

**SURFACE MOUNT ZENER DIODE**

**VOLTAGE RANGE 2.7 to 39 Volts POWER RATING 350 mWatts**

**FEATURES**

- \* Planar Die Construction
- \* 350 mW Power Dissipation
- \* Zener Volages from 2.7V-39V
- \* Ldeally Suited for Automated Assembly Processes

**MECHANICAL DATA**

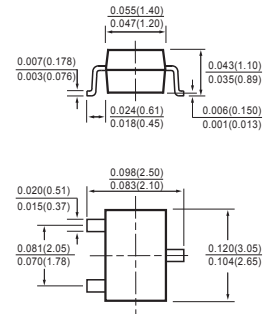
- \* Case: Molded plastic
- \* Epoxy: UL 94V-O rate flame retardant
- \* Lead: MIL-STD-202E method 208C guaranteed
- \* Mounting position: Any
- \* Weight: 0.008 gram

**MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS**

Ratings at 25 °C ambient temperature unless otherwise specified.



SOT-23



MAXIMUM RATINGS ( @ TA = 25°C unless otherwise noted )

| RATINGS                                      | SYMBOL           | VALUE       | UNITS |
|--|------------------|-------------|-------|
| Max. Steady State Power Dissipation @TA=25°C | P <sub>D</sub>   | 350         | mW    |
| Max. Operating Temperature Range             | T <sub>J</sub>   | -65 to +150 | °C    |
| Storage Temperature Range                    | T <sub>STG</sub> | -65 to +150 | °C    |

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

| CHARACTERISTICS   | SYMBOL           | MIN. | TYP. | MAX. | UNITS |
|---|------------------|------|------|------|-------|
| Thermal Resistance Junction to Ambient                      | R <sub>qJA</sub> | -    | -    | 357  | °C/W  |
| Max. Instantaneous Forward Voltage at I <sub>F</sub> = 10mA | V <sub>F</sub>   | -    | -    | 0.9  | Volts |

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

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REV: A

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

| TYPE      | Zener voltage Range(Note 1)<br>Vz (V) @ IZT |       |       | Test<br>current | Maximum Zener impedance |                      |            | Maximum<br>reverse leakage current |            |
|-----------|---|-------|-------|-----------------|-------------------------|----------------------|------------|------------------------------------|------------|
|           | Nom   | Min   | Max   |                 | IZT (mA)                | ZzT<br>at IZT<br>(W) | Zzk<br>(W) | at<br>Izk<br>(mA)                  | IR<br>(uA) |
|           | Volts                                       | Volts | Volts |                 |                         |                      |            |                                    |            |
| MMBZ5223B | 2.7   | 2.57  | 2.84  | 20              | 30                      | 1300                 | 0.25       | 75                                 | 1.0        |
| MMBZ5225B | 3.0   | 2.85  | 3.15  | 20              | 30                      | 1600                 | 0.25       | 50                                 | 1.0        |
| MMBZ5226B | 3.3   | 3.14  | 3.47  | 20              | 28                      | 1600                 | 0.25       | 25                                 | 1.0        |
| MMBZ5227B | 3.6   | 3.42  | 3.78  | 20              | 24                      | 1700                 | 0.25       | 15                                 | 1.0        |
| MMBZ5228B | 3.9   | 3.71  | 4.10  | 20              | 23                      | 1900                 | 0.25       | 10                                 | 1.0        |
| MMBZ5229B | 4.3   | 4.09  | 4.52  | 20              | 22                      | 2000                 | 0.25       | 5.0                                | 1.0        |
| MMBZ5230B | 4.7   | 4.47  | 4.94  | 20              | 19                      | 1900                 | 0.25       | 5.0                                | 2.0        |
| MMBZ5231B | 5.1   | 4.85  | 5.36  | 20              | 17                      | 1600                 | 0.25       | 5.0                                | 2.0        |
| MMBZ5232B | 5.6   | 5.32  | 5.88  | 20              | 11                      | 1600                 | 0.25       | 5.0                                | 3.0        |
| MMBZ5234B | 6.2   | 5.89  | 6.51  | 20              | 7                       | 1000                 | 0.25       | 5.0                                | 4.0        |
| MMBZ5235B | 6.8   | 6.46  | 7.14  | 20              | 5                       | 750                  | 0.25       | 3.0                                | 5.0        |
| MMBZ5236B | 7.5   | 7.13  | 7.88  | 20              | 6                       | 500                  | 0.25       | 3.0                                | 6.0        |
| MMBZ5237B | 8.2   | 7.79  | 8.61  | 20              | 8                       | 500                  | 0.25       | 3.0                                | 6.5        |
| MMBZ5239B | 9.1   | 8.65  | 9.56  | 20              | 10                      | 600                  | 0.25       | 3.0                                | 7.0        |
| MMBZ5240B | 10  | 9.50  | 10.50 | 20              | 17                      | 600                  | 0.25       | 3.0                                | 8.0        |
| MMBZ5241B | 11  | 10.45 | 11.55 | 20              | 22                      | 600                  | 0.25       | 2.0                                | 8.4        |
| MMBZ5242B | 12  | 11.40 | 12.60 | 20              | 30                      | 600                  | 0.25       | 1.0                                | 9.1        |
| MMBZ5243B | 13  | 12.35 | 13.65 | 9.5             | 13                      | 600                  | 0.25       | 0.5                                | 9.9        |
| MMBZ5245B | 15  | 14.25 | 15.75 | 8.5             | 16                      | 600                  | 0.25       | 0.1                                | 11         |
| MMBZ5246B | 16  | 15.20 | 16.80 | 7.8             | 17                      | 600                  | 0.25       | 0.1                                | 12         |
| MMBZ5248B | 18  | 17.10 | 18.90 | 7.0             | 21                      | 600                  | 0.25       | 0.1                                | 14         |
| MMBZ5250B | 20  | 19.00 | 21.00 | 6.2             | 25                      | 600                  | 0.25       | 0.1                                | 15         |
| MMBZ5251B | 22  | 20.90 | 23.10 | 5.6             | 29                      | 600                  | 0.25       | 0.1                                | 17         |
| MMBZ5252B | 24  | 22.80 | 25.20 | 5.2             | 33                      | 600                  | 0.25       | 0.1                                | 18         |
| MMBZ5254B | 27  | 25.65 | 28.35 | 5.0             | 41                      | 600                  | 0.25       | 0.1                                | 21         |
| MMBZ5255B | 28  | 26.60 | 29.40 | 4.5             | 44                      | 600                  | 0.25       | 0.1                                | 21         |
| MMBZ5256B | 30  | 28.50 | 31.50 | 4.2             | 49                      | 600                  | 0.25       | 0.1                                | 23         |
| MMBZ5257B | 33  | 31.35 | 34.65 | 3.8             | 58                      | 700                  | 0.25       | 0.1                                | 25         |
| MMBZ5258B | 36  | 34.20 | 37.80 | 3.4             | 70                      | 700                  | 0.25       | 0.1                                | 27         |
| MMBZ5259B | 39  | 37.05 | 40.95 | 3.2             | 80                      | 800                  | 0.25       | 0.1                                | 30         |

Note 1. Tested with pulses, Tp<1.0ms.

# RATING AND CHARACTERISTICS CURVES(MMBZ5223B-MMBZ5259B)

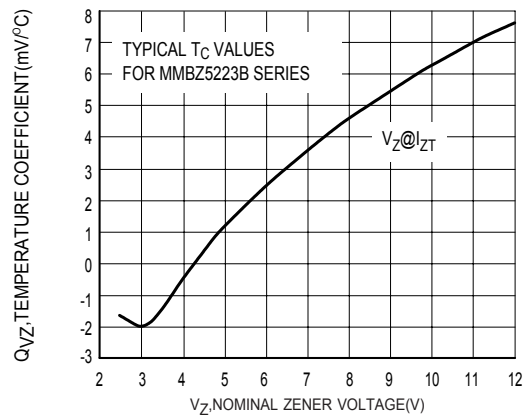


Figure 1 Temperature Coefficients

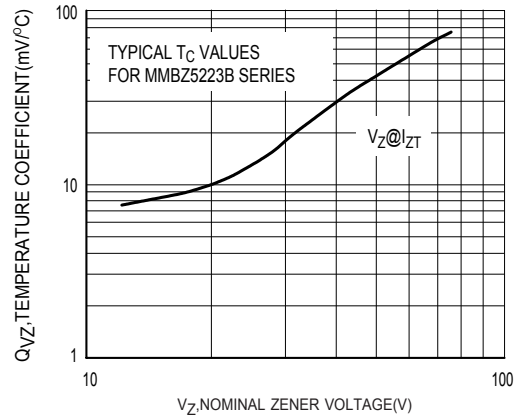


Figure 2 Temperature Coefficients

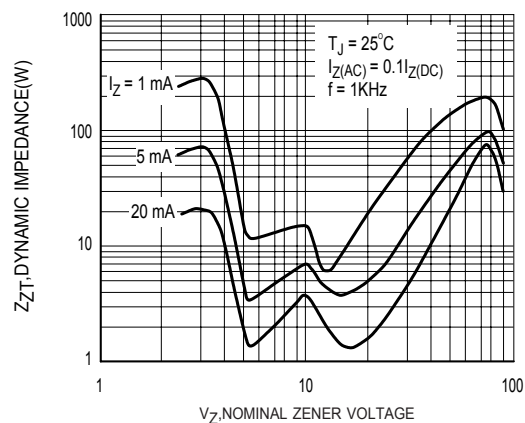


Figure 3 Effect of Zener Voltage on Zener Impedance

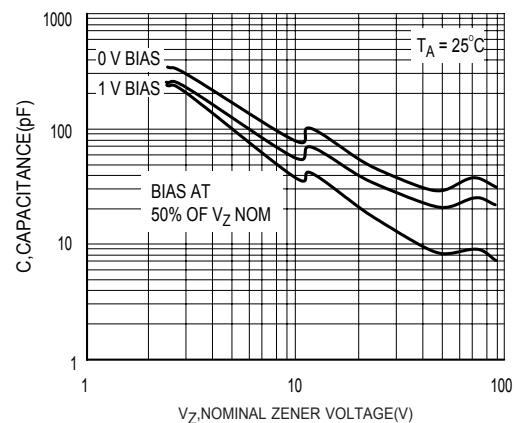


Figure 4 Typical Capacitance

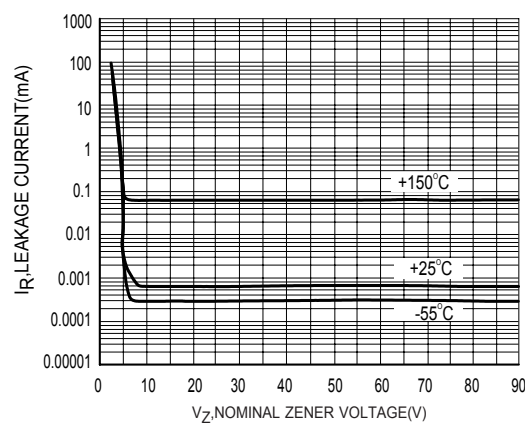


Figure 5 Typical Leakage Current

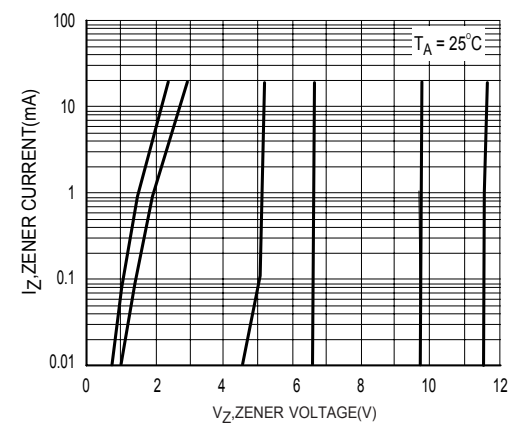


Figure 6 Zener Voltage versus Zener Current ( $V_Z$  Up to 91V)

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