



**CHENMKO ENTERPRISE CO.,LTD**

*Halogens free devices*

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

**MMPZ5221BGP**

**THRU**

**MMPZ5270BGP**

**FEATURE**

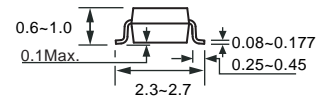
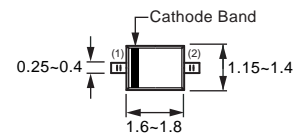
- \* High temperature soldering type.
- \* ESD rating of class 3(>16 kV) per human body model.
- \* Silicon planar zener diodes.
- \* Silicon-oxide passivated junction.
- \* Low temperature coefficient voltage
- \* 225 mW Rating on FR-4 or FR-5 Board

**MECHANICAL**

- \* Void-free, Transfer-molded, Thermosetting plastic case
- \* SC-76/SOD-323 Packaging.
- \* Cathode indicated by polarity band.
- \* Mounting position: Any.



**SC-76/SOD-323**



Dimensions in millimeters

**SC-76/SOD-323**

**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 @ $T_A=25^{\circ}\text{C}$	$P_D$	225	mW
Max. Operating Temperature Range	$T_J$	-65 to +150	$^{\circ}\text{C}$
Storage Temperature Range	$T_{STG}$	-65 to +150	$^{\circ}\text{C}$

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

CHARACTERISTICS	SYMBOL	MIN.	TYP.	MAX.	UNITS
Thermal Resistance Junction to Ambient	$R_{\theta JA}$	-	-	550	$^{\circ}\text{C/W}$
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= $\pm 5\%$ .
  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.

2003-01

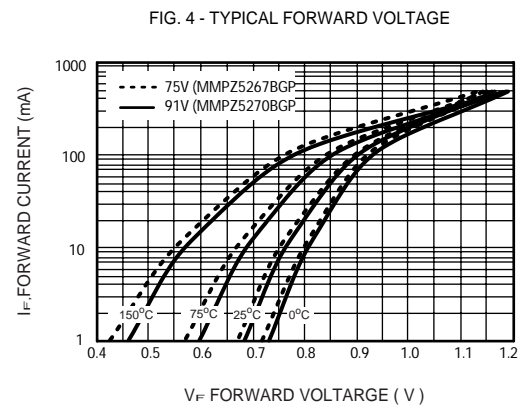
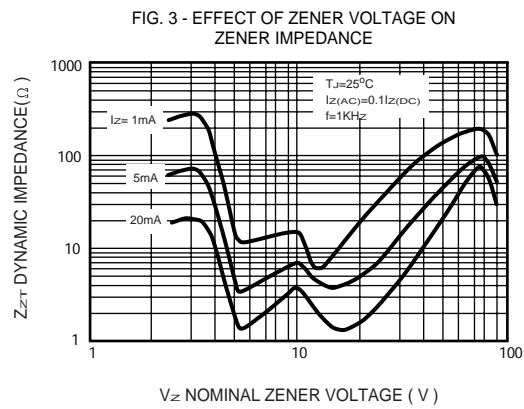
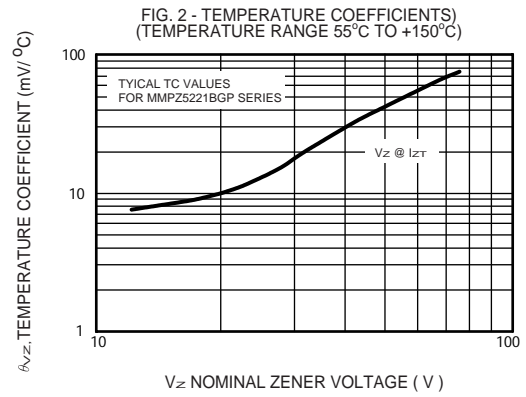
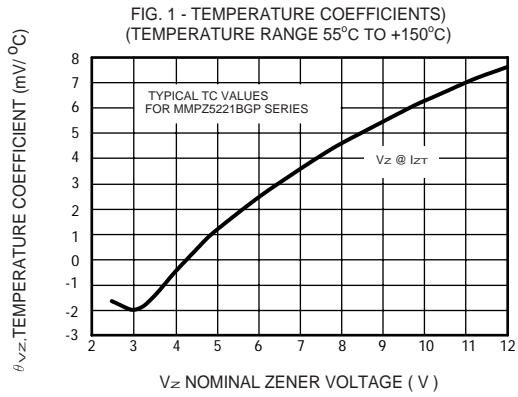
## ELECTRICAL CHARACTERISTICS ( MMPZ5221BGP THRU MMPZ5270BGP )

TYPE	Zener voltage V <sub>Z</sub> (V) @ I <sub>ZT</sub>			Test current  I <sub>ZT</sub> (mA)	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								
MMPZ5221BGP	2.280	2.4	2.520	5	100	1800	0.25	100	1	-0.085	85
MMPZ5222BGP	2.375	2.5	2.625	5	100	1800	0.25	100	1	-0.085	82
MMPZ5223BGP	2.565	2.7	2.835	5	100	1900	0.25	75	1	-0.080	76
MMPZ5224BGP	2.660	2.8	2.940	5	100	1900	0.25	75	1	-0.080	73
MMPZ5225BGP	2.850	3.0	3.150	5	95	2000	0.25	50	1	-0.075	68
MMPZ5226BGP	3.135	3.3	3.465	5	95	2200	0.25	25	1	-0.070	62
MMPZ5227BGP	3.420	3.6	3.780	5	90	2300	0.25	15	1	-0.065	57
MMPZ5228BGP	3.705	3.9	4.095	5	90	2400	0.25	10	1	-0.060	52
MMPZ5229BGP	4.085	4.3	4.515	5	88	2500	0.25	5	1	-0.055	48
MMPZ5230BGP	4.465	4.7	4.935	5	70	2200	0.25	3	1.5	+0.030	44
MMPZ5231BGP	4.845	5.1	5.355	5	50	2050	0.25	2	2	+0.030	40
MMPZ5232BGP	5.320	5.6	5.880	5	25	1800	0.25	5	3	+0.038	36
MMPZ5233BGP	5.700	6.0	6.300	5	25	1800	0.25	5	3	+0.038	34
MMPZ5234BGP	5.890	6.2	6.510	5	10	1300	0.25	1	4	+0.045	33
MMPZ5235BGP	6.460	6.8	7.140	5	8	750	0.25	1	5.2	+0.050	30
MMPZ5236BGP	7.125	7.5	7.875	5	7	600	0.25	0.5	6	+0.058	27
MMPZ5237BGP	7.790	8.2	8.610	5	7	600	0.25	0.5	6.5	+0.062	25
MMPZ5238BGP	8.265	8.7	9.135	5	7	600	0.25	0.5	6.5	+0.065	23
MMPZ5239BGP	8.645	9.1	9.555	5	10	600	0.25	0.1	7	+0.068	22
MMPZ5240BGP	9.500	10	10.50	5	15	600	0.25	0.1	8	+0.075	20
MMPZ5241BGP	10.45	11	11.55	5	18	600	0.25	0.1	8.4	+0.076	18
MMPZ5242BGP	11.40	12	12.60	5	22	600	0.25	0.1	9.1	+0.077	17
MMPZ5243BGP	12.35	13	13.65	5	25	600	0.25	0.1	9.9	+0.079	16
MMPZ5244BGP	13.30	14	14.70	5	25	600	0.25	0.1	10	+0.082	14
MMPZ5245BGP	14.25	15	15.75	5	32	600	0.25	0.1	11	+0.082	13
MMPZ5246BGP	15.20	16	16.80	5	36	600	0.25	0.1	12	+0.083	12.5
MMPZ5247BGP	16.15	17	17.85	5	36	600	0.25	0.1	13	+0.084	12.1
MMPZ5248BGP	17.10	18	18.90	5	42	600	0.25	0.1	14	+0.085	11.2
MMPZ5249BGP	18.05	19	19.95	5	42	600	0.25	0.1	14	+0.086	10.8
MMPZ5250BGP	19.00	20	21.00	5	48	600	0.25	0.1	16	+0.086	10.3
MMPZ5251BGP	20.90	22	23.10	5	55	600	0.25	0.1	17	+0.087	9.4
MMPZ5252BGP	22.80	24	25.20	5	62	600	0.25	0.1	18	+0.088	8.6
MMPZ5253BGP	23.75	25	26.25	5	62	600	0.25	0.1	19	+0.089	7.6
MMPZ5254BGP	25.65	27	28.35	5	70	600	0.25	0.1	21	+0.090	7.5
MMPZ5255BGP	26.60	28	29.40	5	44	600	0.25	0.1	21	+0.091	7.3
MMPZ5256BGP	28.50	30	31.50	5	78	600	0.25	0.1	23	+0.091	6.8
MMPZ5257BGP	31.35	33	34.65	5	88	700	0.25	0.1	25	+0.092	6.2

## ELECTRICAL CHARACTERISTICS ( MMPZ5221BGP THRU MMPZ5270BGP )

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)							
MMPZ5258BGP	34.20	36	37.80	5	95	700	0.25	0.1	27	+0.093	5.8
MMPZ5259BGP	37.05	39	40.95	5	130	800	0.25	0.1	30	+0.094	5.4
MMPZ5260BGP	40.85	43	45.15	3.0	93	900	0.25	0.1	33	+0.095	4.9
MMPZ5261BGP	44.65	47	49.35	2.7	105	1000	0.25	0.1	36	+0.095	4.5
MMPZ5262BGP	48.45	51	53.55	2.5	125	1100	0.25	0.1	39	+0.096	4.2
MMPZ5263BGP	53.20	56	58.80	2.2	150	1300	0.25	0.1	43	+0.096	3.8
MMPZ5264BGP	57.00	60	63.00	2.1	170	1400	0.25	0.1	46	+0.097	3.5
MMPZ5265BGP	58.90	62	65.10	2.0	185	1400	0.25	0.1	47	+0.097	-
MMPZ5266BGP	64.60	68	71.40	1.8	230	1600	0.25	0.1	52	+0.097	-
MMPZ5267BGP	71.25	75	78.75	1.7	270	1700	0.25	0.1	56	+0.098	-
MMPZ5268BGP	77.90	82	86.10	1.5	330	2000	0.25	0.1	62	+0.098	-
MMPZ5269BGP	82.65	87	91.35	1.4	370	2200	0.25	0.1	68	+0.099	-
MMPZ5270BGP	86.45	91	95.55	1.4	400	2300	0.25	0.1	69	+0.099	-

# RATING CHARACTERISTIC CURVES ( MMPZ5221BGP THRU MMPZ5270BGP )



# RATING CHARACTERISTIC CURVES ( MMPZ5221BGP THRU MMPZ5270BGP )

FIG. 5 - TYPICAL CAPACITANCE



FIG. 6 - TYPICAL LEAKAGE CURRENT



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

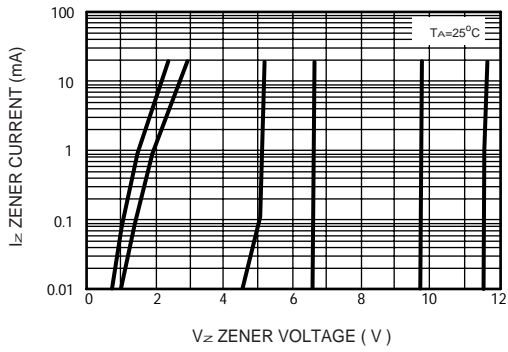


FIG. 8 - ZENER VOLTAGE VERSUS ZENER CURRENT (12V TO 91V)

