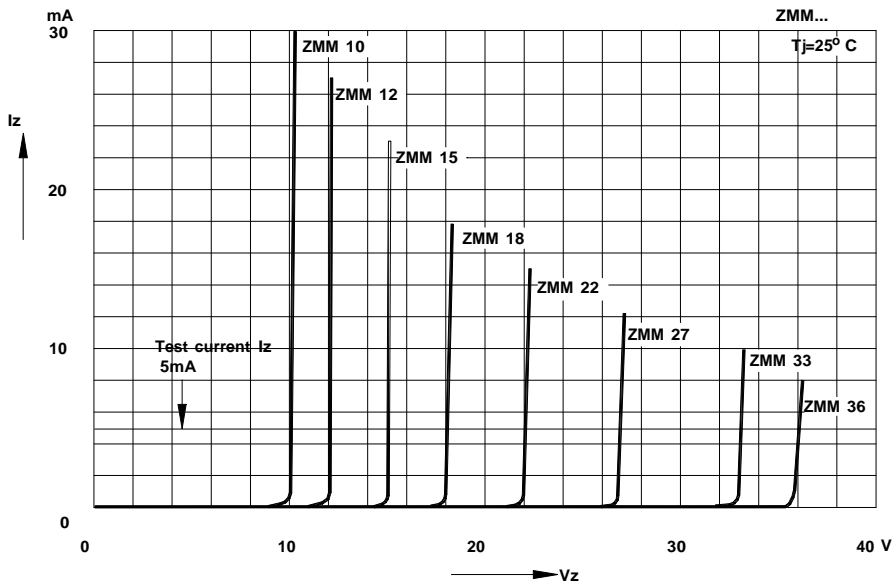
Breakdown characteristics

$T_j = \text{constant}$ (pulsed)



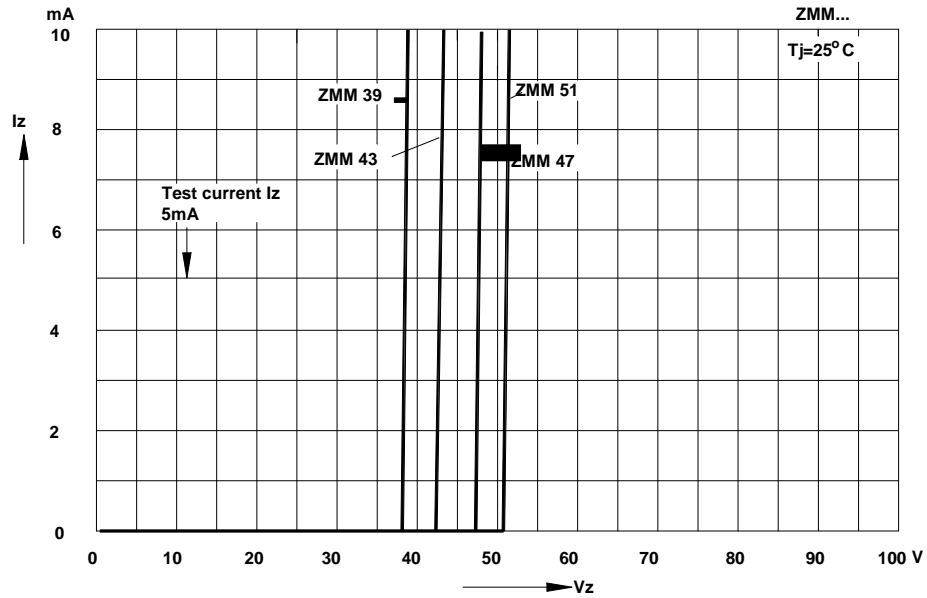
Breakdown characteristics

$T_j = \text{constant}$ (pulsed)

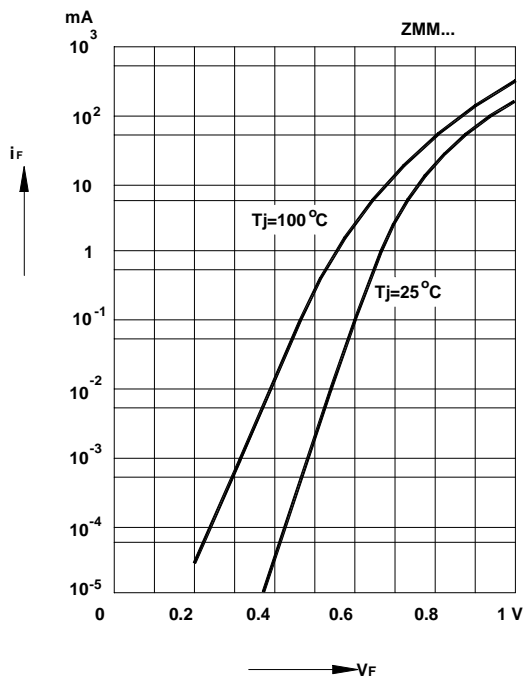




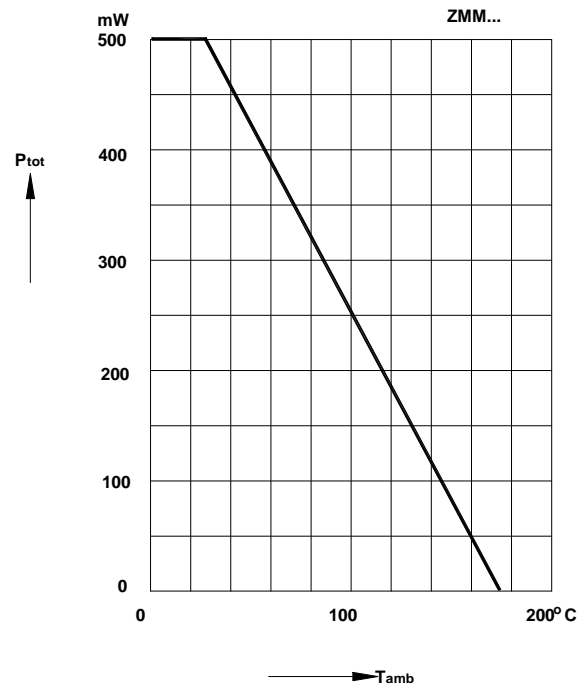
Breakdown characteristics $T_j = \text{constant (pulsed)}$

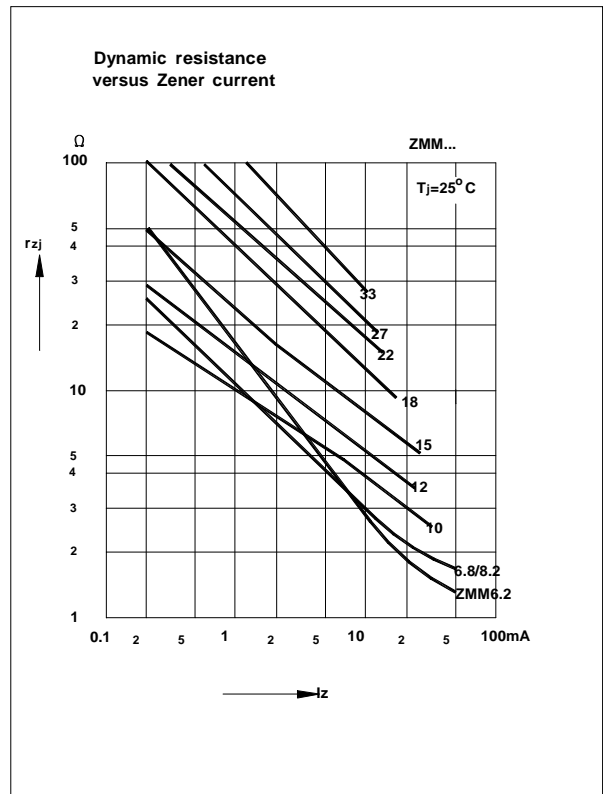
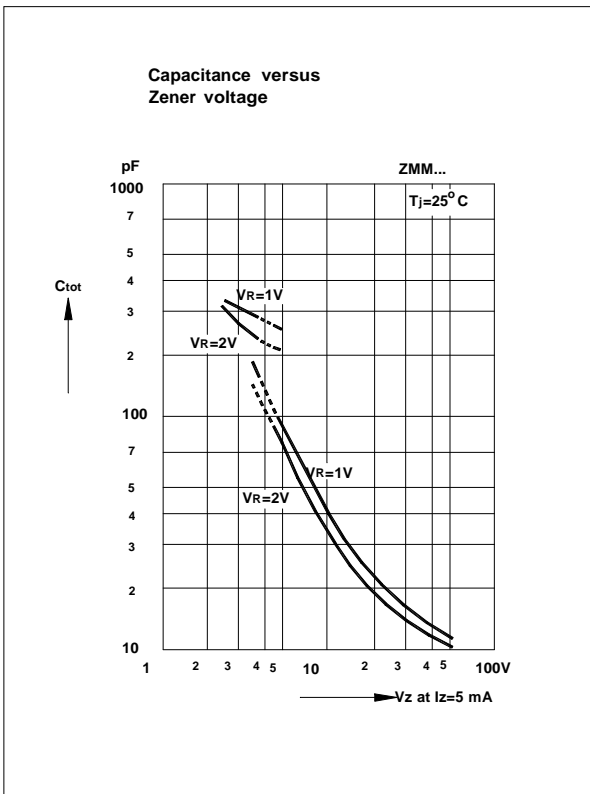
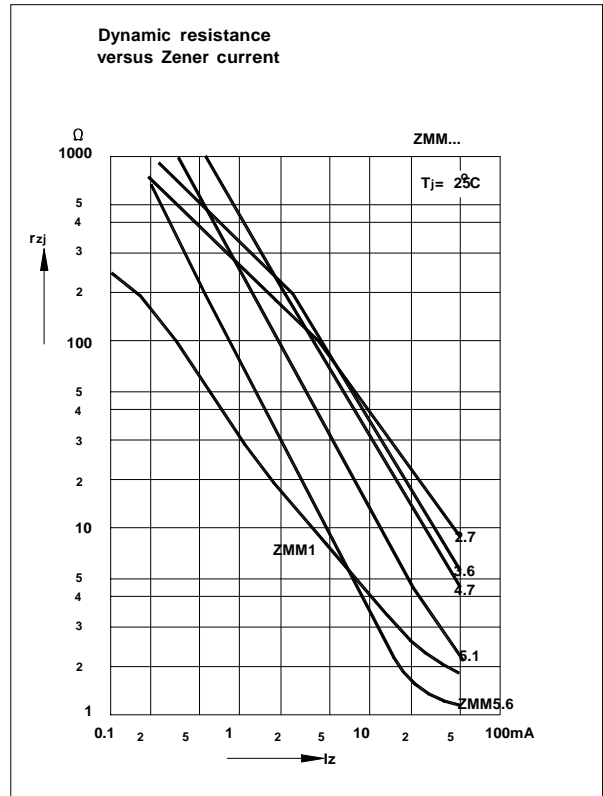
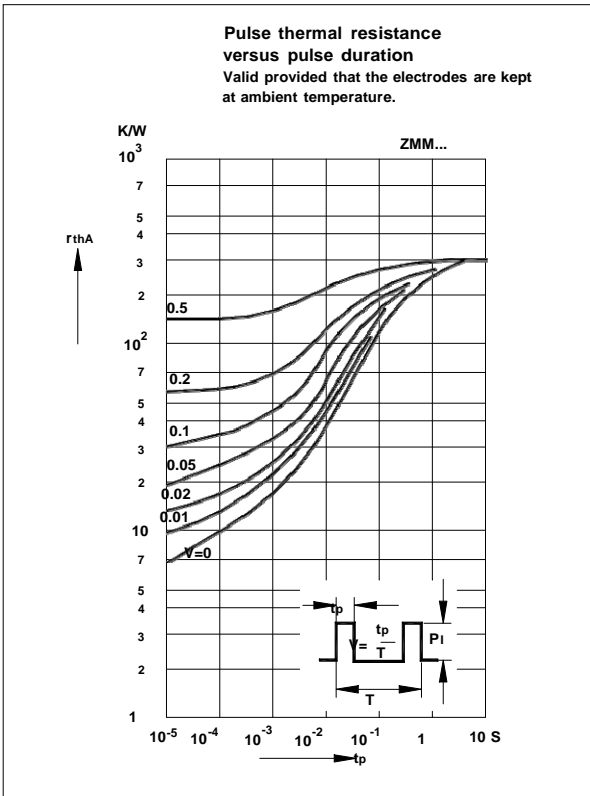


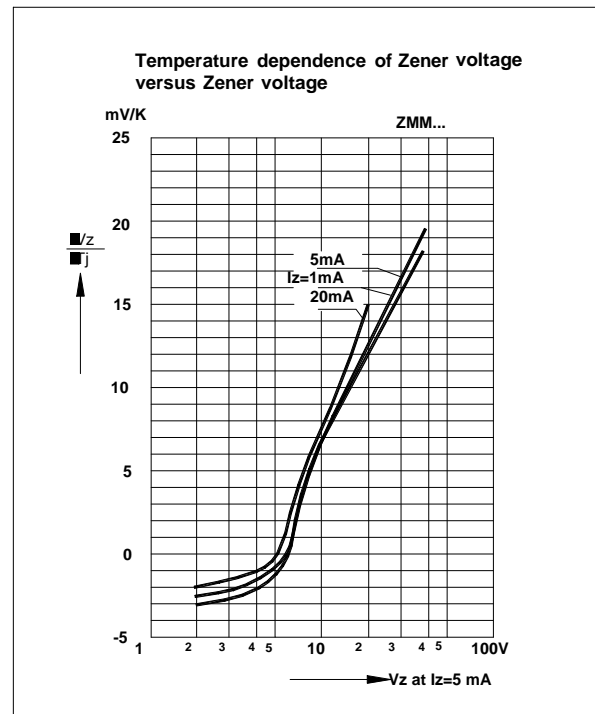
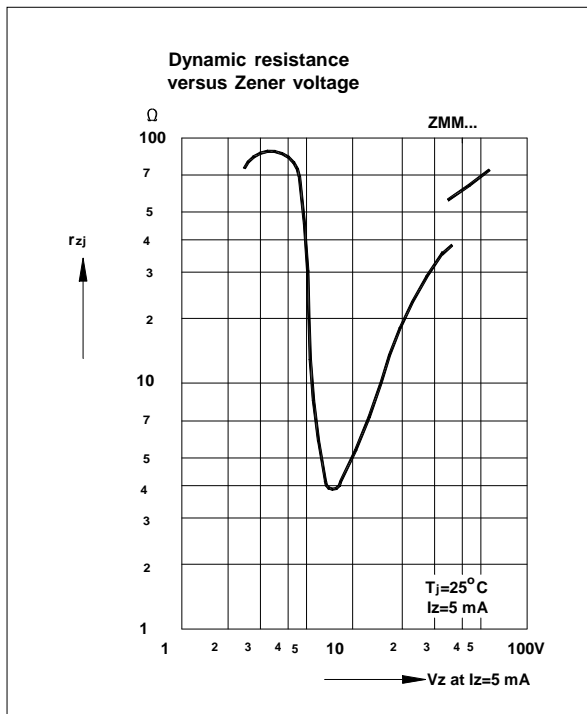
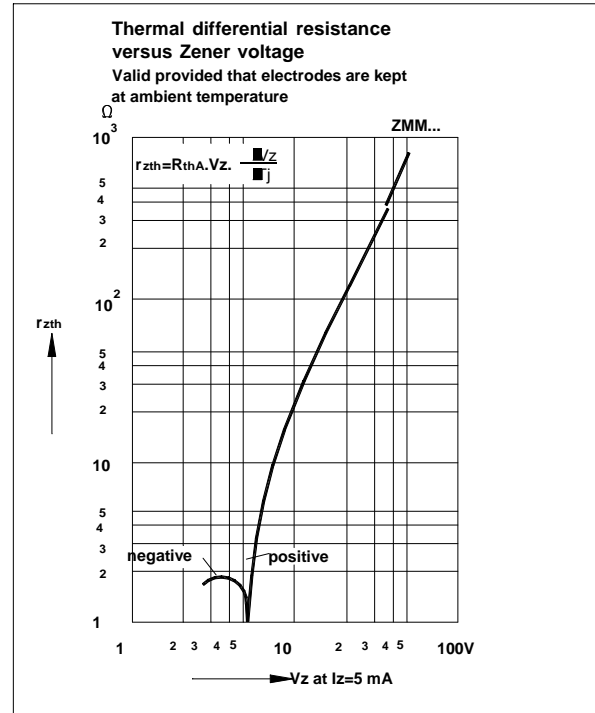
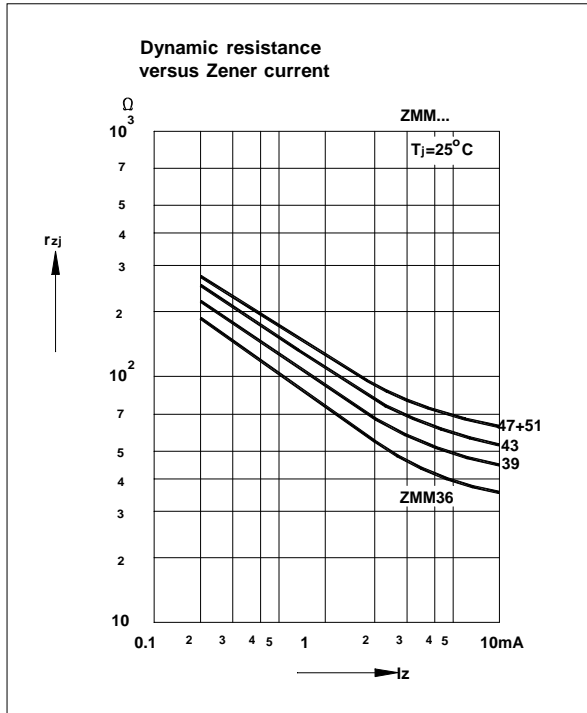
Forward characteristics

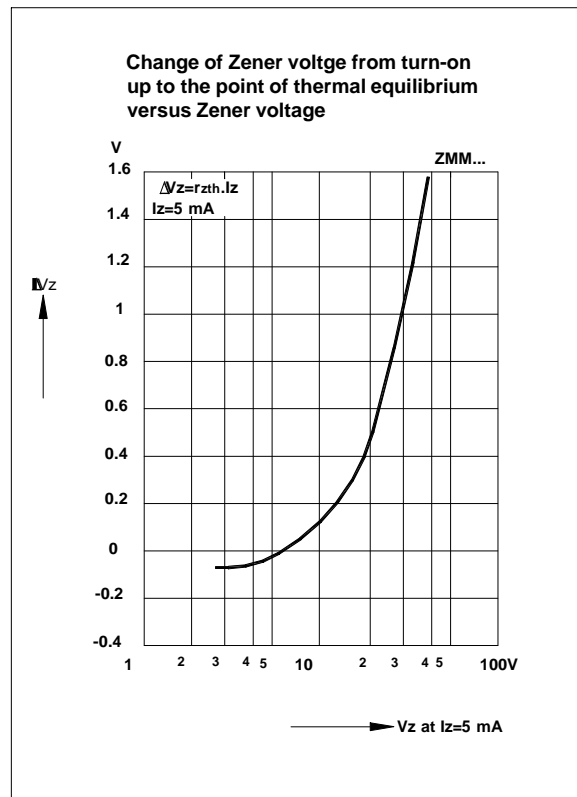
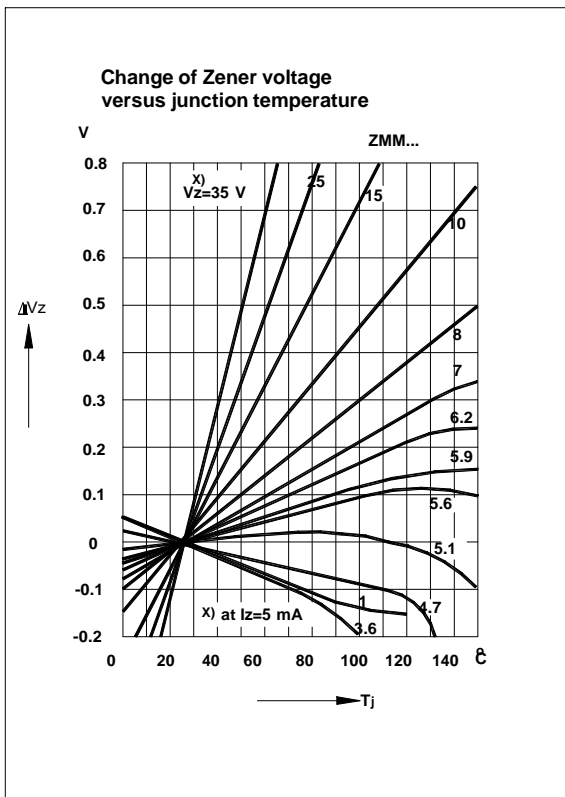
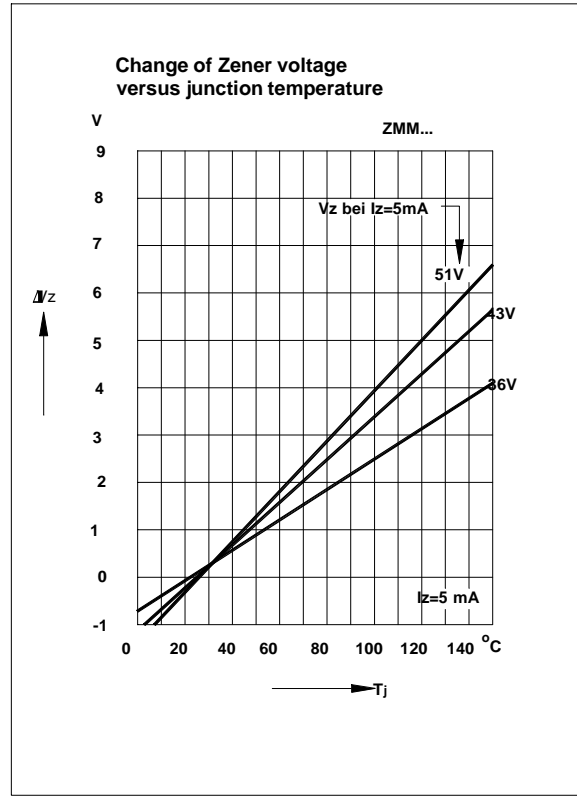
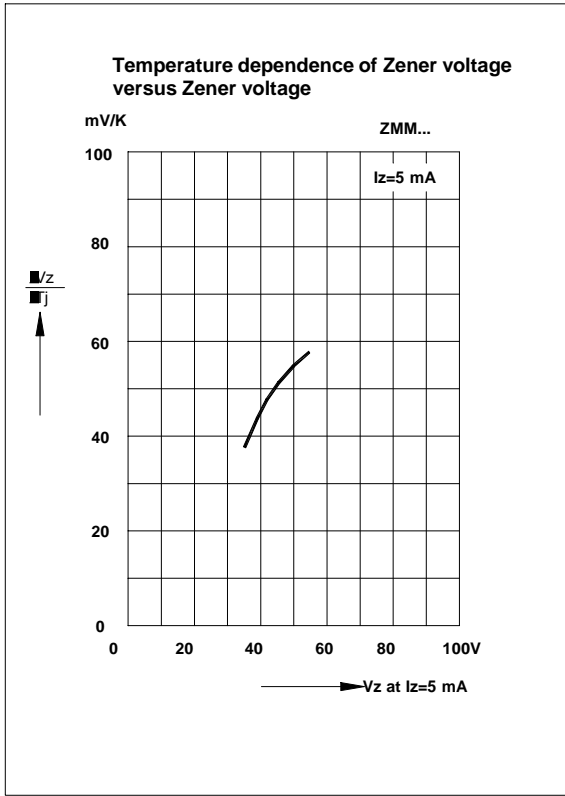


Admissible power dissipation versus ambient temperature Valid provided that electrodes are kept at ambient temperature.











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

