



**THE DATASHEET OF  
MMBZ5231B-TP**





Micro Commercial Components



Micro Commercial Components
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MMBZ5221B
THRU
MMBZ5259B

Features

- Halogen free available upon request by adding suffix "-HF"
Lead Free Finish/RoHS Compliant ("P" Suffix designates RoHS Compliant. See ordering information)
Epoxy meets UL 94 V-0 flammability rating
Moisture Sensitivity Level 1
Wide Voltage Range Available
Small Outline Package For Space Savings
High Temp Soldering: 260°C for 10 Seconds At Terminals
Surface Mount Package

Maximum Ratings

- Operating Junction Temperature: -55°C to +150°C
Storage Temperature: -55°C to +150°C
Maximum Thermal Resistance; 357°C/W Junction To Ambient

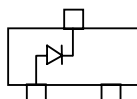
Maximum Ratings @ 25°C Unless Otherwise Specified

Table with 4 columns: Parameter, Symbol, Value, Unit. Rows include Zener Current (IF, 100 mA), Maximum Forward Voltage (VF, 1.2 V), Power Dissipation (Pd, 350 mWatt), and Peak Forward Surge Current (IFSM, 4.0 Amps).

NOTES:

- A. Mounted on FR4 PC board with our suggested solder pad layout.
B. Measured on 8.3ms, single half sine-wave or equivalent square wave, duty cycle = 4 pulses per minute maximum.

\*Pin Configuration - Top View



350 mW
Zener Diode
2.4 to 39 Volts

SOT-23

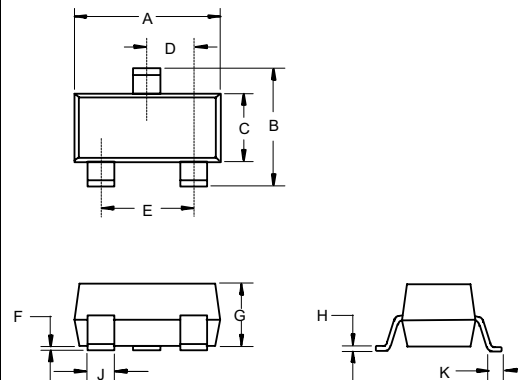
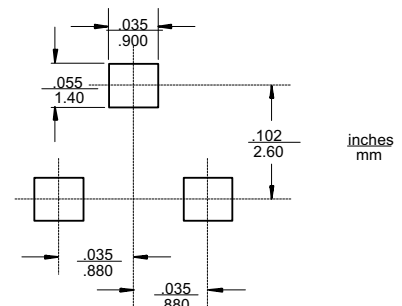


Table titled 'DIMENSIONS' with columns for DIM, INCHES (MIN, MAX), MM (MIN, MAX), and NOTE. It lists dimensions A through K with their respective minimum and maximum values in inches and millimeters.

Suggested Solder Pad Layout



# MMBZ5221B thru MMBZ5259B



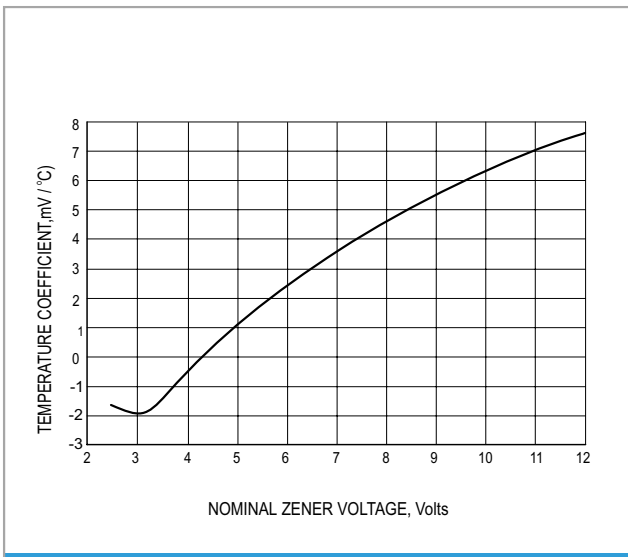
## ELECTRICAL CHARACTERISTICS @25°C

| MCC PART NUMBER | MARKING | NOMINAL ZENER VOLTAGE $V_Z @ I_{ZT}$ | TEST CURRENT $I_{ZT}$ | MAXIMUM ZENER IMPEDANCE 'B' SUFFIX ONLY |                            | MAXIMUM REVERSE LEAKAGE CURRENT |       |
|-----------------|---------|--------------------------------------|-----------------------|---|----------------------------|---------------------------------|-------|
|                 |         |                                      |                       | $Z_{ZT} @ I_{ZT}$                       | $Z_{ZK} @ I_{ZK} = 0.25mA$ | $I_R @ V_R$                     | $V_R$ |
|                 |         | VOLTS                                | mA                    | OHMS                                    | OHMS                       | μA                              | VOLTS |
| MMBZ5221B       | KC1/C1  | 2.4                                  | 20                    | 30                                      | 1200                       | 100                             | 1.0   |
| MMBZ5222B       | KC2/C2  | 2.5                                  | 20                    | 30                                      | 1250                       | 100                             | 1.0   |
| MMBZ5223B       | KC3/C3  | 2.7                                  | 20                    | 30                                      | 1300                       | 75                              | 1.0   |
| MMBZ5225B       | KC5/C5  | 3.0                                  | 20                    | 29                                      | 1600                       | 50                              | 1.0   |
| MMBZ5226B       | KG1/D1  | 3.3                                  | 20                    | 28                                      | 1600                       | 25                              | 1.0   |
| MMBZ5227B       | KG2/D2  | 3.6                                  | 20                    | 24                                      | 1700                       | 15                              | 1.0   |
| MMBZ5228B       | KG3/D3  | 3.9                                  | 20                    | 23                                      | 1900                       | 10                              | 1.0   |
| MMBZ5229B       | KG4/D4  | 4.3                                  | 20                    | 22                                      | 2000                       | 5.0                             | 1.0   |
| MMBZ5230B       | KG5/D5  | 4.7                                  | 20                    | 19                                      | 1900                       | 5.0                             | 2.0   |
| MMBZ5231B       | KE1/E1  | 5.1                                  | 20                    | 17                                      | 1600                       | 5.0                             | 2.0   |
| MMBZ5232B       | KE2/E2  | 5.6                                  | 20                    | 11                                      | 1600                       | 5.0                             | 3.0   |
| MMBZ5233B       | KE3/E3  | 6.0                                  | 20                    | 7.0                                     | 1600                       | 5.0                             | 3.5   |
| MMBZ5234B       | KE4/E4  | 6.2                                  | 20                    | 7.0                                     | 1000                       | 5.0                             | 4.0   |
| MMBZ5235B       | KE5/E5  | 6.8                                  | 20                    | 5.0                                     | 750                        | 3.0                             | 5.0   |
| MMBZ5236B       | KF1/F1  | 7.5                                  | 20                    | 6.0                                     | 500                        | 3.0                             | 6.0   |
| MMBZ5237B       | KF2/F2  | 8.2                                  | 20                    | 8.0                                     | 500                        | 3.0                             | 6.5   |
| MMBZ5238B       | KF3/F3  | 8.7                                  | 20                    | 8.0                                     | 600                        | 3.0                             | 6.5   |
| MMBZ5239B       | KF4/F4  | 9.1                                  | 20                    | 10                                      | 600                        | 3.0                             | 7.0   |
| MMBZ5240B       | KF5/F5  | 10                                   | 20                    | 17                                      | 600                        | 3.0                             | 8.0   |
| MMBZ5241B       | KH1/H1  | 11                                   | 20                    | 22                                      | 600                        | 2.0                             | 8.4   |
| MMBZ5242B       | KH2/H2  | 12                                   | 20                    | 30                                      | 600                        | 1.0                             | 9.1   |
| MMBZ5243B       | KH3/H3  | 13                                   | 9.5                   | 13                                      | 600                        | 0.5                             | 9.9   |
| MMBZ5244B       | KH4/H4  | 14                                   | 9.0                   | 15                                      | 600                        | 0.1                             | 10    |
| MMBZ5245B       | KH5/H5  | 15                                   | 8.5                   | 16                                      | 600                        | 0.1                             | 11    |
| MMBZ5246B       | KJ1/J1  | 16                                   | 7.8                   | 17                                      | 600                        | 0.1                             | 12    |
| MMBZ5248B       | KJ3/J3  | 18                                   | 7.0                   | 21                                      | 600                        | 0.1                             | 14    |
| MMBZ5250B       | KJ5/J5  | 20                                   | 6.2                   | 25                                      | 600                        | 0.1                             | 15    |
| MMBZ5251B       | KK1/K1  | 22                                   | 5.6                   | 29                                      | 600                        | 0.1                             | 17    |
| MMBZ5252B       | KK2/K2  | 24                                   | 5.2                   | 33                                      | 600                        | 0.1                             | 18    |
| MMBZ5254B       | KK4/K4  | 27                                   | 5.0                   | 41                                      | 600                        | 0.1                             | 21    |
| MMBZ5255B       | KK5/K5  | 28                                   | 4.5                   | 44                                      | 600                        | 0.1                             | 21    |
| MMBZ5256B       | KM1/M1  | 30                                   | 4.2                   | 49                                      | 600                        | 0.1                             | 23    |
| MMBZ5257B       | KM2/M2  | 33                                   | 3.8                   | 58                                      | 700                        | 0.1                             | 25    |
| MMBZ5258B       | KM3/M3  | 36                                   | 3.4                   | 70                                      | 700                        | 0.1                             | 27    |
| MMBZ5259B       | KM4/M4  | 39                                   | 3.2                   | 80                                      | 800                        | 0.1                             | 30    |

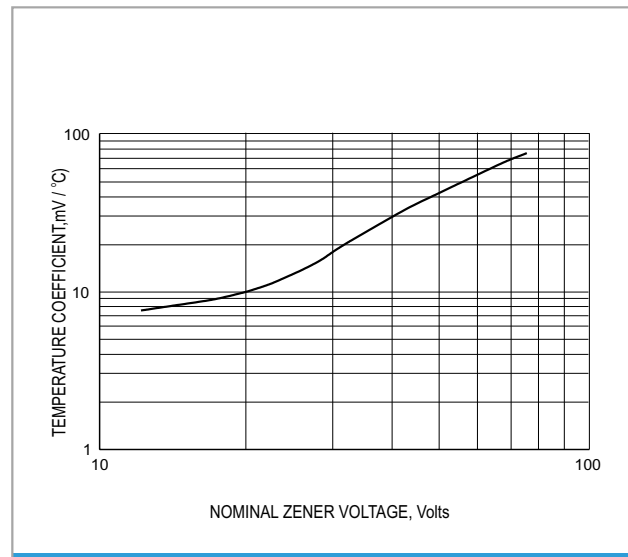
**Note:**

- Tolerance and Type Number Designation. The type numbers listed have a standard tolerance on the nominal zener voltage of  $\pm 5\%$ .
- Specials Available Include:
  - Nominal zener voltages between the voltages shown and tighter voltage tolerances.
  - Matched sets.
- Zener Voltage ( $V_Z$ ) Measurement. Guarantees the zener voltage when measured at 90 seconds while maintaining the lead temperature ( $T_L$ ) at 30°C, from the diode body.
- Zener Impedance ( $Z_Z$ ) Derivation. The zener impedance is derived from the 60 cycle ac voltage, which results when an AC current having an rms value equal to 10% of the dc zener current ( $I_{ZT}$  or  $I_{ZK}$ ) is superimposed on  $I_{ZT}$  or  $I_{ZK}$ .
- Surge Current ( $I_R$ ) Non-Repetitive. 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; however, actual device capability is as described in Figure 5.

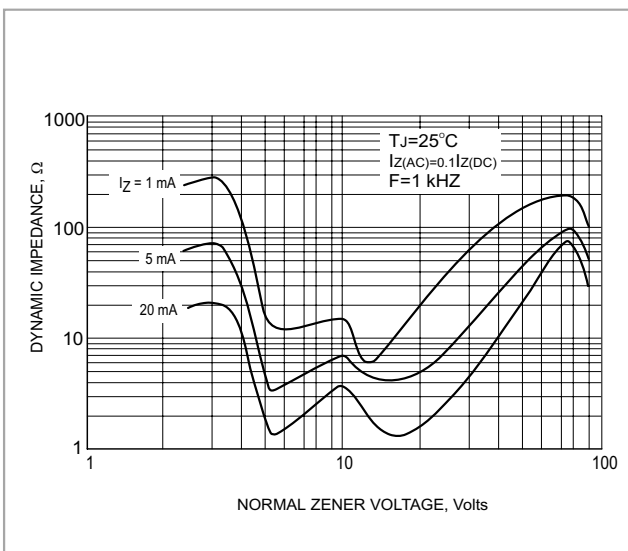
# MMBZ5221B thru MMBZ5259B



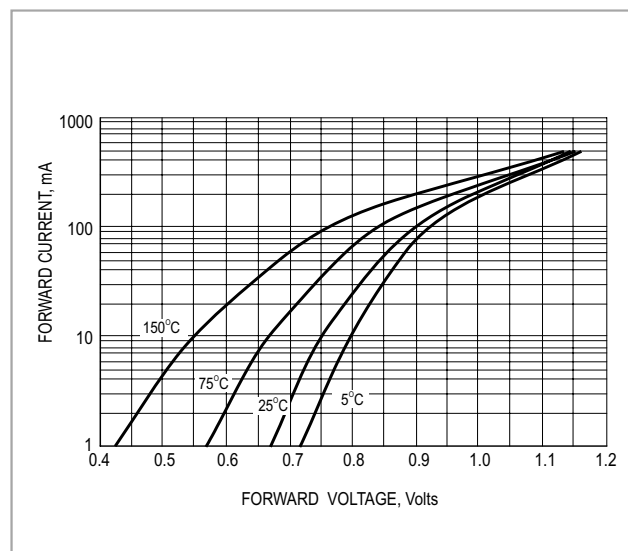
**TYPICAL REVERSE CURRENT**



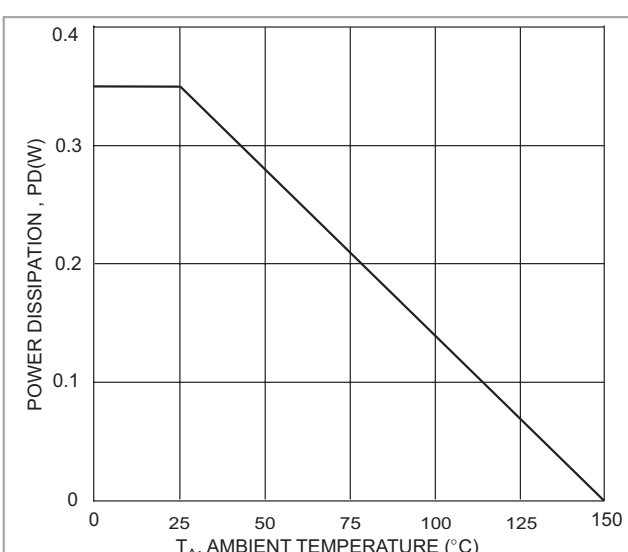
**STEADY STATE POWER DERATING**



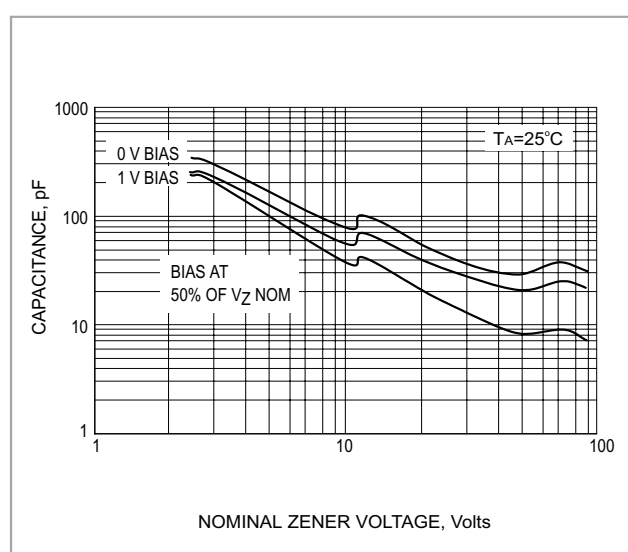
**EFFECT OF ZENER VOLTAGE ON ZENER IMPEDANCE**



**TYPICAL FORWARD VOLTAGE**

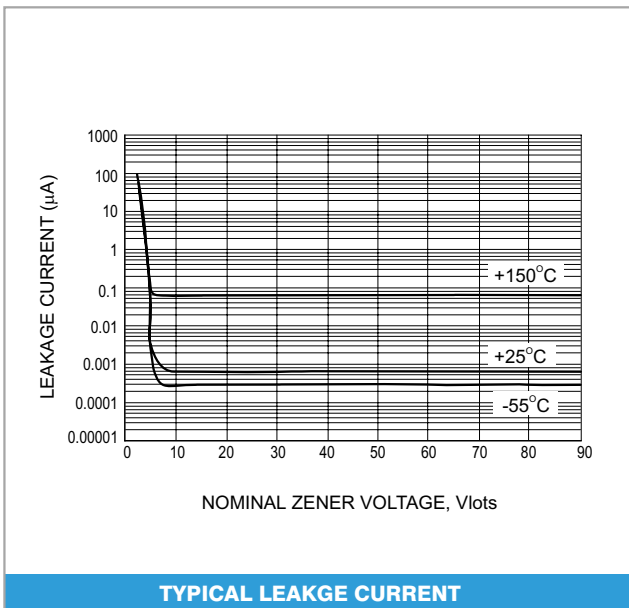
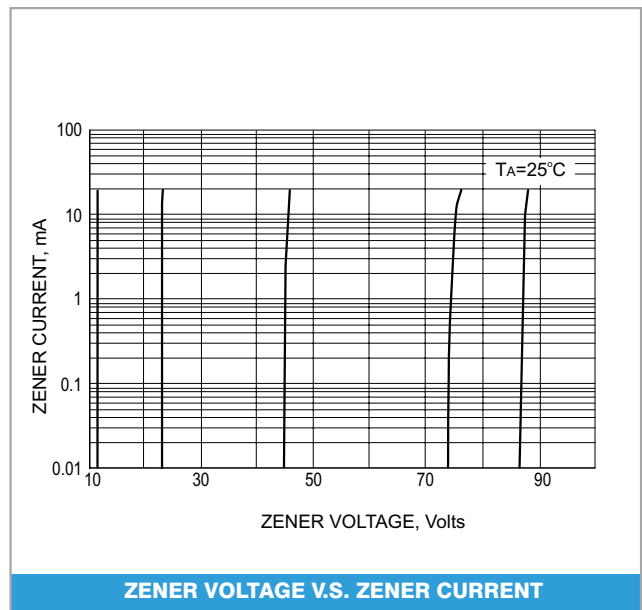
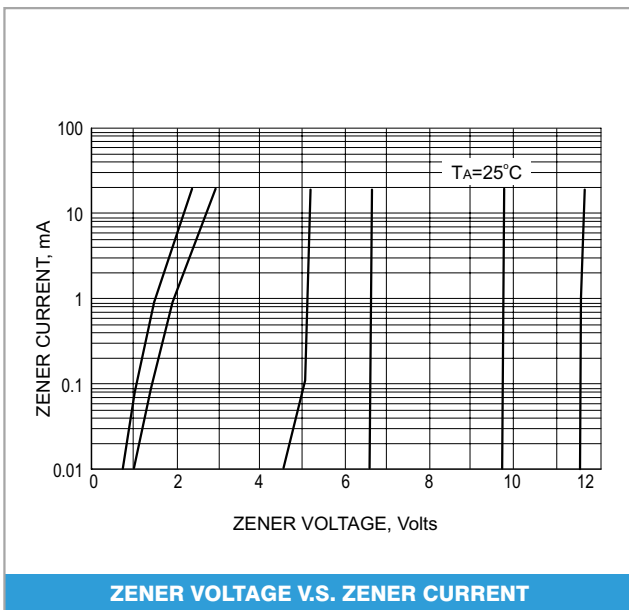


**STEADY STATE POWER DERATING**



**TYPICAL CAPACITANCE**

# MMBZ5221B thru MMBZ5259B





TM

Micro Commercial Components

### Ordering Information :

| Device         | Packing               |
|----------------|-----------------------|
| Part Number-TP | Tape&Reel: 3Kpcs/Reel |

Note : Adding "-HF" suffix for halogen free, eg. Part Number-TP-HF

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