CHENMKO ENTERPRISE CO.,LTD

SURFACE MOUNT ZENER

SILICON PLANAR POWER ZENER DIODES

VOLTAGE RANGE 2.4V TO 91V

MMBZ5221SGP

THRU

MMBZ5270SGP

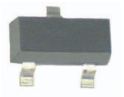
Halogens free devices

FEATURE

* Small surface mounting type. (SOT-23)
* 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
* 225 mW Rating on FR-4 or FR-5 Board

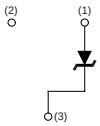
MECHANICAL

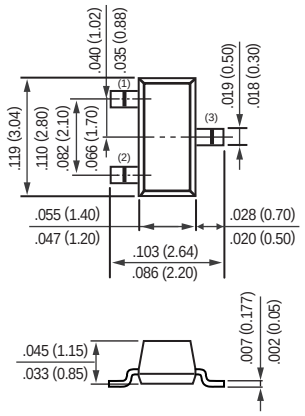
* ST-23 Packaging.
* Mounting position: Any.



SOT-23

CIRCUIT





Dimensions in millimeters

SOT-23

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	$R_{\theta JA}$	-	-	500	°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 (MMBZ5221SGP THRU MMBZ5270SGP)

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)							
MMBZ5221SGP	2.352	2.4	2.448	5	100	1800	0.25	100	1	-0.085	85
MMBZ5222SGP	2.450	2.5	2.550	5	100	1800	0.25	100	1	-0.085	82
MMBZ5223SGP	2.646	2.7	2.754	5	100	1900	0.25	75	1	-0.080	76
MMBZ5224SGP	2.774	2.8	2.856	5	100	1900	0.25	75	1	-0.080	73
MMBZ5225SGP	2.940	3.0	3.060	5	95	2000	0.25	50	1	-0.075	68
MMBZ5226SGP	3.234	3.3	3.366	5	95	2200	0.25	25	1	-0.070	62
MMBZ5227SGP	3.528	3.6	3.762	5	90	2300	0.25	15	1	-0.065	57
MMBZ5228SGP	3.822	3.9	3.987	5	90	2400	0.25	10	1	-0.060	52
MMBZ5229SGP	4.214	4.3	4.386	5	88	2500	0.25	5	1	-0.055	48
MMBZ5230SGP	4.606	4.7	4.794	5	70	2200	0.25	3	1.5	+0.030	44
MMBZ5231SGP	4.998	5.1	5.202	5	50	2050	0.25	2	2	+0.030	40
MMBZ5232SGP	5.488	5.6	5.712	5	25	1800	0.25	5	3	+0.038	36
MMBZ5233SGP	5.880	6.0	6.120	5	25	1800	0.25	5	3	+0.038	34
MMBZ5234SGP	6.070	6.2	6.324	5	10	1300	0.25	1	4	+0.045	33
MMBZ5235SGP	6.664	6.8	6.936	5	8	750	0.25	1	5.2	+0.050	30
MMBZ5236SGP	7.350	7.5	7.650	5	7	600	0.25	0.5	6	+0.058	27
MMBZ5237SGP	8.036	8.2	8.364	5	7	600	0.25	0.5	6.5	+0.062	25
MMBZ5238SGP	8.526	8.7	8.874	5	7	600	0.25	0.5	6.5	+0.065	23
MMBZ5239SGP	8.918	9.1	9.282	5	10	600	0.25	0.1	7	+0.068	22
MMBZ5240SGP	9.800	10	10.20	5	15	600	0.25	0.1	8	+0.075	20
MMBZ5241SGP	10.78	11	11.22	5	18	600	0.25	0.1	8.4	+0.076	18
MMBZ5242SGP	11.76	12	12.24	5	22	600	0.25	0.1	9.1	+0.077	17
MMBZ5243SGP	12.74	13	13.26	5	25	600	0.25	0.1	9.9	+0.079	16
MMBZ5244SGP	13.72	14	14.28	5	25	600	0.25	0.1	10	+0.082	14
MMBZ5245SGP	14.70	15	15.30	5	32	600	0.25	0.1	11	+0.082	13
MMBZ5246SGP	15.68	16	16.32	5	36	600	0.25	0.1	12	+0.083	12.5
MMBZ5247SGP	16.66	17	17.34	5	36	600	0.25	0.1	13	+0.084	12.1
MMBZ5248SGP	17.64	18	18.36	5	42	600	0.25	0.1	14	+0.085	11.2
MMBZ5249SGP	18.62	19	19.38	5	42	600	0.25	0.1	14	+0.086	10.8
MMBZ5250SGP	19.60	20	20.40	5	48	600	0.25	0.1	16	+0.086	10.3
MMBZ5251SGP	21.56	22	22.44	5	55	600	0.25	0.1	17	+0.087	9.4
MMBZ5252SGP	23.52	24	24.48	5	62	600	0.25	0.1	18	+0.088	8.6
MMBZ5253SGP	24.50	25	25.50	5	62	600	0.25	0.1	19	+0.089	7.6
MMBZ5254SGP	26.46	27	27.54	5	70	600	0.25	0.1	21	+0.090	7.5
MMBZ5255SGP	27.44	28	28.56	5	44	600	0.25	0.1	21	+0.091	7.3
MMBZ5256SGP	29.40	30	30.60	5	78	600	0.25	0.1	23	+0.091	6.8
MMBZ5257SGP	32.34	33	33.66	5	88	700	0.25	0.1	25	+0.092	6.2

ELECTRICAL CHARACTERISTICS (MMBZ5221SGP THRU MMBZ5270SGP)

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)		
MMBZ5258SGP	35.28	36	36.72	5	95	700	0.25	0.1	27	+0.093	5.8
MMBZ5259SGP	38.22	39	39.78	5	130	800	0.25	0.1	30	+0.094	5.4
MMBZ5260SGP	42.14	43	43.86	3.0	93	900	0.25	0.1	33	+0.095	4.9
MMBZ5261SGP	46.06	47	47.94	2.7	105	1000	0.25	0.1	36	+0.095	4.5
MMBZ5262SGP	49.98	51	52.02	2.5	125	1100	0.25	0.1	36	+0.096	4.2
MMBZ5263SGP	54.88	56	57.12	2.2	150	1300	0.25	0.1	39	+0.096	3.8
MMBZ5264SGP	58.80	60	61.20	2.1	170	1400	0.25	0.1	43	+0.097	3.5
MMBZ5265SGP	60.76	62	63.24	2.0	185	1400	0.25	0.1	46	+0.097	-
MMBZ5266SGP	66.64	68	69.36	1.8	230	1600	0.25	0.1	52	+0.097	-
MMBZ5267SGP	73.50	75	76.50	1.7	270	1700	0.25	0.1	56	+0.098	-
MMBZ5268SGP	80.36	82	83.64	1.5	330	2000	0.25	0.1	62	+0.098	-
MMBZ5269SGP	85.26	87	88.74	1.4	370	2000	0.25	0.1	68	+0.099	-
MMBZ5270SGP	89.18	91	92.82	1.4	400	2300	0.25	0.1	69	+0.099	-

RATING CHARACTERISTIC CURVES (MMBZ5221SGP THRU MMBZ5270SGP)

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

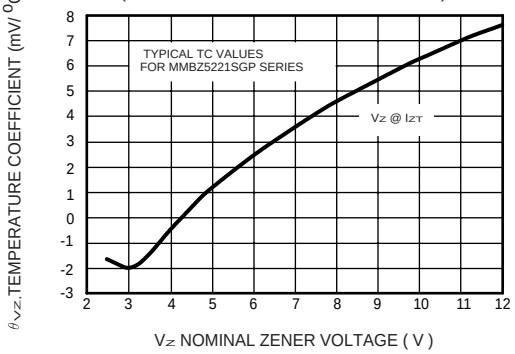


FIG. 2 - TEMPERATURE COEFFICIENTS)
(TEMPERATURE RANGE 55°C TO +150°C)

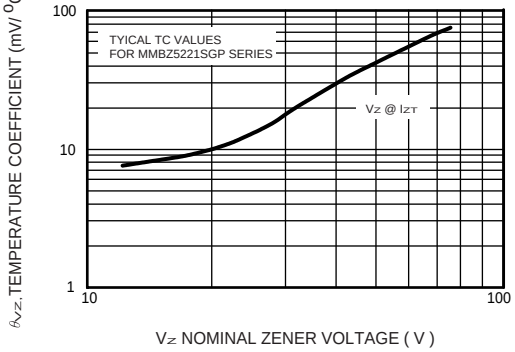


FIG. 3 - EFFECT OF ZENER VOLTAGE ON
ZENER IMPEDANCE

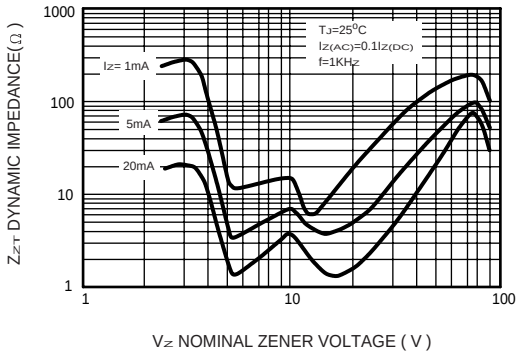
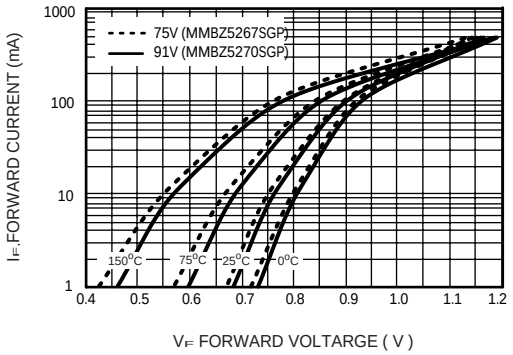


FIG. 4 - TYPICAL FORWARD VOLTAGE



RATING CHARACTERISTIC CURVES (MMBZ5221SGP THRU MMBZ5270SGP)

FIG. 5 - TYPICAL CAPACITANCE

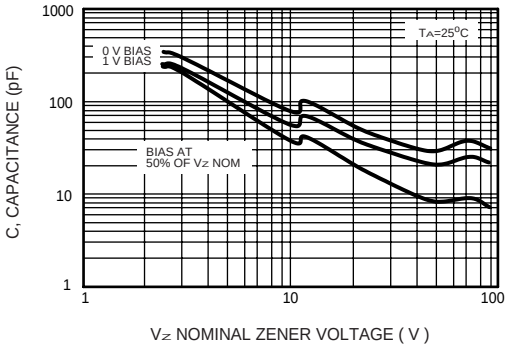


FIG. 6 - TYPICAL LEAKAGE CURRENT

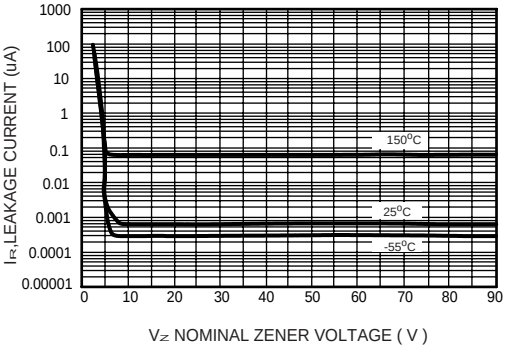


FIG. 7 - ZENER VOLTAGE VERSUS ZENER CURRENT (VZ UP TO 12V)

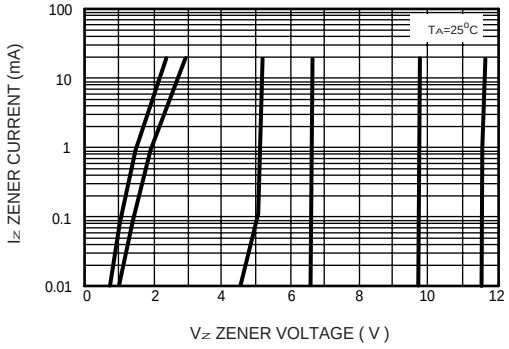


FIG. 8 - ZENER VOLTAGE VERSUS ZENER CURRENT (12V TO 91V)