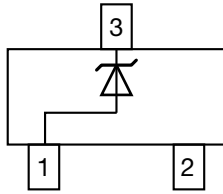


Small Signal Zener Diodes


DESIGN SUPPORT TOOLS
[click logo to get started](#)
3D
Models
Available

| PRIMARY CHARACTERISTICS | | |
|-------------------------|---------------------|------|
| PARAMETER | VALUE | UNIT |
| V_Z range nom. | 3 to 75 | V |
| Test current I_{ZT} | 1.7 to 20 | mA |
| V_Z specification | Thermal equilibrium | |
| Circuit configuration | Single | |

FEATURES

- Silicon planar power Zener diodes
- Standard Zener voltage tolerance is $\pm 5\%$ with a "B" suffix (e.g.: MMBZ5225B), suffix "C" is $\pm 2\%$ tolerance.
- High temperature soldering guaranteed: 260 °C/4 x 10 s at terminals
- AEC-Q101 qualified available
- ESD capability according to AEC-Q101: Human body model > 8 kV Machine model > 800 V
- Base P/N-E3 - RoHS-compliant, commercial grade
- Base P/N-HE3 - RoHS-compliant, AEC-Q101 qualified
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

 AUTOMOTIVE
GRADE
Available

RoHS
COMPLIANT

| ORDERING INFORMATION | | | |
|-------------------------|--------------------------------------|--------------------------------|------------------------|
| DEVICE NAME | ORDERING CODE | TAPED UNITS PER REEL | MINIMUM ORDER QUANTITY |
| MMBZ5225 to MMBZ5267 | MMBZ5225B-E3-08 to MMBZ5267B-E3-08 | 3000 (8 mm tape on 7" reel) | 15 000/box |
| | MMBZ5225C-E3-08 to MMBZ5267C-E3-08 | | |
| | MMBZ5225B-HE3-08 to MMBZ5267B-HE3-08 | | |
| | MMBZ5225C-HE3-08 to MMBZ5267C-HE3-08 | | |
| | MMBZ5225B-E3-18 to MMBZ5267B-E3-18 | 10 000 (8 mm tape on 13" reel) | 10 000/box |
| | MMBZ5225C-E3-18 to MMBZ5267C-E3-18 | | |
| | MMBZ5225B-HE3-18 to MMBZ5267B-HE3-18 | | |
| | MMBZ5225C-HE3-18 to MMBZ5267C-HE3-18 | | |

| PACKAGE | | | | |
|--------------|--------|---|--------------------------------------|--------------------------|
| PACKAGE NAME | WEIGHT | MOLDING COMPOUND FLAMMABILITY RATING | MOISTURE SENSITIVITY LEVEL | SOLDERING CONDITIONS |
| SOT-23 | 8.8 mg | UL 94 V-0 | MSL level 1 (according J-STD-020) | 260 °C/10 s at terminals |

| ABSOLUTE MAXIMUM RATINGS ($T_{amb} = 25\text{ °C}$, unless otherwise specified) | | | | |
|---|---|------------|-------------|------|
| PARAMETER | TEST CONDITION | SYMBOL | VALUE | UNIT |
| Power dissipation | On FR - 5 board using recommended solder pad layout | P_{tot} | 225 | mW |
| | On alumina substrate | P_{tot} | 300 | mW |
| Zener current | See table "Electrical Characteristics" | | | |
| Thermal resistance, junction to ambient air | On FR - 5 board using recommended solder pad layout | R_{thJA} | 556 | K/W |
| Junction temperature | | T_j | 150 | °C |
| Storage temperature range | | T_{stg} | -65 to +150 | °C |
| Operating temperature range | | T_{op} | -55 to +150 | °C |



| ELECTRICAL CHARACTERISTICS ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified) | | | | | | | | | |
|---|--------------|------------------------------------|--------------|-----------|-------------------------|-----|-----------------------------------|-----------------------|-------------------------|
| PART NUMBER | MARKING CODE | ZENER VOLTAGE RANGE ⁽¹⁾ | TEST CURRENT | | REVERSE LEAKAGE CURRENT | | DYNAMIC RESISTANCE ⁽²⁾ | | TEMPERATURE COEFFICIENT |
| | | V_Z at I_{ZT1} | I_{ZT1} | I_{ZT2} | I_R at V_R | | Z_Z at I_{ZT1} | Z_{ZK} at I_{ZT2} | α_{VZ} |
| | | V | mA | | μA | V | Ω | | %/ $^{\circ}\text{C}$ |
| | | NOM. | | | MAX. | | MAX. | MAX. | TYP. |
| MMBZ5225 | 18E | 3 | 20 | 0.25 | 50 | 1 | 30 | 1600 | -0.075 |
| MMBZ5226 | 8A | 3.3 | 20 | 0.25 | 25 | 1 | 28 | 1600 | -0.07 |
| MMBZ5227 | 8B | 3.6 | 20 | 0.25 | 15 | 1 | 24 | 1700 | -0.065 |
| MMBZ5228 | 8C | 3.9 | 20 | 0.25 | 10 | 1 | 23 | 1900 | -0.06 |
| MMBZ5229 | 8D | 4.3 | 20 | 0.25 | 5 | 1 | 22 | 2000 | -0.055 |
| MMBZ5230 | 8E | 4.7 | 20 | 0.25 | 5 | 2 | 19 | 1900 | ± 0.030 |
| MMBZ5231 | 8F | 5.1 | 20 | 0.25 | 5 | 2 | 17 | 1600 | ± 0.030 |
| MMBZ5232 | 8G | 5.6 | 20 | 0.25 | 5 | 3 | 11 | 1600 | 0.038 |
| MMBZ5233 | 8H | 6 | 20 | 0.25 | 5 | 3.5 | 7 | 1600 | 0.038 |
| MMBZ5234 | 8J | 6.2 | 20 | 0.25 | 5 | 4 | 7 | 1000 | 0.045 |
| MMBZ5235 | 8K | 6.8 | 20 | 0.25 | 3 | 5 | 5 | 750 | 0.05 |
| MMBZ5236 | 8L | 7.5 | 20 | 0.25 | 3 | 6 | 6 | 500 | 0.058 |
| MMBZ5237 | 8M | 8.2 | 20 | 0.25 | 3 | 6.5 | 8 | 500 | 0.062 |
| MMBZ5238 | 8N | 8.7 | 20 | 0.25 | 3 | 6.5 | 8 | 600 | 0.065 |
| MMBZ5239 | 8P | 9.1 | 20 | 0.25 | 3 | 7 | 10 | 600 | 0.068 |
| MMBZ5240 | 8Q | 10 | 20 | 0.25 | 3 | 8 | 17 | 600 | 0.075 |
| MMBZ5241 | 8R | 11 | 20 | 0.25 | 2 | 8.4 | 22 | 600 | 0.076 |
| MMBZ5242 | 8S | 12 | 20 | 0.25 | 1 | 9.1 | 30 | 600 | 0.077 |
| MMBZ5243 | 8T | 13 | 9.5 | 0.25 | 0.5 | 9.9 | 13 | 600 | 0.079 |
| MMBZ5244 | 8U | 14 | 9 | 0.25 | 0.1 | 10 | 15 | 600 | 0.082 |
| MMBZ5245 | 8V | 15 | 8.5 | 0.25 | 0.1 | 11 | 16 | 600 | 0.082 |
| MMBZ5246 | 8W | 16 | 7.8 | 0.25 | 0.1 | 12 | 17 | 600 | 0.083 |
| MMBZ5247 | 8X | 17 | 7.4 | 0.25 | 0.1 | 13 | 19 | 600 | 0.084 |
| MMBZ5248 | 8Y | 18 | 7 | 0.25 | 0.1 | 14 | 21 | 600 | 0.085 |
| MMBZ5249 | 8Z | 19 | 6.6 | 0.25 | 0.1 | 14 | 23 | 600 | 0.086 |
| MMBZ5250 | 81A | 20 | 6.2 | 0.25 | 0.1 | 15 | 25 | 600 | 0.086 |
| MMBZ5251 | 81B | 22 | 5.6 | 0.25 | 0.1 | 17 | 29 | 600 | 0.087 |
| MMBZ5252 | 81C | 24 | 5.2 | 0.25 | 0.1 | 18 | 33 | 600 | 0.087 |
| MMBZ5253 | 81D | 25 | 5 | 0.25 | 0.1 | 19 | 35 | 600 | 0.089 |
| MMBZ5254 | 81E | 27 | 4.6 | 0.25 | 0.1 | 21 | 41 | 600 | 0.09 |
| MMBZ5255 | 81F | 28 | 4.5 | 0.25 | 0.1 | 21 | 44 | 600 | 0.091 |
| MMBZ5256 | 81G | 30 | 4.2 | 0.25 | 0.1 | 23 | 49 | 600 | 0.091 |
| MMBZ5257 | 81H | 33 | 3.8 | 0.25 | 0.1 | 25 | 58 | 700 | 0.092 |
| MMBZ5258 | 81J | 36 | 3.4 | 0.25 | 0.1 | 27 | 70 | 700 | 0.093 |
| MMBZ5259 | 81K | 39 | 3.2 | 0.25 | 0.1 | 30 | 80 | 800 | 0.094 |
| MMBZ5260 | 18F | 43 | 3 | 0.25 | 0.1 | 33 | 93 | 900 | 0.095 |
| MMBZ5261 | 81M | 47 | 2.7 | 0.25 | 0.1 | 36 | 105 | 1000 | 0.095 |
| MMBZ5262 | 81N | 51 | 2.5 | 0.25 | 0.1 | 39 | 125 | 1100 | 0.096 |
| MMBZ5263 | 81P | 56 | 2.2 | 0.25 | 0.1 | 43 | 150 | 1300 | 0.096 |
| MMBZ5264 | 81Q | 60 | 2.1 | 0.25 | 0.1 | 46 | 170 | 1400 | 0.097 |
| MMBZ5265 | 81R | 62 | 2 | 0.25 | 0.1 | 47 | 185 | 1400 | 0.097 |
| MMBZ5266 | 81S | 68 | 1.8 | 0.25 | 0.1 | 52 | 230 | 1600 | 0.097 |
| MMBZ5267 | 81T | 75 | 1.7 | 0.25 | 0.1 | 56 | 270 | 1700 | 0.098 |

Notes

- Maximum $V_F = 0.9\text{ V}$, at $I_F = 10\text{ mA}$

(1) Measured at thermal equilibrium

(2) The Zener impedance is derived from the 1 kHz AC voltage which results when an AC current having an RMS value equal to 10 % of the Zener current (I_{ZT1} or I_{ZT2}) is superimposed on I_{ZT1} or I_{ZT2} . Zener Impedance is measured at two points to insure a sharp knee on the breakdown curve and to eliminate unstable units

TYPICAL CHARACTERISTICS ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified)

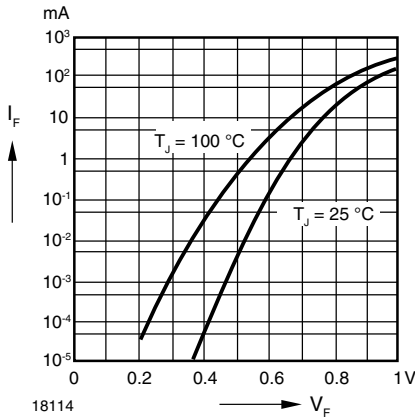


Fig. 1 - Forward Characteristics

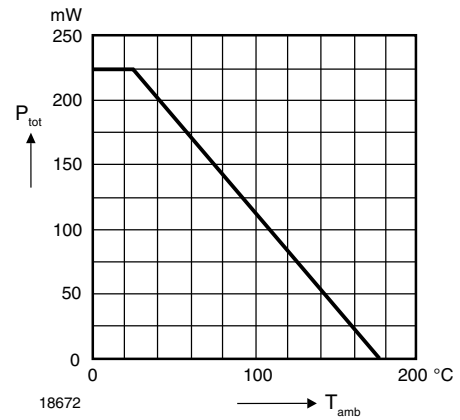
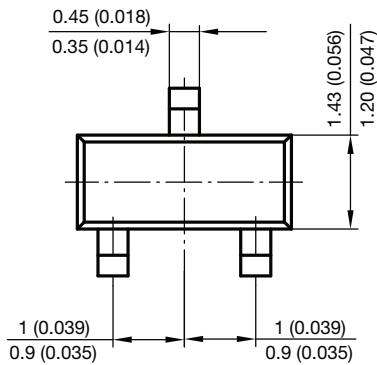
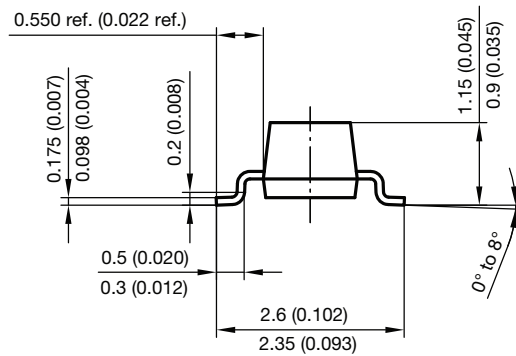
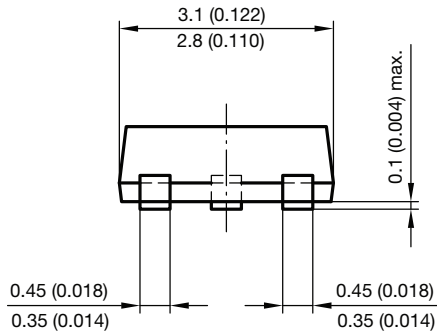
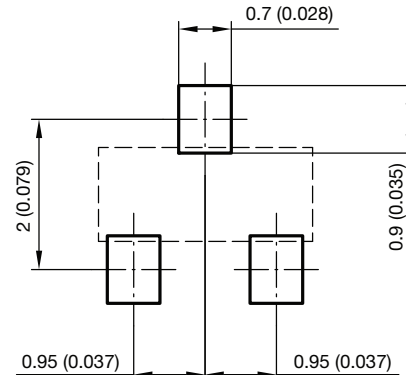


Fig. 2 - Admissible Power Dissipation vs. Ambient Temperature

PACKAGE DIMENSIONS in millimeters (inches): **SOT-23**



Foot print recommendation:





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