



**CHENMKO ENTERPRISE CO.,LTD**

**MMKZ5221BPT**

**THRU**

**MMKZ5270BPT**

**SURFACE MOUNT ZENER**

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

*Lead free devices*

**FEATURE**

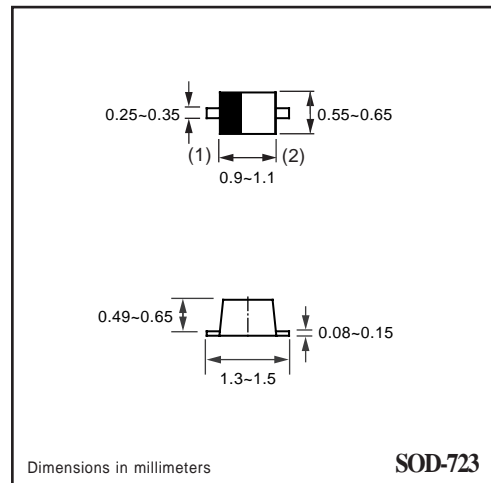
- \* High temperature soldering type.
- \* ESD rating of class 3(>16 kV) per human body model.
- \* Silicon planar zener diodes.
- \* Silicon-oxide passivated junction.
- \* Low temperature coefficient voltage
- \* 225 mW Rating on FR-4 or FR-5 Board

**MECHANICAL**

- \* Void-free, Transfer-molded, Thermosetting plastic case
- \* SOD-723 Packaging.
- \* Cathode indicated by polarity band.
- \* Mounting position: Any.



**SOD-723**



Dimensions in millimeters

**SOD-723**

**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

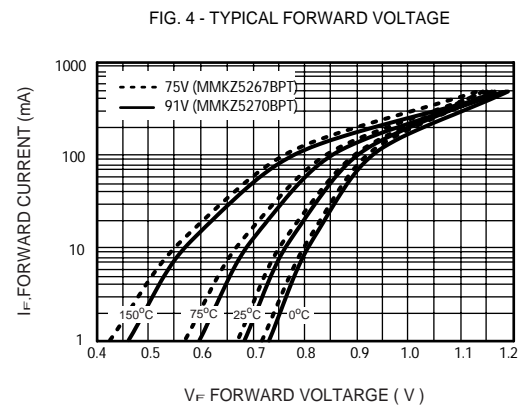
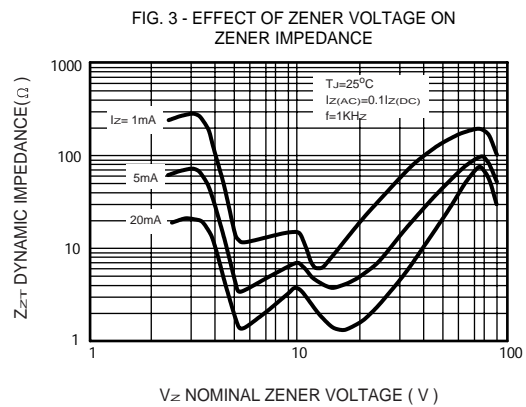
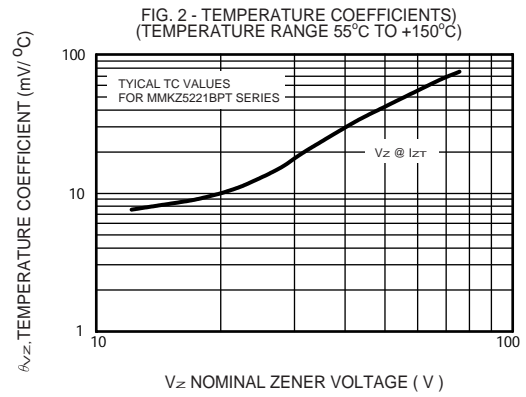
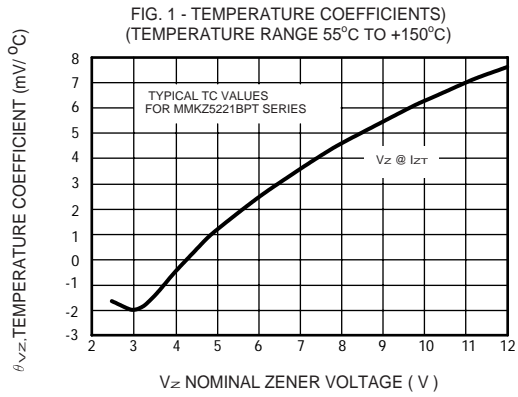
## ELECTRICAL CHARACTERISTICS ( MMKZ5221BPT THRU MMKZ5270BPT )

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								
MMKZ5221BPT	2.280	2.4	2.520	5	100	1800	0.25	100	1	-0.085	190
MMKZ5222BPT	2.375	2.5	2.625	5	100	1800	0.25	100	1	-0.085	182
MMKZ5223BPT	2.565	2.7	2.835	5	100	1900	0.25	75	1	-0.080	168
MMKZ5224BPT	2.660	2.8	2.940	5	100	1900	0.25	75	1	-0.080	162
MMKZ5225BPT	2.850	3.0	3.150	5	95	2000	0.25	50	1	-0.075	152
MMKZ5226BPT	3.135	3.3	3.465	5	95	2200	0.25	25	1	-0.070	138
MMKZ5227BPT	3.420	3.6	3.780	5	90	2300	0.25	15	1	-0.065	126
MMKZ5228BPT	3.705	3.9	4.095	5	90	2400	0.25	10	1	-0.060	115
MMKZ5229BPT	4.085	4.3	4.515	5	88	2500	0.25	5	1	-0.055	106
MMKZ5230BPT	4.465	4.7	4.935	5	70	2200	0.25	3	1.5	+0.030	97
MMKZ5231BPT	4.845	5.1	5.355	5	50	2050	0.25	2	2	+0.030	89
MMKZ5232BPT	5.320	5.6	5.880	5	25	1800	0.25	5	3	+0.038	81
MMKZ5233BPT	5.700	6.0	6.300	5	25	1800	0.25	5	3	+0.038	76
MMKZ5234BPT	5.890	6.2	6.510	5	10	1300	0.25	1	4	+0.045	73
MMKZ5235BPT	6.460	6.8	7.140	5	8	750	0.25	1	5.2	+0.050	67
MMKZ5236BPT	7.125	7.5	7.875	5	7	600	0.25	0.5	6	+0.058	61
MMKZ5237BPT	7.790	8.2	8.610	5	7	600	0.25	0.5	6.5	+0.062	55
MMKZ5238BPT	8.265	8.7	9.135	5	7	600	0.25	0.5	6.5	+0.065	52
MMKZ5239BPT	8.645	9.1	9.555	5	10	600	0.25	0.1	7	+0.068	50
MMKZ5240BPT	9.500	10	10.50	5	15	600	0.25	0.1	8	+0.075	45
MMKZ5241BPT	10.45	11	11.55	5	18	600	0.25	0.1	8.4	+0.076	41
MMKZ5242BPT	11.40	12	12.60	5	22	600	0.25	0.1	9.1	+0.077	38
MMKZ5243BPT	12.35	13	13.65	5	25	600	0.25	0.1	9.9	+0.079	35
MMKZ5244BPT	13.30	14	14.70	5	25	600	0.25	0.1	10	+0.082	32
MMKZ5245BPT	14.25	15	15.75	5	32	600	0.25	0.1	11	+0.082	30
MMKZ5246BPT	15.20	16	16.80	5	36	600	0.25	0.1	12	+0.083	28
MMKZ5247BPT	16.15	17	17.85	5	36	600	0.25	0.1	13	+0.084	27
MMKZ5248BPT	17.10	18	18.90	5	42	600	0.25	0.1	14	+0.085	25
MMKZ5249BPT	18.05	19	19.95	5	42	600	0.25	0.1	14	+0.086	24
MMKZ5250BPT	19.00	20	21.00	5	48	600	0.25	0.1	16	+0.086	23
MMKZ5251BPT	20.90	22	23.10	5	55	600	0.25	0.1	17	+0.087	21
MMKZ5252BPT	22.80	24	25.20	5	62	600	0.25	0.1	18	+0.088	19.1
MMKZ5253BPT	23.75	25	26.25	5	62	600	0.25	0.1	19	+0.089	18.2
MMKZ5254BPT	25.65	27	28.35	5	70	600	0.25	0.1	21	+0.090	16.8
MMKZ5255BPT	26.60	28	29.40	5	44	600	0.25	0.1	21	+0.091	16.2
MMKZ5256BPT	28.50	30	31.50	5	78	600	0.25	0.1	23	+0.091	15.1
MMKZ5257BPT	31.35	33	34.65	5	88	700	0.25	0.1	25	+0.092	13.8

## ELECTRICAL CHARACTERISTICS ( MMKZ5221BPT THRU MMKZ5270BPT )

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)							
MMKZ5258BPT	34.20	36	37.80	5	95	700	0.25	0.1	27	+0.093	13.8
MMKZ5259BPT	37.05	39	40.95	5	130	800	0.25	0.1	30	+0.094	12.6
MMKZ5260BPT	40.85	43	45.15	3.0	93	900	0.25	0.1	33	+0.095	11.6
MMKZ5261BPT	44.65	47	49.35	2.7	105	1000	0.25	0.1	36	+0.095	10.6
MMKZ5262BPT	48.45	51	53.55	2.5	125	1100	0.25	0.1	39	+0.096	9.7
MMKZ5263BPT	53.20	56	58.80	2.2	150	1300	0.25	0.1	43	+0.096	8.9
MMKZ5264BPT	57.00	60	63.00	2.1	170	1400	0.25	0.1	46	+0.097	11.6
MMKZ5265BPT	58.90	62	65.10	2.0	185	1400	0.25	0.1	47	+0.097	-
MMKZ5266BPT	64.60	68	71.40	1.8	230	1600	0.25	0.1	52	+0.097	-
MMKZ5267BPT	71.25	75	78.75	1.7	270	1700	0.25	0.1	56	+0.098	-
MMKZ5268BPT	77.90	82	86.10	1.5	330	2000	0.25	0.1	62	+0.098	-
MMKZ5269BPT	82.65	87	91.35	1.4	370	2200	0.25	0.1	68	+0.099	-
MMKZ5270BPT	86.45	91	95.55	1.4	400	2300	0.25	0.1	69	+0.099	-

# RATING CHARACTERISTIC CURVES ( MMKZ5221BPT THRU MMKZ5270BPT )



# RATING CHARACTERISTIC CURVES ( MMKZ5221BPT THRU MMKZ5270BPT )

FIG. 5 - TYPICAL CAPACITANCE

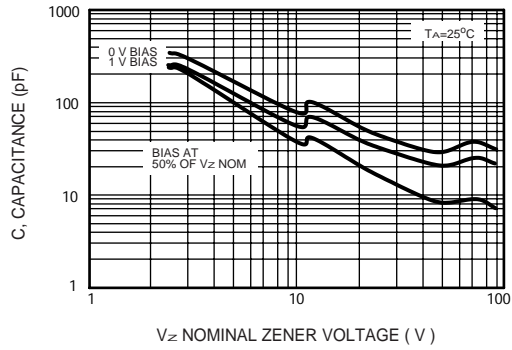


FIG. 6 - TYPICAL LEAKAGE CURRENT

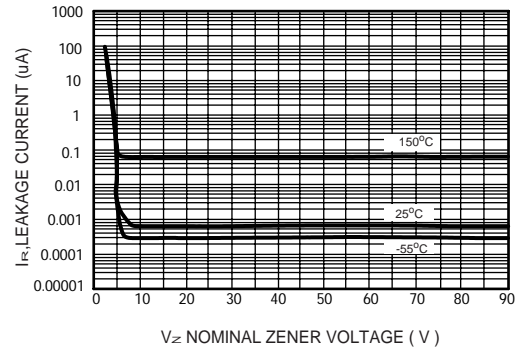


FIG. 7 - ZENER VOLTAGE VERSUS ZENER CURRENT ( $V_z$  UP TO 12V)

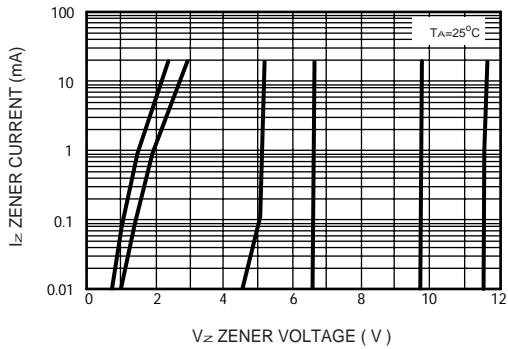


FIG. 8 - ZENER VOLTAGE VERSUS ZENER CURRENT (12V TO 91V)

