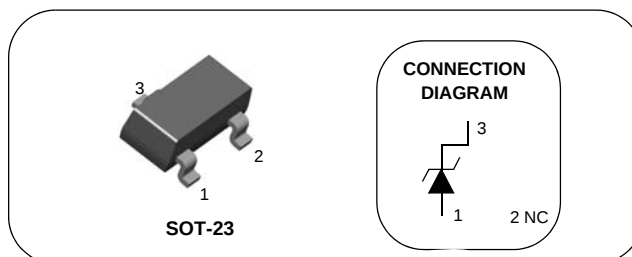


# MMBZ5221B-MMBZ5257B

## Zener Diodes

Tolerance = 5%



### Absolute Maximum Ratings \* $T_A = 25^\circ\text{C}$ unless otherwise noted

| Symbol    | Parameter                      | Value       | Units            |
|-----------|--------------------------------|-------------|------------------|
| $P_D$     | Power Dissipation              | 350         | mW               |
| $T_{STG}$ | Storage Temperature Range      | -55 to +150 | $^\circ\text{C}$ |
| $T_J$     | Operating Junction Temperature | +150        | $^\circ\text{C}$ |

\* These ratings are limiting values above which the serviceability of the diode may be impaired.

### NOTES:

- 1) These ratings are based on a maximum junction temperature of 150 degrees C.
- 2) These are steady state limits. The factory should be consulted on applications involving pulsed or low duty cycle operations.

### Electrical Characteristics $T_A = 25^\circ\text{C}$ unless otherwise noted

| Device    | Mark | $V_Z$ (V) |      |       | $Z_Z(\Omega) @ I_Z$ (mA) |    | $Z_{ZK}(\Omega) @ I_{ZK}$ (mA) |      | $I_R$ ( $\mu\text{A}$ ) @ $V_R$ (V) |     |
|-----------|------|-----------|------|-------|--------------------------|----|--------------------------------|------|-------------------------------------|-----|
|           |      | Min.      | Nor. | Max.  |                          |    |                                |      |                                     |     |
| MMBZ5221B | 18A  | 2.28      | 2.4  | 2.52  | 30                       | 20 | 1,200                          | 0.25 | 100                                 | 1.0 |
| MMBZ5223B | 18C  | 2.565     | 2.7  | 2.835 | 30                       | 20 | 1,300                          | 0.25 | 75                                  | 1.0 |
| MMBZ5226B | 8A   | 3.135     | 3.3  | 3.465 | 28                       | 20 | 1,600                          | 0.25 | 25                                  | 1.0 |
| MMBZ5227B | 8B   | 3.42      | 3.6  | 3.78  | 24                       | 20 | 1,700                          | 0.25 | 15                                  | 1.0 |
| MMBZ5228B | 8C   | 3.705     | 3.9  | 4.095 | 23                       | 20 | 1,900                          | 0.25 | 10                                  | 1.0 |
| MMBZ5229B | 8D   | 4.085     | 4.3  | 4.515 | 22                       | 20 | 1,000                          | 0.25 | 5.0                                 | 1.0 |
| MMBZ5230B | 8E   | 4.465     | 4.7  | 4.935 | 19                       | 20 | 1,900                          | 0.25 | 5.0                                 | 2.0 |
| MMBZ5231B | 8F   | 4.845     | 5.1  | 5.355 | 17                       | 20 | 1,600                          | 0.25 | 5.0                                 | 2.0 |
| MMBZ5232B | 8G   | 5.32      | 5.6  | 5.88  | 11                       | 20 | 1,600                          | 0.25 | 5.0                                 | 3.0 |
| MMBZ5233B | 8H   | 5.7       | 6.0  | 6.3   | 7.0                      | 20 | 1,600                          | 0.25 | 5.0                                 | 3.5 |
| MMBZ5234B | 8J   | 5.89      | 6.2  | 6.51  | 7.0                      | 20 | 1,000                          | 0.25 | 5.0                                 | 4.0 |
| MMBZ5235B | 8K   | 6.46      | 6.8  | 7.14  | 5.0                      | 20 | 750                            | 0.25 | 3.0                                 | 5.0 |
| MMBZ5236B | 8L   | 7.125     | 7.5  | 7.875 | 6.0                      | 20 | 500                            | 0.25 | 3.0                                 | 6.0 |
| MMBZ5237B | 8M   | 7.79      | 8.2  | 8.61  | 8.0                      | 20 | 500                            | 0.25 | 3.0                                 | 6.5 |
| MMBZ5238B | 8N   | 8.265     | 8.7  | 9.135 | 8.0                      | 20 | 600                            | 0.25 | 3.0                                 | 6.5 |
| MMBZ5239B | 8P   | 8.645     | 9.1  | 9.555 | 10                       | 20 | 600                            | 0.25 | 3.0                                 | 7.0 |
| MMBZ5240B | 8Q   | 9.5       | 10   | 10.5  | 17                       | 20 | 600                            | 0.25 | 3.0                                 | 8.0 |
| MMBZ5241B | 8R   | 10.45     | 11   | 11.55 | 22                       | 20 | 600                            | 0.25 | 2.0                                 | 8.4 |
| MMBZ5242B | 8S   | 11.4      | 12   | 12.6  | 30                       | 20 | 600                            | 0.25 | 1.0                                 | 9.1 |

$V_F$  Forward Voltage = 0.9V Maximum @  $I_F = 10\text{mA}$  for all MMBZ5200 series

**Electrical Characteristics** (Continued)  $T_A = 25^\circ\text{C}$  unless otherwise noted

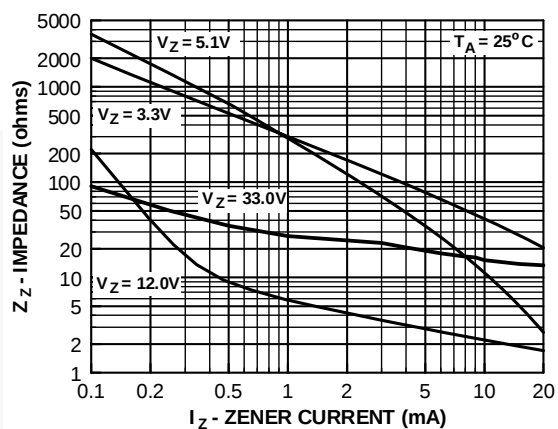
| Device    | Mark | $V_Z$ (V) |      |       | $Z_Z(\Omega)$ @ $I_Z$ (mA) |     | $Z_{ZK}(\Omega)$ @ $I_{ZK}$ (mA) |      | $I_R$ ( $\mu\text{A}$ ) @ $V_R$ (V) |     |
|-----------|------|-----------|------|-------|----------------------------|-----|----------------------------------|------|-------------------------------------|-----|
|           |      | Min.      | Nor. | Max.  |                            |     |                                  |      |                                     |     |
| MMBZ5243B | 8T   | 12.35     | 13   | 13.65 | 13                         | 9.5 | 600                              | 0.25 | 0.5                                 | 9.9 |
| MMBZ5244B | 8U   | 13.3      | 14   | 14.7  | 15                         | 9.0 | 600                              | 0.25 | 0.1                                 | 10  |
| MMBZ5245B | 8V   | 14.25     | 15   | 15.75 | 16                         | 8.5 | 600                              | 0.25 | 0.1                                 | 11  |
| MMBZ5246B | 8W   | 15.2      | 16   | 16.8  | 17                         | 7.8 | 600                              | 0.25 | 0.1                                 | 12  |
| MMBZ5247B | 8X   | 16.15     | 17   | 17.85 | 19                         | 7.4 | 600                              | 0.25 | 0.1                                 | 13  |
| MMBZ5248B | 8Y   | 17.1      | 18   | 18.9  | 21                         | 7.0 | 600                              | 0.25 | 0.1                                 | 14  |
| MMBZ5249B | 8Z   | 18.05     | 19   | 19.95 | 23                         | 6.6 | 600                              | 0.25 | 0.1                                 | 14  |
| MMBZ5250B | 81A  | 19        | 20   | 21    | 25                         | 6.2 | 600                              | 0.25 | 0.1                                 | 15  |
| MMBZ5251B | 81B  | 20.9      | 22   | 23.1  | 29                         | 5.6 | 600                              | 0.25 | 0.1                                 | 17  |
| MMBZ5252B | 81C  | 22.8      | 24   | 25.2  | 33                         | 5.2 | 600                              | 0.25 | 0.1                                 | 18  |
| MMBZ5253B | 81D  | 23.75     | 25   | 26.25 | 35                         | 5.0 | 600                              | 0.25 | 0.1                                 | 19  |
| MMBZ5254B | 81E  | 25.65     | 27   | 28.35 | 41                         | 4.6 | 600                              | 0.25 | 0.1                                 | 21  |
| MMBZ5255B | 81F  | 26.6      | 28   | 29.4  | 44                         | 4.5 | 600                              | 0.25 | 0.1                                 | 21  |
| MMBZ5256B | 81G  | 28.5      | 30   | 31.5  | 49                         | 4.2 | 600                              | 0.25 | 0.1                                 | 23  |
| MMBZ5257B | 81H  | 31.35     | 33   | 34.65 | 58                         | 3.8 | 600                              | 0.25 | 0.1                                 | 25  |

 **$V_F$  Forward Voltage = 0.9V Maximum @  $I_F = 10\text{mA}$  for all MMBZ5200 series**

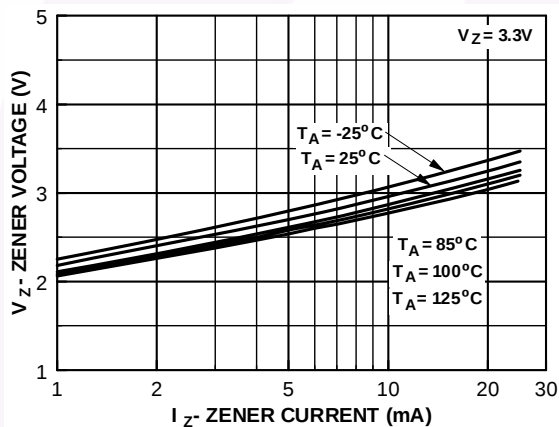
## Typical Performance Characteristics



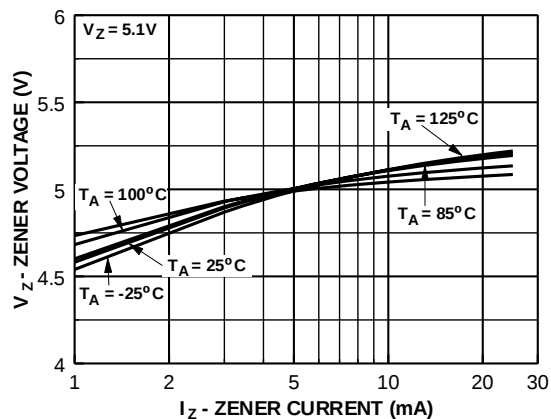
Zener Current vs. Zener Voltage



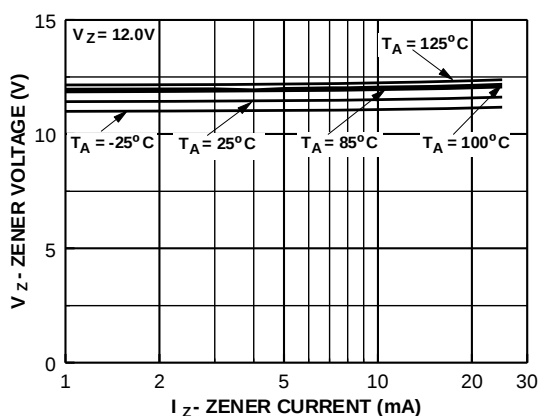
Zener Current vs. Zener Impedance



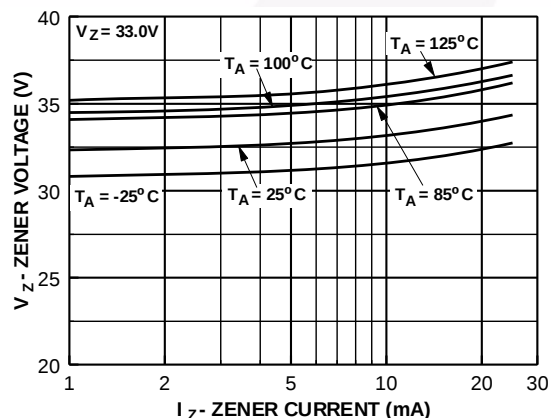
3.3 Zener Voltage vs. Temperature



5.1 Zener Voltage vs. Temperature



12 Zener Voltage vs. Zener Temperature



33 Zener Voltage vs. Zener Temperature



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| AX-CAP™*                                                                          | Global Power Resource™                         | Programmable Active Droop™                                                         | TinyBuck™                                                                           |
| BitSiC™                                                                           | GreenBridge™                                   | QFET®                                                                              | TinyCalc™                                                                           |
| Build it Now™                                                                     | Green FPS™                                     | QS™                                                                                | TinyLogic®                                                                          |
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|  | MicroPak2™                                     | SuperFET®                                                                          | Ultra FRFET™                                                                        |
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| FastvCore™                                                                        | OPTOLOGIC®                                     | Sync-Lock™                                                                         |                                                                                     |
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