CHENMKO ENTERPRISE CO.,LTD

SURFACE MOUNT ZENER

SILICON PLANAR POWER ZENER DIODES

VOLTAGE RANGE 2.4V TO 91V

MMSZ5221SPT

THRU

MMSZ5270SPT

Lead free devices

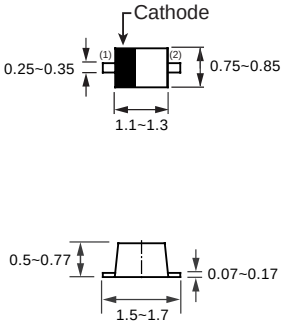
FEATURE

* 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.
* Silcon-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.

SC-79/SOD-523



Dimensions in millimeters

SC-79/SOD-523

CIRCUIT

MAXIMUM RATINGES (At T_A = 25°C unless otherwise noted)

RATINGS	SYMBOL	VALUE	UNITS
Zener Current (see Table "Characteristics")	-	-	-
Max. Steady State Power Dissipation @T_A=25°C	P_D	225	mW
Max. Operating Temperature Range	T_J	-65 to +150	°C
Storage Temperature Range	T_{STG}	-65 to +150	°C

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

CHARACTERISTICS	SYMBOL	MIN.	TYP.	MAX.	UNITS
Thermal Resistance Junction to Ambient	$R_{\theta JA}$	-	-	556	°C/W
Max. Instantaneous Forward Voltage at I_F= 10mA	V_F	-	-	0.9	Volts

2003-01

NOTES :
1. The JEDEC type numbers listd have a standaerd tolerance on the normal zener voltage of ±10%, Suffix B=±5%.Suffix S=±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 listd 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 (MMSZ5221SPT THRU MMSZ5270SPT)

TYPE	Zener voltage V_Z (V) @ I_{ZT}			Test current	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}	Z_{ZK}	at I_{ZK}	I_R	at V_R		
	Volts	Volts	Volts	I_{ZT} (mA)	(Ω)	(Ω)	(mA)	(uA)	(V)		
MMSZ5221SPT	2.352	2.4	2.448	5	100	1800	0.25	100	1	-0.085	190
MMSZ5222SPT	2.450	2.5	2.550	5	100	1800	0.25	100	1	-0.085	182
MMSZ5223SPT	2.646	2.7	2.754	5	100	1900	0.25	75	1	-0.080	168
MMSZ5224SPT	2.774	2.8	2.856	5	100	1900	0.25	75	1	-0.080	162
MMSZ5225SPT	2.940	3.0	3.060	5	95	2000	0.25	50	1	-0.075	152
MMSZ5226SPT	3.234	3.3	3.366	5	95	2200	0.25	25	1	-0.070	138
MMSZ5227SPT	3.528	3.6	3.762	5	90	2300	0.25	15	1	-0.065	126
MMSZ5228SPT	3.822	3.9	3.987	5	90	2400	0.25	10	1	-0.060	115
MMSZ5229SPT	4.214	4.3	4.386	5	88	2500	0.25	5	1	-0.055	106
MMSZ5230SPT	4.606	4.7	4.794	5	70	2200	0.25	3	1.5	+0.030	97
MMSZ5231SPT	4.998	5.1	5.202	5	50	2050	0.25	2	2	+0.030	89
MMSZ5232SPT	5.488	5.6	5.712	5	25	1800	0.25	5	3	+0.038	81
MMSZ5233SPT	5.880	6.0	6.120	5	25	1800	0.25	5	3	+0.038	76
MMSZ5234SPT	6.070	6.2	6.324	5	10	1300	0.25	1	4	+0.045	73
MMSZ5235SPT	6.664	6.8	6.936	5	8	750	0.25	1	5.2	+0.050	67
MMSZ5236SPT	7.350	7.5	7.650	5	7	600	0.25	0.5	6	+0.058	61
MMSZ5237SPT	8.036	8.2	8.364	5	7	600	0.25	0.5	6.5	+0.062	55
MMSZ5238SPT	8.526	8.7	8.874	5	7	600	0.25	0.5	6.5	+0.065	52
MMSZ5239SPT	8.918	9.1	9.282	5	10	600	0.25	0.1	7	+0.068	50
MMSZ5240SPT	9.800	10	10.20	5	15	600	0.25	0.1	8	+0.075	45
MMSZ5241SPT	10.78	11	11.22	5	18	600	0.25	0.1	8.4	+0.076	41
MMSZ5242SPT	11.76	12	12.24	5	22	600	0.25	0.1	9.1	+0.077	38
MMSZ5243SPT	12.74	13	13.26	5	25	600	0.25	0.1	9.9	+0.079	35
MMSZ5244SPT	13.72	14	14.28	5	25	600	0.25	0.1	10	+0.082	32
MMSZ5245SPT	14.70	15	15.30	5	32	600	0.25	0.1	11	+0.082	30
MMSZ5246SPT	15.68	16	16.32	5	36	600	0.25	0.1	12	+0.083	28
MMSZ5247SPT	16.66	17	17.34	5	36	600	0.25	0.1	13	+0.084	27
MMSZ5248SPT	17.64	18	18.36	5	42	600	0.25	0.1	14	+0.085	25
MMSZ5249SPT	18.62	19	19.38	5	42	600	0.25	0.1	14	+0.086	24
MMSZ5250SPT	19.60	20	20.40	5	48	600	0.25	0.1	16	+0.086	23
MMSZ5251SPT	21.56	22	22.44	5	55	600	0.25	0.1	17	+0.087	21
MMSZ5252SPT	23.52	24	24.48	5	62	600	0.25	0.1	18	+0.088	19.1
MMSZ5253SPT	24.50	25	25.50	5	62	600	0.25	0.1	19	+0.089	18.2
MMSZ5254SPT	26.46	27	27.54	5	70	600	0.25	0.1	21	+0.090	16.8
MMSZ5255SPT	27.44	28	28.56	5	44	600	0.25	0.1	21	+0.091	16.2
MMSZ5256SPT	29.40	30	30.60	5	78	600	0.25	0.1	23	+0.091	15.1
MMSZ5257SPT	32.34	33	33.66	5	88	700	0.25	0.1	25	+0.092	13.8

ELECTRICAL CHARACTERISTICS (MMSZ5221SPT THRU MMSZ5270SPT)

TYPE	Zener voltage V_Z (V) @ I_{ZT}			Test current	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 (uA)	at V_R (V)		
	Volts	Volts	Volts	I_{ZT} (mA)							
MMSZ5258SPT	35.28	36	36.72	5	95	700	0.25	0.1	27	+0.093	13.8
MMSZ5259SPT	38.22	39	39.78	5	130	800	0.25	0.1	30	+0.094	12.6
MMSZ5260SPT	42.14	43	43.86	3.0	93	900	0.25	0.1	33	+0.095	11.6
MMSZ5261SPT	46.06	47	47.94	2.7	105	1000	0.25	0.1	36	+0.095	10.6
MMSZ5262SPT	49.98	51	52.02	2.5	125	1100	0.25	0.1	36	+0.096	9.7
MMSZ5263SPT	54.88	56	57.12	2.2	150	1300	0.25	0.1	39	+0.096	8.9
MMSZ5264SPT	58.80	60	61.20	2.1	170	1400	0.25	0.1	43	+0.097	11.6
MMSZ5265SPT	60.76	62	63.24	2.0	185	1400	0.25	0.1	46	+0.097	-
MMSZ5266SPT	66.64	68	69.36	1.8	230	1600	0.25	0.1	52	+0.097	-
MMSZ5267SPT	73.50	75	76.50	1.7	270	1700	0.25	0.1	56	+0.098	-
MMSZ5268SPT	80.36	82	83.64	1.5	330	2000	0.25	0.1	62	+0.098	-
MMSZ5269SPT	85.26	87	88.74	1.4	370	2000	0.25	0.1	68	+0.099	-
MMSZ5270SPT	89.18	91	92.82	1.4	400	2300	0.25	0.1	69	+0.099	-

RATING CHARACTERISTIC CURVES (MMSZ5221SPT THRU MMSZ5270SPT)

FIG. 1 - TEMPERATURE COEFFICIENTS)
(TEMPERATURE RANGE 55°C TO +150°C)

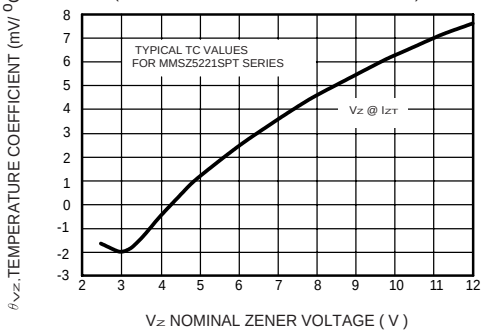


FIG. 2 - TEMPERATURE COEFFICIENTS)
(TEMPERATURE RANGE 55°C TO +150°C)

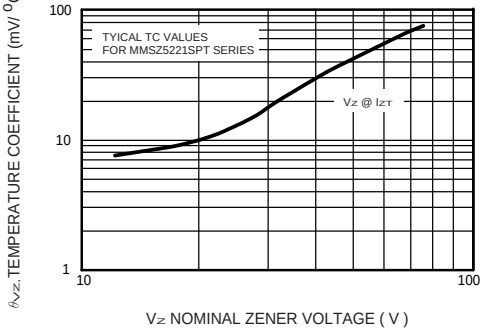


FIG. 3 - EFFECT OF ZENER VOLTAGE ON
ZENER IMPEDANCE

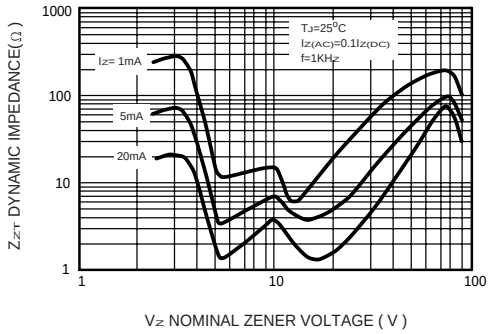
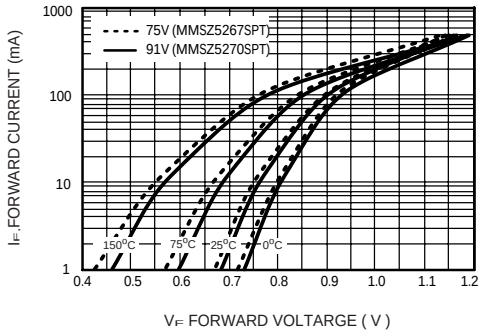


FIG. 4 - TYPICAL FORWARD VOLTAGE



RATING CHARACTERISTIC CURVES (MMSZ5221SPT THRU MMSZ5270SPT)

FIG. 5 - TYPICAL CAPACITANCE

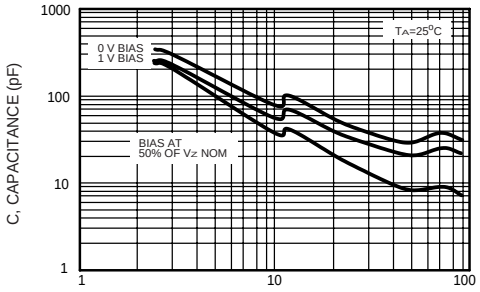


FIG. 6 - TYPICAL LEAKAGE CURRENT

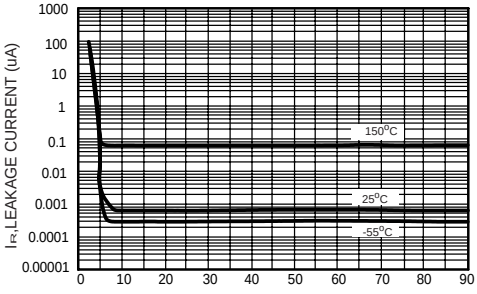


FIG. 7 - ZENER VOLTAGE VERSUS ZENER CURRENT (VZ UP TO 12V)

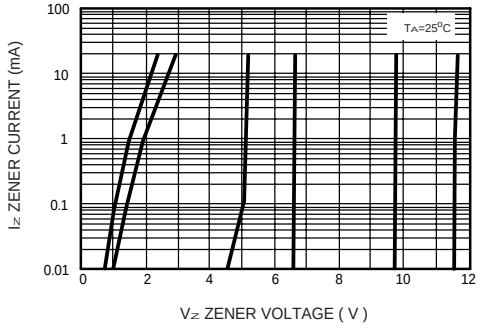


FIG. 8 - ZENER VOLTAGE VERSUS ZENER CURRENT (12V TO 91V)