



# CHENMKO ENTERPRISE CO.,LTD

## SURFACE MOUNT ZENER

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

Lead free devices

MMSZ5221BPT

THRU

MMSZ5270BPT

### FEATURE

- \* Small surface mounting type. (SC-79/SOD-523)
- \* 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

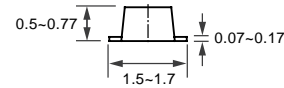
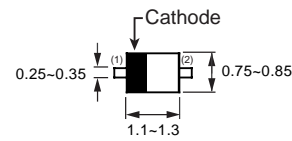
### MECHANICAL

- \* SC-79/SOD-523 Packaging.
- \* Cathode indicated by polarity band.
- \* Mounting position: Any.

### CIRCUIT



SC-79/SOD-523



Dimensions in millimeters

SC-79/SOD-523

### MAXIMUM RATINGS ( At TA = 25°C unless otherwise noted )

RATINGS	SYMBOL	VALUE	UNITS
Zener Current ( see Table "Characteristics" )	-	-	-
Max. Steady State Power Dissipation @TA=25°C	P <sub>D</sub>	225	mW
Max. Operating Temperature Range	T <sub>J</sub>	-65 to +150	°C
Storage Temperature Range	T <sub>STG</sub>	-65 to +150	°C

### ELECTRICAL CHARACTERISTICS ( At TA = 25°C unless otherwise noted )

CHARACTERISTICS	SYMBOL	MIN.	TYP.	MAX.	UNITS
Thermal Resistance Junction to Ambient	R θJA	-	-	556	°C/W
Max. Instantaneous Forward Voltage at I <sub>F</sub> = 10mA	V <sub>F</sub>	-	-	0.9	Volts

- NOTES : 1. The JEDEC type numbers listed have a standard tolerance on the normal zener voltage of ±10%, Suffix B=±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<sub>ZT</sub> or I<sub>ZK</sub>) is superimposed on I<sub>ZT</sub> or I<sub>ZK</sub>. 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<sub>ZT</sub>, per JEDEC registration.

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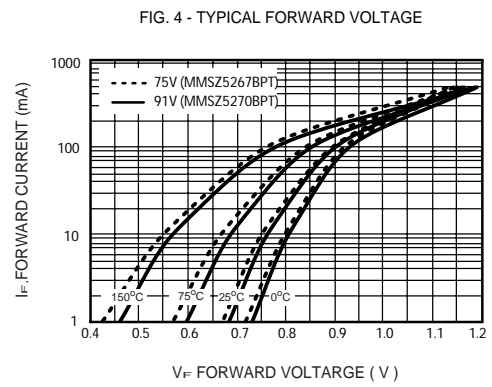
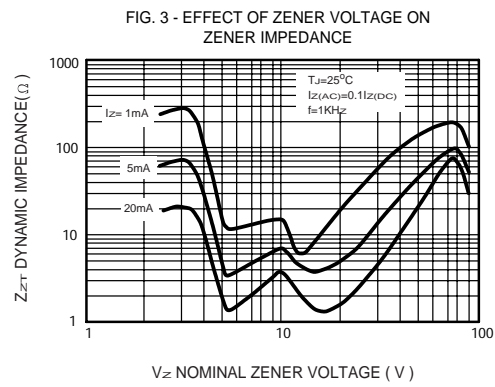
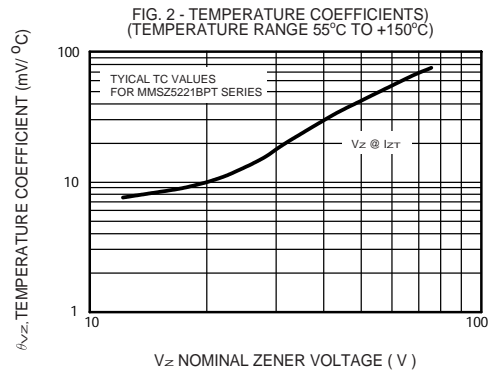
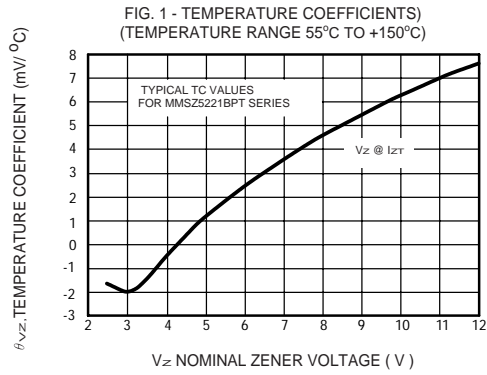
## ELECTRICAL CHARACTERISTICS ( MMSZ5221BPT THRU MMSZ5270BPT )

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)							
MMSZ5221BPT	2.280	2.4	2.520	5	100	1800	0.25	100	1	-0.085	190
MMSZ5222BPT	2.375	2.5	2.625	5	100	1800	0.25	100	1	-0.085	182
MMSZ5223BPT	2.565	2.7	2.835	5	100	1900	0.25	75	1	-0.080	168
MMSZ5224BPT	2.660	2.8	2.940	5	100	1900	0.25	75	1	-0.080	162
MMSZ5225BPT	2.850	3.0	3.150	5	95	2000	0.25	50	1	-0.075	152
MMSZ5226BPT	3.135	3.3	3.465	5	95	2200	0.25	25	1	-0.070	138
MMSZ5227BPT	3.420	3.6	3.780	5	90	2300	0.25	15	1	-0.065	126
MMSZ5228BPT	3.705	3.9	4.095	5	90	2400	0.25	10	1	-0.060	115
MMSZ5229BPT	4.085	4.3	4.515	5	88	2500	0.25	5	1	-0.055	106
MMSZ5230BPT	4.465	4.7	4.935	5	70	2200	0.25	3	1.5	+0.030	97
MMSZ5231BPT	4.845	5.1	5.355	5	50	2050	0.25	2	2	+0.030	89
MMSZ5232BPT	5.320	5.6	5.880	5	25	1800	0.25	5	3	+0.038	81
MMSZ5233BPT	5.700	6.0	6.300	5	25	1800	0.25	5	3	+0.038	76
MMSZ5234BPT	5.890	6.2	6.510	5	10	1300	0.25	1	4	+0.045	73
MMSZ5235BPT	6.460	6.8	7.140	5	8	750	0.25	1	5.2	+0.050	67
MMSZ5236BPT	7.125	7.5	7.875	5	7	600	0.25	0.5	6	+0.058	61
MMSZ5237BPT	7.790	8.2	8.610	5	7	600	0.25	0.5	6.5	+0.062	55
MMSZ5238BPT	8.265	8.7	9.135	5	7	600	0.25	0.5	6.5	+0.065	52
MMSZ5239BPT	8.645	9.1	9.555	5	10	600	0.25	0.1	7	+0.068	50
MMSZ5240BPT	9.500	10	10.50	5	15	600	0.25	0.1	8	+0.075	45
MMSZ5241BPT	10.45	11	11.55	5	18	600	0.25	0.1	8.4	+0.076	41
MMSZ5242BPT	11.40	12	12.60	5	22	600	0.25	0.1	9.1	+0.077	38
MMSZ5243BPT	12.35	13	13.65	5	25	600	0.25	0.1	9.9	+0.079	35
MMSZ5244BPT	13.30	14	14.70	5	25	600	0.25	0.1	10	+0.082	32
MMSZ5245BPT	14.25	15	15.75	5	32	600	0.25	0.1	11	+0.082	30
MMSZ5246BPT	15.20	16	16.80	5	36	600	0.25	0.1	12	+0.083	28
MMSZ5247BPT	16.15	17	17.85	5	36	600	0.25	0.1	13	+0.084	27
MMSZ5248BPT	17.10	18	18.90	5	42	600	0.25	0.1	14	+0.085	25
MMSZ5249BPT	18.05	19	19.95	5	42	600	0.25	0.1	14	+0.086	24
MMSZ5250BPT	19.00	20	21.00	5	48	600	0.25	0.1	16	+0.086	23
MMSZ5251BPT	20.90	22	23.10	5	55	600	0.25	0.1	17	+0.087	21
MMSZ5252BPT	22.80	24	25.20	5	62	600	0.25	0.1	18	+0.088	19.1
MMSZ5253BPT	23.75	25	26.25	5	62	600	0.25	0.1	19	+0.089	18.2
MMSZ5254BPT	25.65	27	28.35	5	70	600	0.25	0.1	21	+0.090	16.8
MMSZ5255BPT	26.60	28	29.40	5	44	600	0.25	0.1	21	+0.091	16.2
MMSZ5256BPT	28.50	30	31.50	5	78	600	0.25	0.1	23	+0.091	15.1
MMSZ5257BPT	31.35	33	34.65	5	88	700	0.25	0.1	25	+0.092	13.8

## ELECTRICAL CHARACTERISTICS ( MMSZ5221BPT THRU MMSZ5270BPT )

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)							
MMSZ5258BPT	34.20	36	37.80	5	95	700	0.25	0.1	27	+0.093	13.8
MMSZ5259BPT	37.05	39	40.95	5	130	800	0.25	0.1	30	+0.094	12.6
MMSZ5260BPT	40.85	43	45.15	3.0	93	900	0.25	0.1	33	+0.095	11.6
MMSZ5261BPT	44.65	47	49.35	2.7	105	1000	0.25	0.1	36	+0.095	10.6
MMSZ5262BPT	48.45	51	53.55	2.5	125	1100	0.25	0.1	39	+0.096	9.7
MMSZ5263BPT	53.20	56	58.80	2.2	150	1300	0.25	0.1	43	+0.096	8.9
MMSZ5264BPT	57.00	60	63.00	2.1	170	1400	0.25	0.1	46	+0.097	11.6
MMSZ5265BPT	58.90	62	65.10	2.0	185	1400	0.25	0.1	47	+0.097	-
MMSZ5266BPT	64.60	68	71.40	1.8	230	1600	0.25	0.1	52	+0.097	-
MMSZ5267BPT	71.25	75	78.75	1.7	270	1700	0.25	0.1	56	+0.098	-
MMSZ5268BPT	77.90	82	86.10	1.5	330	2000	0.25	0.1	62	+0.098	-
MMSZ5269BPT	82.65	87	91.35	1.4	370	2200	0.25	0.1	68	+0.099	-
MMSZ5270BPT	86.45	91	95.55	1.4	400	2300	0.25	0.1	69	+0.099	-

## RATING CHARACTERISTIC CURVES ( MMSZ5221BPT THRU MMSZ5270BPT )



## RATING CHARACTERISTIC CURVES ( MMSZ5221BPT THRU MMSZ5270BPT )

FIG. 5 - TYPICAL CAPACITANCE

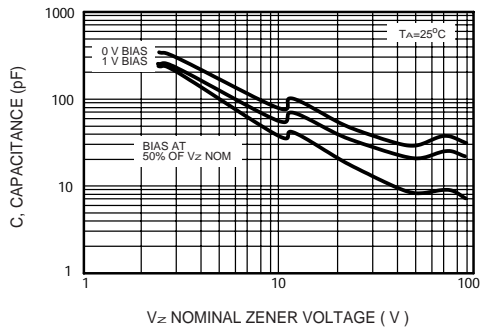


FIG. 6 - TYPICAL LEAKAGE CURRENT

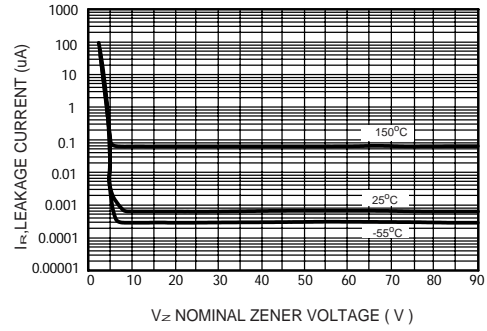


FIG. 7 - ZENER VOLTAGE VERSUS ZENER CURRENT  
( $V_Z$  UP TO 12V)

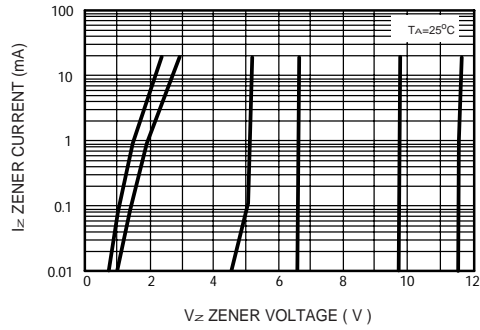


FIG. 8 - ZENER VOLTAGE VERSUS ZENER CURRENT  
(12V TO 91V)

