

## SILICON PLANAR ZENER DIODES

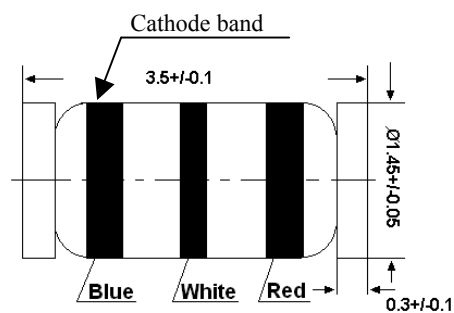
in MiniMELF case especially for automatic insertion. The Zener voltages are graded according to the international E 24 standard. Smaller voltage tolerances and higher Zener voltages are upon request.

These diodes are also available in DO-35 case with the type designation BZX55B

These diodes are delivered taped.

Details see "Taping".

LL-34



Glass case MiniMELF  
Dimensions in mm

### Absolute Maximum Ratings (Ta = 25°C)

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

### Characteristics at T<sub>amb</sub> = 25°C

|                                                                              | Symbol    | Min. | Typ. | Max.              | Unit |
|------------------------------------------------------------------------------|-----------|------|------|-------------------|------|
| Thermal Resistance<br>Junction to Ambient Air                                | $R_{thA}$ | -    | -    | 0.3 <sup>1)</sup> | K/mW |
| <sup>1)</sup> Valid provided that electrodes are kept at ambient temperature |           |      |      |                   |      |

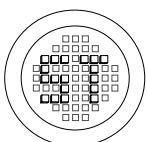
# ZMM 1B...ZMM200B

| Type                 | Zener Voltage Range <sup>1)</sup> |                       |                                        | Dynamic Resistance    |                          |                       | Reverse Leakage Current    |                             |                                       | Temp coefficient of Zener Voltage |
|----------------------|-----------------------------------|-----------------------|----------------------------------------|-----------------------|--------------------------|-----------------------|----------------------------|-----------------------------|---------------------------------------|-----------------------------------|
|                      | V <sub>znom</sub><br>V            | I <sub>ZT</sub><br>mA | for V <sub>ZT</sub> <sup>2)</sup><br>V | r <sub>ZJT</sub><br>Ω | r <sub>ZJK</sub> at<br>Ω | I <sub>ZK</sub><br>mA | T <sub>a</sub> =25°C<br>μA | T <sub>a</sub> =125°C<br>μA | I <sub>R</sub> at V <sub>R</sub><br>V | TKvz<br>%/K                       |
| ZMM 1B <sup>3)</sup> | 0.75                              | 5                     | 0.73...0.77                            | <8                    | <50                      | 1                     | --                         | --                          | --                                    | -0.26...-0.23                     |
| ZMM 2B0              | 2.0                               | 5                     | 1.96...2.04                            | <85                   | <600                     | 1                     | <100                       | <200                        | 1                                     | -0.09...-0.06                     |
| ZMM 2B2              | 2.2                               | 5                     | 2.15...2.25                            | <85                   | <600                     | 1                     | <75                        | <160                        | 1                                     | -0.09...-0.06                     |
| ZMM 2B4              | 2.4                               | 5                     | 2.35...2.45                            | <85                   | <600                     | 1                     | <50                        | <100                        | 1                                     | -0.09...-0.06                     |
| ZMM 2B7              | 2.7                               | 5                     | 2.64...2.75                            | <85                   | <600                     | 1                     | <10                        | <50                         | 1                                     | -0.09...-0.06                     |
| ZMM 3B0              | 3.0                               | 5                     | 2.94...3.06                            | <85                   | <600                     | 1                     | <4                         | <40                         | 1                                     | -0.08...-0.05                     |
| ZMM 3B3              | 3.3                               | 5                     | 3.23...3.36                            | <85                   | <600                     | 1                     | <2                         | <40                         | 1                                     | -0.08...-0.05                     |
| ZMM 3B6              | 3.6                               | 5                     | 3.52...3.67                            | <85                   | <600                     | 1                     | <2                         | <40                         | 1                                     | -0.08...-0.05                     |
| ZMM 3B9              | 3.9                               | 5                     | 3.82...3.98                            | <85                   | <600                     | 1                     | <2                         | <40                         | 1                                     | -0.08...-0.05                     |
| ZMM 4B3              | 4.3                               | 5                     | 4.21...4.39                            | <75                   | <600                     | 1                     | <1                         | <20                         | 1                                     | -0.06...-0.03                     |
| ZMM 4B7              | 4.7                               | 5                     | 4.60...4.80                            | <60                   | <600                     | 1                     | <0.5                       | <10                         | 1                                     | -0.05...+0.02                     |
| ZMM 5B1              | 5.1                               | 5                     | 4.99...5.20                            | <35                   | <550                     | 1                     | <0.1                       | <2                          | 1                                     | -0.02...+0.02                     |
| ZMM 5B6              | 5.6                               | 5                     | 5.49...5.71                            | <25                   | <450                     | 1                     | <0.1                       | <2                          | 1                                     | -0.05...+0.05                     |
| ZMM 6B2              | 6.2                               | 5                     | 6.07...6.32                            | <10                   | <200                     | 1                     | <0.1                       | <2                          | 2                                     | 0.03...0.06                       |
| ZMM 6B8              | 6.8                               | 5                     | 6.66...6.94                            | <8                    | <150                     | 1                     | <0.1                       | <2                          | 3                                     | 0.03...0.07                       |
| ZMM 7B5              | 7.5                               | 5                     | 7.35...7.65                            | <7                    | <50                      | 1                     | <0.1                       | <2                          | 5                                     | 0.03...0.07                       |
| ZMM 8B2              | 8.2                               | 5                     | 8.04...8.36                            | <7                    | <50                      | 1                     | <0.1                       | <2                          | 6.2                                   | 0.03...0.08                       |
| ZMM 9B1              | 9.1                               | 5                     | 8.92...9.28                            | <10                   | <50                      | 1                     | <0.1                       | <2                          | 6.8                                   | 0.03...0.09                       |
| ZMM 10B              | 10                                | 5                     | 9.8...10.2                             | <15                   | <70                      | 1                     | <0.1                       | <2                          | 7.5                                   | 0.03...0.1                        |
| ZMM 11B              | 11                                | 5                     | 10.8...11.2                            | <20                   | <70                      | 1                     | <0.1                       | <2                          | 8.2                                   | 0.03...0.11                       |
| ZMM 12B              | 12                                | 5                     | 11.8...12.2                            | <20                   | <90                      | 1                     | <0.1                       | <2                          | 9.1                                   | 0.03...0.11                       |
| ZMM 13B              | 13                                | 5                     | 12.7...13.3                            | <26                   | <110                     | 1                     | <0.1                       | <2                          | 10                                    | 0.03...0.11                       |
| ZMM 15B              | 15                                | 5                     | 14.7...15.3                            | <30                   | <110                     | 1                     | <0.1                       | <2                          | 11                                    | 0.03...0.11                       |
| ZMM 16B              | 16                                | 5                     | 15.7...16.3                            | <40                   | <170                     | 1                     | <0.1                       | <2                          | 12                                    | 0.03...0.11                       |
| ZMM 18B              | 18                                | 5                     | 17.6...18.4                            | <50                   | <170                     | 1                     | <0.1                       | <2                          | 13                                    | 0.03...0.11                       |
| ZMM 20B              | 20                                | 5                     | 19.6...20.4                            | <55                   | <220                     | 1                     | <0.1                       | <2                          | 15                                    | 0.03...0.11                       |
| ZMM 22B              | 22                                | 5                     | 21.6...22.5                            | <55                   | <220                     | 1                     | <0.1                       | <2                          | 16                                    | 0.04...0.12                       |
| ZMM 24B              | 24                                | 5                     | 23.5...24.5                            | <80                   | <220                     | 1                     | <0.1                       | <2                          | 18                                    | 0.04...0.12                       |
| ZMM 27B              | 27                                | 5                     | 26.4...27.6                            | <80                   | <220                     | 1                     | <0.1                       | <2                          | 20                                    | 0.04...0.12                       |
| ZMM 30B              | 30                                | 5                     | 29.4...30.6                            | <80                   | <220                     | 1                     | <0.1                       | <2                          | 22                                    | 0.04...0.12                       |
| ZMM 33B              | 33                                | 5                     | 32.3...33.7                            | <80                   | <220                     | 1                     | <0.1                       | <2                          | 24                                    | 0.04...0.12                       |
| ZMM 36B              | 36                                | 5                     | 35.2...36.8                            | <80                   | <220                     | 1                     | <0.1                       | <2                          | 27                                    | 0.04...0.12                       |
| ZMM 39B              | 39                                | 2.5                   | 38.2...39.8                            | <90                   | <500                     | 0.5                   | <0.1                       | <5                          | 30                                    | 0.04...0.12                       |
| ZMM 43B              | 43                                | 2.5                   | 42.1...43.9                            | <90                   | <500                     | 0.5                   | <0.1                       | <5                          | 33                                    | 0.04...0.12                       |
| ZMM 47B              | 47                                | 2.5                   | 46.0...48.0                            | <110                  | <600                     | 0.5                   | <0.1                       | <5                          | 36                                    | 0.04...0.12                       |
| ZMM 51B              | 51                                | 2.5                   | 49.9...52.1                            | <125                  | <700                     | 0.5                   | <0.1                       | <10                         | 39                                    | 0.04...0.12                       |
| ZMM 56B              | 56                                | 2.5                   | 54.8...57.2                            | <135                  | <700                     | 0.5                   | <0.1                       | <10                         | 43                                    | 0.04...0.12                       |
| ZMM 62B              | 62                                | 2.5                   | 60.7...63.3                            | <150                  | <1000                    | 0.5                   | <0.1                       | <10                         | 47                                    | 0.04...0.12                       |
| ZMM 68B              | 68                                | 2.5                   | 66.6...69.4                            | <200                  | <1000                    | 0.5                   | <0.1                       | <10                         | 51                                    | 0.04...0.12                       |
| ZMM 75B              | 75                                | 2.5                   | 73.5...76.5                            | <250                  | <1000                    | 0.5                   | <0.1                       | <10                         | 56                                    | 0.04...0.12                       |
| ZMM 82B              | 82                                | 2.5                   | 80.3...83.7                            | <300                  | <1500                    | 0.25                  | <0.1                       | <10                         | 62                                    | 0.05...0.12                       |
| ZMM 91B              | 91                                | 1                     | 89.1...92.9                            | <450                  | <2000                    | 0.1                   | <0.1                       | <10                         | 68                                    | 0.05...0.12                       |
| ZMM 100B             | 100                               | 1                     | 98.0...102.0                           | <450                  | <5000                    | 0.1                   | <0.1                       | <10                         | 75                                    | 0.05...0.12                       |
| ZMM 110B             | 110                               | 1                     | 107.8...112.2                          | <600                  | <5000                    | 0.1                   | <0.1                       | <10                         | 82                                    | 0.05...0.12                       |
| ZMM 120B             | 120                               | 1                     | 117.6...122.4                          | <800                  | <5500                    | 0.1                   | <0.1                       | <10                         | 91                                    | 0.05...0.12                       |
| ZMM 130B             | 130                               | 1                     | 127.4...132.6                          | <950                  | <6000                    | 0.1                   | <0.1                       | <10                         | 100                                   | 0.05...0.12                       |
| ZMM 150B             | 150                               | 1                     | 147.0...153.0                          | <1250                 | <6500                    | 0.1                   | <0.1                       | <10                         | 110                                   | 0.05...0.12                       |
| ZMM 160B             | 160                               | 1                     | 156.8...163.2                          | <1400                 | <7000                    | 0.1                   | <0.1                       | <10                         | 120                                   | 0.05...0.12                       |
| ZMM 180B             | 180                               | 1                     | 176.4...183.6                          | <1700                 | <8500                    | 0.1                   | <0.1                       | <10                         | 130                                   | 0.05...0.12                       |
| ZMM 200B             | 200                               | 1                     | 196.0...204.0                          | <2000                 | <10000                   | 0.1                   | <0.1                       | <10                         | 150                                   | 0.05...0.12                       |

1) Tested with pulses t<sub>p</sub> = 20 ms.

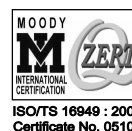
1) Valid provided that electrodes are kept at ambient temperature

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.



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ISO/TS 16949 : 2002  
Certificate No. 05103

ISO 14001:2004  
Certificate No. 7116

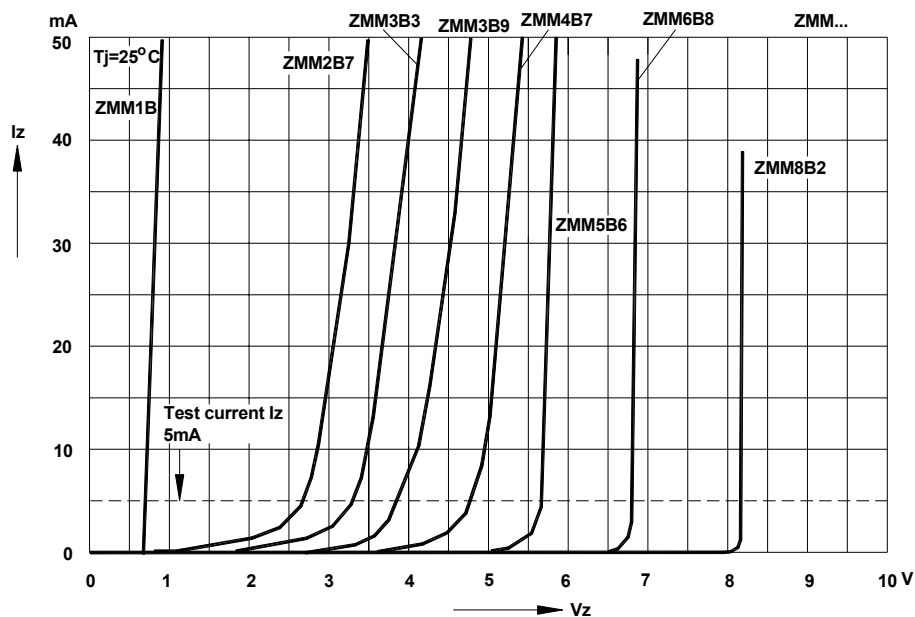
ISO 9001:2000  
Certificate No. 0506098

Dated : 20/09/2005

# ZMM 1B...ZMM200B

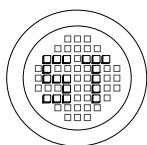
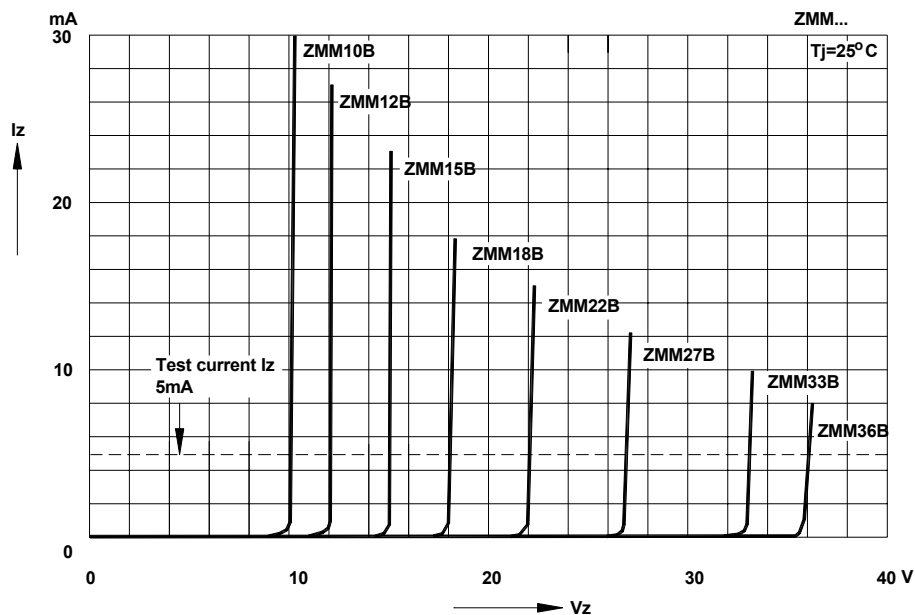
## Breakdown characteristics

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



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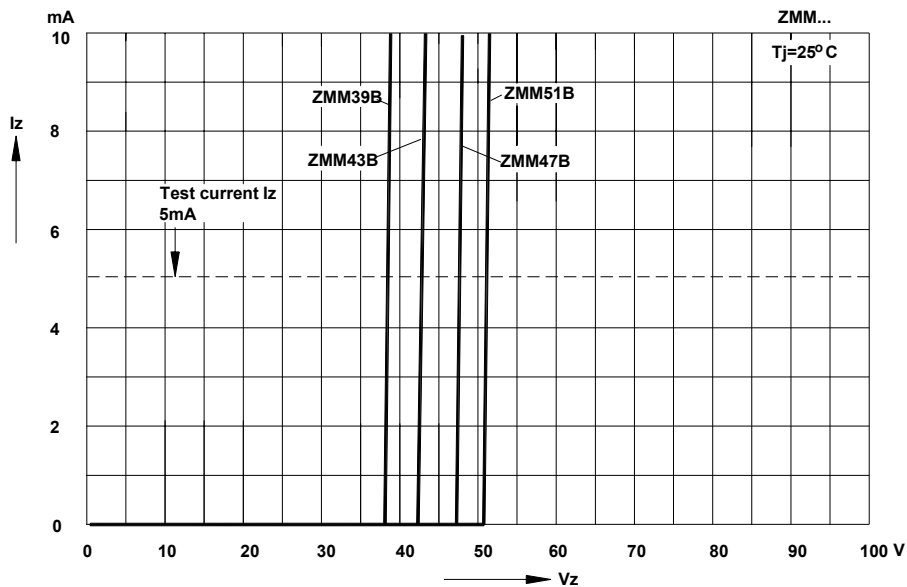


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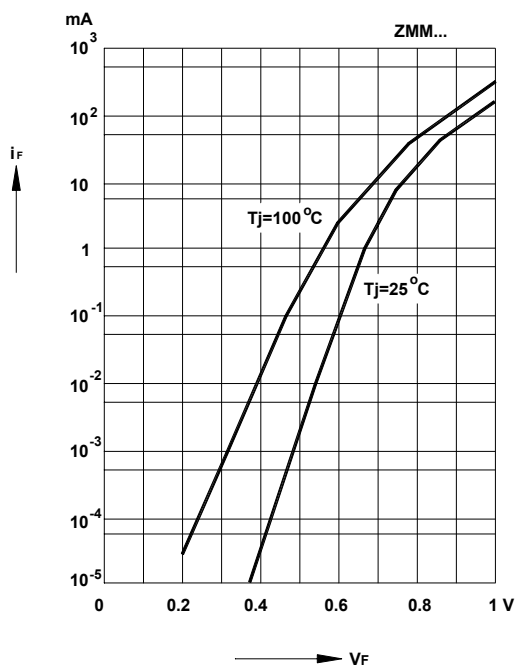
# ZMM 1B...ZMM200B

## Breakdown characteristics

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

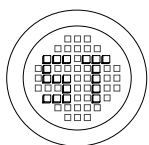
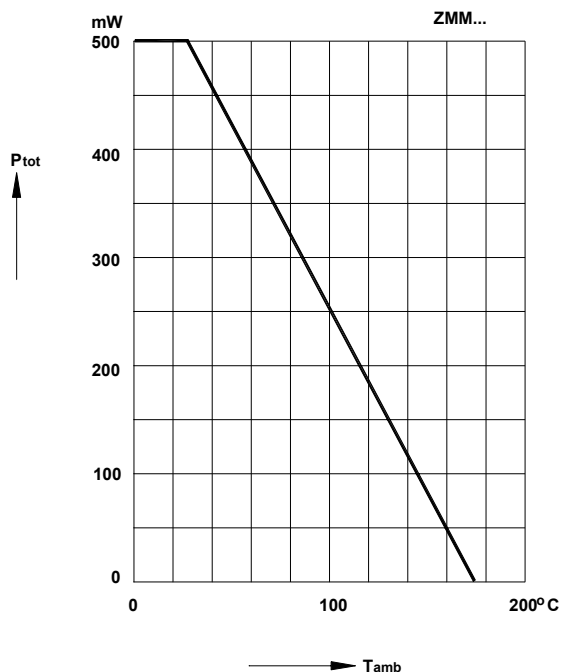


## Forward characteristics



## Admissible power dissipation versus ambient temperature

Valid provided that electrodes are kept at ambient temperature.



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ISO/TS 16949 : 2002  
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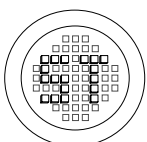
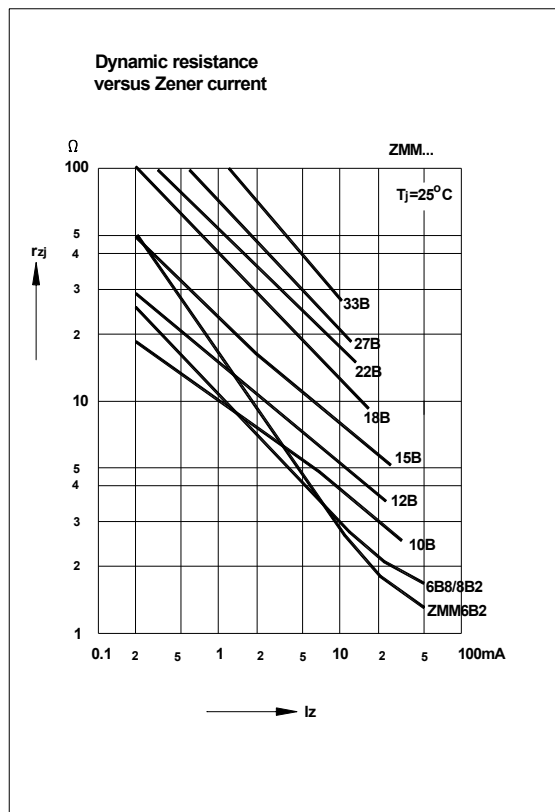
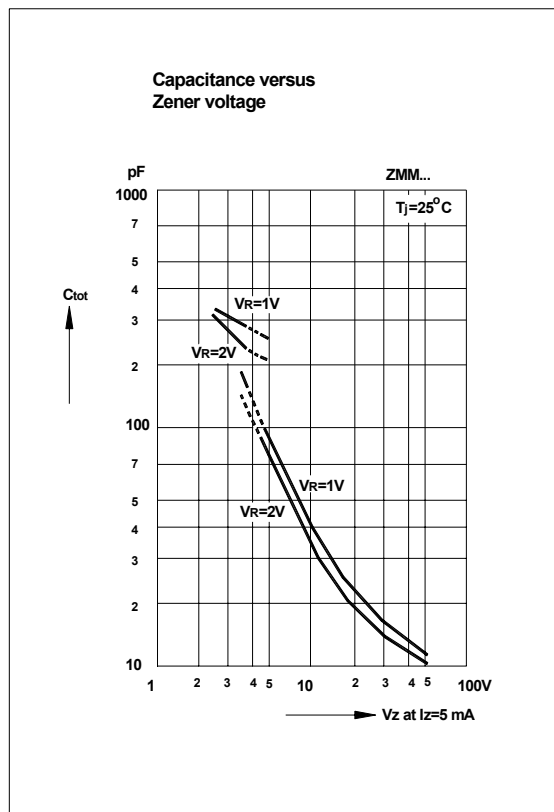
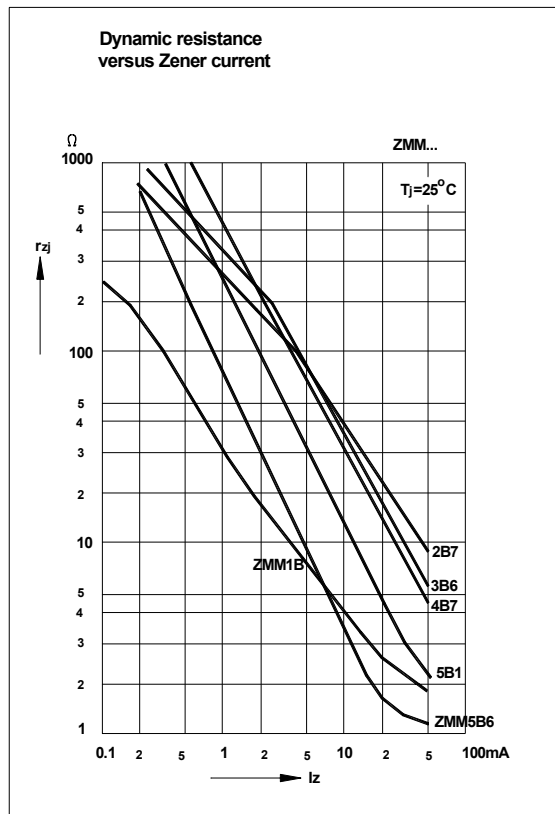
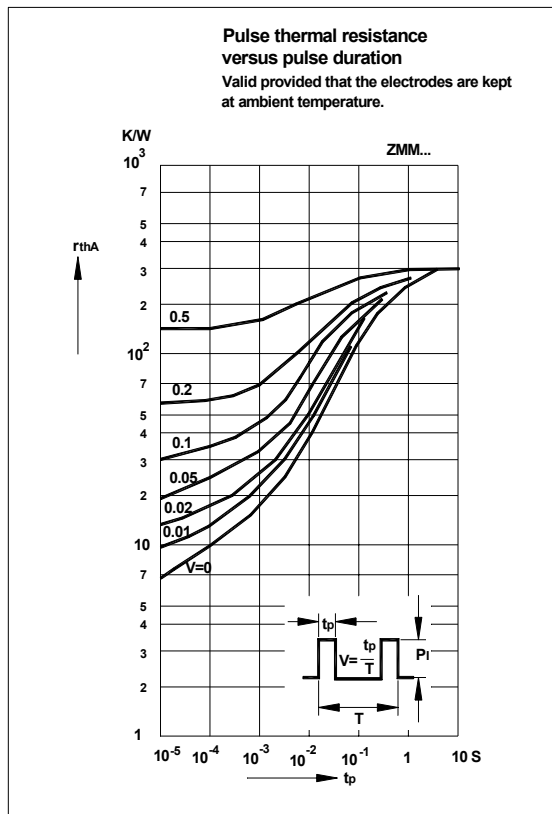
ISO 14001:2004  
Certificate No. 7116



ISO 9001:2000  
Certificate No. 0506098

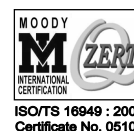
Dated : 20/09/2005

# ZMM 1B...ZMM200B



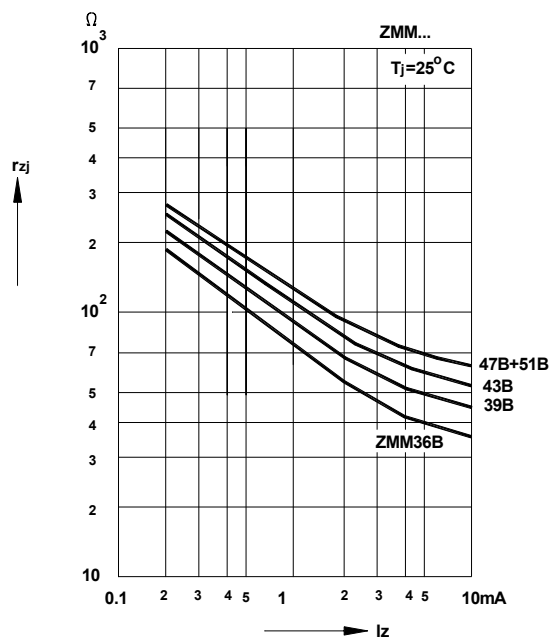
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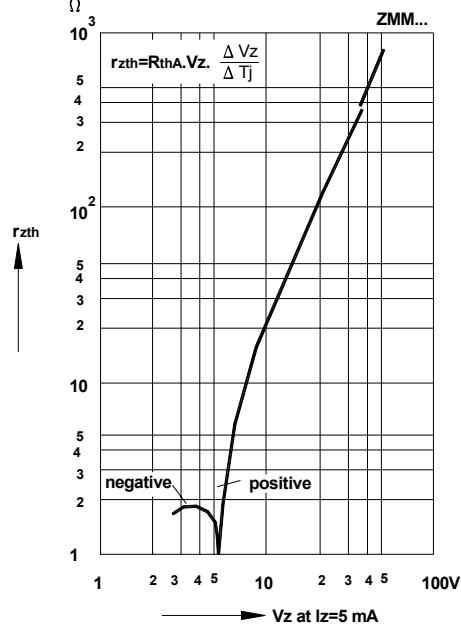
Dated : 20/09/2005

**Dynamic resistance versus Zener current**

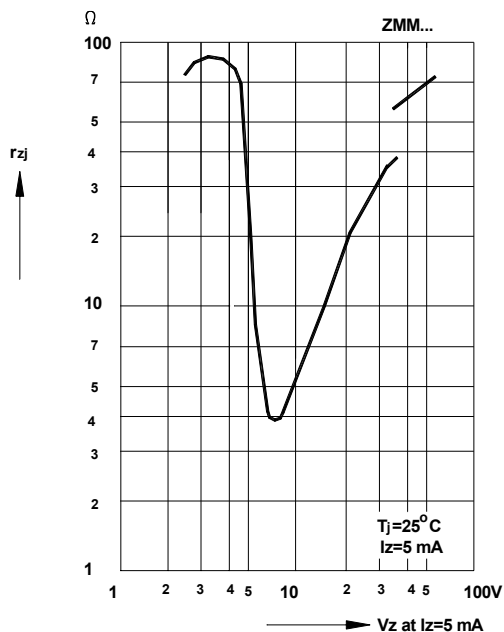


**Thermal differential resistance versus Zener voltage**

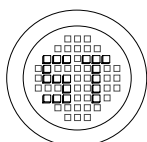
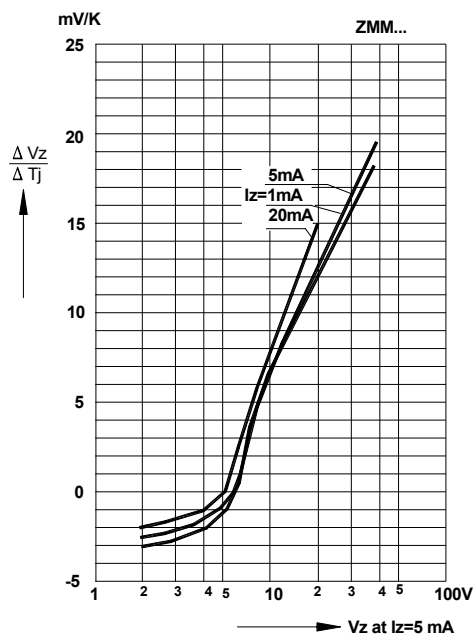
Valid provided that electrodes are kept at ambient temperature



**Dynamic resistance versus Zener voltage**

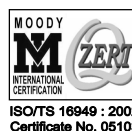


**Temperature dependence of Zener voltage versus Zener voltage**



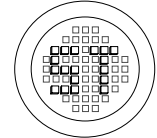
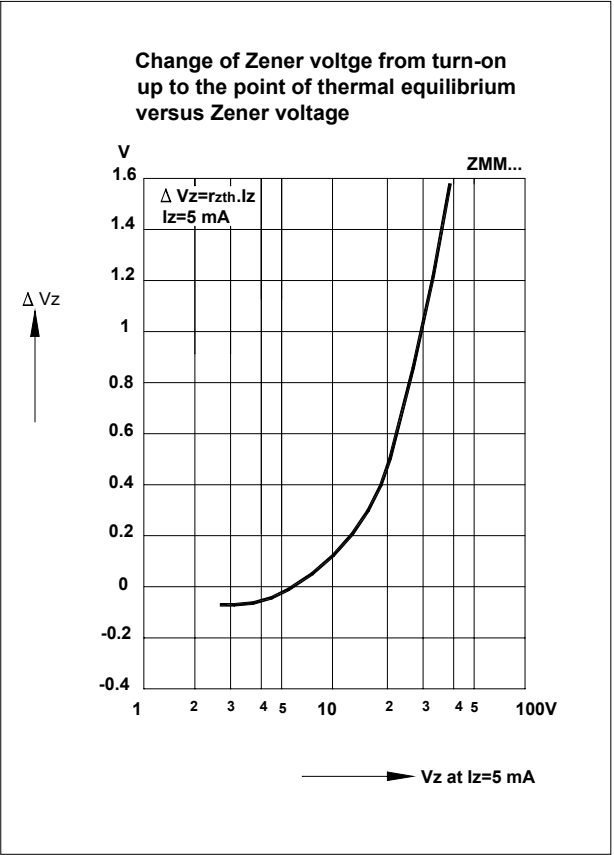
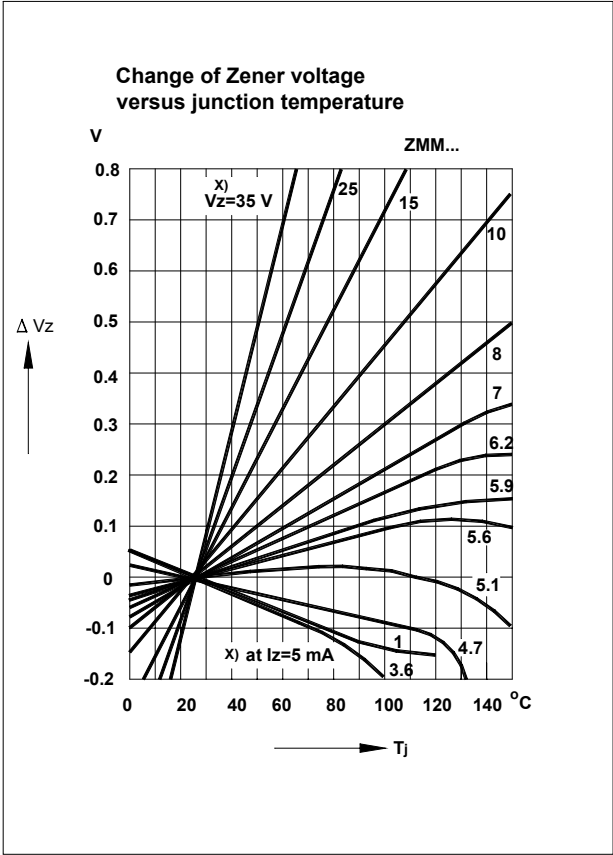
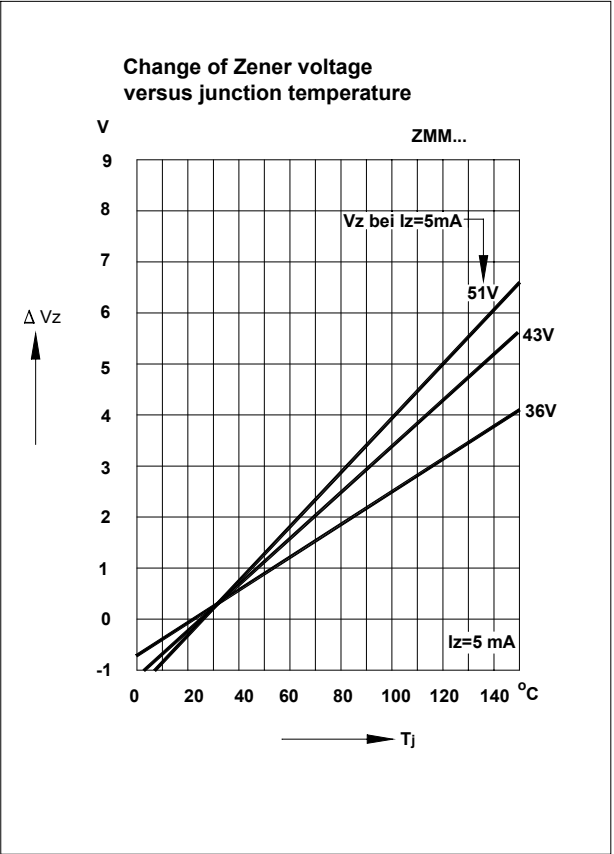
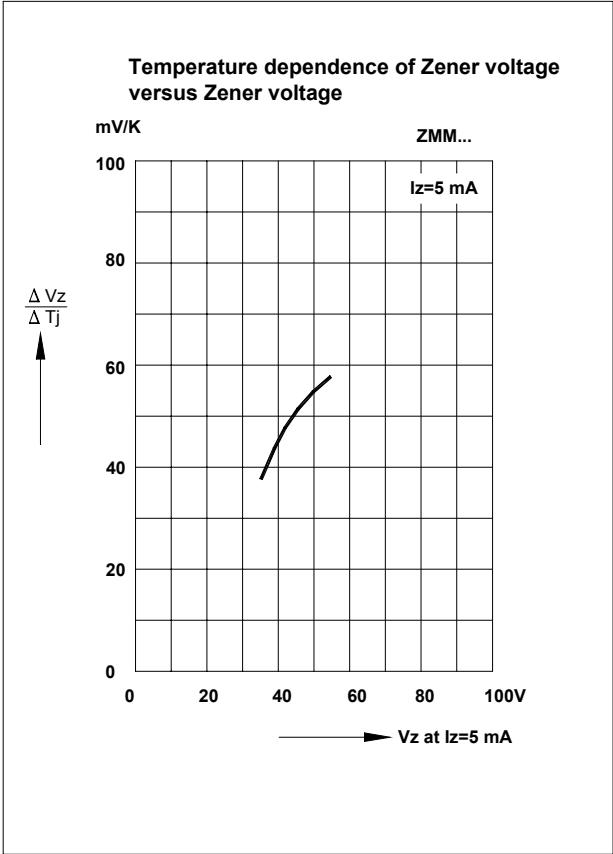
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ZMM 1B...ZMM200B



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