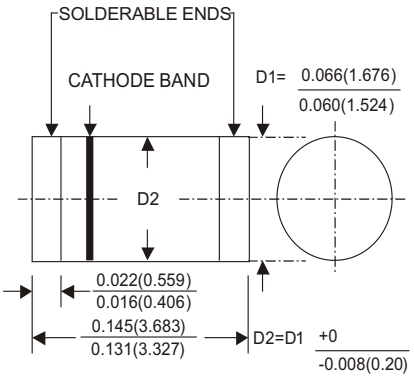
ZMM1 thru ZMM200

SURFACE MOUNT ZENER DIODES

DO-213AA / MINI MELF



Dimension in inches (millimeters)

FEATURES

- 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 on request.
- These diodes are also available in DO-35 case with the type designation ZPD1 thru ZPD51.
- These diodes are delivered taped. Details see .Taping..
- Weight approx. : 0.05g
- High temperature soldering : 260°C / 10 seconds at terminals
- Pb free product at available : 99% Sn above meet RoHS environment substance directive request

MECHANICAL DATA

Case：MINI MELF Molded Glass (SOD-80)
Weight：Approx .0.05g

MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Absolute Maximum Ratings (Ta=25℃)

	Symbols	Values	Units
Zener current see Table "Characteristics"			
Power dissipation at Tamb=25℃	Ptot	500 1)	mW
Junction temperature	Tj	175	℃
Storage temperature range	TS	-55 to +175	℃

Note:

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

Characteristics at Tamb=25℃

	Symbols	Min.	Typ.	Max.	Units
Thermal resistance junction to ambient Air	RthA	-	-	0.3 1)	K/mW

Note:

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

SURFACE MOUNT ZENER DIODES

Type	Zener voltage range 1)			Dynamic resistance			Reverse leakage current			Temp. coefficient of Zener Voltage
	Vznom	IZT fo r VZT 2)		rzjT and rzjk at IZK			I and I 2) at V			TKVZ
	V	mA	V	Ω	Ω	mA	µA	µA	V	%/K
ZMM1V3	0.75	5	0.7 ... 0.8	<8	<50	1	-	-	-	-0.26 ... -0.23
ZMM2V0	2.0	5	1.9 ... 2.1	<85	<600	1	<100	<200	1	-0.09 ... -0.06
ZMM2V4	2.4	5	2.28 ... 2.56	<85	<600	1	<50	<100	1	-0.09 ... -0.06
ZMM2V7	2.7	5	2.5 ... 2.9	<85	<600	1	<10	<50	1	-0.09 ... -0.06
ZMM3V0	3.0	5	2.8 ... 3.2	<85	<600	1	<4	<40	1	-0.08 ... -0.05
ZMM3V3	3.3	5	3.1 ... 3.5	<85	<600	1	<2	<40	1	-0.08 ... -0.05
ZMM3V6	3.6	5	3.4 ... 3.8	<85	<600	1	<2	<40	1	-0.08 ... -0.05
ZMM3V9	3.9	5	3.7 ... 4.1	<85	<600	1	<2	<40	1	-0.08 ... -0.05
ZMM4V3	4.3	5	4.0 ... 4.6	<75	<600	1	<1	<20	1	-0.06 ... -0.03
ZMM4V7	4.7	5	4.4 ... 5.0	<60	<600	1	<0.5	<10	1	-0.05 ... +0.02
ZMM5V1	5.1	5	4.8 ... 5.4	<35	<550	1	<0.1	<2	1	-0.02 ... +0.02
ZMM5V6	5.6	5	5.2 ... 6.0	<25	<450	1	<0.1	<2	1	-0.05 ... +0.05
ZMM6V2	6.2	5	5.8 ...6.6	<10	<200	1	<0.1	<2	2	0.03 ... 0.06
ZMM6V8	6.8	5	6.4 ... 7.2	<8	<150	1	<0.1	<2	3	0.03 ... 0.07
ZMM7V5	7.5	5	7.0 ... 7.9	<7	<50	1	<0.1	<2	5	0.03 ... 0.07
ZMM8V2	8.2	5	7.7 ... 8.7	<7	<50	1	<0.1	<2	6.2	0.03 ... 0.08
ZMM9V1	9.1	5	8.5 ... 9.6	<10	<50	1	<0.1	<2	6.8	0.03 ... 0.09
ZMM10	10	5	9.4 ... 10.6	<15	<70	1	<0.1	<2	7.5	0.03 ... 0.1
ZMM11	11	5	10.4 ... 11.6	<20	<70	1	<0.1	<2	8.2	0.03 ... 0.11
ZMM12	12	5	11.4 ... 12.7	<20	<90	1	<0.1	<2	9.1	0.03 ... 0.11
ZMM13	13	5	12.4 ... 14.1	<26	<110	1	<0.1	<2	10	0.03 ... 0.11
ZMM15	15	5	13.8 ... 15.6	<30	<110	1	<0.1	<2	11	0.03 ... 0.11
ZMM16	16	5	15.3 ... 17.1	<40	<170	1	<0.1	<2	12	0.03 ... 0.11
ZMM18	18	5	16.8 ... 19.1	<50	<170	1	<0.1	<2	13	0.03 ... 0.11
ZMM20	20	5	18.8 ... 21.2	<55	<220	1	<0.1	<2	15	0.03 ... 0.11
ZMM22	22	5	20.8 ... 23.3	<55	<220	1	<0.1	<2	16	0.04 ... 0.12
ZMM24	24	5	22.8 ... 25.6	<80	<220	1	<0.1	<2	18	0.04 ... 0.12
ZMM27	27	5	25.1 ... 28.9	<80	<220	1	<0.1	<2	20	0.04 ... 0.12
ZMM30	30	5	28 ... 32	<80	<220	1	<0.1	<2	22	0.04 ... 0.12
ZMM33	33	5	31 ... 35	<80	<220	1	<0.1	<2	24	0.04 ... 0.12
ZMM36	36	5	34 ... 38	<80	<220	1	<0.1	<2	27	0.04 ... 0.12
ZMM39	39	2.5	37 ... 41	<90	<500	0.5	<0.1	<5	30	0.04 ... 0.12
ZMM43	43	2.5	40 ... 46	<90	<500	0.5	<0.1	<5	33	0.04 ... 0.12
ZMM47	47	2.5	44 ... 50	<110	<600	0.5	<0.1	<5	36	0.04 ... 0.12
ZMM51	51	2.5	48 ... 54	<125	<700	0.5	<0.1	<10	39	0.04 ... 0.12
ZMM56	56	2.5	52 ... 60	<135	<700	0.5	<0.1	<10	43	0.04 ... 0.12
ZMM62	62	2.5	58 ... 66	<150	<1000	0.5	<0.1	<10	47	0.04 ... 0.12
ZMM68	68	2.5	64 ... 72	<200	<1000	0.5	<0.1	<10	51	0.04 ... 0.12
ZMM75	75	2.5	70 ... 79	<250	<1000	0.5	<0.1	<10	56	0.04 ... 0.12
ZMM82	82	2.5	77 ... 87	<300	<1500	0.25	<0.1	<10	62	0.05 ... 0.12
ZMM91	91	1	85 ... 96	<450	<2000	0.1	<0.1	<10	68	0.05 ... 0.12
ZMM100	100	1	94 ... 106	<450	<5000	0.1	<0.1	<10	75	0.05 ... 0.12
ZMM110	110	1	104 ... 116	<600	<5000	0.1	<0.1	<10	82	0.05 ... 0.12
ZMM120	120	1	114 ... 127	<800	<5500	0.1	<0.1	<10	91	0.05 ... 0.12
ZMM130	130	1	124 ... 141	<950	<6000	0.1	<0.1	<10	100	0.05 ... 0.12
ZMM150	150	1	138 ... 156	<1250	<6500	0.1	<0.1	<10	110	0.05 ... 0.12
ZMM160	160	1	153 ... 171	<1400	<7000	0.1	<0.1	<10	120	0.05 ... 0.12
ZMM180	180	1	168 ... 191	<1700	<8500	0.1	<0.1	<10	130	0.05 ... 0.12
ZMM200	200	1	188 ... 212	<2000	<10000	0.1	<0.1	<10	150	0.05 ... 0.12

Notes:

(1) Tested with pulses tp=20ms.

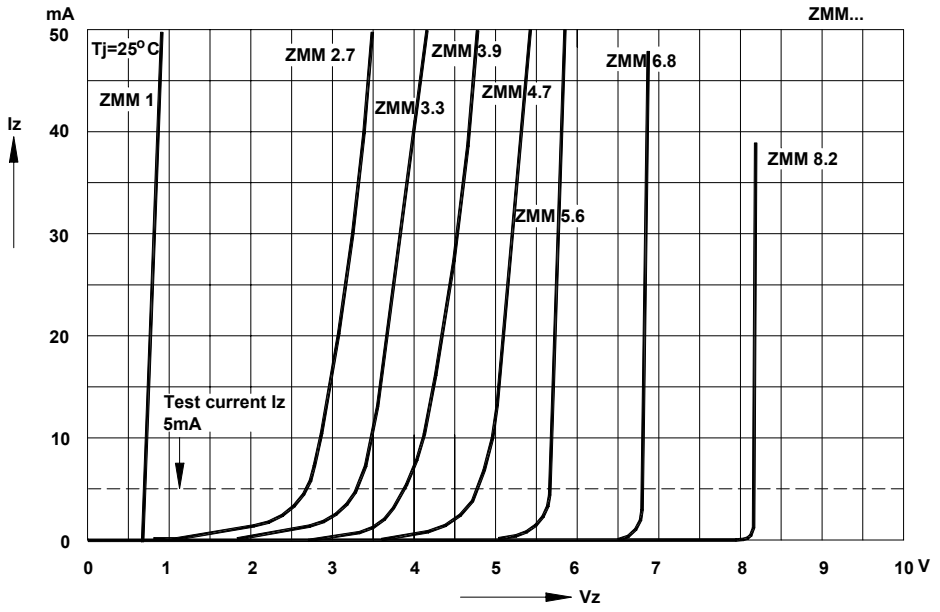
(2) Valid provided that electrodes are kept at ambient temperature.

(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.

SURFACE MOUNT ZENER DIODES

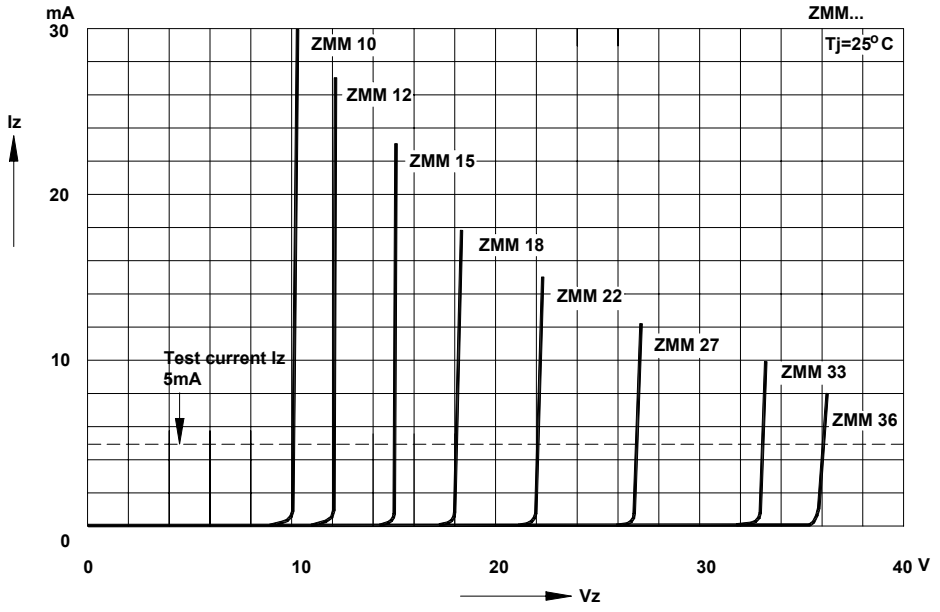
Breakdown characteristics

T_j = constant (pulsed)



Breakdown characteristics

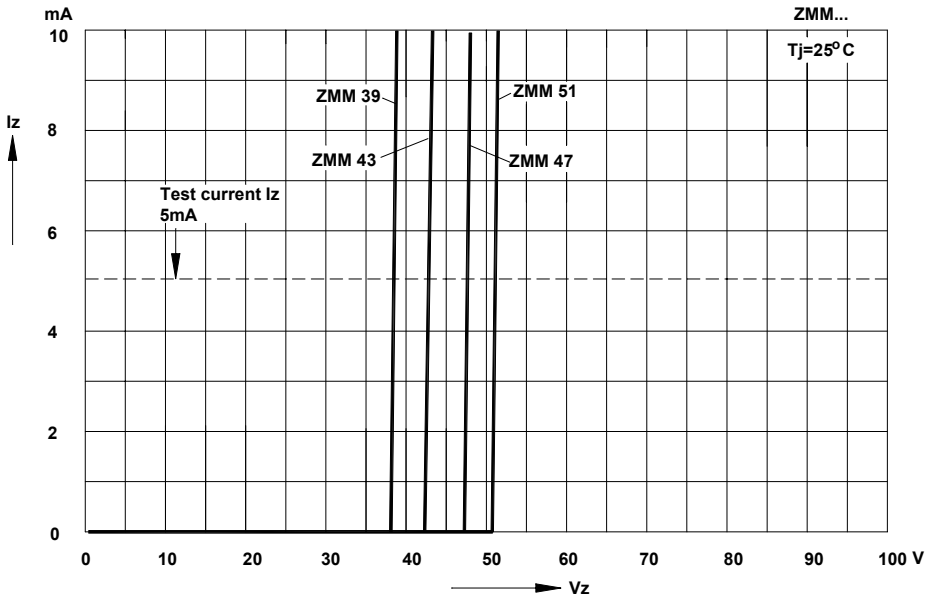
T_j = constant (pulsed)



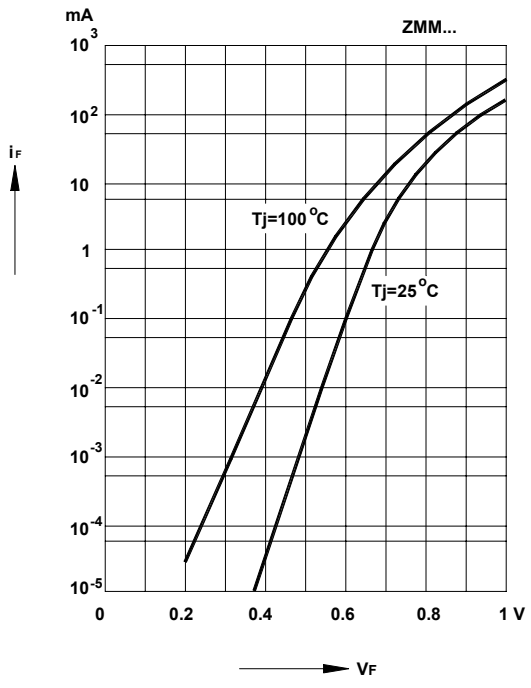
SURFACE MOUNT ZENER DIODES

Breakdown characteristics

T_j = constant (pulsed)

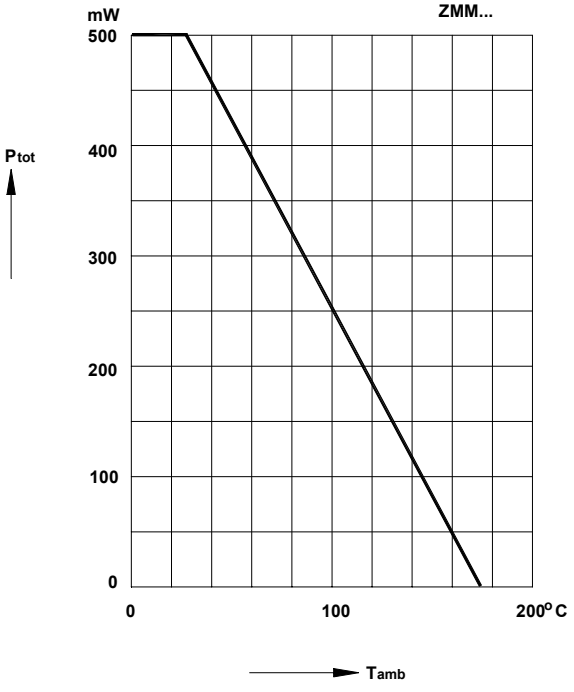


Forward characteristics



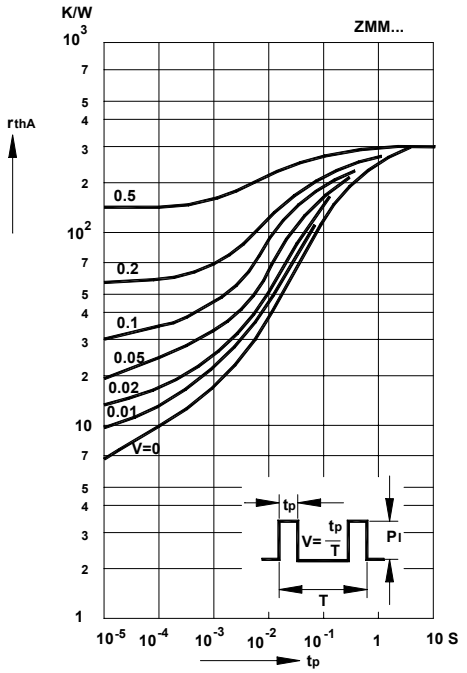
Admissible power dissipation versus ambient temperature

Valid provided that electrodes are kept at ambient temperature.

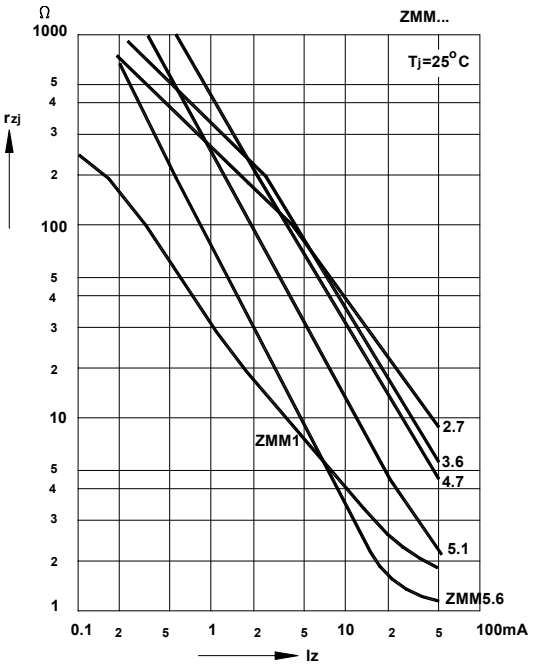


SURFACE MOUNT ZENER DIODES

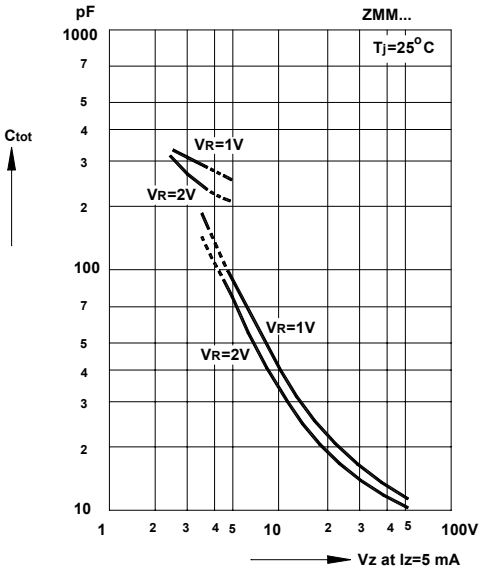
Pulse thermal resistance versus pulse duration
Valid provided that the electrodes are kept at ambient temperature.



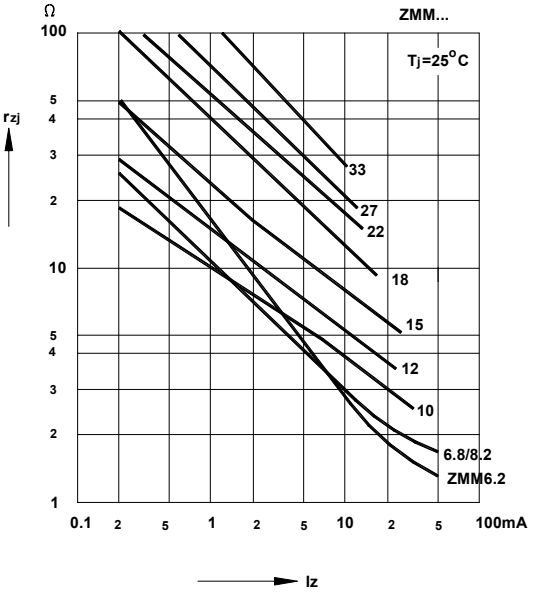
Dynamic resistance versus Zener current



Capacitance versus Zener voltage



Dynamic resistance versus Zener current



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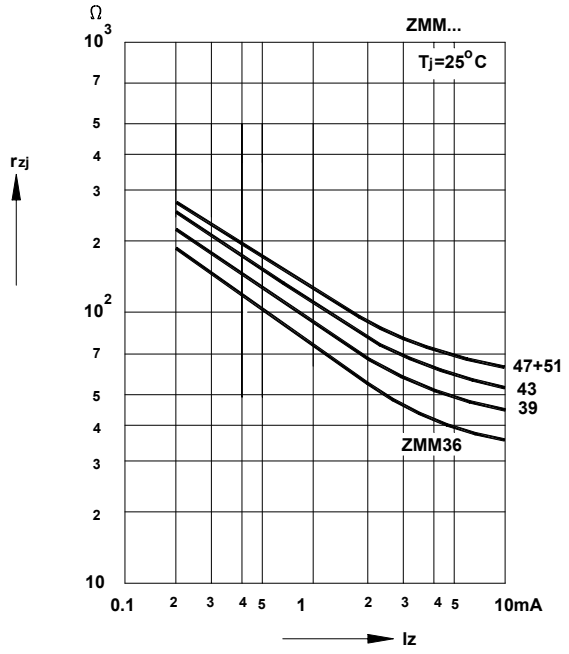
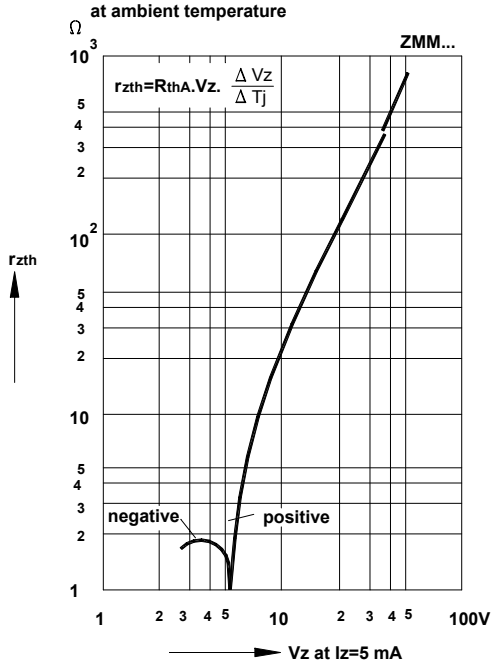
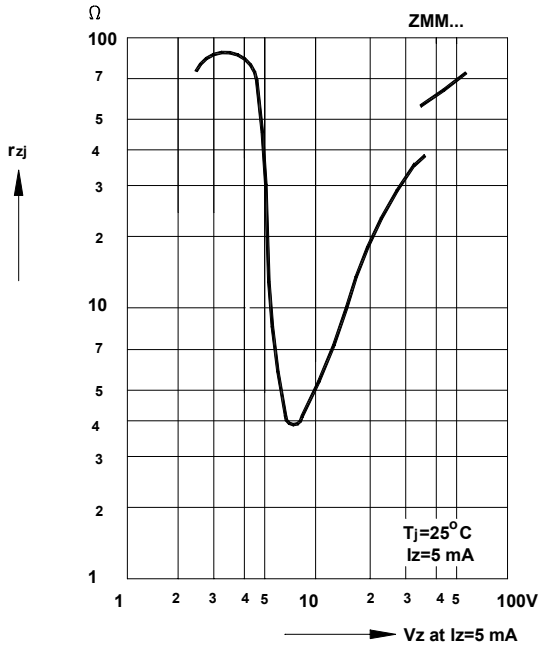
Dynamic resistance versus Zener current



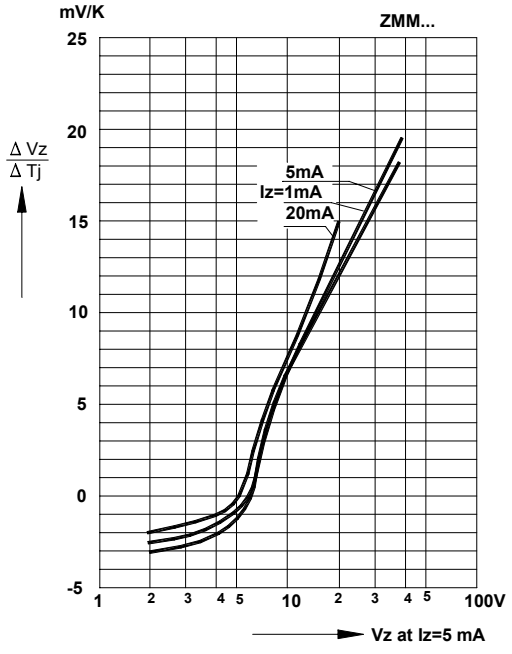
Thermal differential resistance versus Zener voltage
Valid provided that electrodes are kept at ambient temperature



Dynamic resistance versus Zener voltage



Temperature dependence of Zener voltage versus Zener voltage



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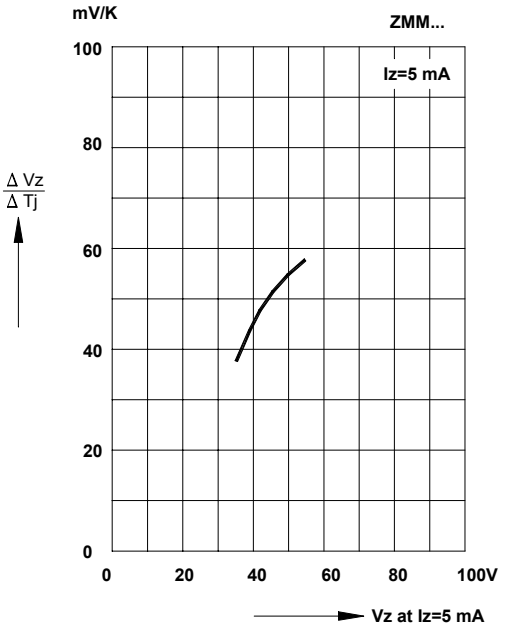
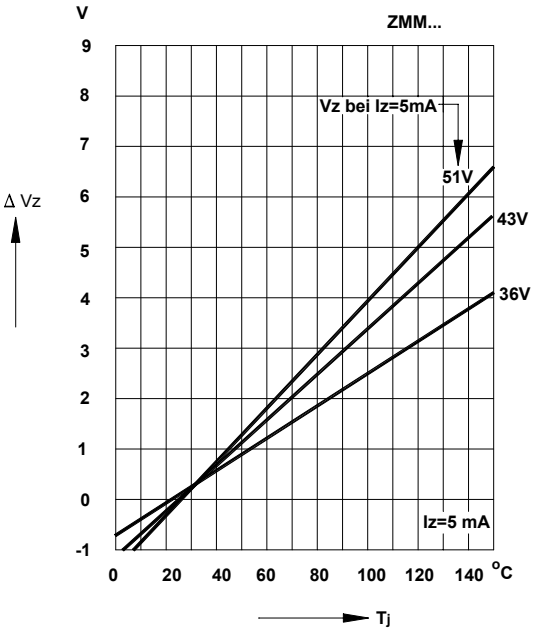
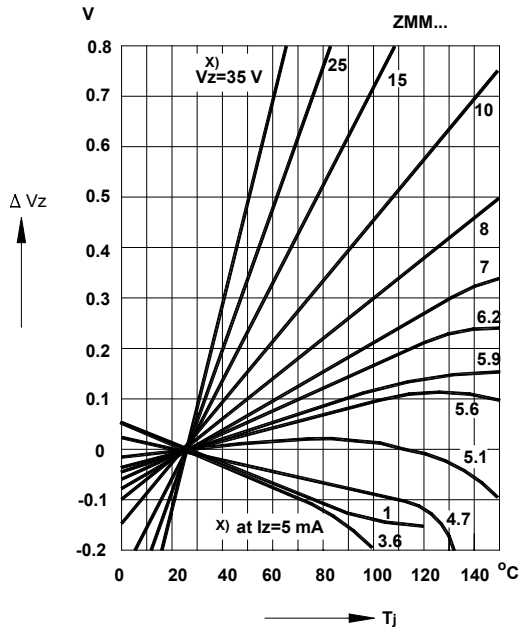


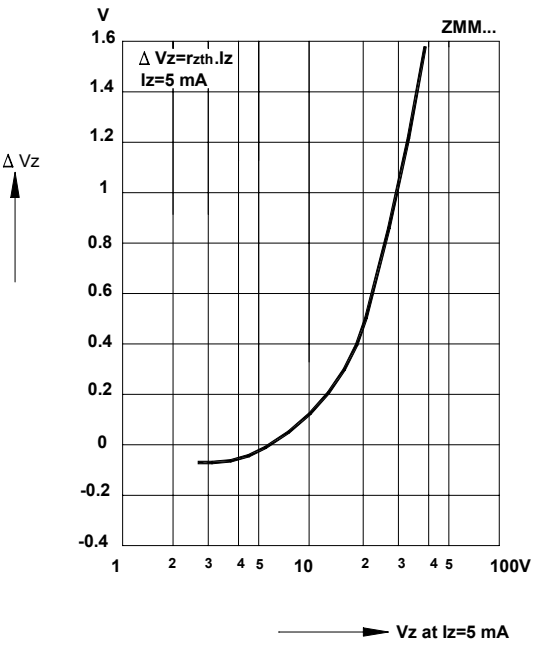
Change of Zener voltage versus junction temperature



Change of Zener voltage versus junction temperature



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



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