



**CHENMKO ENTERPRISE CO.,LTD**

**MMPZ5221BPT**

**THRU**

**MMPZ5270BPT**

**SURFACE MOUNT ZENER**

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

*Lead free devices*

**FEATURE**

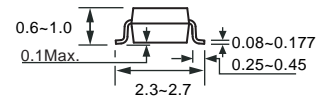
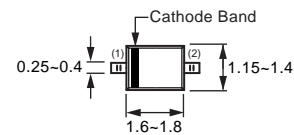
- \* High temperature soldering type.
- \* ESD rating of class 3(>16 kV) per human body model.
- \* Silicon planar zener diodes.
- \* Silicon-oxide passivated junction.
- \* Low temperature coefficient voltage
- \* 225 mW Rating on FR-4 or FR-5 Board

**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

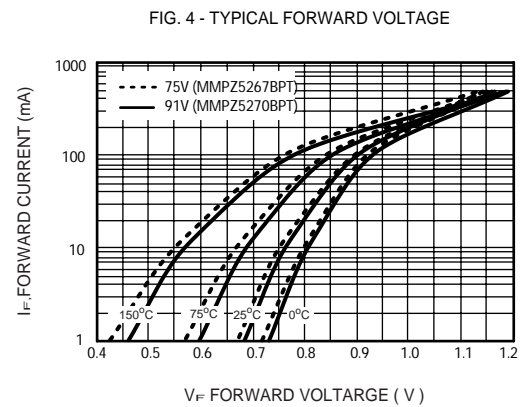
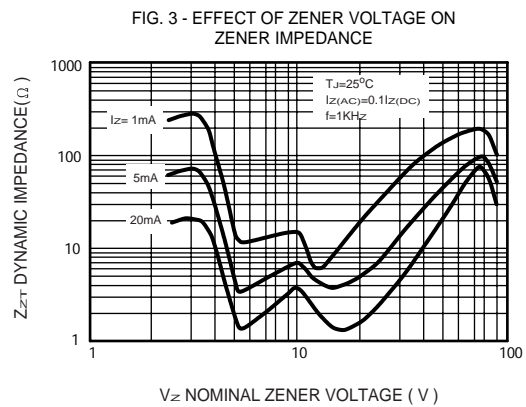
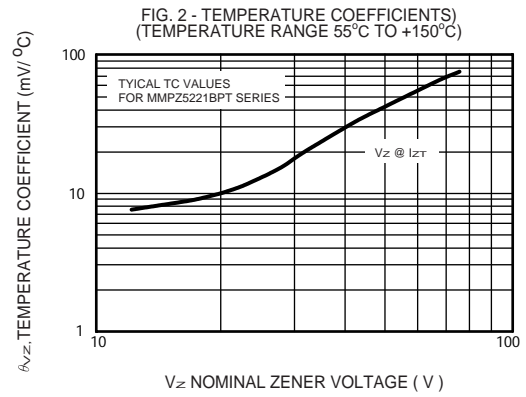
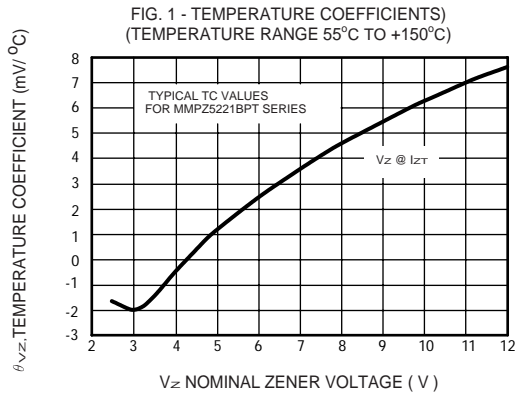
## ELECTRICAL CHARACTERISTICS ( MMPZ5221BPT THRU MMPZ5270BPT )

TYPE	Zener voltage Vz (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								
MMPZ5221BPT	2.280	2.4	2.520	5	100	1800	0.25	100	1	-0.085	85
MMPZ5222BPT	2.375	2.5	2.625	5	100	1800	0.25	100	1	-0.085	82
MMPZ5223BPT	2.565	2.7	2.835	5	100	1900	0.25	75	1	-0.080	76
MMPZ5224BPT	2.660	2.8	2.940	5	100	1900	0.25	75	1	-0.080	73
MMPZ5225BPT	2.850	3.0	3.150	5	95	2000	0.25	50	1	-0.075	68
MMPZ5226BPT	3.135	3.3	3.465	5	95	2200	0.25	25	1	-0.070	62
MMPZ5227BPT	3.420	3.6	3.780	5	90	2300	0.25	15	1	-0.065	57
MMPZ5228BPT	3.705	3.9	4.095	5	90	2400	0.25	10	1	-0.060	52
MMPZ5229BPT	4.085	4.3	4.515	5	88	2500	0.25	5	1	-0.055	48
MMPZ5230BPT	4.465	4.7	4.935	5	70	2200	0.25	3	1.5	+0.030	44
MMPZ5231BPT	4.845	5.1	5.355	5	50	2050	0.25	2	2	+0.030	40
MMPZ5232BPT	5.320	5.6	5.880	5	25	1800	0.25	5	3	+0.038	36
MMPZ5233BPT	5.700	6.0	6.300	5	25	1800	0.25	5	3	+0.038	34
MMPZ5234BPT	5.890	6.2	6.510	5	10	1300	0.25	1	4	+0.045	33
MMPZ5235BPT	6.460	6.8	7.140	5	8	750	0.25	1	5.2	+0.050	30
MMPZ5236BPT	7.125	7.5	7.875	5	7	600	0.25	0.5	6	+0.058	27
MMPZ5237BPT	7.790	8.2	8.610	5	7	600	0.25	0.5	6.5	+0.062	25
MMPZ5238BPT	8.265	8.7	9.135	5	7	600	0.25	0.5	6.5	+0.065	23
MMPZ5239BPT	8.645	9.1	9.555	5	10	600	0.25	0.1	7	+0.068	22
MMPZ5240BPT	9.500	10	10.50	5	15	600	0.25	0.1	8	+0.075	20
MMPZ5241BPT	10.45	11	11.55	5	18	600	0.25	0.1	8.4	+0.076	18
MMPZ5242BPT	11.40	12	12.60	5	22	600	0.25	0.1	9.1	+0.077	17
MMPZ5243BPT	12.35	13	13.65	5	25	600	0.25	0.1	9.9	+0.079	16
MMPZ5244BPT	13.30	14	14.70	5	25	600	0.25	0.1	10	+0.082	14
MMPZ5245BPT	14.25	15	15.75	5	32	600	0.25	0.1	11	+0.082	13
MMPZ5246BPT	15.20	16	16.80	5	36	600	0.25	0.1	12	+0.083	12.5
MMPZ5247BPT	16.15	17	17.85	5	36	600	0.25	0.1	13	+0.084	12.1
MMPZ5248BPT	17.10	18	18.90	5	42	600	0.25	0.1	14	+0.085	11.2
MMPZ5249BPT	18.05	19	19.95	5	42	600	0.25	0.1	14	+0.086	10.8
MMPZ5250BPT	19.00	20	21.00	5	48	600	0.25	0.1	16	+0.086	10.3
MMPZ5251BPT	20.90	22	23.10	5	55	600	0.25	0.1	17	+0.087	9.4
MMPZ5252BPT	22.80	24	25.20	5	62	600	0.25	0.1	18	+0.088	8.6
MMPZ5253BPT	23.75	25	26.25	5	62	600	0.25	0.1	19	+0.089	7.6
MMPZ5254BPT	25.65	27	28.35	5	70	600	0.25	0.1	21	+0.090	7.5
MMPZ5255BPT	26.60	28	29.40	5	44	600	0.25	0.1	21	+0.091	7.3
MMPZ5256BPT	28.50	30	31.50	5	78	600	0.25	0.1	23	+0.091	6.8
MMPZ5257BPT	31.35	33	34.65	5	88	700	0.25	0.1	25	+0.092	6.2

## ELECTRICAL CHARACTERISTICS ( MMPZ5221BPT THRU MMPZ5270BPT )

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)							
MMPZ5258BPT	34.20	36	37.80	5	95	700	0.25	0.1	27	+0.093	5.8
MMPZ5259BPT	37.05	39	40.95	5	130	800	0.25	0.1	30	+0.094	5.4
MMPZ5260BPT	40.85	43	45.15	3.0	93	900	0.25	0.1	33	+0.095	4.9
MMPZ5261BPT	44.65	47	49.35	2.7	105	1000	0.25	0.1	36	+0.095	4.5
MMPZ5262BPT	48.45	51	53.55	2.5	125	1100	0.25	0.1	39	+0.096	4.2
MMPZ5263BPT	53.20	56	58.80	2.2	150	1300	0.25	0.1	43	+0.096	3.8
MMPZ5264BPT	57.00	60	63.00	2.1	170	1400	0.25	0.1	46	+0.097	3.5
MMPZ5265BPT	58.90	62	65.10	2.0	185	1400	0.25	0.1	47	+0.097	-
MMPZ5266BPT	64.60	68	71.40	1.8	230	1600	0.25	0.1	52	+0.097	-
MMPZ5267BPT	71.25	75	78.75	1.7	270	1700	0.25	0.1	56	+0.098	-
MMPZ5268BPT	77.90	82	86.10	1.5	330	2000	0.25	0.1	62	+0.098	-
MMPZ5269BPT	82.65	87	91.35	1.4	370	2200	0.25	0.1	68	+0.099	-
MMPZ5270BPT	86.45	91	95.55	1.4	400	2300	0.25	0.1	69	+0.099	-

# RATING CHARACTERISTIC CURVES ( MMPZ5221BPT THRU MMPZ5270BPT )



# RATING CHARACTERISTIC CURVES ( MMPZ5221BPT THRU MMPZ5270BPT )

FIG. 5 - TYPICAL CAPACITANCE

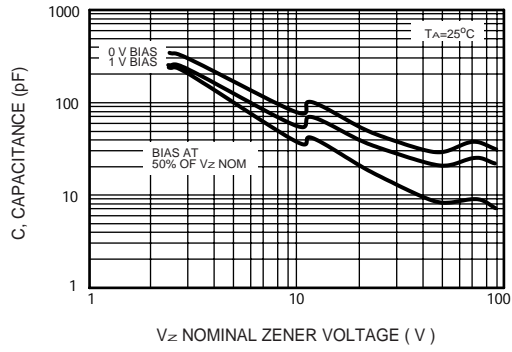


FIG. 6 - TYPICAL LEAKAGE CURRENT

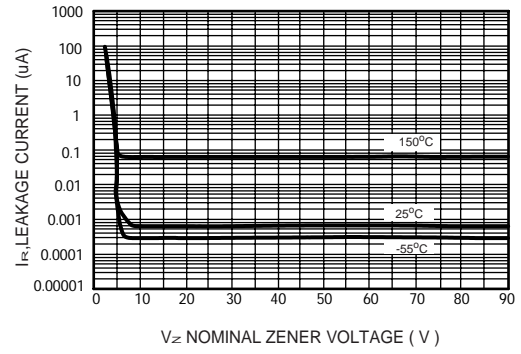


FIG. 7 - ZENER VOLTAGE VERSUS ZENER CURRENT ( $V_z$  UP TO 12V)

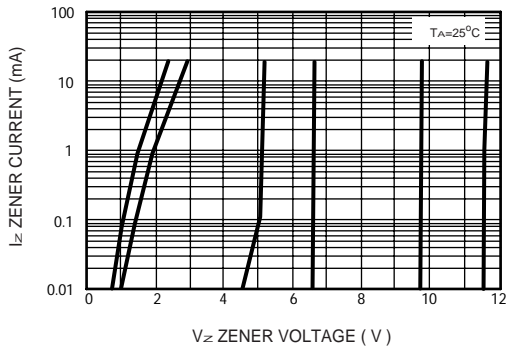


FIG. 8 - ZENER VOLTAGE VERSUS ZENER CURRENT (12V TO 91V)

