

ZMM 1...ZMM200

SILICON PLANAR ZENER DIODES

in MiniMELF case especially for automatic insertion. The Zener voltages are graded according to the international E 24 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...

LL-34



Glass case MiniMELF
Dimensions in mm

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

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

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

| | Symbol | Min. | Typ. | 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 | | | | | |



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| Type | Zener Voltage Range ¹⁾ | | | Dynamic Resistance | | | Reverse Leakage Current | | | Temp coefficient of Zener Voltage |
|---------------------|-----------------------------------|-----------------------|--|-----------------------|--|-----------------------|----------------------------|-----------------------------|---------------------------------------|-----------------------------------|
| | V _{znom} V | I _{ZT} mA | for V _{ZT} ²⁾ V | r _{ZJT} Ω | r _{ZJK} at I _{ZK} Ω | I _{ZK} mA | T _a =25°C μA | T _a =125°C μA | I _R at V _R V | TKvz %/K |
| ZMM 1 ³⁾ | 0.75 | 5 | 0.7...0.8 | <8 | <50 | 1 | -- | -- | -- | -0.26...-0.23 |
| ZMM 2V0 | 2.0 | 5 | 1.80...2.15 | <85 | <600 | 1 | <100 | <200 | 1 | -0.09...-0.06 |
| ZMM 2V2 | 2.2 | 5 | 2.08...2.33 | <85 | <600 | 1 | <75 | <160 | 1 | -0.09...-0.06 |
| ZMM 2V4 | 2.4 | 5 | 2.28...2.56 | <85 | <600 | 1 | <50 | <100 | 1 | -0.09...-0.06 |
| ZMM 2V7 | 2.7 | 5 | 2.5...2.9 | <85 | <600 | 1 | <10 | <50 | 1 | -0.09...-0.06 |
| ZMM 3V0 | 3.0 | 5 | 2.8...3.2 | <85 | <600 | 1 | <4 | <40 | 1 | -0.08...-0.05 |
| ZMM 3V3 | 3.3 | 5 | 3.1...3.5 | <85 | <600 | 1 | <2 | <40 | 1 | -0.08...-0.05 |
| ZMM 3V6 | 3.6 | 5 | 3.4...3.8 | <85 | <600 | 1 | <2 | <40 | 1 | -0.08...-0.05 |
| ZMM 3V9 | 3.9 | 5 | 3.7...4.1 | <85 | <600 | 1 | <2 | <40 | 1 | -0.08...-0.05 |
| ZMM 4V3 | 4.3 | 5 | 4.0...4.6 | <75 | <600 | 1 | <1 | <20 | 1 | -0.06...-0.03 |
| ZMM 4V7 | 4.7 | 5 | 4.4...5.0 | <60 | <600 | 1 | <0.5 | <10 | 1 | -0.05...+0.02 |
| ZMM 5V1 | 5.1 | 5 | 4.8...5.4 | <35 | <550 | 1 | <0.1 | <2 | 1 | -0.02...+0.02 |
| ZMM 5V6 | 5.6 | 5 | 5.2...6.0 | <25 | <450 | 1 | <0.1 | <2 | 1 | -0.05...+0.05 |
| ZMM 6V2 | 6.2 | 5 | 5.8...6.6 | <10 | <200 | 1 | <0.1 | <2 | 2 | 0.03...0.06 |
| ZMM 6V8 | 6.8 | 5 | 6.4...7.2 | <8 | <150 | 1 | <0.1 | <2 | 3 | 0.03...0.07 |
| ZMM 7V5 | 7.5 | 5 | 7.0...7.9 | <7 | <50 | 1 | <0.1 | <2 | 5 | 0.03...0.07 |
| ZMM 8V2 | 8.2 | 5 | 7.7...8.7 | <7 | <50 | 1 | <0.1 | <2 | 6.2 | 0.03...0.08 |
| ZMM 9V1 | 9.1 | 5 | 8.5...9.6 | <10 | <50 | 1 | <0.1 | <2 | 6.8 | 0.03...0.09 |
| ZMM 10 | 10 | 5 | 9.4...10.6 | <15 | <70 | 1 | <0.1 | <2 | 7.5 | 0.03...0.1 |
| ZMM 11 | 11 | 5 | 10.4...11.6 | <20 | <70 | 1 | <0.1 | <2 | 8.2 | 0.03...0.11 |
| ZMM 12 | 12 | 5 | 11.4...12.7 | <20 | <90 | 1 | <0.1 | <2 | 9.1 | 0.03...0.11 |
| ZMM 13 | 13 | 5 | 12.4...14.1 | <26 | <110 | 1 | <0.1 | <2 | 10 | 0.03...0.11 |
| ZMM 15 | 15 | 5 | 13.8...15.6 | <30 | <110 | 1 | <0.1 | <2 | 11 | 0.03...0.11 |
| ZMM 16 | 16 | 5 | 15.3...17.1 | <40 | <170 | 1 | <0.1 | <2 | 12 | 0.03...0.11 |
| ZMM 18 | 18 | 5 | 16.8...19.1 | <50 | <170 | 1 | <0.1 | <2 | 13 | 0.03...0.11 |
| ZMM 20 | 20 | 5 | 18.8...21.2 | <55 | <220 | 1 | <0.1 | <2 | 15 | 0.03...0.11 |
| ZMM 22 | 22 | 5 | 20.8...23.3 | <55 | <220 | 1 | <0.1 | <2 | 16 | 0.04...0.12 |
| ZMM 24 | 24 | 5 | 22.8...25.6 | <80 | <220 | 1 | <0.1 | <2 | 18 | 0.04...0.12 |
| ZMM 27 | 27 | 5 | 25.1...28.9 | <80 | <220 | 1 | <0.1 | <2 | 20 | 0.04...0.12 |
| ZMM 30 | 30 | 5 | 28...32 | <80 | <220 | 1 | <0.1 | <2 | 22 | 0.04...0.12 |
| ZMM 33 | 33 | 5 | 31...35 | <80 | <220 | 1 | <0.1 | <2 | 24 | 0.04...0.12 |
| ZMM 36 | 36 | 5 | 34...38 | <80 | <220 | 1 | <0.1 | <2 | 27 | 0.04...0.12 |
| ZMM 39 | 39 | 2.5 | 37...41 | <90 | <500 | 0.5 | <0.1 | <5 | 30 | 0.04...0.12 |
| ZMM 43 | 43 | 2.5 | 40...46 | <90 | <500 | 0.5 | <0.1 | <5 | 33 | 0.04...0.12 |
| ZMM 47 | 47 | 2.5 | 44...50 | <110 | <600 | 0.5 | <0.1 | <5 | 36 | 0.04...0.12 |
| ZMM 51 | 51 | 2.5 | 48...54 | <125 | <700 | 0.5 | <0.1 | <10 | 39 | 0.04...0.12 |
| ZMM 56 | 56 | 2.5 | 52...60 | <135 | <700 | 0.5 | <0.1 | <10 | 43 | 0.04...0.12 |
| ZMM 62 | 62 | 2.5 | 58...66 | <150 | <1000 | 0.5 | <0.1 | <10 | 47 | 0.04...0.12 |
| ZMM 68 | 68 | 2.5 | 64...72 | <200 | <1000 | 0.5 | <0.1 | <10 | 51 | 0.04...0.12 |
| ZMM 75 | 75 | 2.5 | 70...79 | <250 | <1000 | 0.5 | <0.1 | <10 | 56 | 0.04...0.12 |
| ZMM 82 | 82 | 2.5 | 77...87 | <300 | <1500 | 0.25 | <0.1 | <10 | 62 | 0.05...0.12 |
| ZMM 91 | 91 | 1 | 85...96 | <450 | <2000 | 0.1 | <0.1 | <10 | 68 | 0.05...0.12 |
| ZMM 100 | 100 | 1 | 94...106 | <450 | <5000 | 0.1 | <0.1 | <10 | 75 | 0.05...0.12 |
| ZMM 110 | 110 | 1 | 104...116 | <600 | <5000 | 0.1 | <0.1 | <10 | 82 | 0.05...0.12 |
| ZMM 120 | 120 | 1 | 114...127 | <800 | <5500 | 0.1 | <0.1 | <10 | 91 | 0.05...0.12 |
| ZMM 130 | 130 | 1 | 124...141 | <950 | <6000 | 0.1 | <0.1 | <10 | 100 | 0.05...0.12 |
| ZMM 150 | 150 | 1 | 138...156 | <1250 | <6500 | 0.1 | <0.1 | <10 | 110 | 0.05...0.12 |
| ZMM 160 | 160 | 1 | 153...171 | <1400 | <7000 | 0.1 | <0.1 | <10 | 120 | 0.05...0.12 |
| ZMM 180 | 180 | 1 | 168...191 | <1700 | <8500 | 0.1 | <0.1 | <10 | 130 | 0.05...0.12 |
| ZMM 200 | 200 | 1 | 188...212 | <2000 | <10000 | 0.1 | <0.1 | <10 | 150 | 0.05...0.12 |

- 1) Tested with pulses t_p = 20 ms.
- 2) Valid provided that electrodes are kept at ambient temperature
- 3) 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.



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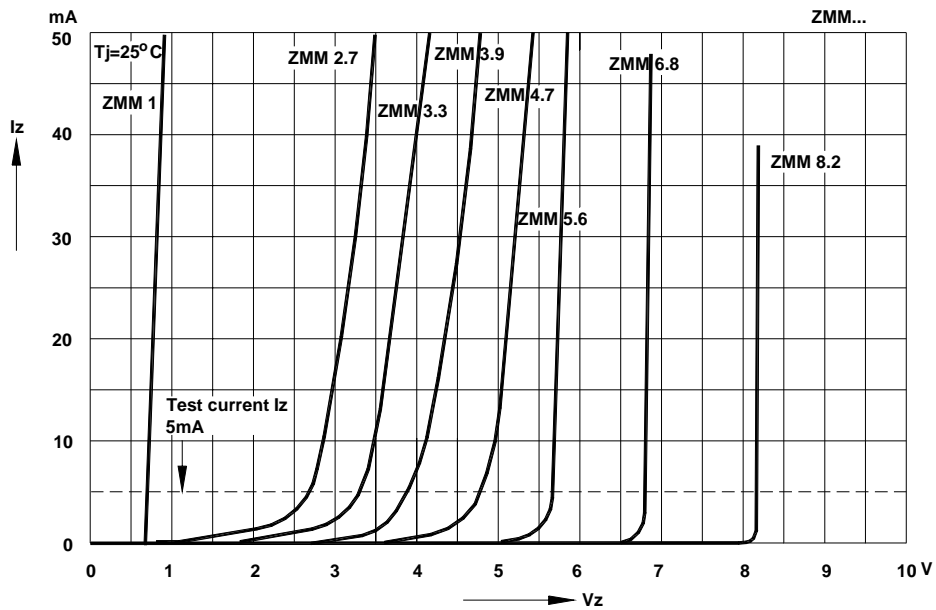
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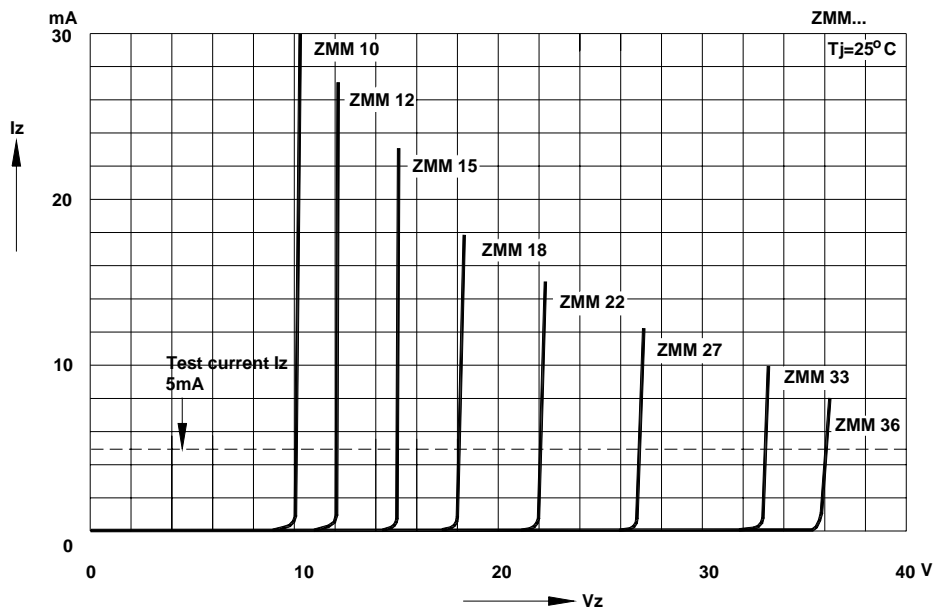
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Breakdown characteristics
 $T_j = \text{constant (pulsed)}$



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



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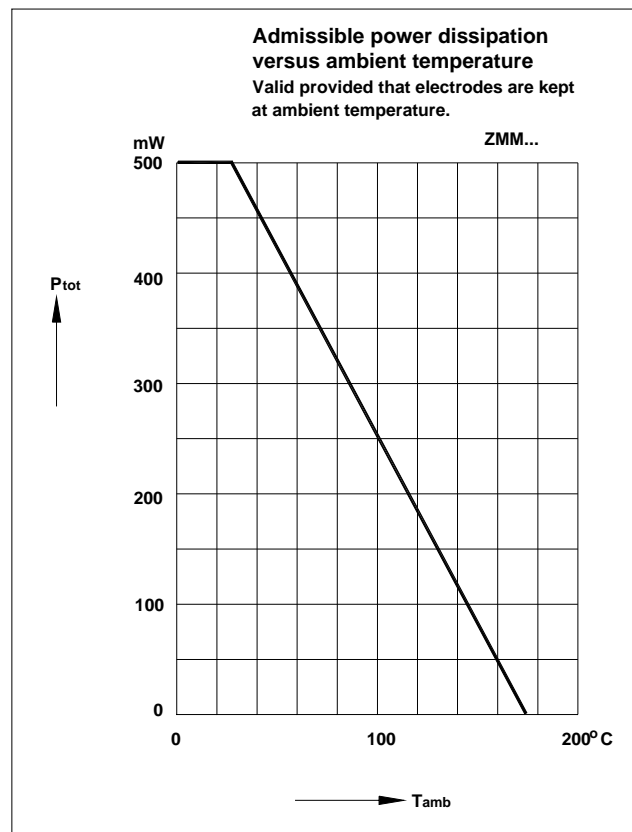
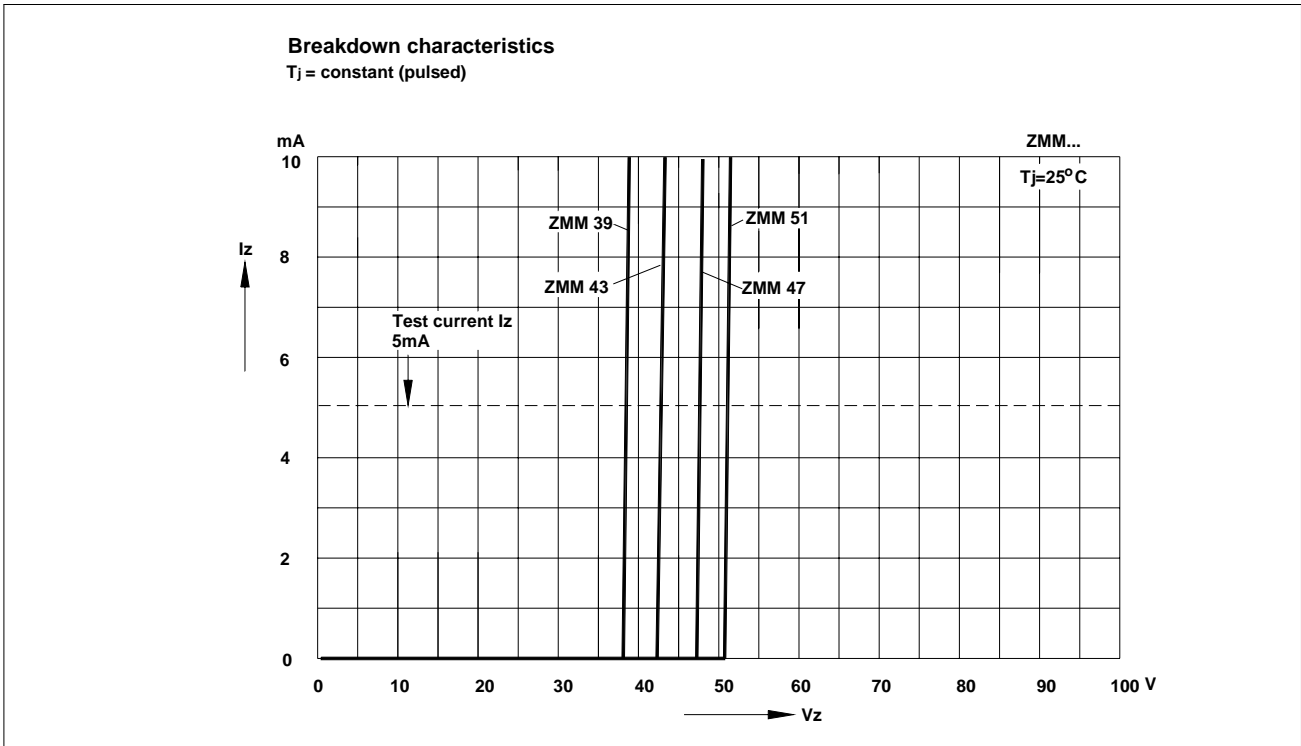
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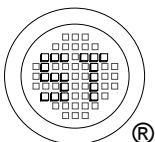
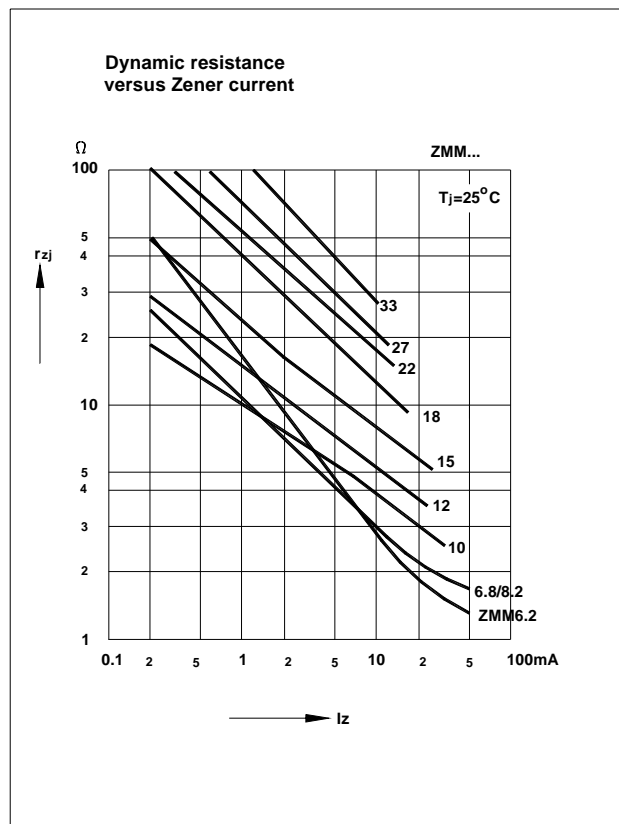
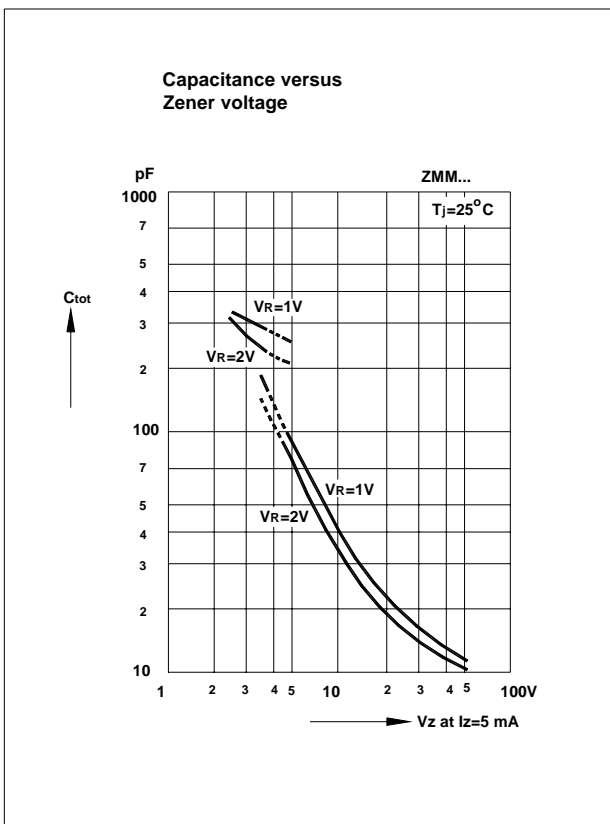
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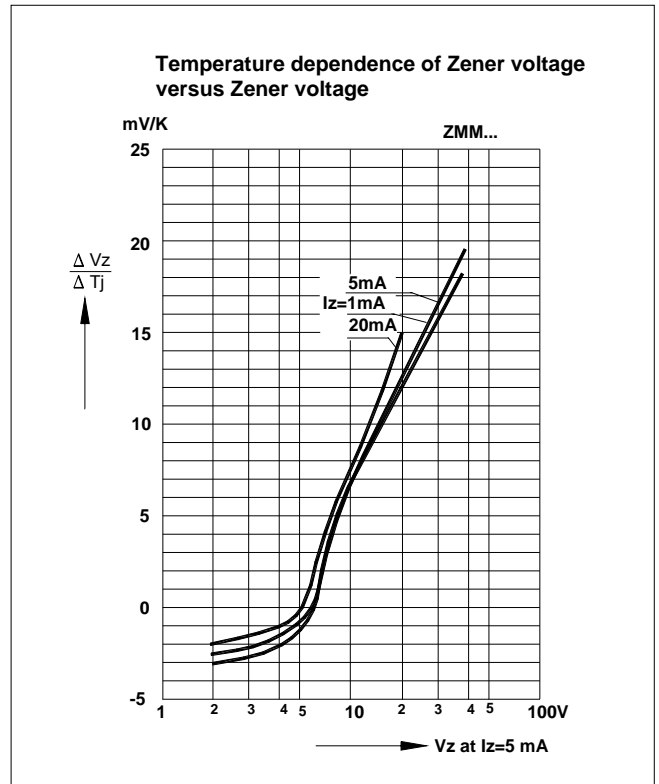
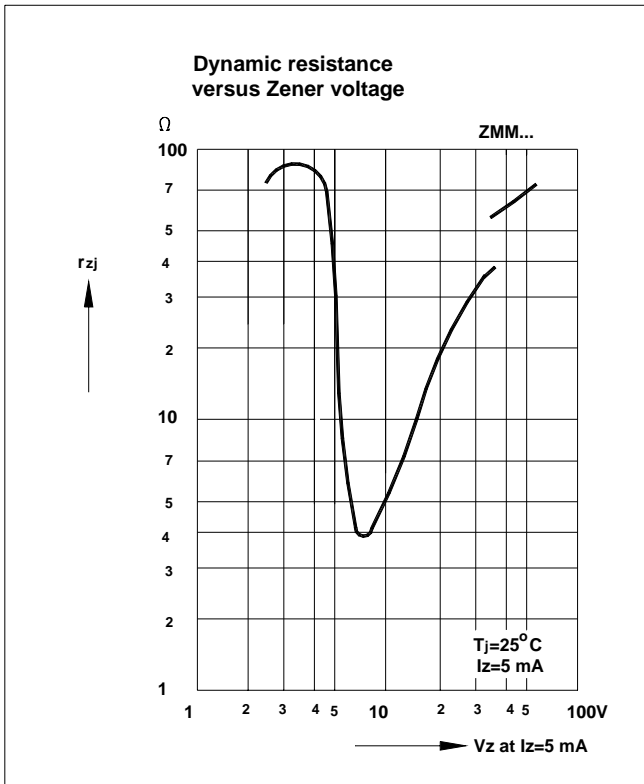
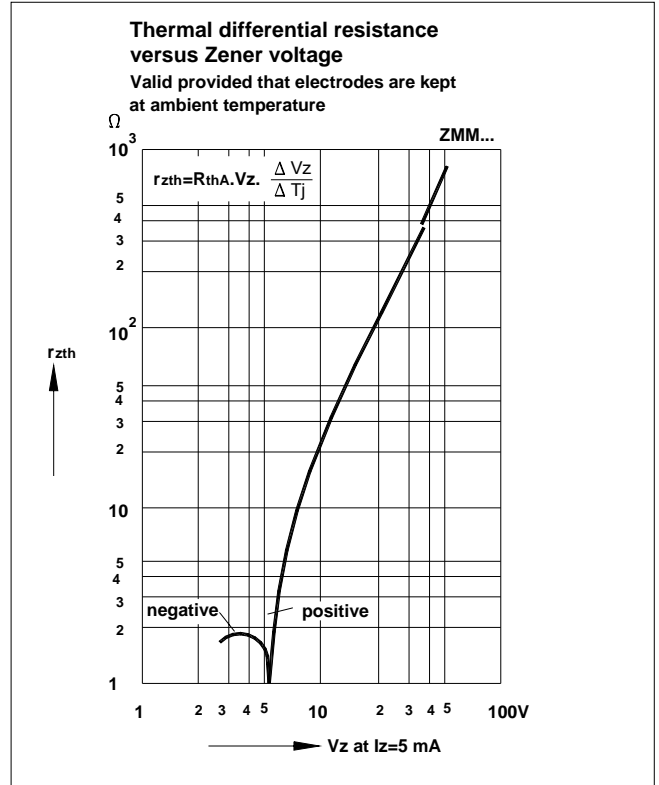
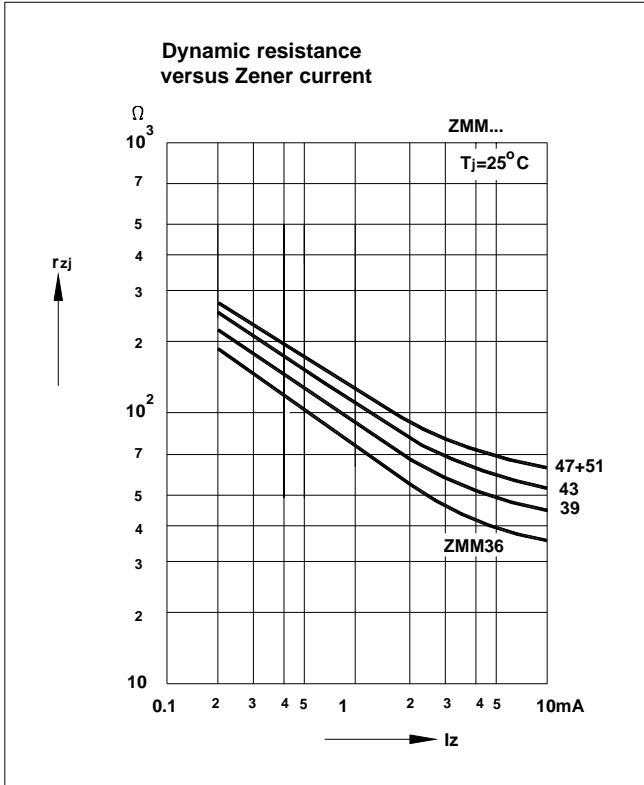
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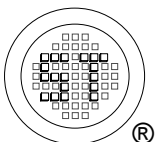
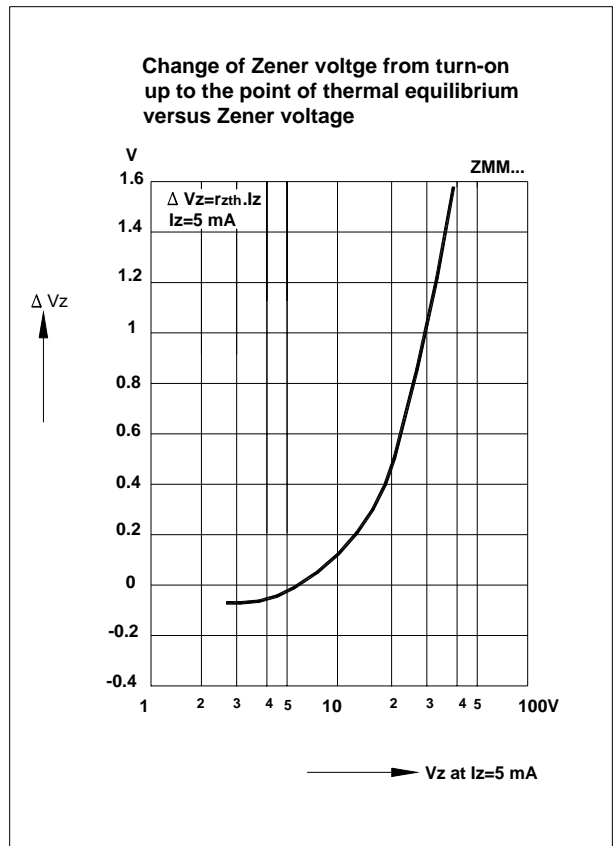
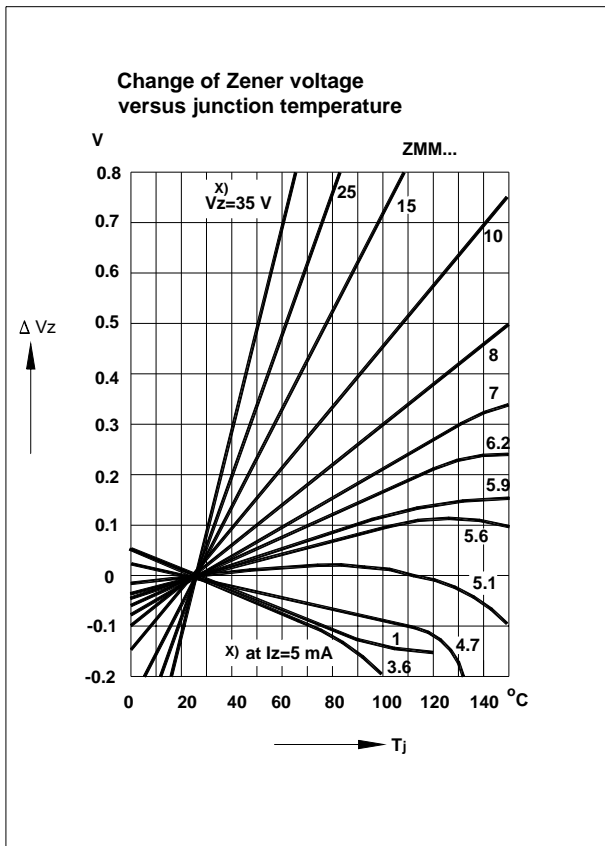
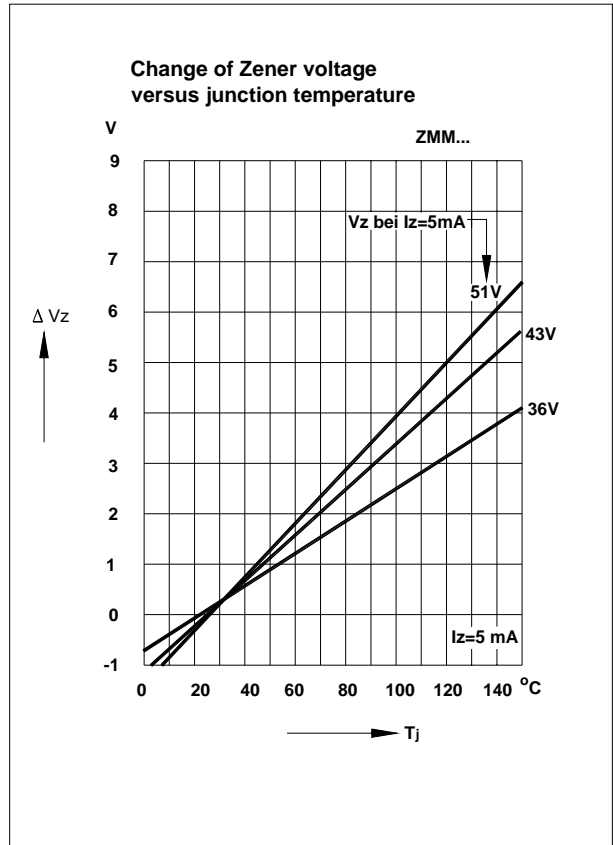
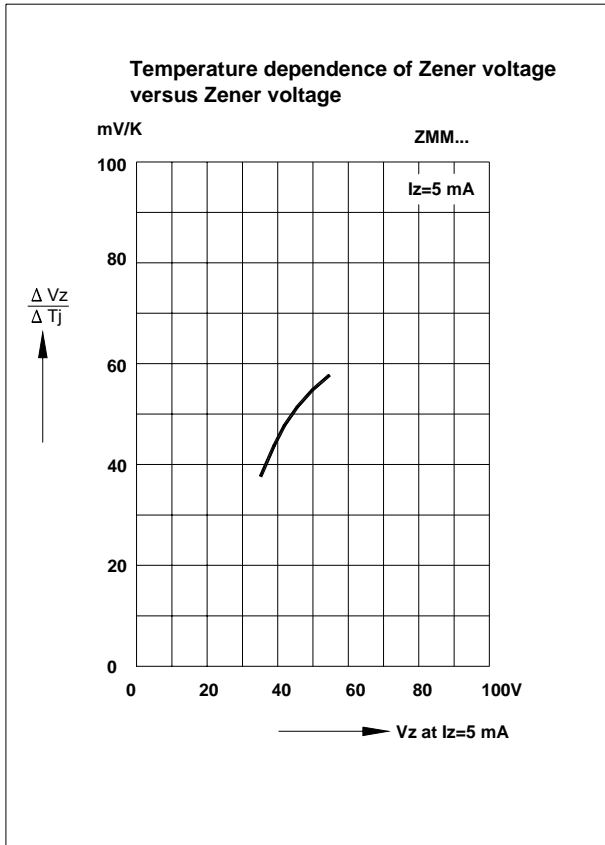
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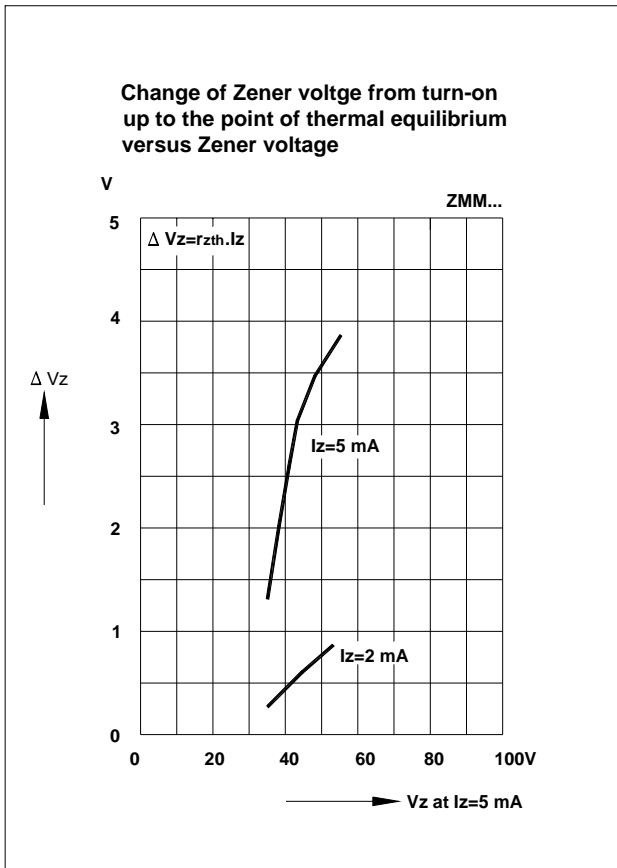
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