

ZMM Series

Zener diode

Features

1. Small surface mounting type
2. High reliability



Applications

Voltage stabilization

LL-34

Absolute Maximum Ratings

$T_j=25^{\circ}\text{C}$

Parameter	Test Conditions	Type	Symbol	Value	Unit
Power dissipation	$R_{thJA} \leq 300\text{K/W}$		P_V	500	mW
Z-current			I_Z	P_V/V_Z	mA
Junction temperature			T_j	175	$^{\circ}\text{C}$
Storage temperature range			T_{stg}	-65~+175	$^{\circ}\text{C}$

Maximum Thermal Resistance

$T_j=25^{\circ}\text{C}$

Parameter	Test Conditions	Symbol	Value	Unit
Junction ambient	on PC board 50mm × 50mm × 1.6mm	R_{thJA}	500	K/W

Stresses exceeding maximum ratings may damage the device. Maximum ratings are stress ratings only. Functional operation above the recommended operating conditions is not implied. Extended exposure to stresses above the recommended operating conditions may affect device reliability.

Electrical Characteristics

$T_j=25^{\circ}\text{C}$

Parameter	Test Conditions	Type	Symbol	Min	Typ	Max	Unit
Forward voltage	$I_F=200\text{mA}$		V_F			1.5	V

Type	V_{Znom}	I_{ZT} for V_{ZT} and r_{zjT}		r_{zjk} at I_{ZK}		I_R and I_R at V_R			TK_{VZ}	
	V	mA	$V^{1)}$	Ω	Ω	mA	μA	$\mu A^{2)}$	V	%/K
ZMM2V0	2.0	5	1.9~2.1	100	<600	1	<150	<300	1	-0.09~-0.06
ZMM2V2	2.2	5	2.09~2.31	100	<600	1	<150	<300	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	<600	0.5	<0.1	<5	33	0.04~0.12
ZMM47	47	2.5	44~50	<110	<700	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	<1000	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	<1500	0.5	<0.1	<10	56	0.04~0.12
ZMM82	82	2.5	77~87	<300	<2000	0.5	<0.1	<10	62	0.04~0.12
ZMM91	91	1.0	85~96	<450	<5000	0.1	<0.1	<10	68	0.04~0.12
ZMM100	100	1.0	94~106	<450	<5000	0.1	<0.1	<10	75	0.04~0.12

¹⁾ Tighter tolerances available request: ZMMB... $\pm 2\%$ of V_{Znom}

²⁾ at $T_j=150^\circ C$

Characteristics ($T_j=25^\circ\text{C}$ unless otherwise specified)

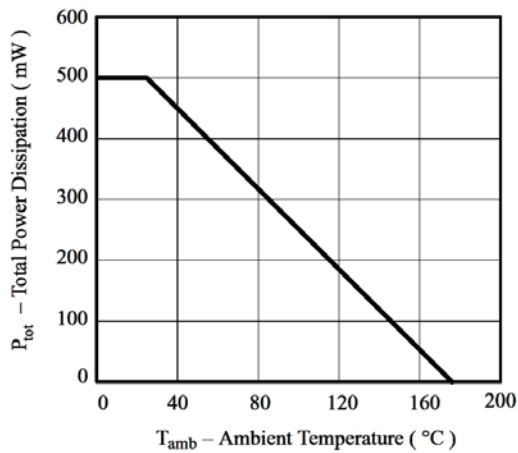


Figure 1. Total Power Dissipation vs. Ambient Temperature

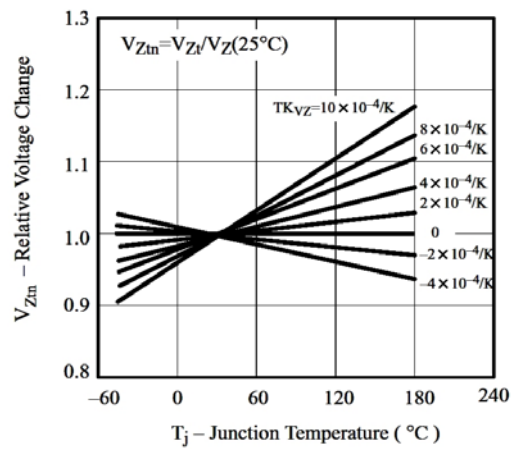


Figure 4. Typical Change of Working Voltage Vs. Junction Temperature

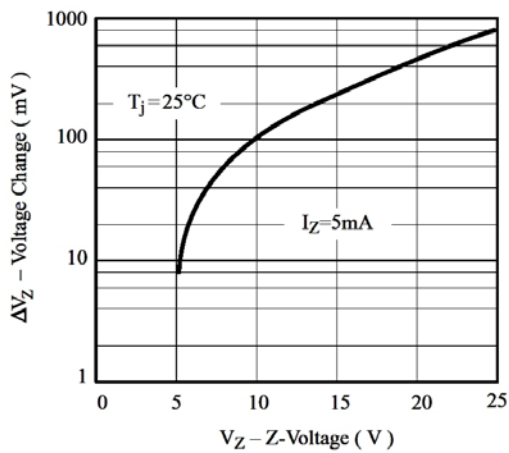


Figure 2. Typical Change of Working Voltage under Operating Conditions at $T_{amb}=25^\circ\text{C}$

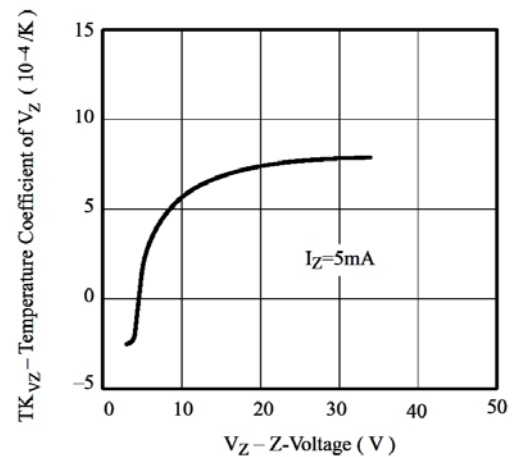


Figure 5. Temperature Coefficient of V_Z vs. Z-Voltage

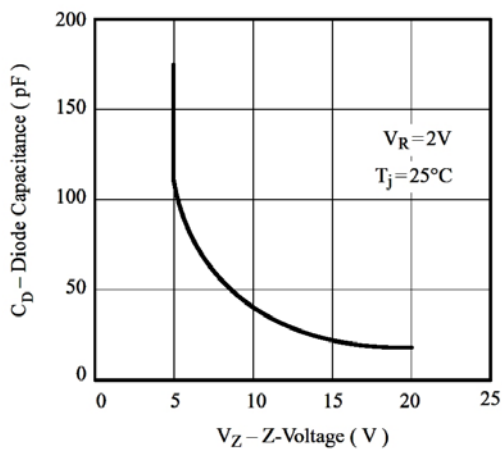


Figure 3. Diode Capacitance vs. Z-voltage

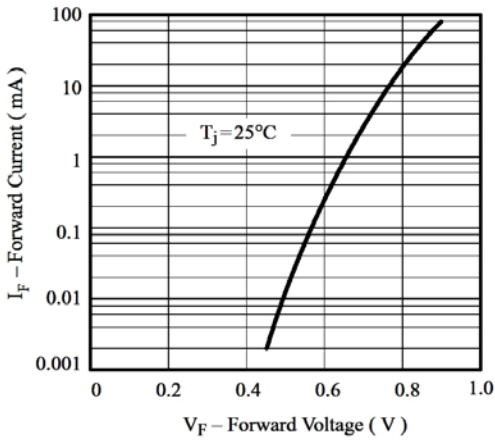


Figure 6. Forward Current vs. Forward Voltage

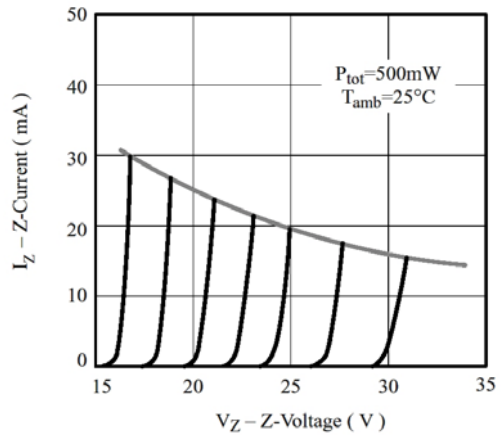


Figure 8. Z-Current vs. Z-Voltage

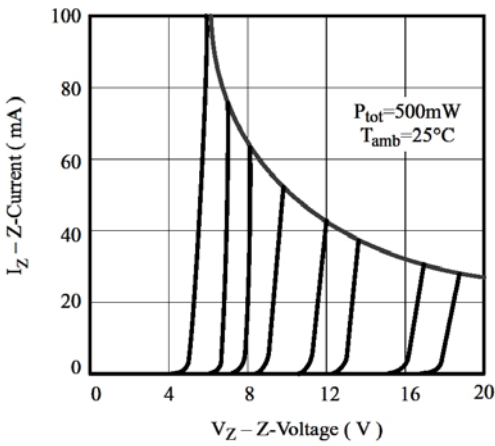


Figure 7. Z-Current vs. Z-Voltage

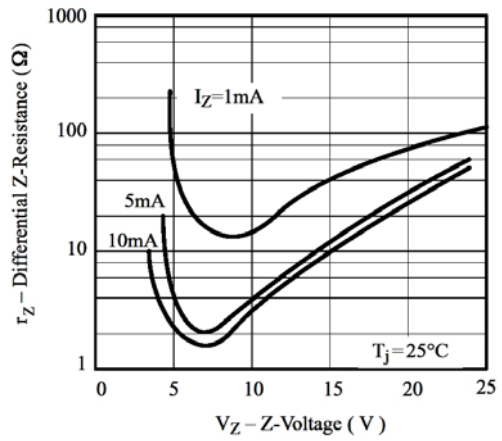


Figure 9. Differential Z-Resistance Vz vs. Z-Voltage

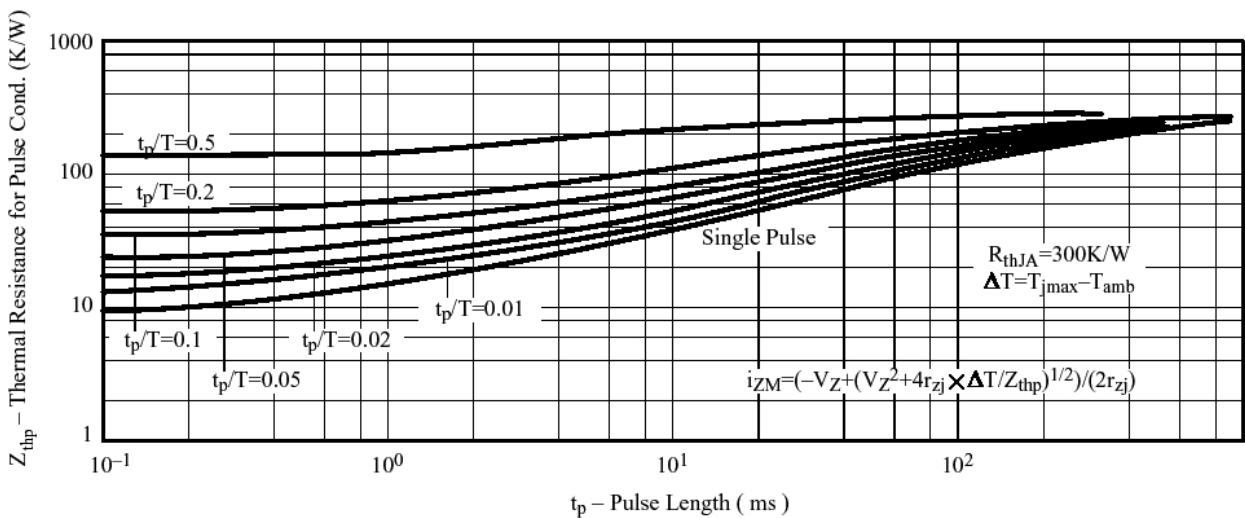
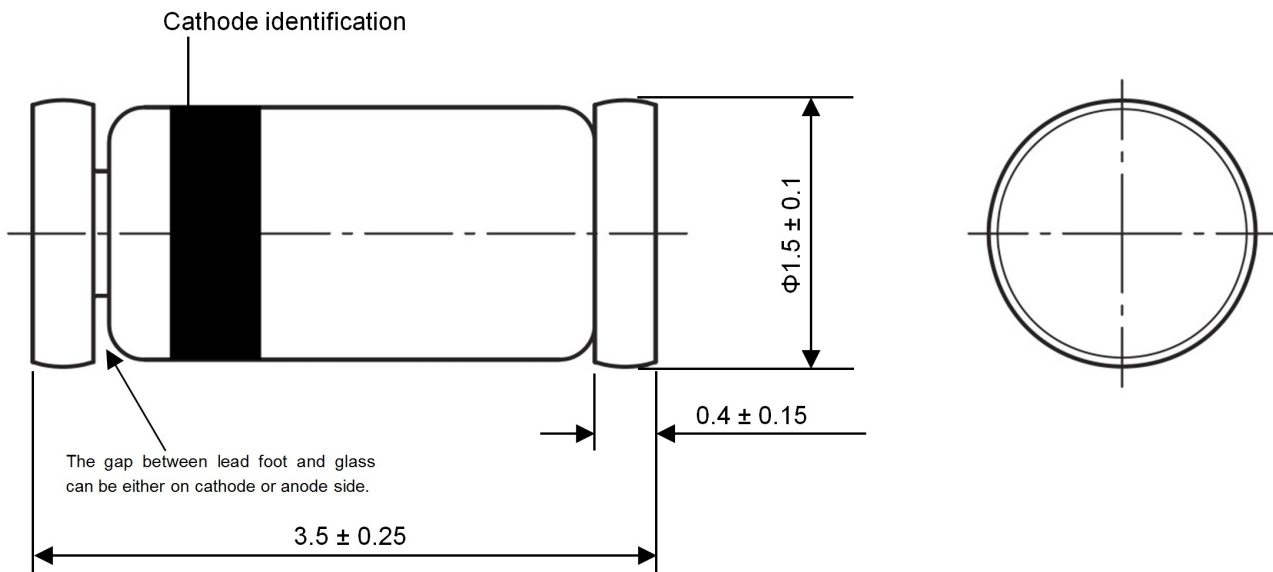


Figure 10. Thermal Response

Dimensions in mm



Glass Case
Mini Melf / SOD-80 / LL-34
JEDEC DO-213 AA