



CHENMKO ENTERPRISE CO.,LTD

SURFACE MOUNT ZENER

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

MMGZ5221SPT

THRU

MMGZ5270SPT

Lead free devices

FEATURE

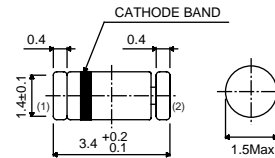
- * Small surface mounting type. (MINI-MELF)
- * High temperature soldering type.
- * ESD rating of class 3(>16 kV) per human body model.
- * Silicon planar zener diodes.
- * Silicon-oxide passivated junction.
- * Low temperature coefficient voltage
- * 500 mW Rating on FR-4 or FR-5 Board

MECHANICAL

- * MINI-MELF Packaging.
- * Cathode indicated by polarity band.
- * Mounting position: Any.



Mini-Melf



Dimensions in millimeters

Mini-Melf

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	500	mW
Max. Operating Temperature Range	T_J	-65 to +175	$^{\circ}\text{C}$
Storage Temperature Range	T_{STG}	-65 to +175	$^{\circ}\text{C}$

ELECTRICAL CHARACTERISTICS (At $T_A = 25^{\circ}\text{C}$ unless otherwise noted)

CHARACTERISTICS	SYMBOL	MIN.	TYP.	MAX.	UNITS
Thermal Resistance Junction to Ambient	$R_{\theta JA}$	-	-	240	$^{\circ}\text{C/W}$
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 B= $\pm 2\%$.
 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.

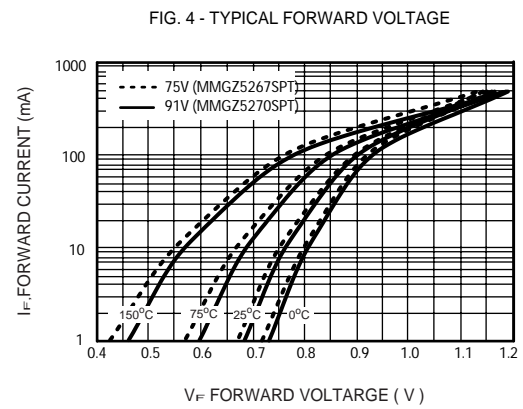
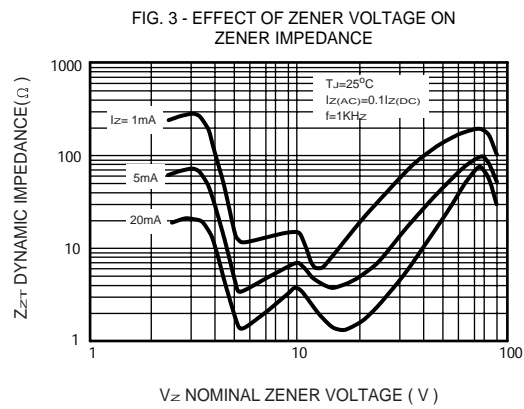
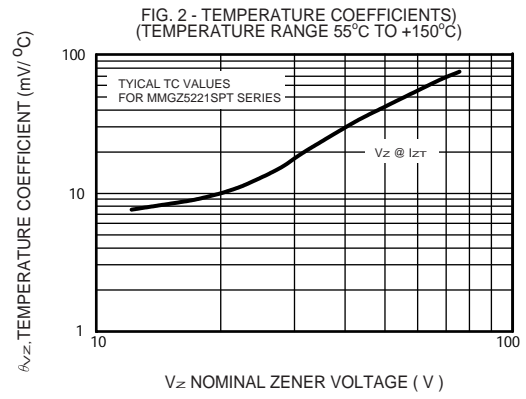
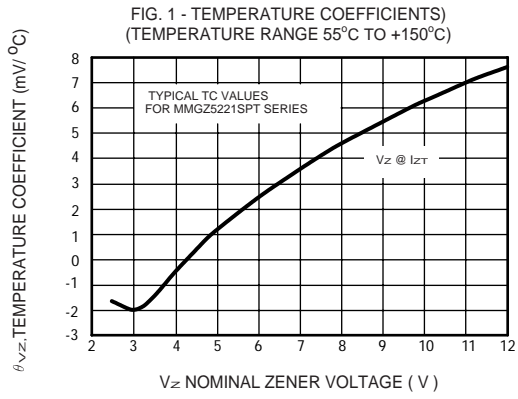
ELECTRICAL CHARACTERISTICS (MMGZ5221SPT THRU MMGZ5270SPT)

TYPE	Zener voltage V _Z (V) @ I _{ZT}			Test current I _{ZT} (mA)	Maximum Zener impedance			Maximum reverse leakage current		Type temperature coefficient at T _A = 25°C θ _{VZ} (%/°C)	Maximum regulator current at T _A = 50°C I _{ZM} (mA)
	Min	Nom	Max		Z _{ZT} at I _{ZT} (Ω)	Z _{ZK} (Ω)	at I _{ZK} (mA)	I _R (μA)	at V _R (V)		
	Volts	Volts	Volts								
MMGZ5221SPT	2.352	2.4	2.448	20	30	1200	0.25	100	1	-0.085	190
MMGZ5222SPT	2.450	2.5	2.550	20	30	1250	0.25	100	1	-0.085	182
MMGZ5223SPT	2.646	2.7	2.754	20	30	1300	0.25	75	1	-0.080	168
MMGZ5224SPT	2.774	2.8	2.856	20	30	1400	0.25	75	1	-0.080	162
MMGZ5225SPT	2.940	3.0	3.060	20	29	1600	0.25	50	1	-0.075	152
MMGZ5226SPT	3.234	3.3	3.366	20	28	1600	0.25	25	1	-0.070	138
MMGZ5227SPT	3.528	3.6	3.762	20	24	1700	0.25	15	1	-0.065	126
MMGZ5228SPT	3.822	3.9	3.987	20	23	1900	0.25	10	1	-0.060	115
MMGZ5229SPT	4.214	4.3	4.386	20	22	2000	0.25	5	1	-0.055	106
MMGZ5230SPT	4.606	4.7	4.794	20	19	1900	0.25	5	2	+0.030	97
MMGZ5231SPT	4.998	5.1	5.202	20	17	1600	0.25	5	2	+0.030	89
MMGZ5232SPT	5.488	5.6	5.712	20	11	1600	0.25	5	3	+0.038	81
MMGZ5233SPT	5.880	6.0	6.120	20	7	1600	0.25	5	3.5	+0.038	76
MMGZ5234SPT	6.070	6.2	6.324	20	7	1000	0.25	5	4	+0.045	73
MMGZ5235SPT	6.664	6.8	6.936	20	5	750	0.25	3	5	+0.050	67
MMGZ5236SPT	7.350	7.5	7.650	20	6	500	0.25	3	6	+0.058	61
MMGZ5237SPT	8.036	8.2	8.364	20	8	500	0.25	3	6.5	+0.062	55
MMGZ5238SPT	8.526	8.7	8.874	20	8	600	0.25	3	6.5	+0.065	52
MMGZ5239SPT	8.918	9.1	9.282	20	10	600	0.25	3	7	+0.068	50
MMGZ5240SPT	9.800	10	10.20	20	17	600	0.25	3	8	+0.075	45
MMGZ5241SPT	10.78	11	11.22	20	22	600	0.25	2	8.4	+0.076	41
MMGZ5242SPT	11.76	12	12.24	20	30	600	0.25	1	9.1	+0.077	38
MMGZ5243SPT	12.74	13	13.26	9.5	13	600	0.25	0.5	9.9	+0.079	35
MMGZ5244SPT	13.72	14	14.28	9.0	15	600	0.25	0.1	10	+0.082	32
MMGZ5245SPT	14.70	15	15.30	8.5	16	600	0.25	0.1	11	+0.082	30
MMGZ5246SPT	15.68	16	16.32	7.8	17	600	0.25	0.1	12	+0.083	28
MMGZ5247SPT	16.66	17	17.34	7.4	19	600	0.25	0.1	13	+0.084	27
MMGZ5248SPT	17.64	18	18.36	7.0	21	600	0.25	0.1	14	+0.085	25
MMGZ5249SPT	18.62	19	19.38	6.6	23	600	0.25	0.1	14	+0.086	24
MMGZ5250SPT	19.60	20	20.40	6.2	25	600	0.25	0.1	16	+0.086	23
MMGZ5251SPT	21.56	22	22.44	5.6	29	600	0.25	0.1	17	+0.087	21
MMGZ5252SPT	23.52	24	24.48	5.2	33	600	0.25	0.1	18	+0.088	19.1
MMGZ5253SPT	24.50	25	25.50	5.0	35	600	0.25	0.1	19	+0.089	18.2
MMGZ5254SPT	26.46	27	27.54	4.6	41	600	0.25	0.1	21	+0.090	16.8
MMGZ5255SPT	27.44	28	28.56	4.5	44	600	0.25	0.1	21	+0.091	16.2
MMGZ5256SPT	29.40	30	30.60	4.2	49	600	0.25	0.1	23	+0.091	15.1
MMGZ5257SPT	32.34	33	33.66	3.8	58	700	0.25	0.1	25	+0.092	13.8

ELECTRICAL CHARACTERISTICS (MMGZ5221SPT THRU MMGZ5270SPT)

TYPE	Zener voltage V _Z (V) @ I _{ZT}			Test current I _{ZT} (mA)	Maximum Zener impedance			Maximum reverse leakage current		Type temperature coefficient at T _A = 25°C θ _{VZ} (%/°C)	Maximum regulator current at T _A = 50°C I _{ZM} (mA)
	Min	Nom	Max		Z _{ZT} at I _{ZT} (Ω)	Z _{ZK} (Ω)	at I _{ZK} (mA)	I _R (μA)	at V _R (V)		
	Volts	Volts	Volts								
MMGZ5258SPT	35.28	36	36.72	3.4	70	700	0.25	0.1	27	+0.093	13.8
MMGZ5259SPT	38.22	39	39.78	3.2	80	800	0.25	0.1	30	+0.094	12.6
MMGZ5260SPT	42.14	43	43.86	3.0	93	900	0.25	0.1	33	+0.095	11.6
MMGZ5261SPT	46.06	47	47.94	2.7	105	1000	0.25	0.1	36	+0.095	10.6
MMGZ5262SPT	49.98	51	52.02	2.5	125	1100	0.25	0.1	36	+0.096	9.7
MMGZ5263SPT	54.88	56	57.12	2.2	150	1300	0.25	0.1	39	+0.096	8.9
MMGZ5264SPT	58.80	60	61.20	2.1	170	1400	0.25	0.1	43	+0.097	11.6
MMGZ5265SPT	60.76	62	63.24	2.0	185	1400	0.25	0.1	46	+0.097	-
MMGZ5266SPT	66.64	68	69.36	1.8	230	1600	0.25	0.1	52	+0.097	-
MMGZ5267SPT	73.50	75	76.50	1.7	270	1700	0.25	0.1	56	+0.098	-
MMGZ5268SPT	80.36	82	83.64	1.5	330	2000	0.25	0.1	62	+0.098	-
MMGZ5269SPT	85.26	87	88.74	1.4	370	2000	0.25	0.1	68	+0.099	-
MMGZ5270SPT	89.18	91	92.82	1.4	400	2300	0.25	0.1	69	+0.099	-

RATING CHARACTERISTIC CURVES (MMGZ5221SPT THRU MMGZ5270SPT)



RATING CHARACTERISTIC CURVES (MMGZ5221SPT THRU MMGZ5270SPT)

FIG. 5 - TYPICAL CAPACITANCE

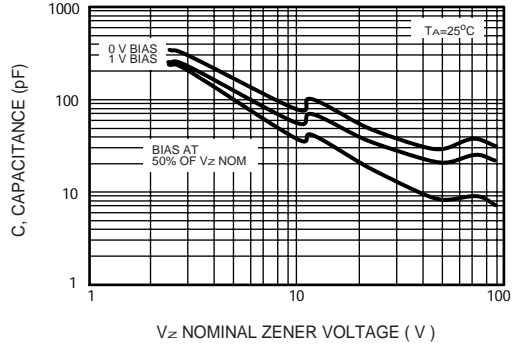


FIG. 6 - TYPICAL LEAKAGE CURRENT

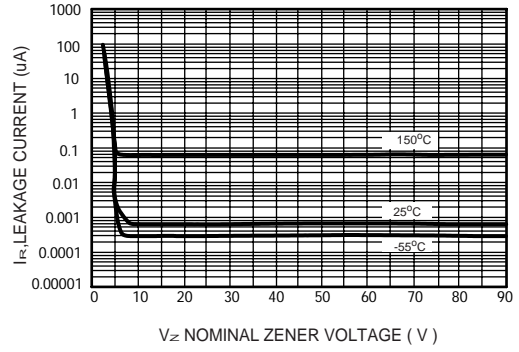


FIG. 7 - ZENER VOLTAGE VERSUS ZENER CURRENT (V_z UP TO 12V)

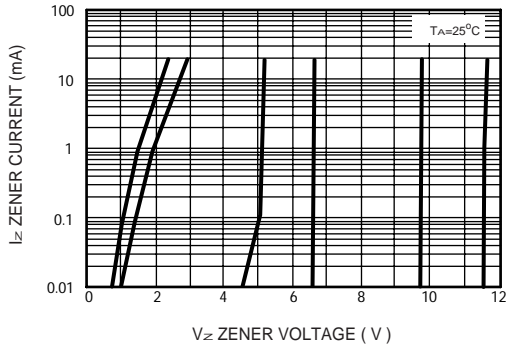


FIG. 8 - ZENER VOLTAGE VERSUS ZENER CURRENT (12V TO 91V)

