



**CHENMKO ENTERPRISE CO.,LTD**

**SURFACE MOUNT ZENER**

**SILICON PLANAR POWER ZENER DIODES**  
VOLTAGE RANGE 2.4V TO 91V

**MMGZ5221BPT**

**THRU**

**MMGZ5270BPT**

*Lead free devices*

**FEATURE**

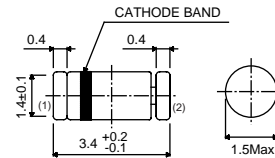
- \* Small surface mounting type. (MINI-MELF)
- \* High temperature soldering type.
- \* ESD rating of class 3(>16 kV) per human body model.
- \* Silicon planar zener diodes.
- \* Silicon-oxide passivated junction.
- \* Low temperature coefficient voltage
- \* 500 mW Rating on FR-4 or FR-5 Board

**MECHANICAL**

- \* MINI-MELF Packaging.
- \* Cathode indicated by polarity band.
- \* Mounting position: Any.



Mini-Melf



Dimensions in millimeters

Mini-Melf

**CIRCUIT**



**MAXIMUM RATINGS** ( At  $T_A = 25^{\circ}\text{C}$  unless otherwise noted )

RATINGS	SYMBOL	VALUE	UNITS
Zener Current ( see Table "Characteristics" )	-	-	-
Max. Steady State Power Dissipation @ $T_A=25^{\circ}\text{C}$	$P_D$	500	mW
Max. Operating Temperature Range	$T_J$	-65 to +175	$^{\circ}\text{C}$
Storage Temperature Range	$T_{STG}$	-65 to +175	$^{\circ}\text{C}$

**ELECTRICAL CHARACTERISTICS** ( At  $T_A = 25^{\circ}\text{C}$  unless otherwise noted )

CHARACTERISTICS	SYMBOL	MIN.	TYP.	MAX.	UNITS
Thermal Resistance Junction to Ambient	$R_{\theta JA}$	-	-	240	$^{\circ}\text{C/W}$
Max. Instantaneous Forward Voltage at $I_F = 10\text{mA}$	$V_F$	-	-	0.9	Volts

- NOTES :
1. The JEDEC type numbers listed have a standard tolerance on the normal zener voltage of  $\pm 10\%$ , Suffix B= $\pm 5\%$ , Suffix B= $\pm 2\%$ .
  2. The zener impedance is derived from 1KHz AC voltage, which results when an AC current having an RMS value equal to 10% of DC zener current ( $I_{ZT}$  or  $I_{ZK}$ ) is superimposed on  $I_{ZT}$  or  $I_{ZK}$ . Zener impedance is measured at two points to insure a sharp knee on the breakdown curve to eliminate unstable units.
  3. Valid provided that electrodes at distance of 10mm from case are kept ambient temperature.
  4. Measured under thermal equilibrium and DC test conditions.
  5. The rating listed in the electrical characteristics table is maximum peak, non-repetitive, reverse surge current of 1/2 square wave or equivalent sine wave pulse of 1/120 second duration superimposed on the test current,  $I_{ZT}$ , per JEDEC registration.

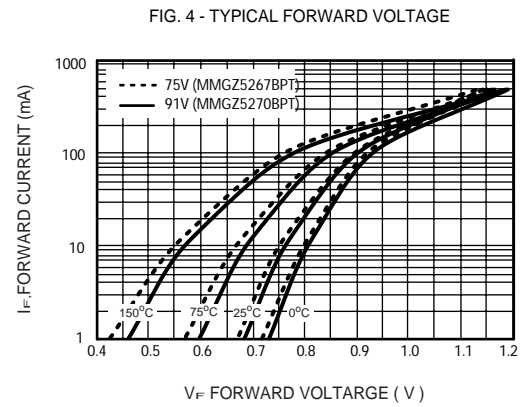
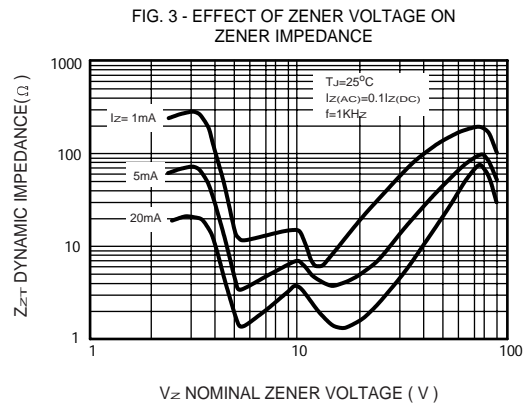
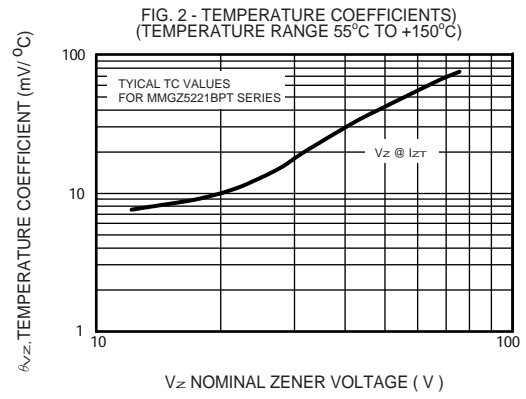
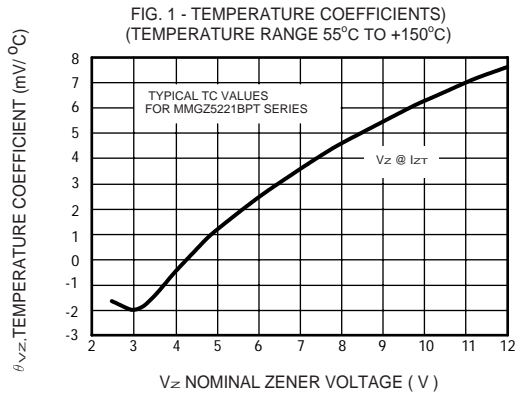
## ELECTRICAL CHARACTERISTICS ( MMGZ5221BPT THRU MMGZ5270BPT )

TYPE	Zener voltage Vz (V) @ IZT			Test current  IZT (mA)	Maximum Zener impedance			Maximum reverse leakage current		Type temperature coefficient at TA= 25°C θVZ (%/°C)	Maximum regulator current at TA= 50°C IZM (mA)
	Min	Nom	Max		ZZT at IZT (Ω)	ZZK (Ω)	at Izk (mA)	IR (μA)	at VR (V)		
	Volts	Volts	Volts								
MMGZ5221BPT	2.280	2.4	2.520	20	30	1200	0.25	100	1	-0.085	190
MMGZ5222BPT	2.375	2.5	2.625	20	30	1250	0.25	100	1	-0.085	182
MMGZ5223BPT	2.565	2.7	2.835	20	30	1300	0.25	75	1	-0.080	168
MMGZ5224BPT	2.660	2.8	2.940	20	30	1400	0.25	75	1	-0.080	162
MMGZ5225BPT	2.850	3.0	3.150	20	29	1600	0.25	50	1	-0.075	152
MMGZ5226BPT	3.135	3.3	3.465	20	28	1600	0.25	25	1	-0.070	138
MMGZ5227BPT	3.420	3.6	3.780	20	24	1700	0.25	15	1	-0.065	126
MMGZ5228BPT	3.705	3.9	4.095	20	23	1900	0.25	10	1	-0.060	115
MMGZ5229BPT	4.085	4.3	4.515	20	22	2000	0.25	5	1	-0.055	106
MMGZ5230BPT	4.465	4.7	4.935	20	19	1900	0.25	5	2	+0.030	97
MMGZ5231BPT	4.845	5.1	5.355	20	17	1600	0.25	5	2	+0.030	89
MMGZ5232BPT	5.320	5.6	5.880	20	11	1600	0.25	5	3	+0.038	81
MMGZ5233BPT	5.700	6.0	6.300	20	7	1600	0.25	5	3.5	+0.038	76
MMGZ5234BPT	5.890	6.2	6.510	20	7	1000	0.25	5	4	+0.045	73
MMGZ5235BPT	6.460	6.8	7.140	20	5	750	0.25	3	5	+0.050	67
MMGZ5236BPT	7.125	7.5	7.875	20	6	500	0.25	3	6	+0.058	61
MMGZ5237BPT	7.790	8.2	8.610	20	8	500	0.25	3	6.5	+0.062	55
MMGZ5238BPT	8.265	8.7	9.135	20	8	600	0.25	3	6.5	+0.065	52
MMGZ5239BPT	8.645	9.1	9.555	20	10	600	0.25	3	7	+0.068	50
MMGZ5240BPT	9.500	10	10.50	20	17	600	0.25	3	8	+0.075	45
MMGZ5241BPT	10.45	11	11.55	20	22	600	0.25	2	8.4	+0.076	41
MMGZ5242BPT	11.40	12	12.60	20	30	600	0.25	1	9.1	+0.077	38
MMGZ5243BPT	12.35	13	13.65	9.5	13	600	0.25	0.5	9.9	+0.079	35
MMGZ5244BPT	13.30	14	14.70	9.0	15	600	0.25	0.1	10	+0.082	32
MMGZ5245BPT	14.25	15	15.75	8.5	16	600	0.25	0.1	11	+0.082	30
MMGZ5246BPT	15.20	16	16.80	7.8	17	600	0.25	0.1	12	+0.083	28
MMGZ5247BPT	16.15	17	17.85	7.4	19	600	0.25	0.1	13	+0.084	27
MMGZ5248BPT	17.10	18	18.90	7.0	21	600	0.25	0.1	14	+0.085	25
MMGZ5249BPT	18.05	19	19.95	6.6	23	600	0.25	0.1	14	+0.086	24
MMGZ5250BPT	19.00	20	21.00	6.2	25	600	0.25	0.1	16	+0.086	23
MMGZ5251BPT	20.90	22	23.10	5.6	29	600	0.25	0.1	17	+0.087	21
MMGZ5252BPT	22.80	24	25.20	5.2	33	600	0.25	0.1	18	+0.088	19.1
MMGZ5253BPT	23.75	25	26.25	5.0	35	600	0.25	0.1	19	+0.089	18.2
MMGZ5254BPT	25.65	27	28.35	4.6	41	600	0.25	0.1	21	+0.090	16.8
MMGZ5255BPT	26.60	28	29.40	4.5	44	600	0.25	0.1	21	+0.091	16.2
MMGZ5256BPT	28.50	30	31.50	4.2	49	600	0.25	0.1	23	+0.091	15.1
MMGZ5257BPT	31.35	33	34.65	3.8	58	700	0.25	0.1	25	+0.092	13.8

## ELECTRICAL CHARACTERISTICS ( MMGZ5221BPT THRU MMGZ5270BPT )

TYPE	Zener voltage V <sub>Z</sub> (V) @ I <sub>ZT</sub>			Test current	Maximum Zener impedance			Maximum reverse leakage current		Type temperature coefficient at T <sub>A</sub> = 25°C θ <sub>VZ</sub> (%/°C)	Maximum regulator current at T <sub>A</sub> = 50°C I <sub>ZM</sub> (mA)
	Min	Nom	Max		Z <sub>ZT</sub> at I <sub>ZT</sub> (Ω)	Z <sub>ZK</sub> (Ω)	at I <sub>ZK</sub> (mA)	I <sub>R</sub> (μA)	at V <sub>R</sub> (V)		
	Volts	Volts	Volts	I <sub>ZT</sub> (mA)							
MMGZ5258BPT	34.20	36	37.80	3.4	70	700	0.25	0.1	27	+0.093	13.8
MMGZ5259BPT	37.05	39	40.95	3.2	80	800	0.25	0.1	30	+0.094	12.6
MMGZ5260BPT	40.85	43	45.15	3.0	93	900	0.25	0.1	33	+0.095	11.6
MMGZ5261BPT	44.65	47	49.35	2.7	105	1000	0.25	0.1	36	+0.095	10.6
MMGZ5262BPT	48.45	51	53.55	2.5	125	1100	0.25	0.1	39	+0.096	9.7
MMGZ5263BPT	53.20	56	58.80	2.2	150	1300	0.25	0.1	43	+0.096	8.9
MMGZ5264BPT	57.00	60	63.00	2.1	170	1400	0.25	0.1	46	+0.097	11.6
MMGZ5265BPT	58.90	62	65.10	2.0	185	1400	0.25	0.1	47	+0.097	-
MMGZ5266BPT	64.60	68	71.40	1.8	230	1600	0.25	0.1	52	+0.097	-
MMGZ5267BPT	71.25	75	78.75	1.7	270	1700	0.25	0.1	56	+0.098	-
MMGZ5268BPT	77.90	82	86.10	1.5	330	2000	0.25	0.1	62	+0.098	-
MMGZ5269BPT	82.65	87	91.35	1.4	370	2200	0.25	0.1	68	+0.099	-
MMGZ5270BPT	86.45	91	95.55	1.4	400	2300	0.25	0.1	69	+0.099	-

## RATING CHARACTERISTIC CURVES ( MMGZ5221BPT THRU MMGZ5270BPT )



# RATING CHARACTERISTIC CURVES ( MMGZ5221BPT THRU MMGZ5270BPT )

FIG. 5 - TYPICAL CAPACITANCE

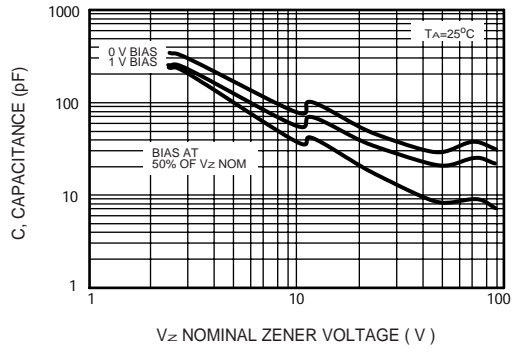


FIG. 6 - TYPICAL LEAKAGE CURRENT

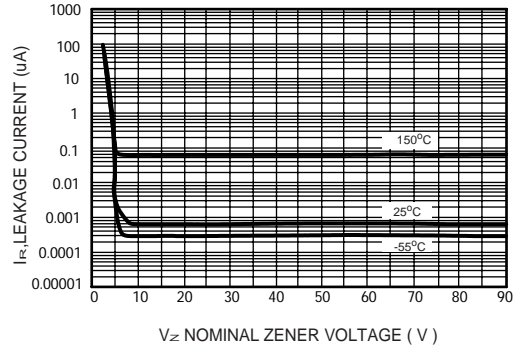


FIG. 7 - ZENER VOLTAGE VERSUS ZENER CURRENT ( $V_z$  UP TO 12V)

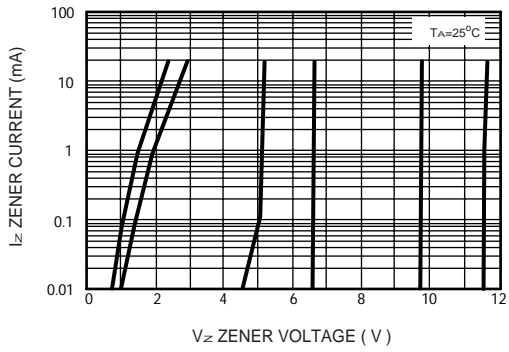


FIG. 8 - ZENER VOLTAGE VERSUS ZENER CURRENT (12V TO 91V)

