



# MMBZ5221B – MMBZ5259B

## Surface Mount Zener Diode



Voltage Range  
2.4 to 39 Volts  
350m Watts Power Dissipation

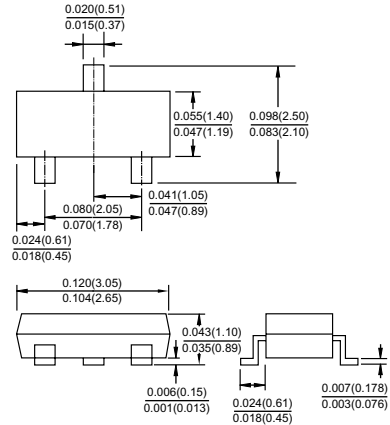
### SOT-23

### Features

- ✧ Planar die construction
- ✧ 350mW power dissipation on FR-4 PCB
- ✧ general purpose, medium current
- ✧ Ideally suited for automated assembly processes
- ✧ Standard zener voltage tolerance is  $\pm 5\%$  tolerance with a :B: suffix

### Mechanical Data

- ✧ Case: SOT-23, Molded plastic
- ✧ Terminals: Solderable per MIL-STD-202, Method 208
- ✧ Polarity: See diagram
- ✧ Marking: Marking Code (see table on Page 2)
- ✧ Weight: 0.008 grams (approx.)



Dimensions in inches and (millimeters)

### Maximum Ratings and Electrical Characteristics

Rating at 25°C ambient temperature unless otherwise specified.

### Maximum Ratings

| Type Number   | Symbol                            | Value        | Units |
|---|-----------------------------------|--------------|-------|
| Forward Voltage @ IF = 10mA                         | VF                                | 0.9          | V     |
| Power Dissipation (Note 1)                          | Pd                                | 350          | mW    |
| Thermal Resistance Junction to Ambient Air (Note 1) | R $\theta$ JA                     | 357          | K/W   |
| Operating and Storage Temperature Range             | T <sub>J</sub> , T <sub>STG</sub> | -65 to + 150 | °C    |

Notes: 1. Valid Provided that Terminals are Kept at Ambient Temperature.

2. Tested with Pulses, Tp ≤ 1.0ms.

# ELECTRICAL CHARACTERISTICS (TA=25°C unless otherwise noted)

| Device<br>(Note 1) | Device<br>Marking<br>Code | Zener Voltage Range (Note 2) |         |         |     | Maximum Zener<br>Impedance |                       | Maximum Reverse<br>Leakage Current |      |
|--------------------|---------------------------|------------------------------|---------|---------|-----|----------------------------|-----------------------|------------------------------------|------|
|                    |                           | Vz @ Izt                     |         |         | IZT | ZZT @ IZT                  | ZZK @ IZK<br>= 0.25mA | IR @ VR                            |      |
|                    |                           | Nom (V)                      | Min (V) | Max (V) |     |                            |                       | mA                                 | Ohms |
|                    |                           |                              |         |         |     |                            |                       |                                    |      |
| MMBZ5221B          | KC1                       | 2.4                          | 2.28    | 2.52    | 20  | 30                         | 1200                  | 100                                | 1.0  |
| MMBZ5223B          | KC3                       | 2.7                          | 2.57    | 2.84    | 20  | 30                         | 1300                  | 75                                 | 1.0  |
| MMBZ5225B          | KC5                       | 3.0                          | 2.85    | 3.15    | 20  | 30                         | 1600                  | 50                                 | 1.0  |
| MMBZ5226B          | KG1                       | 3.3                          | 3.14    | 3.47    | 20  | 28                         | 1600                  | 25                                 | 1.0  |
| MMBZ5227B          | KG2                       | 3.6                          | 3.42    | 3.78    | 20  | 24                         | 1700                  | 15                                 | 1.0  |
| MMBZ5228B          | KG3                       | 3.9                          | 3.71    | 4.10    | 20  | 23                         | 1900                  | 10                                 | 1.0  |
| MMBZ5229B          | KG4                       | 4.3                          | 4.09    | 4.52    | 20  | 22                         | 2000                  | 5.0                                | 1.0  |
| MMBZ5230B          | KG5                       | 4.7                          | 4.47    | 4.94    | 20  | 19                         | 1900                  | 5.0                                | 2.0  |
| MMBZ5231B          | KE1                       | 5.1                          | 4.85    | 5.36    | 20  | 17                         | 1600                  | 5.0                                | 2.0  |
| MMBZ5232B          | KE2                       | 5.6                          | 5.32    | 5.88    | 20  | 11                         | 1600                  | 5.0                                | 3.0  |
| MMBZ5233B          | KE3                       | 6.0                          | 5.70    | 6.30    | 20  | 7                          | 1600                  | 5.0                                | 3.5  |
| MMBZ5234B          | KE4                       | 6.2                          | 5.89    | 6.51    | 20  | 7                          | 1000                  | 5.0                                | 4.0  |
| MMBZ5235B          | KE5                       | 6.8                          | 6.46    | 7.14    | 20  | 5                          | 750                   | 3.0                                | 5.0  |
| MMBZ5236B          | KF1                       | 7.5                          | 7.13    | 7.88    | 20  | 6                          | 500                   | 3.0                                | 6.0  |
| MMBZ5237B          | KF2                       | 8.2                          | 7.79    | 8.61    | 20  | 8                          | 500                   | 3.0                                | 6.5  |
| MMBZ5238B          | KF3                       | 8.7                          | 8.27    | 9.14    | 20  | 8                          | 600                   | 3.0                                | 6.5  |
| MMBZ5239B          | KF4                       | 9.1                          | 8.65    | 9.56    | 20  | 10                         | 600                   | 3.0                                | 7.0  |
| MMBZ5240B          | KF5                       | 10                           | 9.50    | 10.50   | 20  | 17                         | 600                   | 3.0                                | 8.0  |
| MMBZ5241B          | KH1                       | 11                           | 10.45   | 11.55   | 20  | 22                         | 600                   | 2.0                                | 8.4  |
| MMBZ5242B          | KH2                       | 12                           | 11.40   | 12.60   | 20  | 30                         | 600                   | 1.0                                | 9.1  |
| MMBZ5243B          | KH3                       | 13                           | 12.35   | 13.65   | 9.5 | 13                         | 600                   | 0.5                                | 9.9  |
| MMBZ5245B          | KH5                       | 15                           | 14.25   | 15.75   | 8.5 | 16                         | 600                   | 0.1                                | 11   |
| MMBZ5246B          | KJ1                       | 16                           | 15.20   | 16.80   | 7.8 | 17                         | 600                   | 0.1                                | 12   |
| MMBZ5248B          | KJ3                       | 18                           | 17.10   | 18.90   | 7.0 | 21                         | 600                   | 0.1                                | 14   |
| MMBZ5250B          | KJ5                       | 20                           | 19.00   | 21.00   | 6.2 | 25                         | 600                   | 0.1                                | 15   |
| MMBZ5251B          | KK1                       | 22                           | 20.90   | 23.10   | 5.6 | 29                         | 600                   | 0.1                                | 17   |
| MMBZ5252B          | KK2                       | 24                           | 22.80   | 25.20   | 5.2 | 33                         | 600                   | 0.1                                | 18   |
| MMBZ5254B          | KK4                       | 27                           | 25.65   | 28.35   | 5.0 | 41                         | 600                   | 0.1                                | 21   |
| MMBZ5255B          | KK5                       | 28                           | 26.60   | 29.40   | 4.5 | 44                         | 600                   | 0.1                                | 21   |
| MMBZ5256B          | KM1                       | 30                           | 28.50   | 31.50   | 4.2 | 49                         | 600                   | 0.1                                | 23   |
| MMBZ5257B          | KM2                       | 33                           | 31.35   | 34.65   | 3.8 | 58                         | 700                   | 0.1                                | 25   |
| MMBZ5258B          | KM3                       | 36                           | 34.20   | 37.80   | 3.4 | 70                         | 700                   | 0.1                                | 27   |
| MMBZ5259B          | KM4                       | 39                           | 37.05   | 40.95   | 3.2 | 80                         | 800                   | 0.1                                | 30   |

Notes: 1: Valid provided that device terminals are kept at ambient temperature.

2. Tested with pulses, Tp ≤ 1.0ms.

## RATINGS AND CHARACTERISTIC CURVES (MMBZ5221B - MMBZ5259B)

FIG. 1- POWER DISSIPATION VS AMBIENT TEMPERATURE

