



**CHENMKO ENTERPRISE CO.,LTD**

*Halogens free devices*

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

**MMHZ5221SGP**

**THRU**

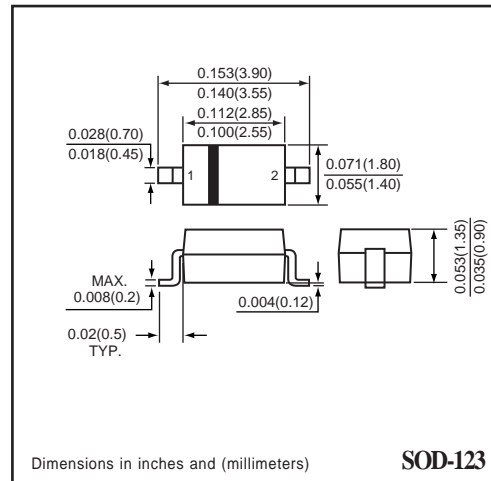
**MMHZ5270SGP**

**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.



**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

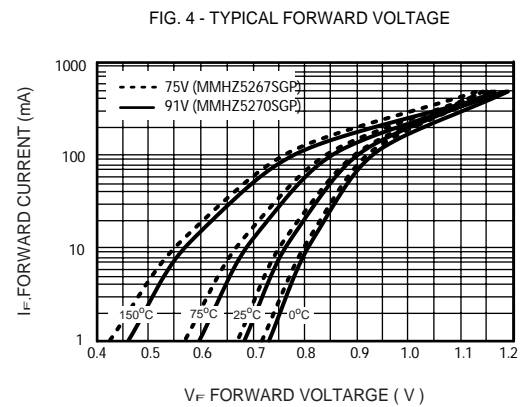
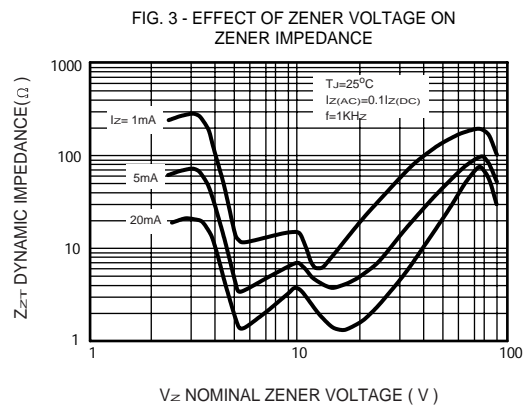
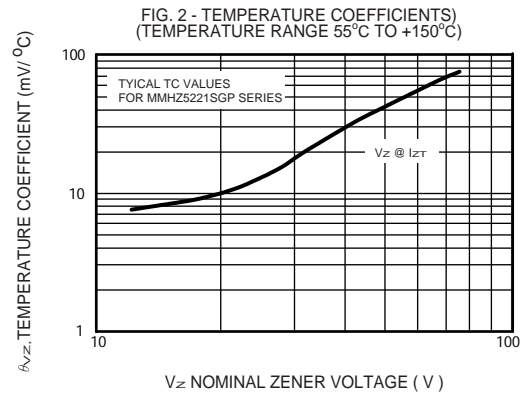
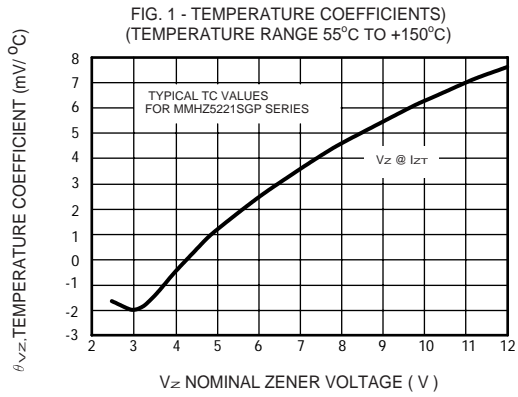
## ELECTRICAL CHARACTERISTICS ( MMHZ5221SGP THRU MMHZ5270SGP )

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								
MMHZ5221SGP	2.352	2.4	2.448	5	100	1800	0.25	100	1	-0.085	85
MMHZ5222SGP	2.450	2.5	2.550	5	100	1800	0.25	100	1	-0.085	82
MMHZ5223SGP	2.646	2.7	2.754	5	100	1900	0.25	75	1	-0.080	76
MMHZ5224SGP	2.774	2.8	2.856	5	100	1900	0.25	75	1	-0.080	73
MMHZ5225SGP	2.940	3.0	3.060	5	95	2000	0.25	50	1	-0.075	68
MMHZ5226SGP	3.234	3.3	3.366	5	95	2200	0.25	25	1	-0.070	62
MMHZ5227SGP	3.528	3.6	3.762	5	90	2300	0.25	15	1	-0.065	57
MMHZ5228SGP	3.822	3.9	3.987	5	90	2400	0.25	10	1	-0.060	52
MMHZ5229SGP	4.214	4.3	4.386	5	88	2500	0.25	5	1	-0.055	48
MMHZ5230SGP	4.606	4.7	4.794	5	70	2200	0.25	3	1.5	+0.030	44
MMHZ5231SGP	4.998	5.1	5.202	5	50	2050	0.25	2	2	+0.030	40
MMHZ5232SGP	5.488	5.6	5.712	5	25	1800	0.25	5	3	+0.038	36
MMHZ5233SGP	5.880	6.0	6.120	5	25	1800	0.25	5	3	+0.038	34
MMHZ5234SGP	6.070	6.2	6.324	5	10	1300	0.25	1	4	+0.045	33
MMHZ5235SGP	6.664	6.8	6.936	5	8	750	0.25	1	5.2	+0.050	30
MMHZ5236SGP	7.350	7.5	7.650	5	7	600	0.25	0.5	6	+0.058	27
MMHZ5237SGP	8.036	8.2	8.364	5	7	600	0.25	0.5	6.5	+0.062	25
MMHZ5238SGP	8.526	8.7	8.874	5	7	600	0.25	0.5	6.5	+0.065	23
MMHZ5239SGP	8.918	9.1	9.282	5	10	600	0.25	0.1	7	+0.068	22
MMHZ5240SGP	9.800	10	10.20	5	15	600	0.25	0.1	8	+0.075	20
MMHZ5241SGP	10.78	11	11.22	5	18	600	0.25	0.1	8.4	+0.076	18
MMHZ5242SGP	11.76	12	12.24	5	22	600	0.25	0.1	9.1	+0.077	17
MMHZ5243SGP	12.74	13	13.26	5	25	600	0.25	0.1	9.9	+0.079	16
MMHZ5244SGP	13.72	14	14.28	5	25	600	0.25	0.1	10	+0.082	14
MMHZ5245SGP	14.70	15	15.30	5	32	600	0.25	0.1	11	+0.082	13
MMHZ5246SGP	15.68	16	16.32	5	36	600	0.25	0.1	12	+0.083	12.5
MMHZ5247SGP	16.66	17	17.34	5	36	600	0.25	0.1	13	+0.084	12.1
MMHZ5248SGP	17.64	18	18.36	5	42	600	0.25	0.1	14	+0.085	11.2
MMHZ5249SGP	18.62	19	19.38	5	42	600	0.25	0.1	14	+0.086	10.8
MMHZ5250SGP	19.60	20	20.40	5	48	600	0.25	0.1	16	+0.086	10.3
MMHZ5251SGP	21.56	22	22.44	5	55	600	0.25	0.1	17	+0.087	9.4
MMHZ5252SGP	23.52	24	24.48	5	62	600	0.25	0.1	18	+0.088	8.6
MMHZ5253SGP	24.50	25	25.50	5	62	600	0.25	0.1	19	+0.089	7.6
MMHZ5254SGP	26.46	27	27.54	5	70	600	0.25	0.1	21	+0.090	7.5
MMHZ5255SGP	27.44	28	28.56	5	44	600	0.25	0.1	21	+0.091	7.3
MMHZ5256SGP	29.40	30	30.60	5	78	600	0.25	0.1	23	+0.091	6.8
MMHZ5257SGP	32.34	33	33.66	5	88	700	0.25	0.1	25	+0.092	6.2

## ELECTRICAL CHARACTERISTICS ( MMHZ5221SGP THRU MMHZ5270SGP )

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	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								
MMHZ5258SGP	35.28	36	36.72	5	95	700	0.25	0.1	27	+0.093	5.8
MMHZ5259SGP	38.22	39	39.78	5	130	800	0.25	0.1	30	+0.094	5.4
MMHZ5260SGP	42.14	43	43.86	3.0	93	900	0.25	0.1	33	+0.095	4.9
MMHZ5261SGP	46.06	47	47.94	2.7	105	1000	0.25	0.1	36	+0.095	4.5
MMHZ5262SGP	49.98	51	52.02	2.5	125	1100	0.25	0.1	36	+0.096	4.2
MMHZ5263SGP	54.88	56	57.12	2.2	150	1300	0.25	0.1	39	+0.096	3.8
MMHZ5264SGP	58.80	60	61.20	2.1	170	1400	0.25	0.1	43	+0.097	3.5
MMHZ5265SGP	60.76	62	63.24	2.0	185	1400	0.25	0.1	46	+0.097	-
MMHZ5266SGP	66.64	68	69.36	1.8	230	1600	0.25	0.1	52	+0.097	-
MMHZ5267SGP	73.50	75	76.50	1.7	270	1700	0.25	0.1	56	+0.098	-
MMHZ5268SGP	80.36	82	83.64	1.5	330	2000	0.25	0.1	62	+0.098	-
MMHZ5269SGP	85.26	87	88.74	1.4	370	2000	0.25	0.1	68	+0.099	-
MMHZ5270SGP	89.18	91	92.82	1.4	400	2300	0.25	0.1	69	+0.099	-

## RATING CHARACTERISTIC CURVES ( MMHZ5221SGP THRU MMHZ5270SGP )



# RATING CHARACTERISTIC CURVES ( MMHZ5221SGP THRU MMHZ5270SGP )

FIG. 5 - TYPICAL CAPACITANCE



FIG. 6 - TYPICAL LEAKAGE CURRENT



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

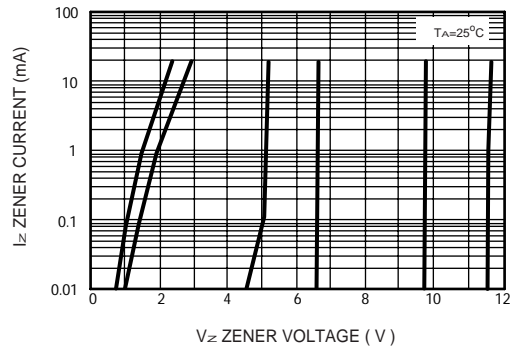


FIG. 8 - ZENER VOLTAGE VERSUS ZENER CURRENT (12V TO 91V)

