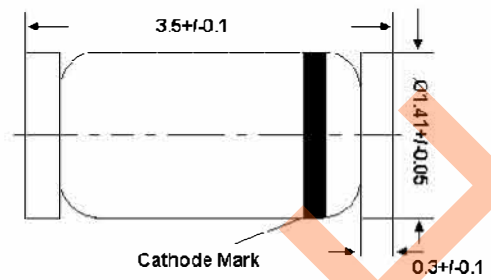


# ZMM 1...ZMM200

## 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.

LL-34



Glass case MiniMELF  
Dimensions In mm

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

	Symbol	Value	Unit
Power Dissipation	$P_{\text{tot}}$	500 <sup>1)</sup>	mW
Junction Temperature	$T_j$	175	$^\circ\text{C}$
Storage Temperature Range	$T_s$	-55 to +175	$^\circ\text{C}$

<sup>1)</sup> 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	$R_{\text{thA}}$	-	-	0.3 <sup>1)</sup>	K/mW
Forward Voltage at $I_F = 100\text{mA}$	$V_F$	-	-	1	V

<sup>1)</sup> Valid provided that electrodes are kept at ambient temperature

# ZMM 1...ZMM200

Type	Zener Voltage Range <sup>1)</sup>			Dynamic Resistance			Reverse Leakage Current			Temp coefficient of Zener Voltage
	V <sub>znom</sub> V	I <sub>ZT</sub> mA	for V <sub>ZT</sub> <sup>2)</sup> V	r <sub>ZJT</sub> Ω	r <sub>ZJK</sub> at I <sub>ZK</sub> Ω	I <sub>ZK</sub> T mA	T <sub>a</sub> = 25°C μA	T <sub>a</sub> = 125°C μA	I <sub>R</sub> at V <sub>R</sub> V	TKvz %/K
ZMM 1 <sup>3)</sup>	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

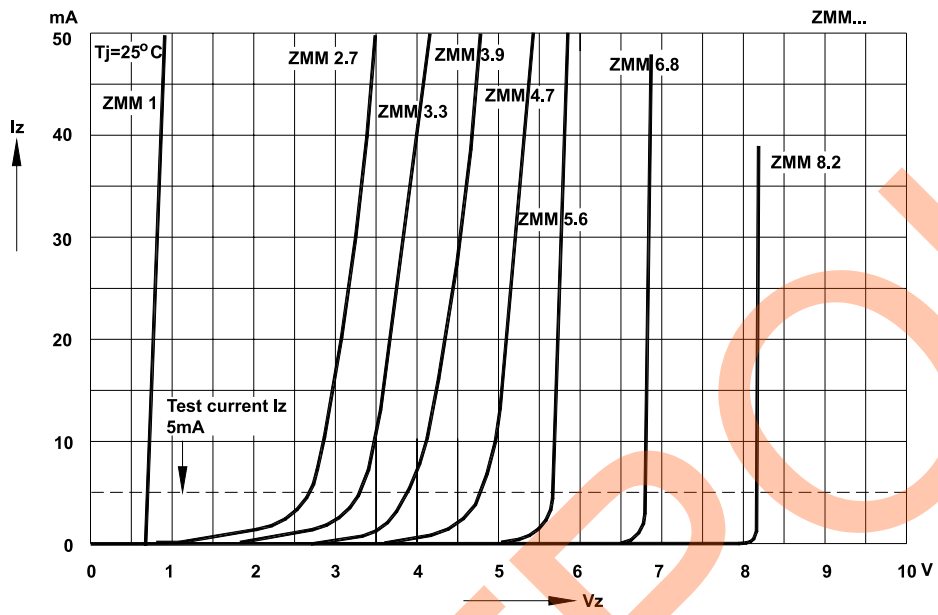
1) Tested with pulses  $t_p = 20$  ms.

2) Valid provided that electrodes are kept at ambient temperature

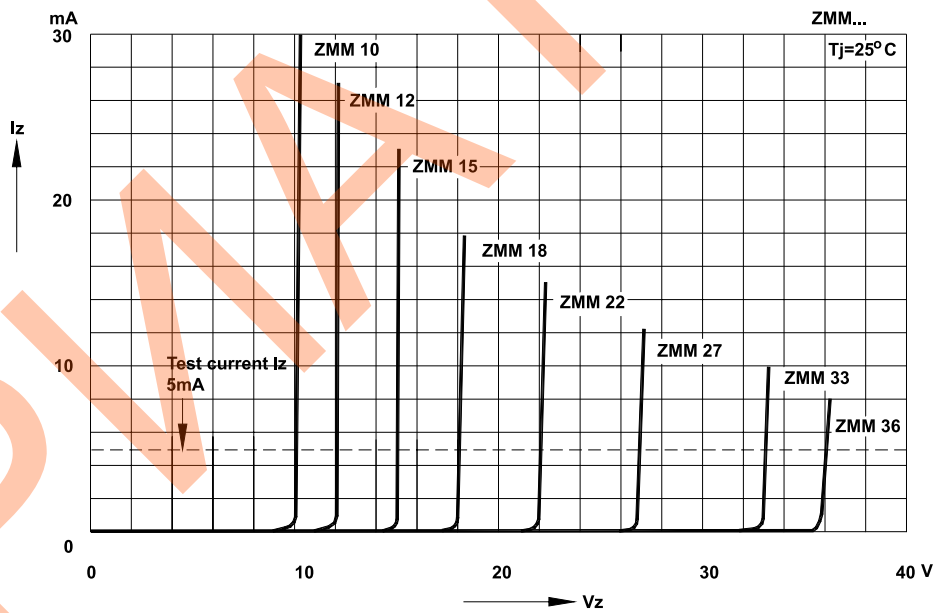
3) The ZMM1 is a silicon diode with operation in forward direction. Hence, the index of all parameters should be "F" instead of "Z". Connect the cathode electrode to the negative pole.

# ZMM 1...ZMM200

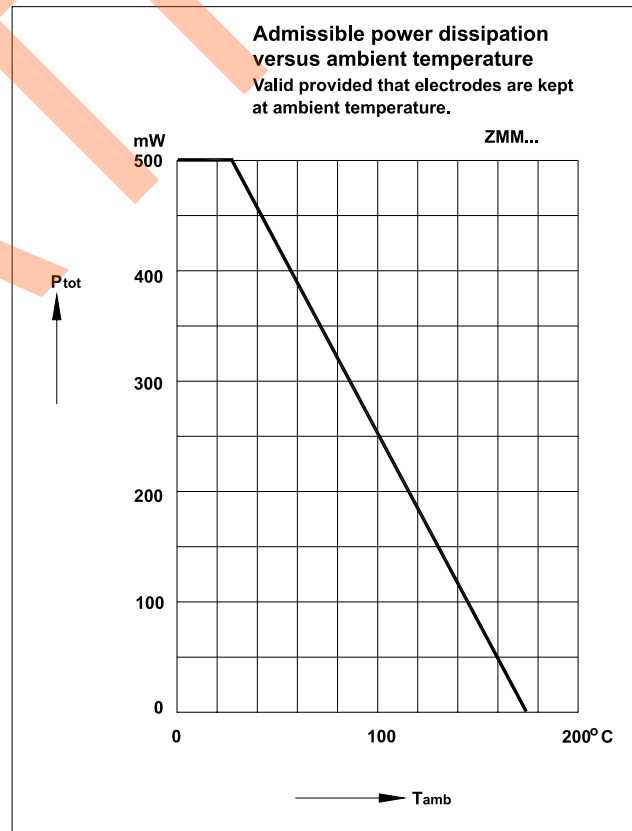
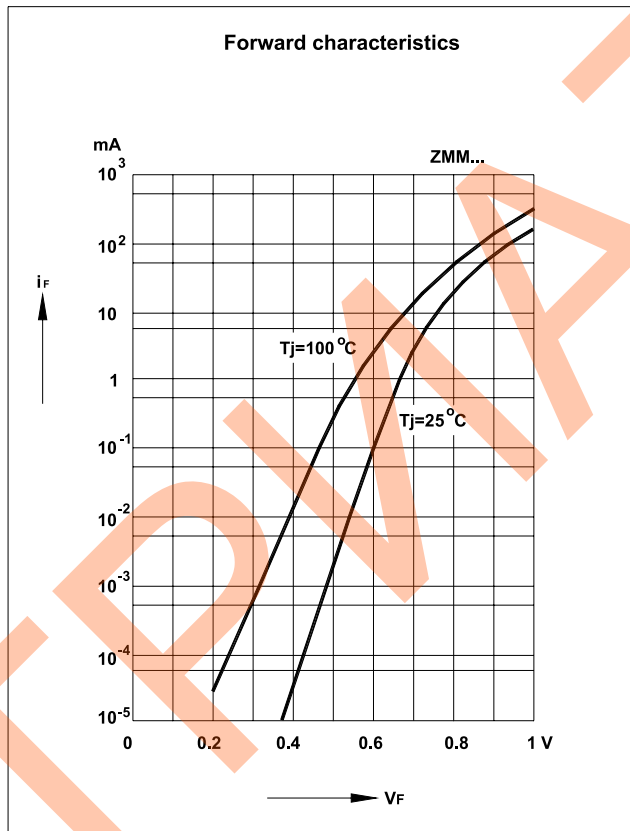
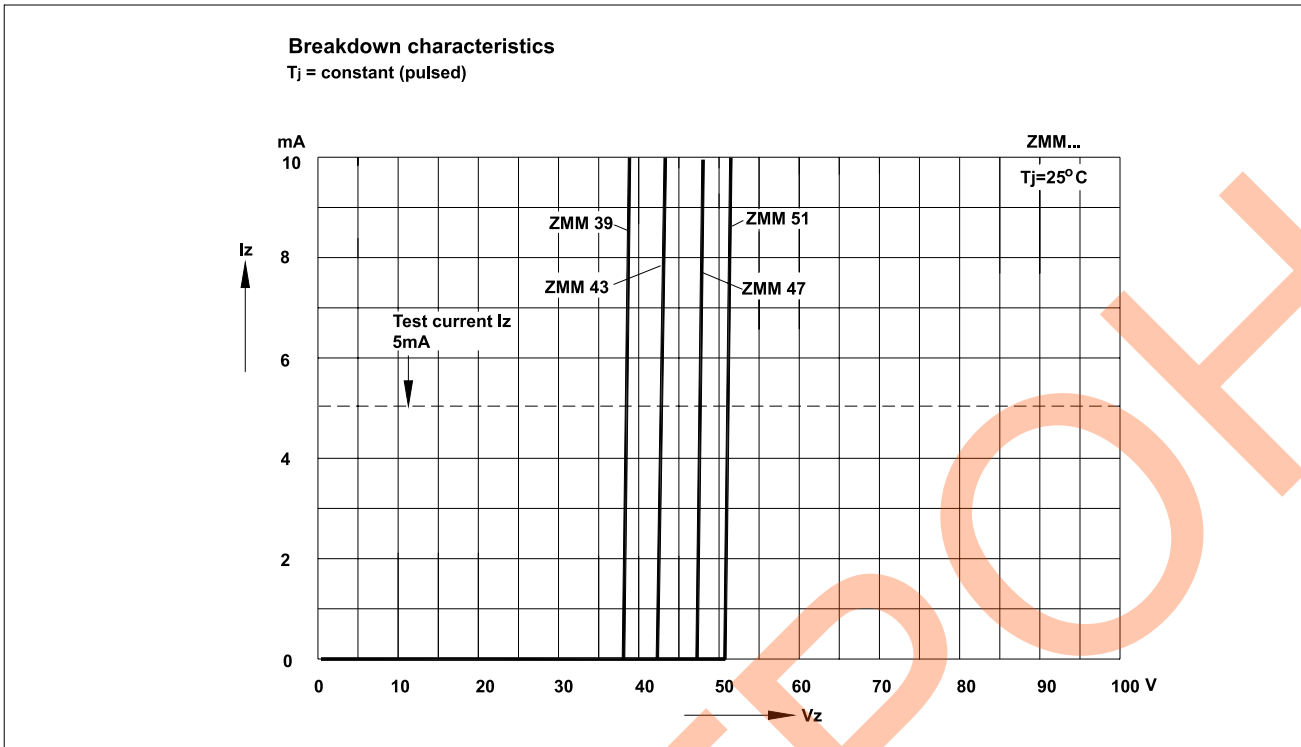
Breakdown characteristics  
 $T_j = \text{constant (pulsed)}$



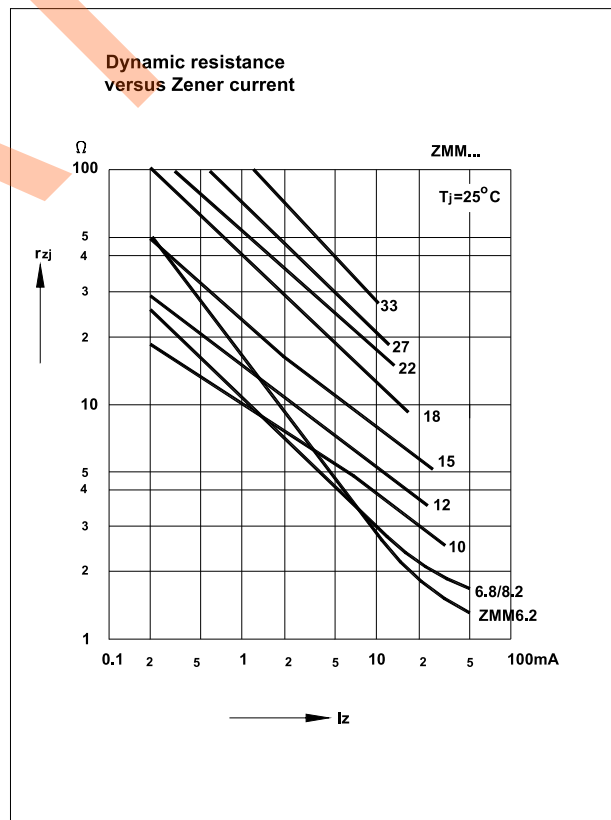
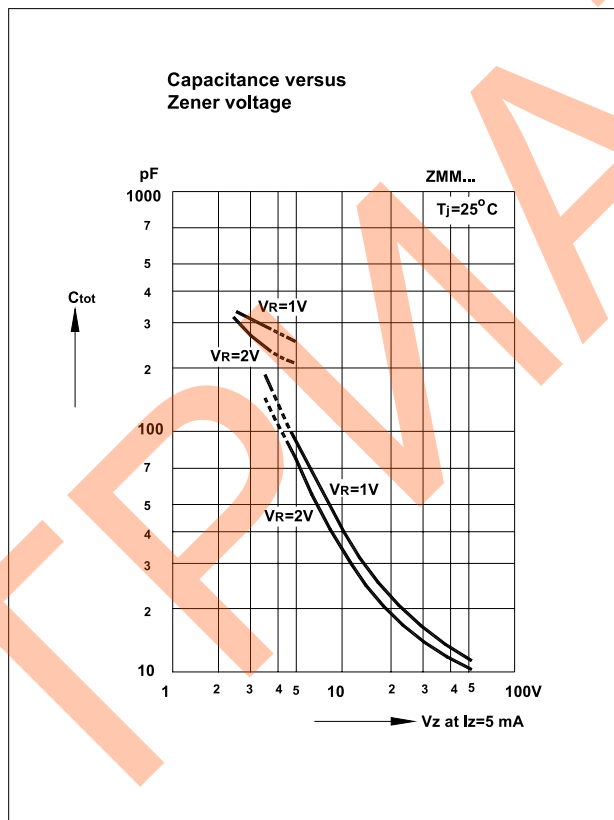
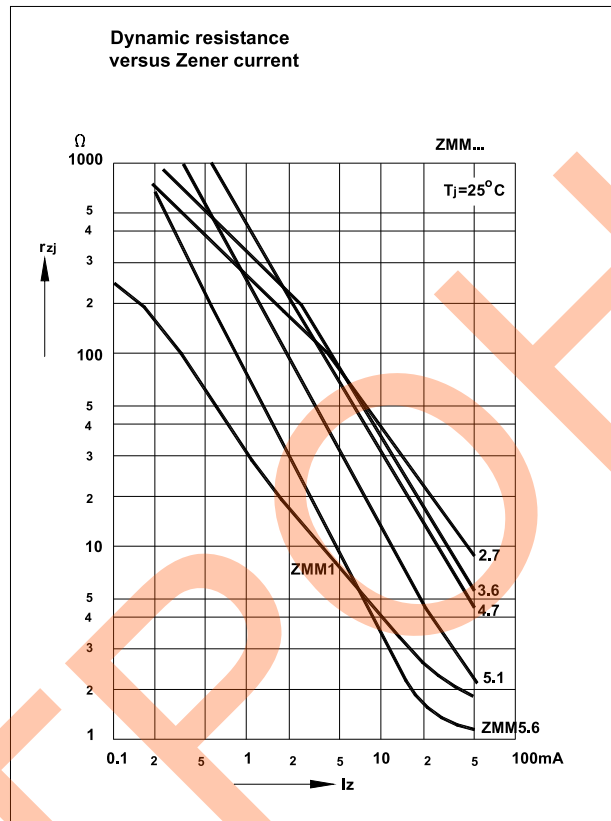
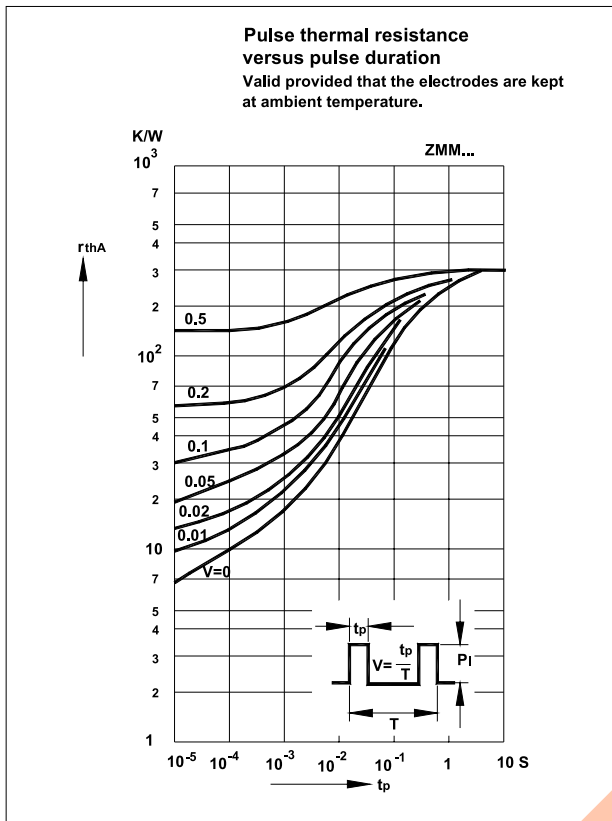
Breakdown characteristics  
 $T_j = \text{constant (pulsed)}$



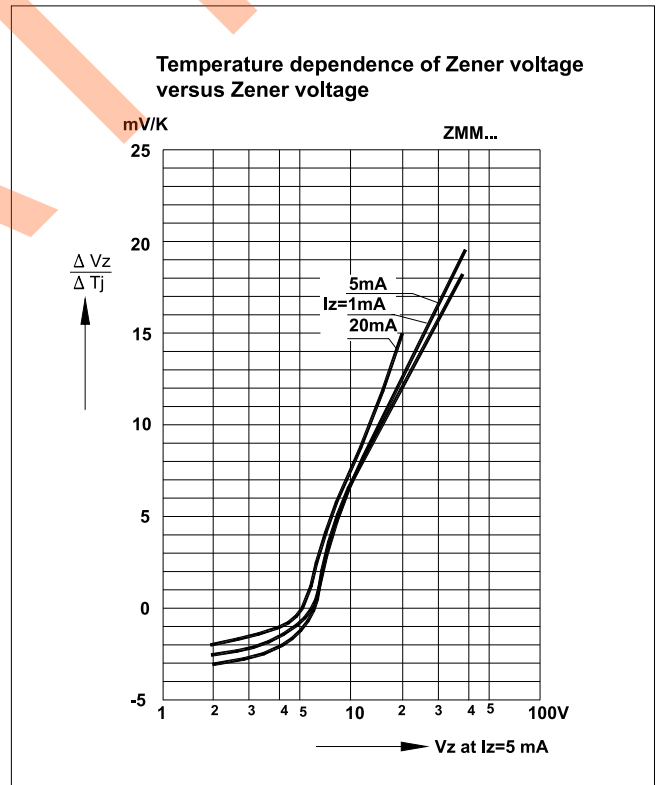
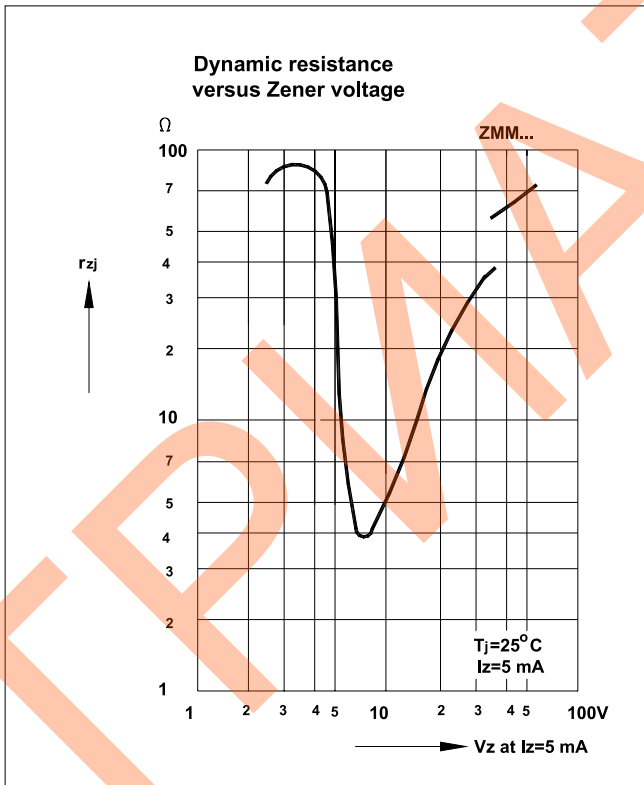
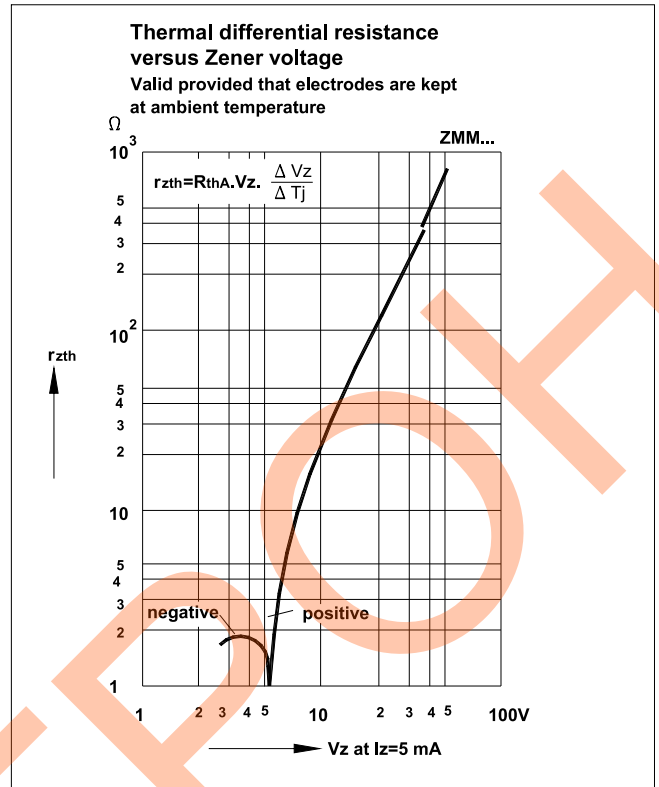
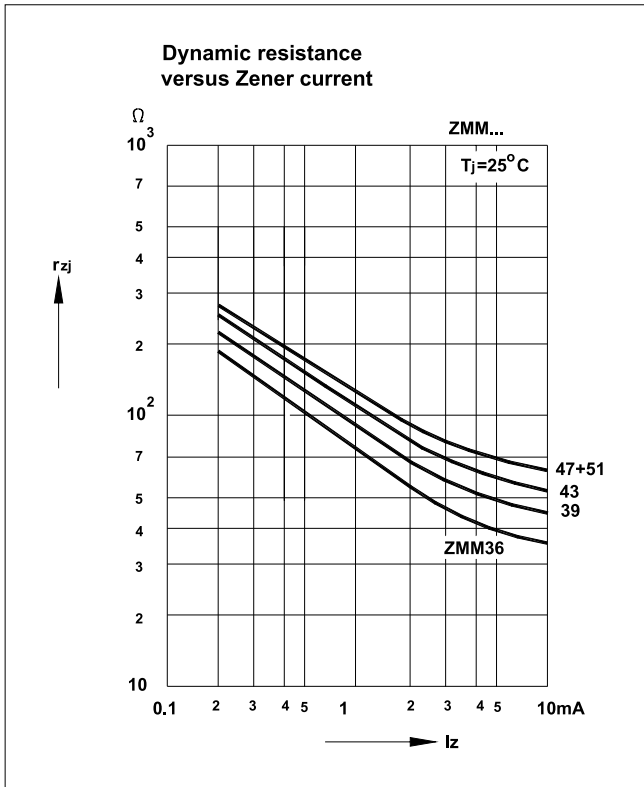
# ZMM 1...ZMM200

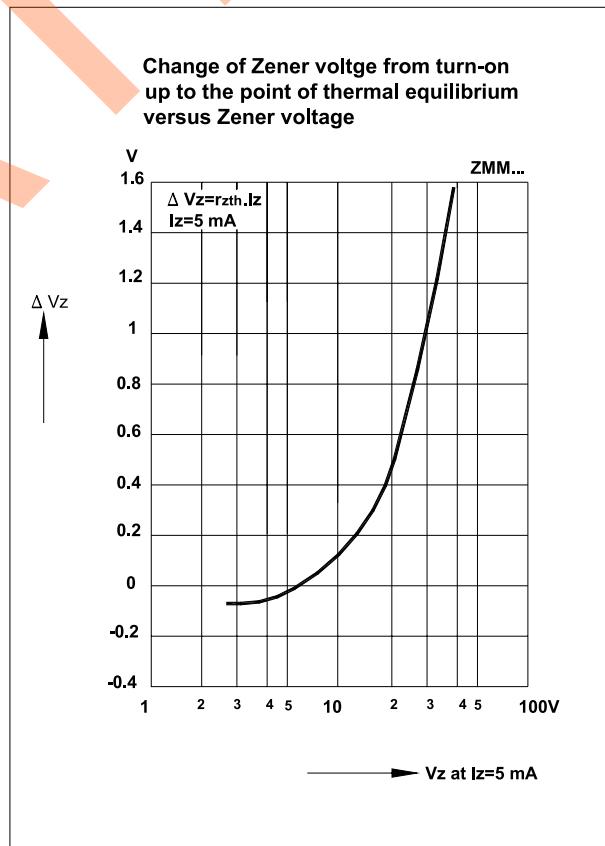
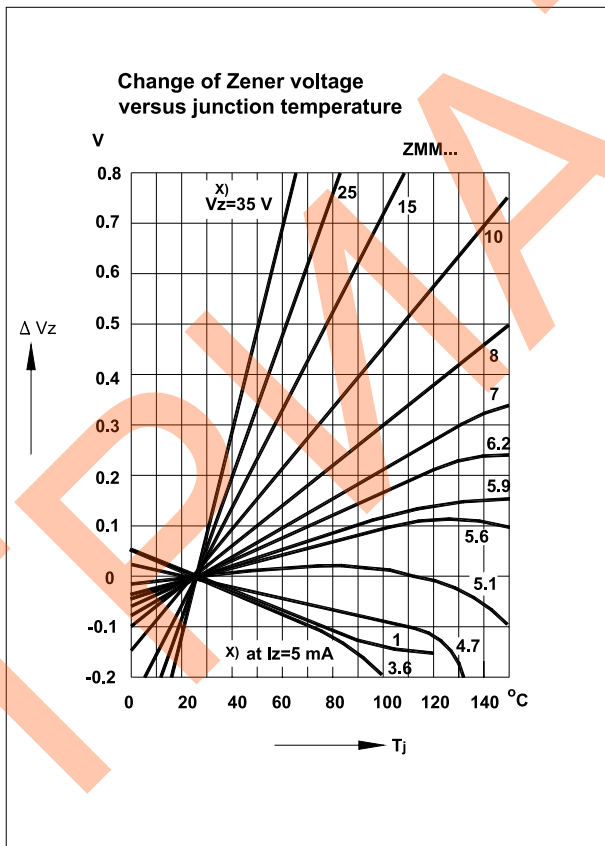
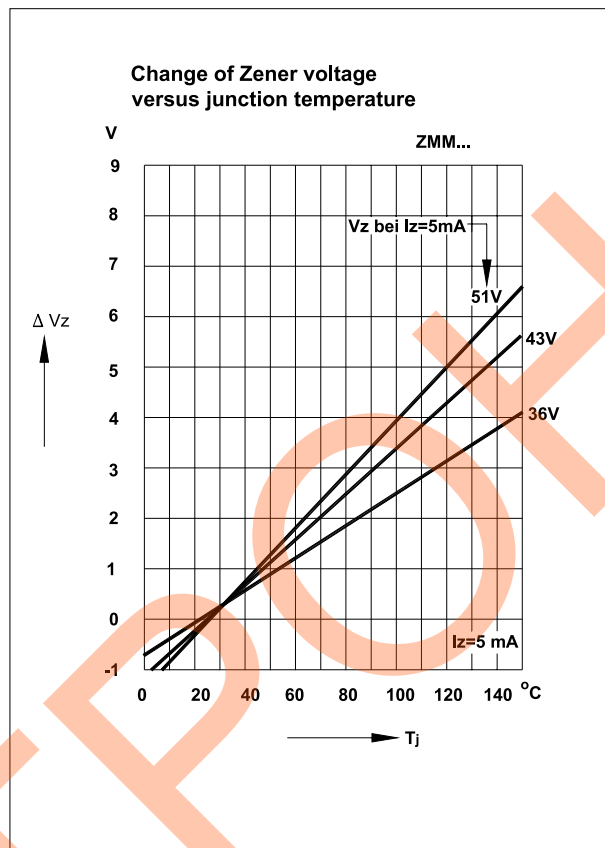
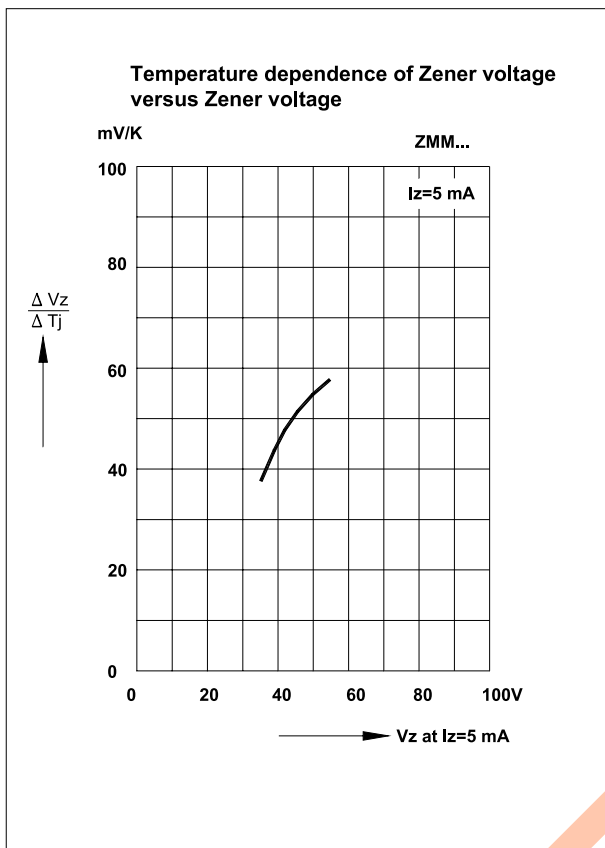


# ZMM 1...ZMM200



# ZMM 1...ZMM200





# ZMM 1...ZMM200

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

