



**CHENMKO ENTERPRISE CO.,LTD**

*Halogens free devices*

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

**MMHZ5221BGP**

**THRU**

**MMHZ5270BGP**

**FEATURE**

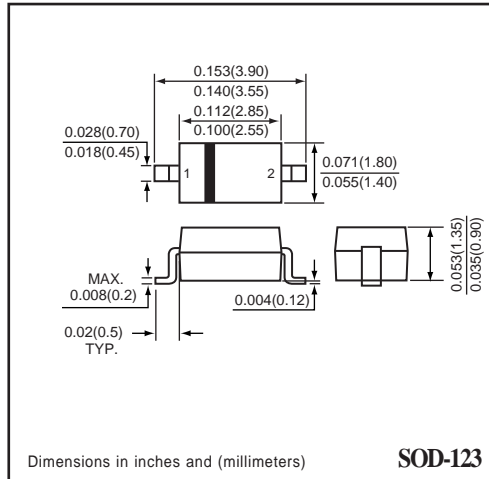
- \* Small surface mounting type. (SOD-123)
- \* High temperature soldering type.
- \* ESD rating of class 3(>16 kV) per human body model.
- \* Silicon planar zener diodes.
- \* Silicon-oxide passivated junction.
- \* Low temperature coefficient voltage
- \* 500 mW Rating on FR-4 or FR-5 Board

**MECHANICAL**

- \* SOD-123 Packaging.
- \* Cathode indicated by polarity band.
- \* Mounting position: Any.



**SOD-123**



Dimensions in inches and (millimeters)

**SOD-123**

**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	$R_{\theta JA}$	-	-	500	$^{\circ}\text{C/W}$
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 S= $\pm 2\%$
  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.

2012-05

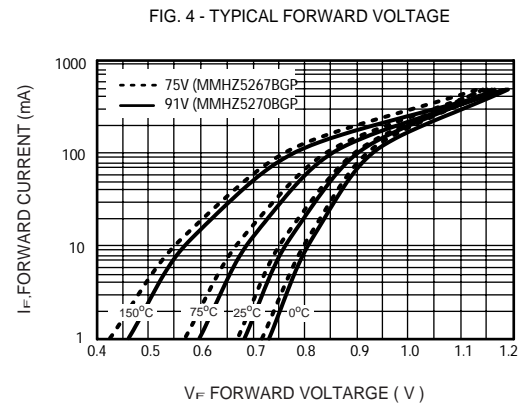
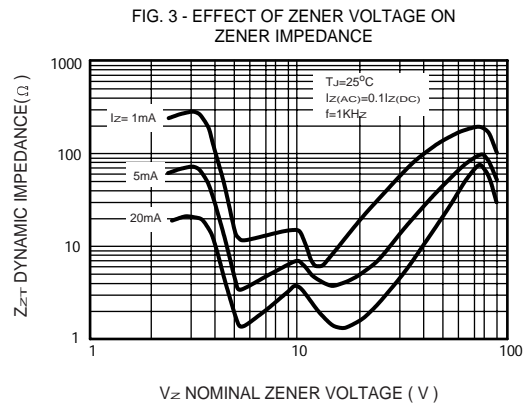
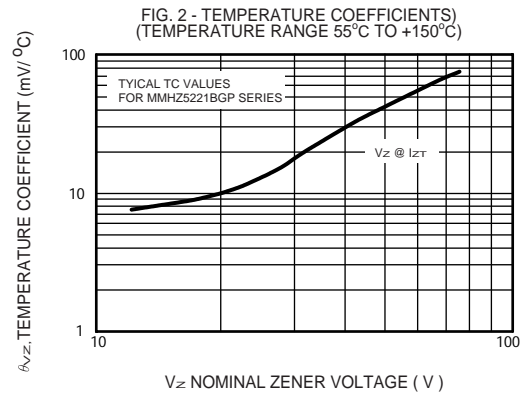
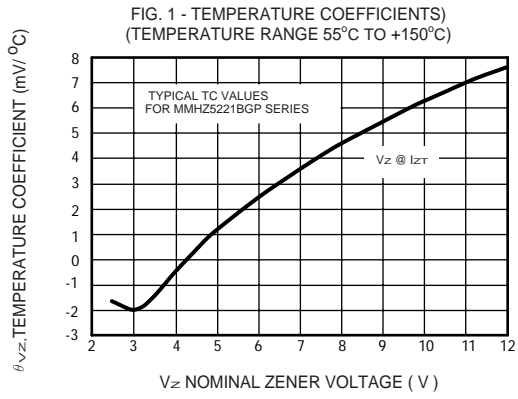
## ELECTRICAL CHARACTERISTICS ( MMHZ5221BGP THRU MMHZ5270BGP )

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								
MMHZ5221BGP	2.280	2.4	2.520	5	100	1800	0.25	100	1	-0.085	85
MMHZ5222BGP	2.375	2.5	2.625	5	100	1800	0.25	100	1	-0.085	82
MMHZ5223BGP	2.565	2.7	2.835	5	100	1900	0.25	75	1	-0.080	76
MMHZ5224BGP	2.660	2.8	2.940	5	100	1900	0.25	75	1	-0.080	73
MMHZ5225BGP	2.850	3.0	3.150	5	95	2000	0.25	50	1	-0.075	68
MMHZ5226BGP	3.135	3.3	3.465	5	95	2200	0.25	25	1	-0.070	62
MMHZ5227BGP	3.420	3.6	3.780	5	90	2300	0.25	15	1	-0.065	57
MMHZ5228BGP	3.705	3.9	4.095	5	90	2400	0.25	10	1	-0.060	52
MMHZ5229BGP	4.085	4.3	4.515	5	88	2500	0.25	5	1	-0.055	48
MMHZ5230BGP	4.465	4.7	4.935	5	70	2200	0.25	3	1.5	+0.030	44
MMHZ5231BGP	4.845	5.1	5.355	5	50	2050	0.25	2	2	+0.030	40
MMHZ5232BGP	5.320	5.6	5.880	5	25	1800	0.25	5	3	+0.038	36
MMHZ5233BGP	5.700	6.0	6.300	5	25	1800	0.25	5	3	+0.038	34
MMHZ5234BGP	5.890	6.2	6.510	5	10	1300	0.25	1	4	+0.045	33
MMHZ5235BGP	6.460	6.8	7.140	5	8	750	0.25	1	5.2	+0.050	30
MMHZ5236BGP	7.125	7.5	7.875	5	7	600	0.25	0.5	6	+0.058	27
MMHZ5237BGP	7.790	8.2	8.610	5	7	600	0.25	0.5	6.5	+0.062	25
MMHZ5238BGP	8.265	8.7	9.135	5	7	600	0.25	0.5	6.5	+0.065	23
MMHZ5239BGP	8.645	9.1	9.555	5	10	600	0.25	0.1	7	+0.068	22
MMHZ5240BGP	9.500	10	10.50	5	15	600	0.25	0.1	8	+0.075	20
MMHZ5241BGP	10.45	11	11.55	5	18	600	0.25	0.1	8.4	+0.076	18
MMHZ5242BGP	11.40	12	12.60	5	22	600	0.25	0.1	9.1	+0.077	17
MMHZ5243BGP	12.35	13	13.65	5	25	600	0.25	0.1	9.9	+0.079	16
MMHZ5244BGP	13.30	14	14.70	5	25	600	0.25	0.1	10	+0.082	14
MMHZ5245BGP	14.25	15	15.75	5	32	600	0.25	0.1	11	+0.082	13
MMHZ5246BGP	15.20	16	16.80	5	36	600	0.25	0.1	12	+0.083	12.5
MMHZ5247BGP	16.15	17	17.85	5	36	600	0.25	0.1	13	+0.084	12.1
MMHZ5248BGP	17.10	18	18.90	5	42	600	0.25	0.1	14	+0.085	11.2
MMHZ5249BGP	18.05	19	19.95	5	42	600	0.25	0.1	14	+0.086	10.8
MMHZ5250BGP	19.00	20	21.00	5	48	600	0.25	0.1	16	+0.086	10.3
MMHZ5251BGP	20.90	22	23.10	5	55	600	0.25	0.1	17	+0.087	9.4
MMHZ5252BGP	22.80	24	25.20	5	62	600	0.25	0.1	18	+0.088	8.6
MMHZ5253BGP	23.75	25	26.25	5	62	600	0.25	0.1	19	+0.089	7.6
MMHZ5254BGP	25.65	27	28.35	5	70	600	0.25	0.1	21	+0.090	7.5
MMHZ5255BGP	26.60	28	29.40	5	44	600	0.25	0.1	21	+0.091	7.3
MMHZ5256BGP	28.50	30	31.50	5	78	600	0.25	0.1	23	+0.091	6.8
MMHZ5257BGP	31.35	33	34.65	5	88	700	0.25	0.1	25	+0.092	6.2

## ELECTRICAL CHARACTERISTICS ( MMHZ5221BGP THRU MMHZ5270BGP )

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)							
MMHZ5258BGP	34.20	36	37.80	5	95	700	0.25	0.1	27	+0.093	5.8
MMHZ5259BGP	37.05	39	40.95	5	130	800	0.25	0.1	30	+0.094	5.4
MMHZ5260BGP	40.85	43	45.15	3.0	93	900	0.25	0.1	33	+0.095	4.9
MMHZ5261BGP	44.65	47	49.35	2.7	105	1000	0.25	0.1	36	+0.095	4.5
MMHZ5262BGP	48.45	51	53.55	2.5	125	1100	0.25	0.1	39	+0.096	4.2
MMHZ5263BGP	53.20	56	58.80	2.2	150	1300	0.25	0.1	43	+0.096	3.8
MMHZ5264BGP	57.00	60	63.00	2.1	170	1400	0.25	0.1	46	+0.097	3.5
MMHZ5265BGP	58.90	62	65.10	2.0	185	1400	0.25	0.1	47	+0.097	-
MMHZ5266BGP	64.60	68	71.40	1.8	230	1600	0.25	0.1	52	+0.097	-
MMHZ5267BGP	71.25	75	78.75	1.7	270	1700	0.25	0.1	56	+0.098	-
MMHZ5268BGP	77.90	82	86.10	1.5	330	2000	0.25	0.1	62	+0.098	-
MMHZ5269BGP	82.65	87	91.35	1.4	370	2200	0.25	0.1	68	+0.099	-
MMHZ5270BGP	86.45	91	95.55	1.4	400	2300	0.25	0.1	69	+0.099	-

## RATING CHARACTERISTIC CURVES ( MMHZ5221BGP THRU MMHZ5270BGP )



# RATING CHARACTERISTIC CURVES ( MMHZ5221BGP THRU MMHZ5270BGP )

FIG. 5 - TYPICAL CAPACITANCE

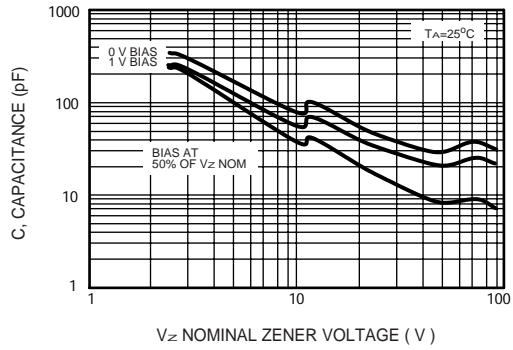


FIG. 6 - TYPICAL LEAKAGE CURRENT

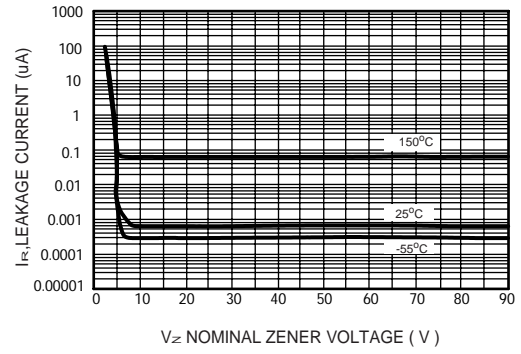


FIG. 7 - ZENER VOLTAGE VERSUS ZENER CURRENT ( $V_z$  UP TO 12V)

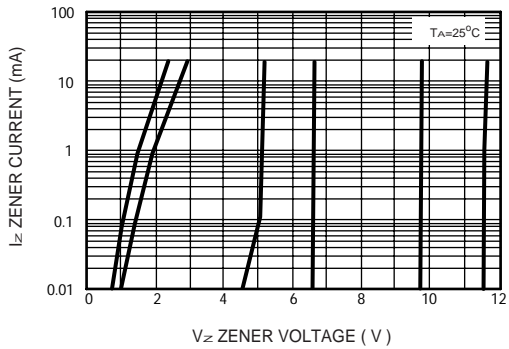


FIG. 8 - ZENER VOLTAGE VERSUS ZENER CURRENT (12V TO 91V)

