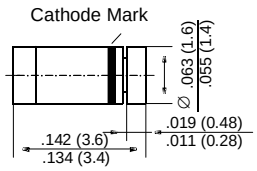
ZMM1 THRU ZMM75

ZENER DIODES

Mini-MELF



Dimensions are in inches and (millimeters)

FEATURES

- Silicon Planar Zener Diodes
- In Mini-MELF case especially for automatic insertion.
- The Zener voltages are graded according to the international E 24 standard. Smaller voltage tolerances and other Zener voltages are available upon request.

- These diodes are also available in DO-35 case with the type designation ZPD1 … ZPD51.

MECHANICAL DATA

Case: Mini-MELF Glass Case (SOD-80)
Weight: approx. 0.05 g

MAXIMUM RATINGS

Ratings at 25°C ambient temperature unless otherwise specified.

	SYMBOL	*VALUE*	*UNIT*
Zener Current (see Table “Characteristics”)			
Power Dissipation at T_{amb} = 25°C	P_{tot}	500(1)	mW
Junction Temperature	T_j	175	°C
Storage Temperature Range	T_S	– 55 to +175	°C

	SYMBOL	*MIN.*	*TYP.*	*MAX.*	*UNIT*
Thermal Resistance Junction to Ambient Air	R_{thJA}	–	–	0.3(1)	°C/W

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

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ZMM1 THRU ZMM75

ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature unless otherwise specified.

Type	Zener Voltage[1] at I_Z = 5 mA V_Z V	Dynamic Resistance at I_Z = 5 mA f = 1 kHz r_{zj} Ω	Dynamic Resistance at I_Z = 1 mA f = 1 kHz r_{zj} Ω	Temp. Coeff. of Zener Voltage at I_Z = 5 mA α_{VZ} 10^{-4}/K	Reverse Voltage at I_R = 100 nA V_R V	Admissable Zener current[2] at T_{amb} = 45°C I_Z = mA	Admissable Zener current[2] at T_{amb} = 25°C I_Z = mA
ZMM1[3]	0.7 ... 0.8	6.5 (< 8)	< 50	– 26 ... – 23	–	280	340
ZMM2.7	2.5 ... 2.9	75 (< 83)	< 500	– 9 ... – 4	–	135	160
ZMM3	2.8 ... 3.2	80 (< 95)	< 500	– 9 ... – 3	–	117	140
ZMM3.3	3.1 ... 3.5	80 (< 95)	< 500	– 8 ... – 3	–	109	130
ZMM3.6	3.4 ... 3.8	80 (< 95)	< 500	– 8 ... – 3	–	101	120
ZMM3.9	3.7 ... 4.1	80 (< 95)	< 500	– 7 ... – 3	–	92	110
ZMM4.3	4.0 ... 4.6	80 (< 95)	< 500	– 6 ... – 1	–	85	100
ZMM4.7	4.4 ... 5.0	70 (< 78)	< 500	– 5 ... +2	–	76	90
ZMM5.1	4.8 ... 5.4	30 (< 60)	< 480	– 3 ... +4	> 0.8	67	80
ZMM5.6	5.2 ... 6.0	10 (< 40)	< 400	– 2 ... +6	> 1	59	70
ZMM6.2	5.8 ... 6.6	4.8 (< 10)	< 200	– 1 ... +7	> 2	54	64
ZMM6.8	6.4 ... 7.2	4.5 (< 8)	< 150	+2 ... +7	> 3	49	58
ZMM7.5	7.0 ... 7.9	4 (< 7)	< 50	+3 ... +7	> 5	44	53
ZMM8.2	7.7 ... 8.7	4.5 (< 7)	< 50	+4 ... +7	> 6	40	47
ZMM9.1	8.5 ... 9.6	4.8 (< 10)	< 50	+5 ... +8	> 7	36	43
ZMM10	9.4 ... 10.6	5.2 (< 15)	< 70	+5 ... +8	> 7.5	33	40
ZMM11	10.4 ... 11.6	6 (< 20)	< 70	+5 ... +9	> 8.5	30	36
ZMM12	11.4 ... 12.7	7 (< 20)	< 90	+6 ... +9	> 9	28	32
ZMM13	12.4 ... 14.1	9 (< 25)	< 110	+7 ... +9	> 10	25	29
ZMM15	13.8 ... 15.6	11 (< 30)	< 110	+7 ... +9	> 11	23	27
ZMM16	15.3 ... 17.1	13 (< 40)	< 170	+8 ... +9.5	> 12	20	24
ZMM18	16.8 ... 19.1	18 (< 50)	< 170	+8 ... +9.5	> 14	18	21
ZMM20	18.8 ... 21.2	20 (< 50)	< 220	+8 ... +10	> 15	17	20
ZMM22	20.8 ... 23.3	25 (< 55)	< 220	+8 ... +10	> 17	16	18
ZMM24	22.8 ... 25.6	28 (< 80)	< 220	+8 ... +10	> 18	13	16
ZMM27	25.1 ... 28.9	30 (< 80)	< 250	+8 ... +10	> 20	12	14
ZMM30	28 ... 32	35 (< 80)	< 250	+8 ... +10	> 22.5	10	13
ZMM33	31 ... 35	40 (< 80)	< 250	+8 ... +10	> 25	9	12
ZMM36	34 ... 38	40 (< 90)	< 250	+8 ... +10	> 27	9	11
ZMM39	37 ... 41	50 (< 90)	< 300	+10 ... +12	> 29	8	10
ZMM43	40 ... 46	60 (< 100)	< 700	+10 ... +12	> 32	7	9.2
ZMM47	44 ... 50	70 (< 100)	< 750	+10 ... +12	> 35	6	8.5
ZMM51	48 ... 54	70 (< 100)	< 750	+10 ... +12	> 38	6	7.8
ZMM56	52.0 … 60.0[4]	<135[4]	<1000[5]	typ. +10[4]	–	–	–
ZMM62	58.0 … 66.0[4]	<150[4]	<1000[5]	typ. +10[4]	–	–	–
ZMM68	64.0 … 72.0[4]	<200[4]	<1000[5]	typ. +10[4]	–	–	–
ZMM75	70.0 … 79.0[4]	<250[4]	<1500[5]	typ. +10[4]	–	–	–

NOTES:

(1) Tested with pulses t_p = 5 ms

(2) Valid provided that electrodes are kept at ambient temperature

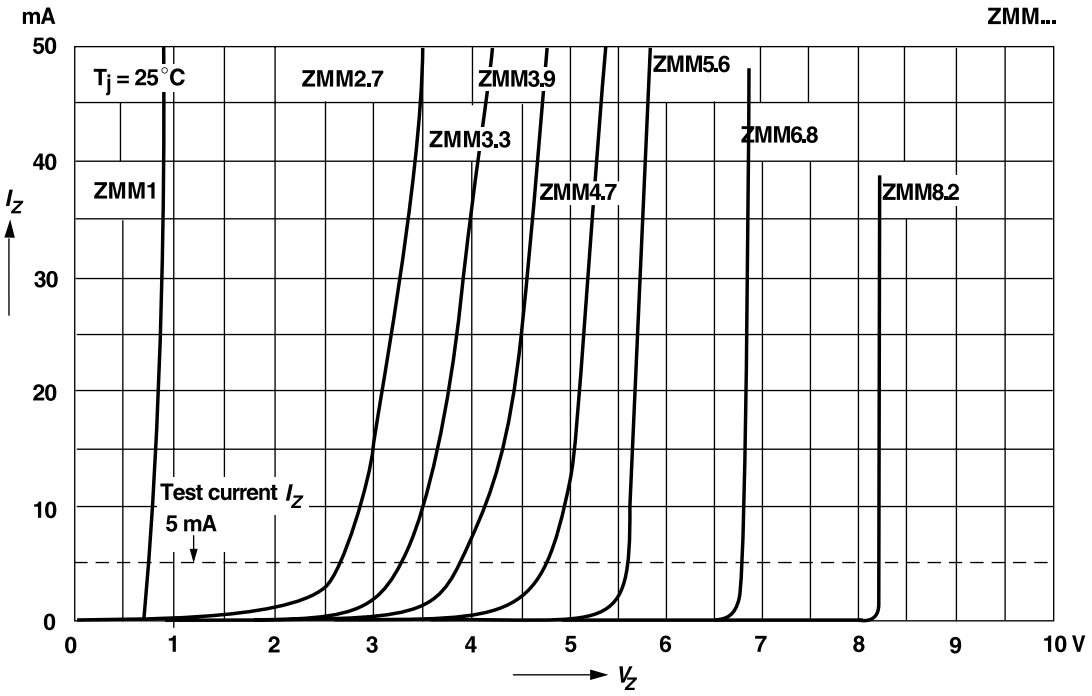
(3) The ZMM1 is a silicon diode operated in forward direction. Hence, the index of all parameters should be “F” instead of “Z”
Connect the cathode electrode to the negative pole

(4) at I_Z = 2.5 mA

(5) at I_Z = 0.5 mA

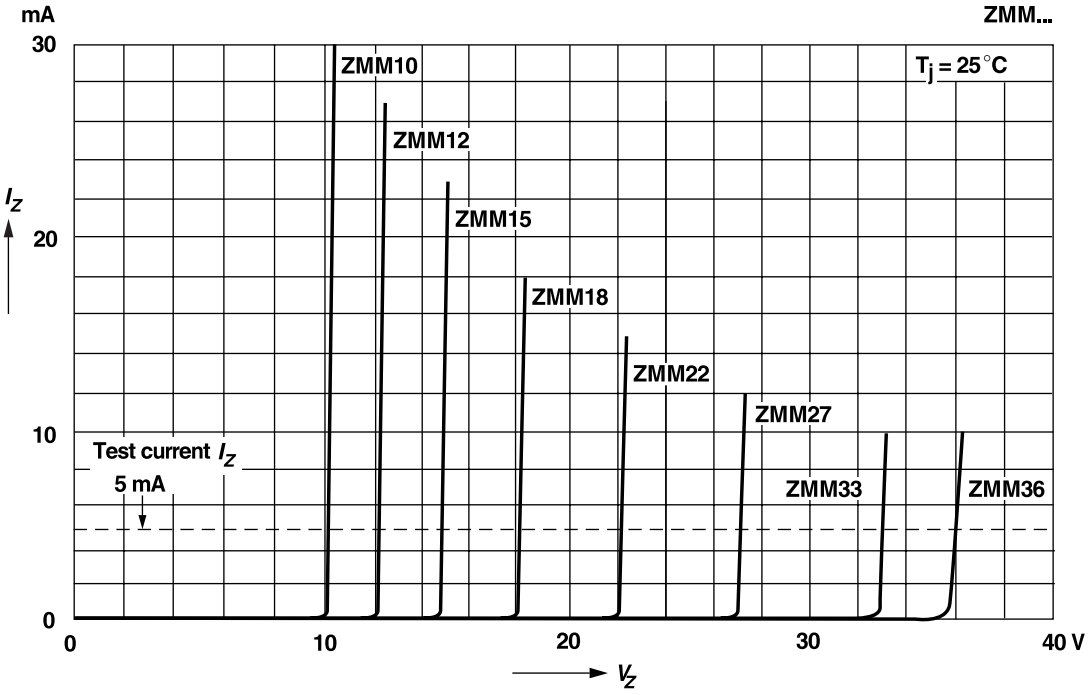
Breakdown characteristics

T_j = constant (pulsed)



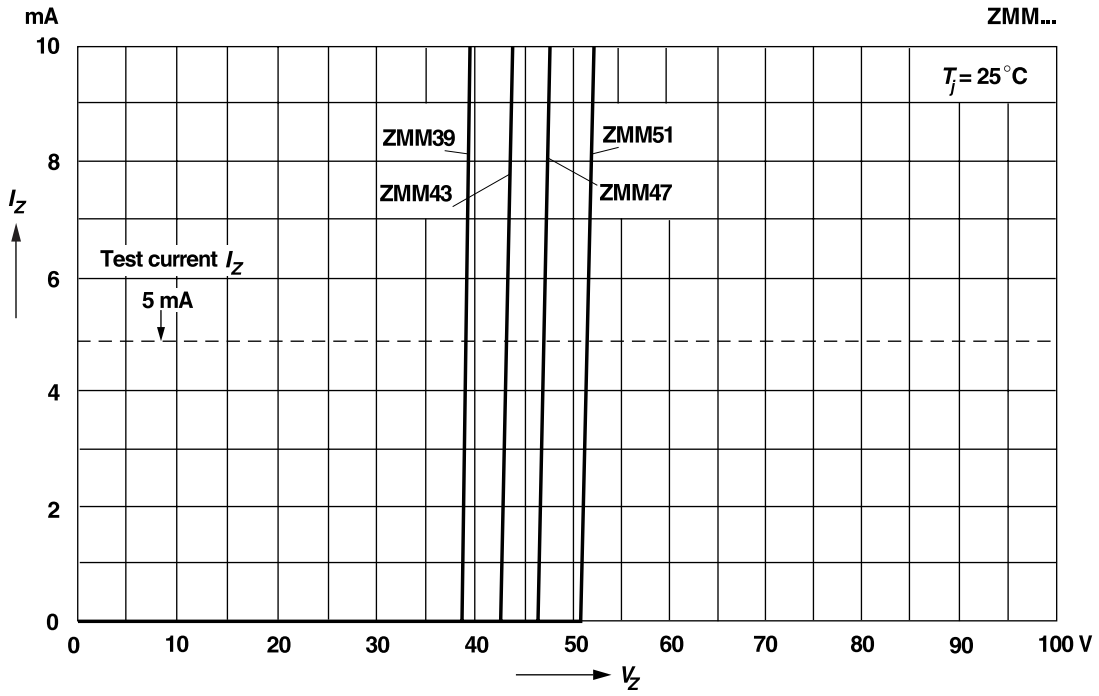
Breakdown characteristics

T_j = constant (pulsed)

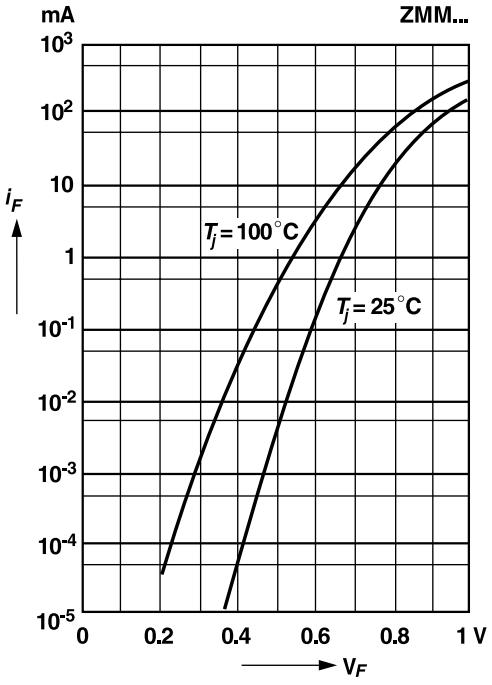


Breakdown characteristics

T_j = constant (pulsed)

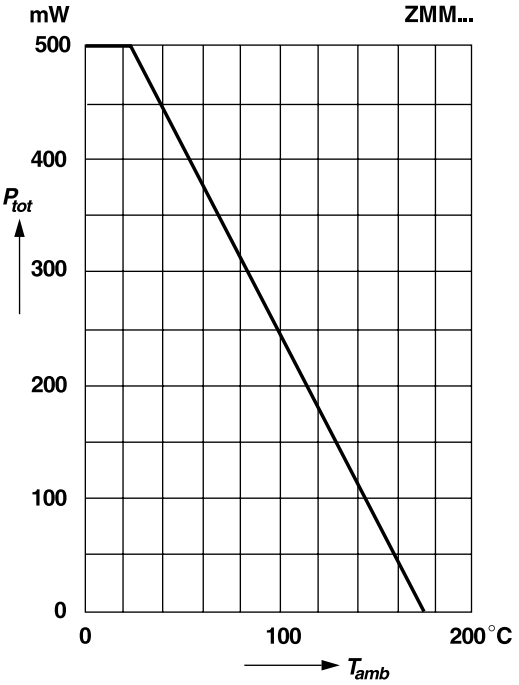


Forward characteristics



Admissible power dissipation versus ambient temperature

Valid provided that electrodes are kept at ambient temperature



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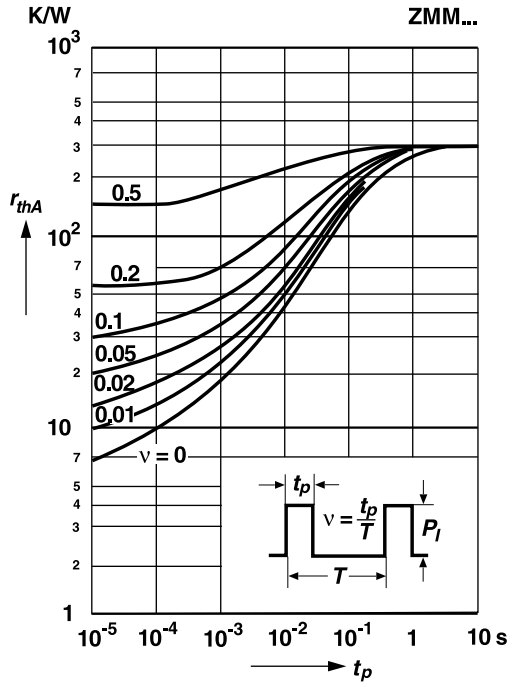
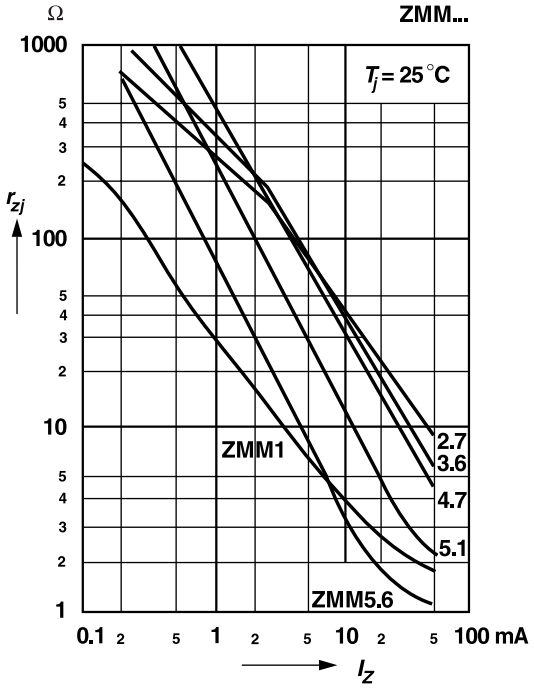
Pulse thermal resistance versus pulse duration

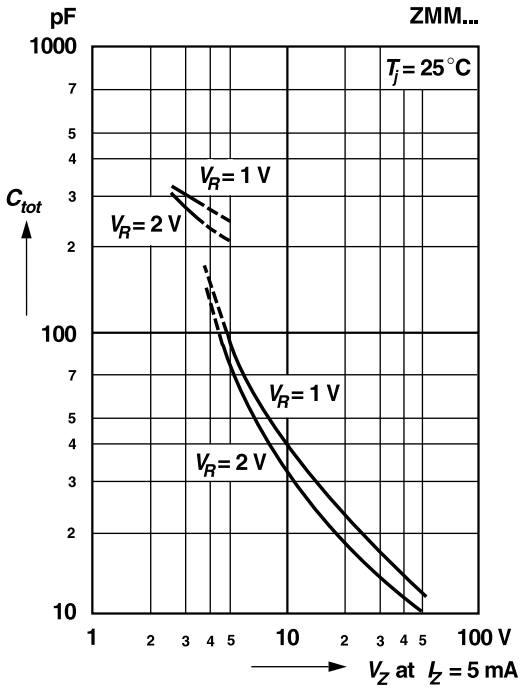
Valid provided that the electrodes are kept at ambient temperature



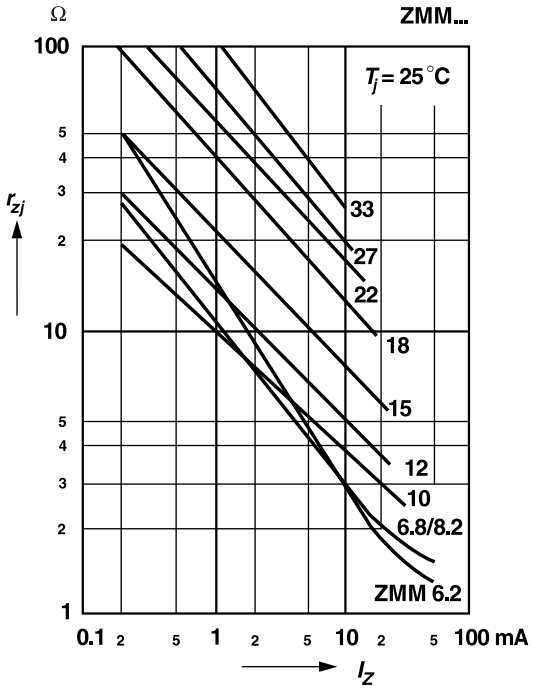
Dynamic resistance versus Zener current



Capacitance versus Zener voltage



Dynamic resistance versus Zener current



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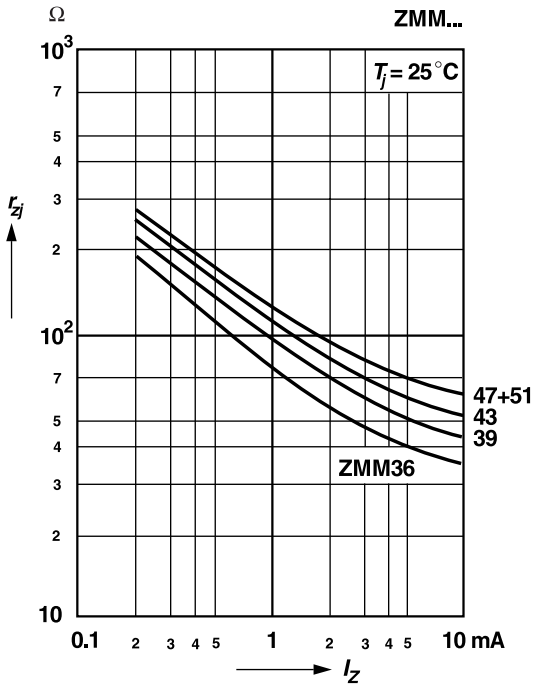
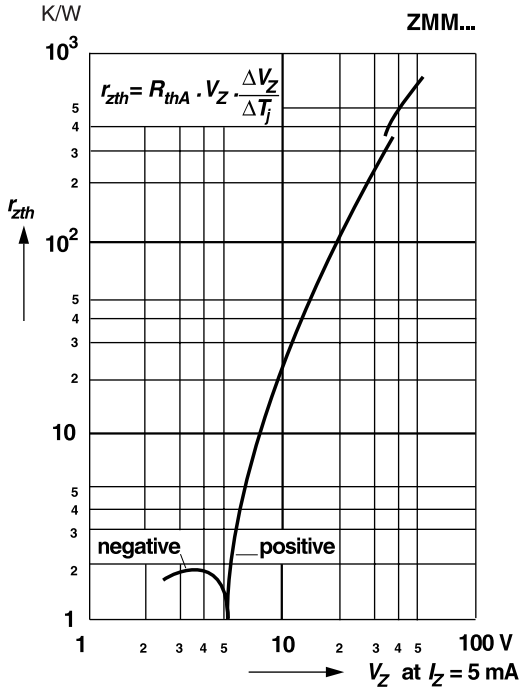
Dynamic resistance versus Zener current

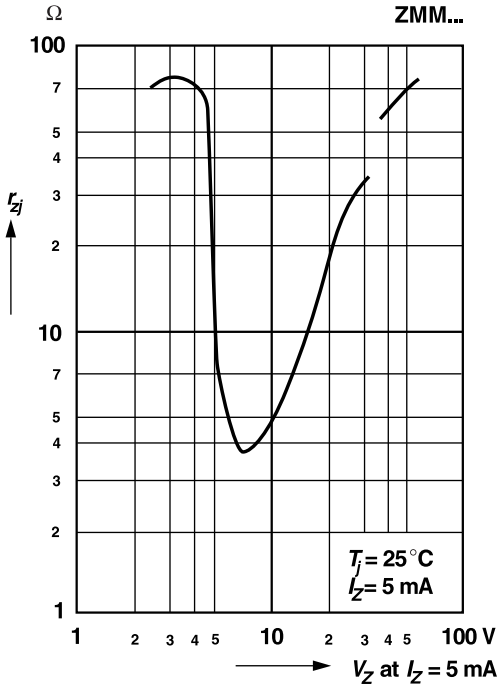


Thermal differential resistance versus Zener voltage

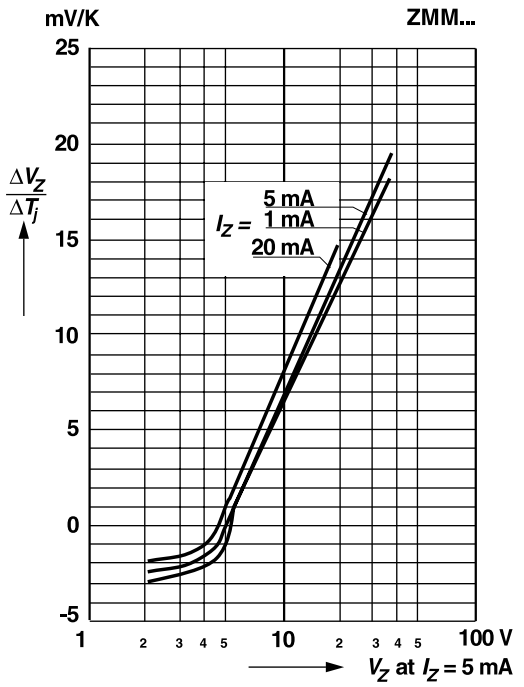
Valid provided that electrodes are kept at ambient temperature



Dynamic resistance versus Zener voltage



Temperature dependence of Zener voltage versus Zener voltage



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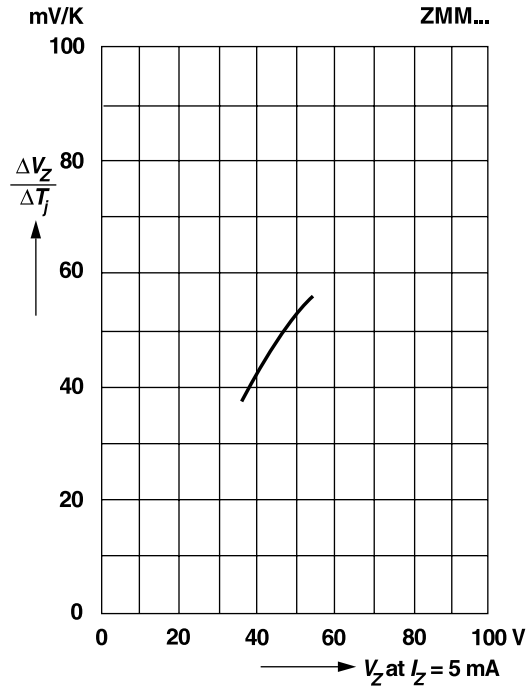
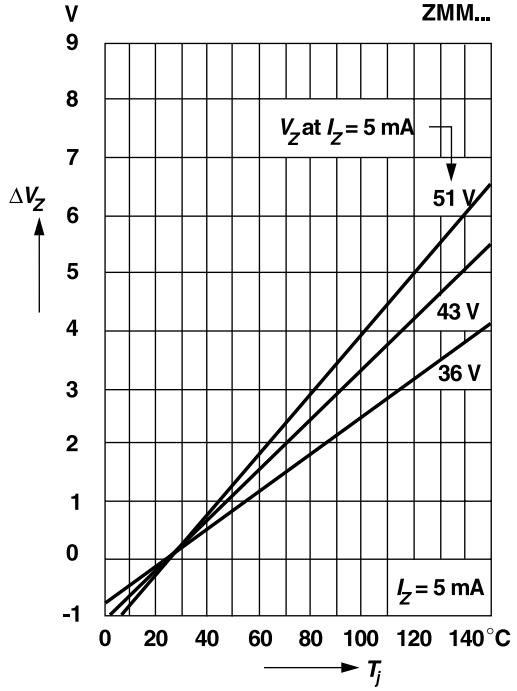


Change of Zener voltage versus junction temperature



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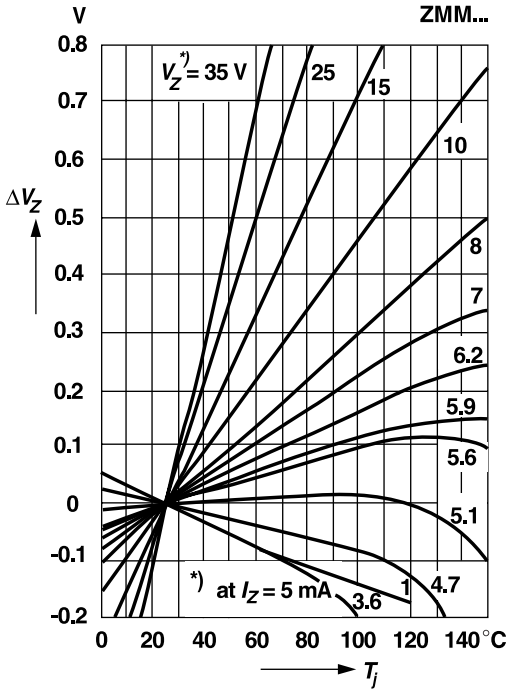
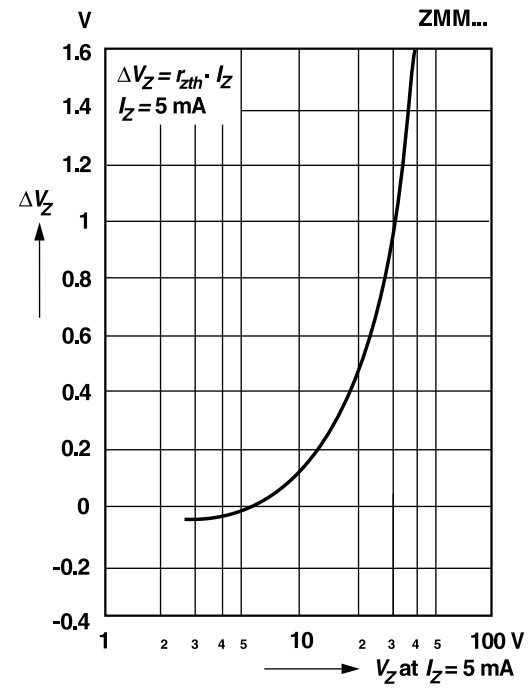


Change of Zener voltage from turn-on up to the point of thermal equilibrium versus Zener voltage



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