ZMM1 THRU ZMM200

SILICON PLANAR ZENER DIODES

Features

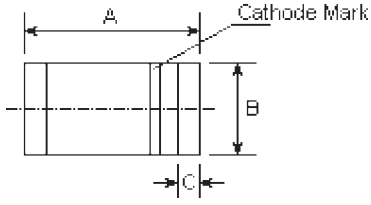
Silicon Planar Zener Diodes
in MiniMELF case especially for automatic insertion. The Zener voltages are graded according to the international E 24 standard. Smaller voltage tolerances and higher Zener voltages on request.

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

MiniMELF



DIMENSIONS					
DIM	inches		mm		Note
	Min.	Max.	Min.	Max.	
A	0.134	0.142	3.4	3.6	
B	0.055	0.059	1.40	1.50	ϕ
C	0.008	0.016	0.2	0.4	

Absolute Maximum Ratings (T_a=25℃)

	Symbols	Values	Units
Zener current see Table "Characteristics"			
Power dissipation at T_{amb}=25℃	P_{tot}	500 [1]	mW
Junction temperature	T_j	175	℃
Storage temperature range	T_S	-55 to +175	℃

Note:

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

Characteristics at T_{amb}=25℃

	Symbols	Min.	Typ.	Max.	Units
Thermal resistance junction to ambient Air	R_{thA}	-	-	0.3 [1]	K/mW

Note:

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

Type	Zener voltage range [1]			Dynamic resistance			Reverse leakage current			Temp. coefficient of Zener Voltage
	V_{znom}	I_{ZT} for V_{ZT} [2]		r_{zjT} and r_{zjk} at I_{ZK}			I_R and I_R [2] at V_R			TK_{VZ}
	V	mA	V	Ω	Ω	mA	µ A	µ A	V	%/K
ZMM1 [3]	0.75	5	0.7 ... 0.8	<8	<50	1	-	-	-	-0.26 ... -0.23
ZMM2.0	2.0	5	1.9 ... 2.1	<85	<600	1	<100	<200	1	-0.09 ... -0.06
ZMM2.4	2.4	5	2.28 ... 2.56	<85	<600	1	<50	<100	1	-0.09 ... -0.06
ZMM2.7	2.7	5	2.5 ... 2.9	<85	<600	1	<10	<50	1	-0.09 ... -0.06
ZMM3.0	3.0	5	2.8 ... 3.2	<85	<600	1	<4	<40	1	-0.08 ... -0.05
ZMM3.3	3.3	5	3.1 ... 3.5	<85	<600	1	<2	<40	1	-0.08 ... -0.05
ZMM3.6	3.6	5	3.4 ... 3.8	<85	<600	1	<2	<40	1	-0.08 ... -0.05
ZMM3.9	3.9	5	3.7 ... 4.1	<85	<600	1	<2	<40	1	-0.08 ... -0.05
ZMM4.3	4.3	5	4.0 ... 4.6	<75	<600	1	<1	<20	1	-0.06 ... -0.03
ZMM4.7	4.7	5	4.4 ... 5.0	<60	<600	1	<0.5	<10	1	-0.05 ... +0.02
ZMM5.1	5.1	5	4.8 ... 5.4	<35	<550	1	<0.1	<2	1	-0.02 ... +0.02
ZMM5.6	5.6	5	5.2 ... 6.0	<25	<450	1	<0.1	<2	1	-0.05 ... +0.05
ZMM6.2	6.2	5	5.8 ... 6.6	<10	<200	1	<0.1	<2	2	0.03 ... 0.06
ZMM6.8	6.8	5	6.4 ... 7.2	<8	<150	1	<0.1	<2	3	0.03 ... 0.07
ZMM7.5	7.5	5	7.0 ... 7.9	<7	<50	1	<0.1	<2	5	0.03 ... 0.07
ZMM8.2	8.2	5	7.7 ... 8.7	<7	<50	1	<0.1	<2	6.2	0.03 ... 0.08
ZMM9.1	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:

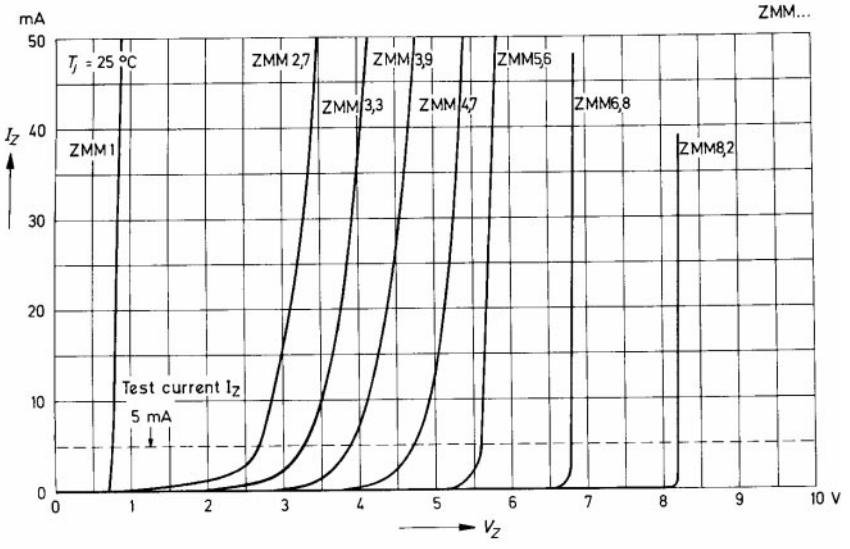
(1) Tested with pulses tp=20ms.

(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.

RATINGS AND CHARACTERISTIC CURVES

Breakdown characteristics
T_j = constant (pulsed)



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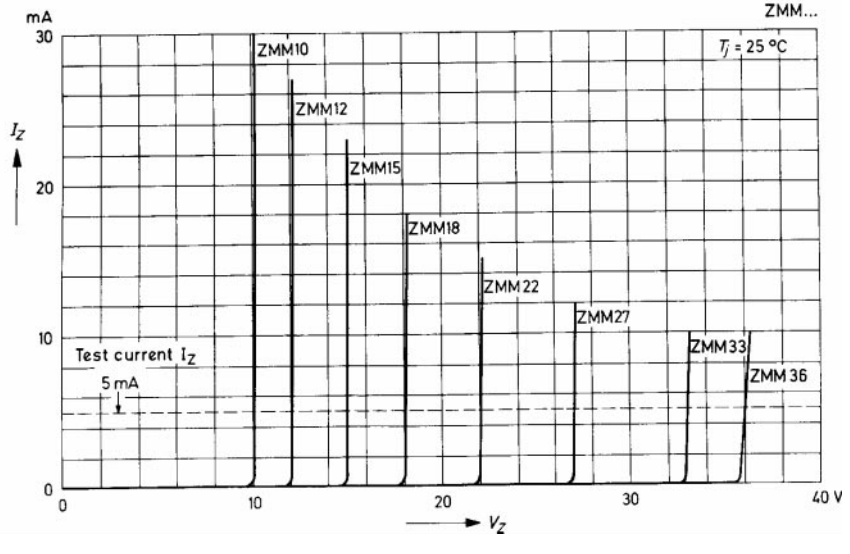
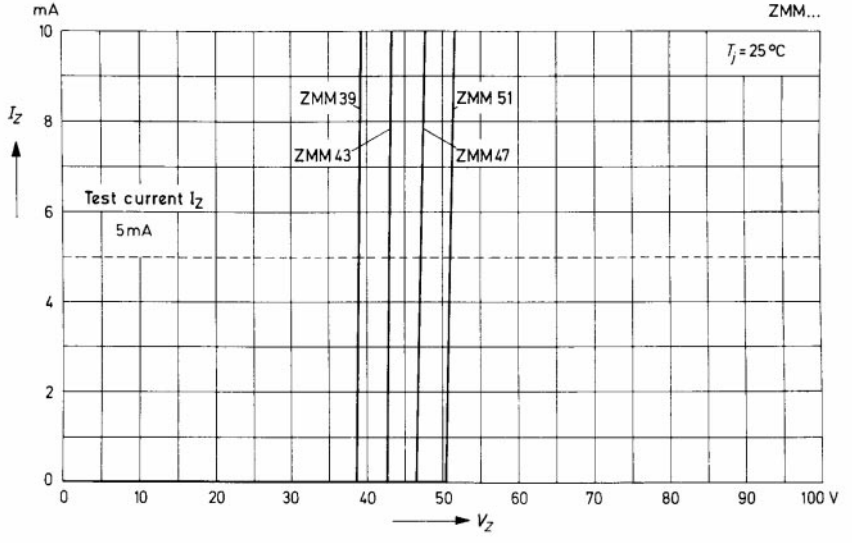
T_j = constant (pulsed)

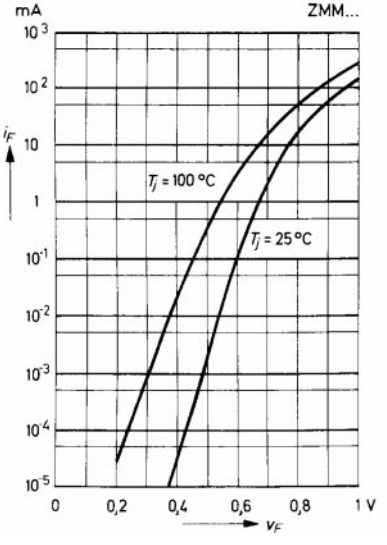


RATINGS AND CHARACTERISTIC CURVES

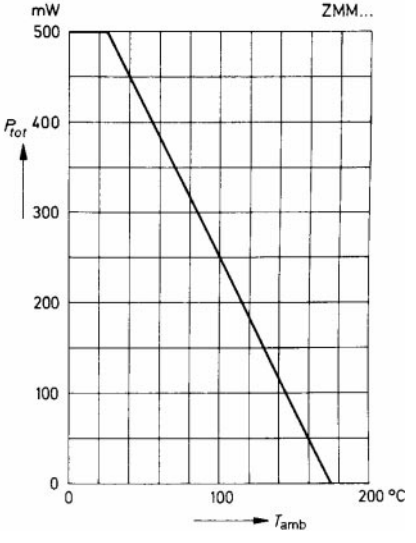
Breakdown characteristics
T_j = constant (pulsed)



Forward characteristics



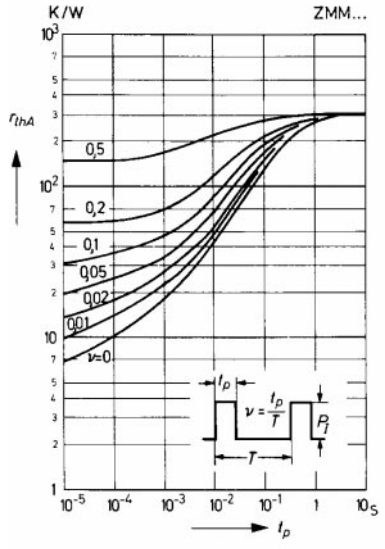
Admissible power dissipation versus ambient temperature
Valid provided that electrodes are kept at ambient temperature.



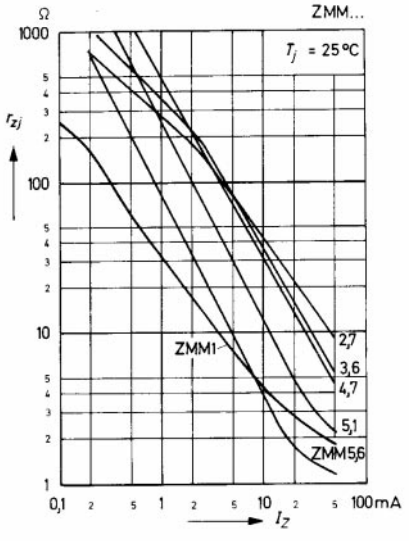
RATINGS AND CHARACTERISTIC CURVES

Pulse thermal resistance versus pulse duration

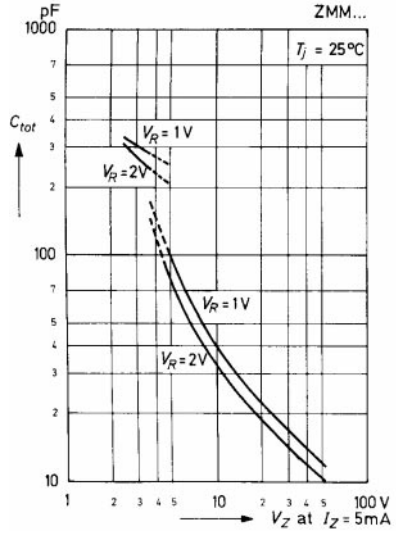
Valid provided that the electrodes are kept at ambient temperature.



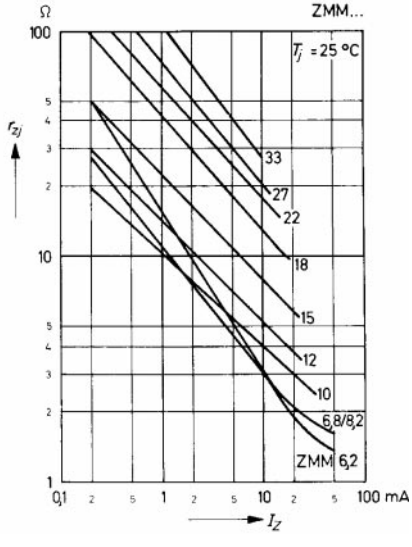
Dynamic resistance versus Zener current



Capacitance versus Zener voltage



Dynamic resistance versus Zener current



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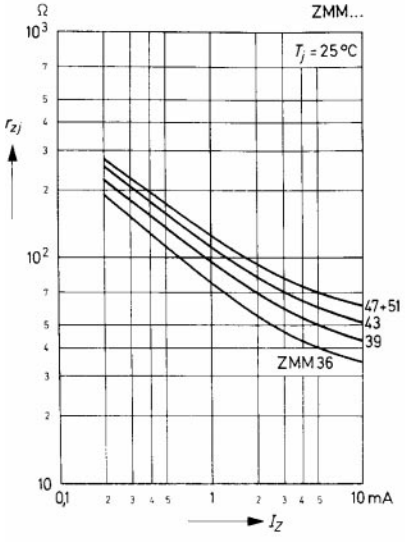
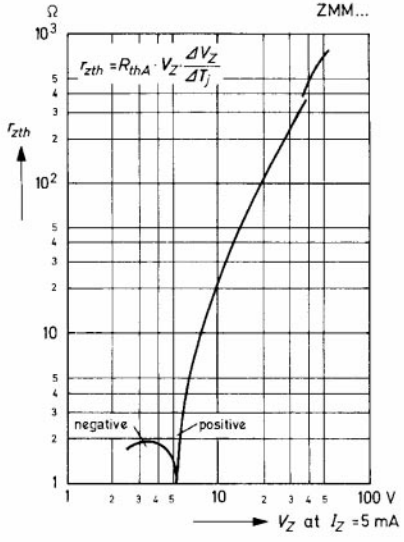
Dynamic resistance versus Zener current

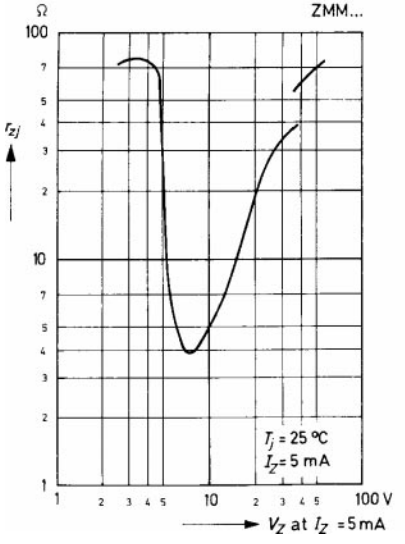


Thermal differential resistance versus Zener voltage

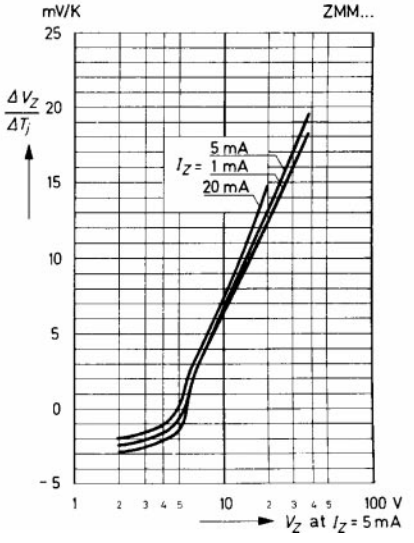
Valid provided that electrodes are kept at ambient temperature.



Dynamic resistance versus Zener voltage

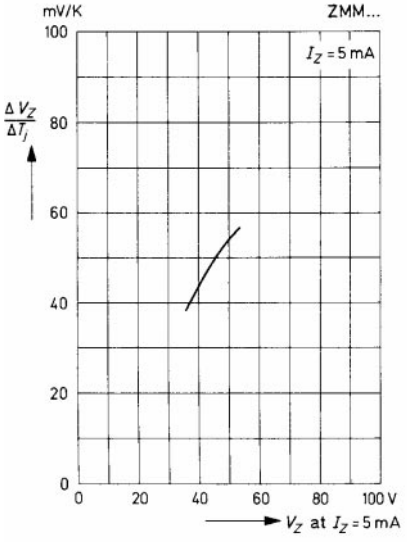


Temperature dependence of Zener voltage versus Zener voltage

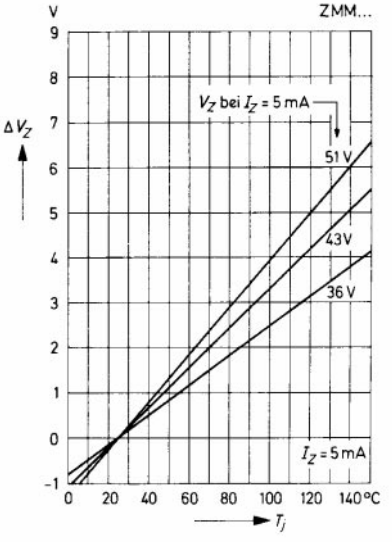


RATINGS AND CHARACTERISTIC CURVES

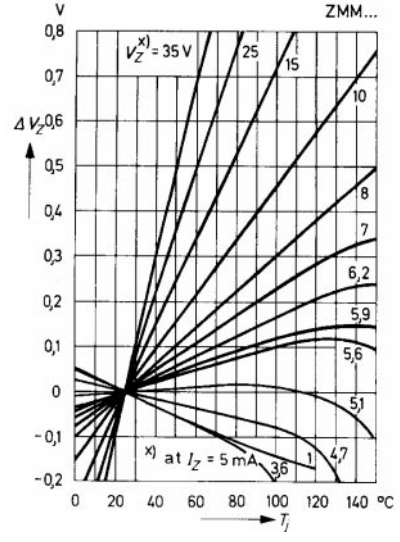
Temperature dependence of Zener voltage versus Zener voltage



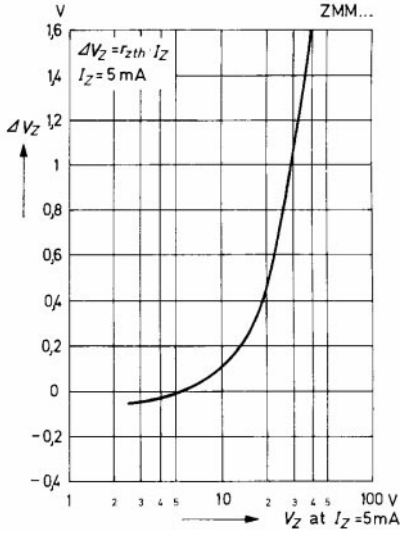
Change of Zener voltage versus junction temperature



Change of Zener voltage versus junction temperature



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



RATINGS AND CHARACTERISTIC CURVES

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