



CHENMKO ENTERPRISE CO.,LTD

Halogens free devices

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

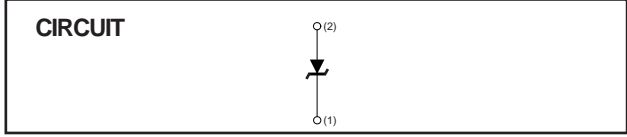
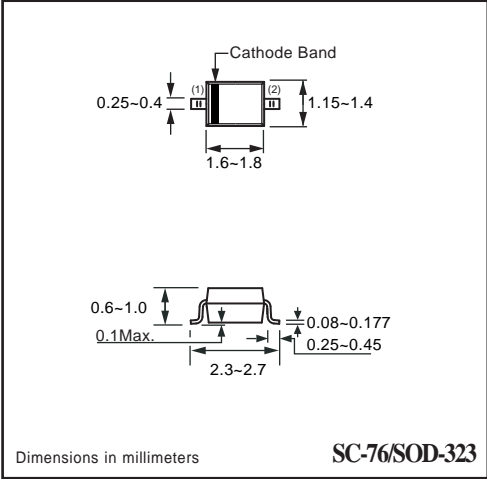
MMPZ5221SGP
THRU
MMPZ5270SGP

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.



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= $\pm 5\%$, Suffix S= $\pm 2\%$.
 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.

2004-05

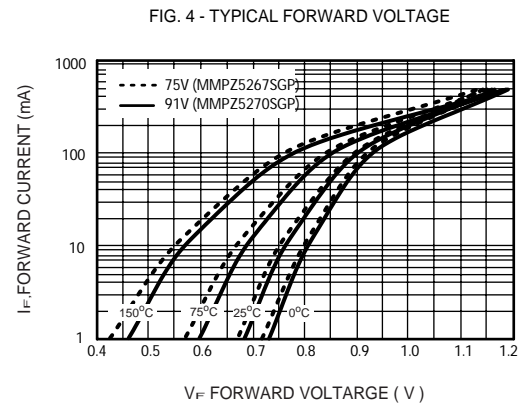
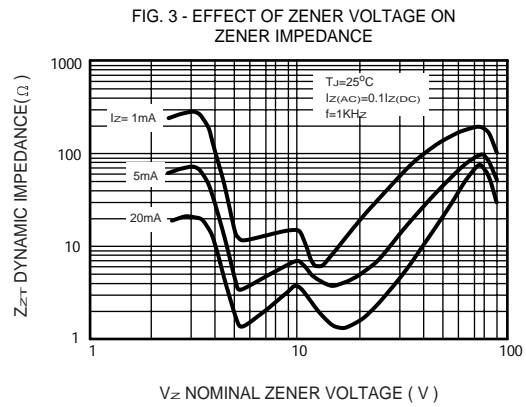
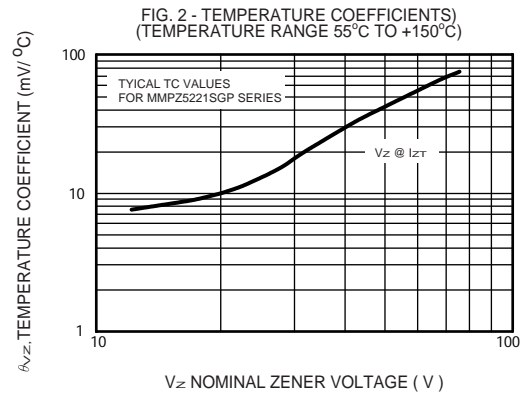
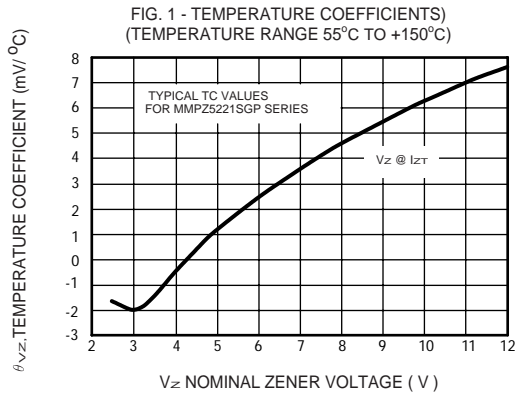
ELECTRICAL CHARACTERISTICS (MMPZ5221SGP THRU MMPZ5270SGP)

| 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 | | | | | | | | |
| MMPZ5221SGP | 2.352 | 2.4 | 2.448 | 5 | 100 | 1800 | 0.25 | 100 | 1 | -0.085 | 85 |
| MMPZ5222SGP | 2.450 | 2.5 | 2.550 | 5 | 100 | 1800 | 0.25 | 100 | 1 | -0.085 | 82 |
| MMPZ5223SGP | 2.646 | 2.7 | 2.754 | 5 | 100 | 1900 | 0.25 | 75 | 1 | -0.080 | 76 |
| MMPZ5224SGP | 2.774 | 2.8 | 2.856 | 5 | 100 | 1900 | 0.25 | 75 | 1 | -0.080 | 73 |
| MMPZ5225SGP | 2.940 | 3.0 | 3.060 | 5 | 95 | 2000 | 0.25 | 50 | 1 | -0.075 | 68 |
| MMPZ5226SGP | 3.234 | 3.3 | 3.366 | 5 | 95 | 2200 | 0.25 | 25 | 1 | -0.070 | 62 |
| MMPZ5227SGP | 3.528 | 3.6 | 3.762 | 5 | 90 | 2300 | 0.25 | 15 | 1 | -0.065 | 57 |
| MMPZ5228SGP | 3.822 | 3.9 | 3.987 | 5 | 90 | 2400 | 0.25 | 10 | 1 | -0.060 | 52 |
| MMPZ5229SGP | 4.214 | 4.3 | 4.386 | 5 | 88 | 2500 | 0.25 | 5 | 1 | -0.055 | 48 |
| MMPZ5230SGP | 4.606 | 4.7 | 4.794 | 5 | 70 | 2200 | 0.25 | 3 | 1.5 | +0.030 | 44 |
| MMPZ5231SGP | 4.998 | 5.1 | 5.202 | 5 | 50 | 2050 | 0.25 | 2 | 2 | +0.030 | 40 |
| MMPZ5232SGP | 5.488 | 5.6 | 5.712 | 5 | 25 | 1800 | 0.25 | 5 | 3 | +0.038 | 36 |
| MMPZ5233SGP | 5.880 | 6.0 | 6.120 | 5 | 25 | 1800 | 0.25 | 5 | 3 | +0.038 | 34 |
| MMPZ5234SGP | 6.070 | 6.2 | 6.324 | 5 | 10 | 1300 | 0.25 | 1 | 4 | +0.045 | 33 |
| MMPZ5235SGP | 6.664 | 6.8 | 6.936 | 5 | 8 | 750 | 0.25 | 1 | 5.2 | +0.050 | 30 |
| MMPZ5236SGP | 7.350 | 7.5 | 7.650 | 5 | 7 | 600 | 0.25 | 0.5 | 6 | +0.058 | 27 |
| MMPZ5237SGP | 8.036 | 8.2 | 8.364 | 5 | 7 | 600 | 0.25 | 0.5 | 6.5 | +0.062 | 25 |
| MMPZ5238SGP | 8.526 | 8.7 | 8.874 | 5 | 7 | 600 | 0.25 | 0.5 | 6.5 | +0.065 | 23 |
| MMPZ5239SGP | 8.918 | 9.1 | 9.282 | 5 | 10 | 600 | 0.25 | 0.1 | 7 | +0.068 | 22 |
| MMPZ5240SGP | 9.800 | 10 | 10.20 | 5 | 15 | 600 | 0.25 | 0.1 | 8 | +0.075 | 20 |
| MMPZ5241SGP | 10.78 | 11 | 11.22 | 5 | 18 | 600 | 0.25 | 0.1 | 8.4 | +0.076 | 18 |
| MMPZ5242SGP | 11.76 | 12 | 12.24 | 5 | 22 | 600 | 0.25 | 0.1 | 9.1 | +0.077 | 17 |
| MMPZ5243SGP | 12.74 | 13 | 13.26 | 5 | 25 | 600 | 0.25 | 0.1 | 9.9 | +0.079 | 16 |
| MMPZ5244SGP | 13.72 | 14 | 14.28 | 5 | 25 | 600 | 0.25 | 0.1 | 10 | +0.082 | 14 |
| MMPZ5245SGP | 14.70 | 15 | 15.30 | 5 | 32 | 600 | 0.25 | 0.1 | 11 | +0.082 | 13 |
| MMPZ5246SGP | 15.68 | 16 | 16.32 | 5 | 36 | 600 | 0.25 | 0.1 | 12 | +0.083 | 12.5 |
| MMPZ5247SGP | 16.66 | 17 | 17.34 | 5 | 36 | 600 | 0.25 | 0.1 | 13 | +0.084 | 12.1 |
| MMPZ5248SGP | 17.64 | 18 | 18.36 | 5 | 42 | 600 | 0.25 | 0.1 | 14 | +0.085 | 11.2 |
| MMPZ5249SGP | 18.62 | 19 | 19.38 | 5 | 42 | 600 | 0.25 | 0.1 | 14 | +0.086 | 10.8 |
| MMPZ5250SGP | 19.60 | 20 | 20.40 | 5 | 48 | 600 | 0.25 | 0.1 | 16 | +0.086 | 10.3 |
| MMPZ5251SGP | 21.56 | 22 | 22.44 | 5 | 55 | 600 | 0.25 | 0.1 | 17 | +0.087 | 9.4 |
| MMPZ5252SGP | 23.52 | 24 | 24.48 | 5 | 62 | 600 | 0.25 | 0.1 | 18 | +0.088 | 8.6 |
| MMPZ5253SGP | 24.50 | 25 | 25.50 | 5 | 62 | 600 | 0.25 | 0.1 | 19 | +0.089 | 7.6 |
| MMPZ5254SGP | 26.46 | 27 | 27.54 | 5 | 70 | 600 | 0.25 | 0.1 | 21 | +0.090 | 7.5 |
| MMPZ5255SGP | 27.44 | 28 | 28.56 | 5 | 44 | 600 | 0.25 | 0.1 | 21 | +0.091 | 7.3 |
| MMPZ5256SGP | 29.40 | 30 | 30.60 | 5 | 78 | 600 | 0.25 | 0.1 | 23 | +0.091 | 6.8 |
| MMPZ5257SGP | 32.34 | 33 | 33.66 | 5 | 88 | 700 | 0.25 | 0.1 | 25 | +0.092 | 6.2 |

ELECTRICAL CHARACTERISTICS (MMPZ5221SGP THRU MMPZ5270SGP)

| 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 (μA) | at V _R (V) | | |
| | Volts | Volts | Volts | I _{ZT} (mA) | | | | | | | |
| MMPZ5258SGP | 35.28 | 36 | 36.72 | 5 | 95 | 700 | 0.25 | 0.1 | 27 | +0.093 | 5.8 |
| MMPZ5259SGP | 38.22 | 39 | 39.78 | 5 | 130 | 800 | 0.25 | 0.1 | 30 | +0.094 | 5.4 |
| MMPZ5260SGP | 42.14 | 43 | 43.86 | 3.0 | 93 | 900 | 0.25 | 0.1 | 33 | +0.095 | 4.9 |
| MMPZ5261SGP | 46.06 | 47 | 47.94 | 2.7 | 105 | 1000 | 0.25 | 0.1 | 36 | +0.095 | 4.5 |
| MMPZ5262SGP | 49.98 | 51 | 52.02 | 2.5 | 125 | 1100 | 0.25 | 0.1 | 36 | +0.096 | 4.2 |
| MMPZ5263SGP | 54.88 | 56 | 57.12 | 2.2 | 150 | 1300 | 0.25 | 0.1 | 39 | +0.096 | 3.8 |
| MMPZ5264SGP | 58.80 | 60 | 61.20 | 2.1 | 170 | 1400 | 0.25 | 0.1 | 43 | +0.097 | 3.5 |
| MMPZ5265SGP | 60.76 | 62 | 63.24 | 2.0 | 185 | 1400 | 0.25 | 0.1 | 46 | +0.097 | - |
| MMPZ5266SGP | 66.64 | 68 | 69.36 | 1.8 | 230 | 1600 | 0.25 | 0.1 | 52 | +0.097 | - |
| MMPZ5267SGP | 73.50 | 75 | 76.50 | 1.7 | 270 | 1700 | 0.25 | 0.1 | 56 | +0.098 | - |
| MMPZ5268SGP | 80.36 | 82 | 83.64 | 1.5 | 330 | 2000 | 0.25 | 0.1 | 62 | +0.098 | - |
| MMPZ5269SGP | 85.26 | 87 | 88.74 | 1.4 | 370 | 2000 | 0.25 | 0.1 | 68 | +0.099 | - |
| MMPZ5270SGP | 89.18 | 91 | 92.82 | 1.4 | 400 | 2300 | 0.25 | 0.1 | 69 | +0.099 | - |

RATING CHARACTERISTIC CURVES (MMPZ5221SGP THRU MMPZ5270SGP)



RATING CHARACTERISTIC CURVES (MMPZ5221SGP THRU MMPZ5270SGP)

FIG. 5 - TYPICAL CAPACITANCE

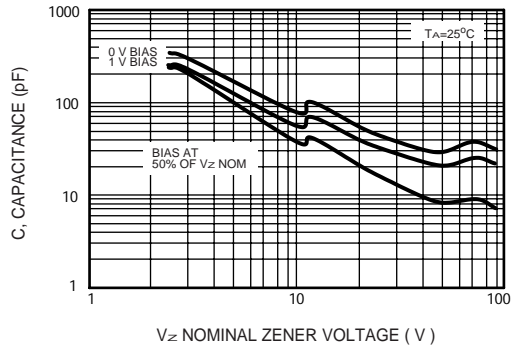


FIG. 6 - TYPICAL LEAKAGE CURRENT

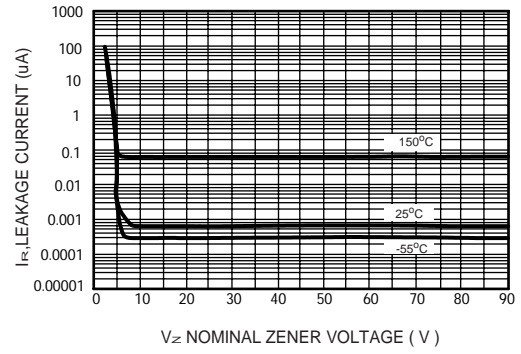


FIG. 7 - ZENER VOLTAGE VERSUS ZENER CURRENT (V_z UP TO 12V)

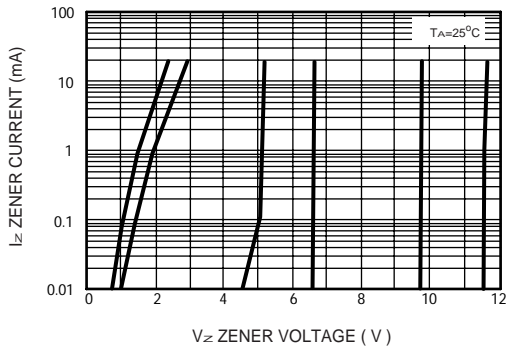


FIG. 8 - ZENER VOLTAGE VERSUS ZENER CURRENT (12V TO 91V)

