

DATA SHEET

ZMM5221B SERIES

SURFACE MOUNT ZENER DIODES

VOLTAGE 2.4 to 47 Volts

POWER 500 mWatts

MINI-MELF/LL-34

Unit : inch (mm)

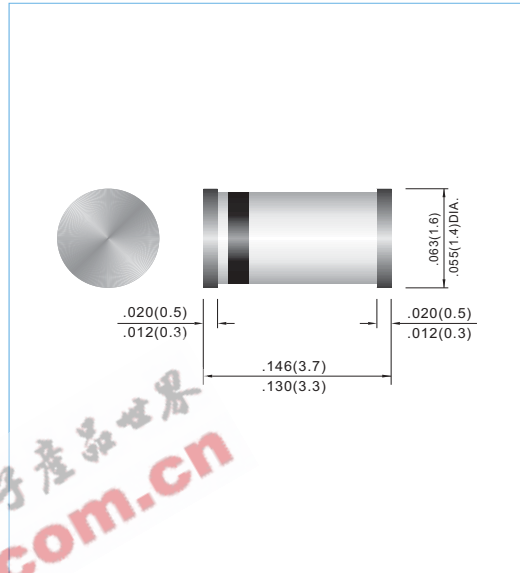
FEATURES

- Planar Die construction
- 500mW Power Dissipation
- Ideally Suited for Automated Assembly Processes
- Both normal and Pb free product are available :
Normal : 80~95% Sn, 5~20% Pb
Pb free: 98.5% Sn above

MECHANICAL DATA

- Case: Molded Glass MINI-MELF
- Terminals: Solderable per MIL-STD-202E, Method 208
- Polarity: See Diagram Below
- Approx. Weight: 0.03 grams
- Mounting Position: Any
- Packing information

T/R - 2.5K per 7" plastic Reel



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

| Parameter | Symbol | Value | Units |
|-----------------------------------|------------------|-------------|-------|
| Power Dissipation at Tamb = 25 °C | P _{TOT} | 500 | mW |
| Junction Temperature | T _J | 175 | °C |
| Storage Temperature Range | T _S | -65 to +175 | °C |

Valid provided that leads at a distance of 10mm from case are kept at ambient temperature.

| Parameter | Symbol | Min. | Typ. | Max. | Units |
|--|------------------|------|------|------|-------|
| Thermal Resistance Junction to Ambient Air | R _{thA} | — | — | 0.3 | K/mW |
| Forward Voltage at I _F = 200mA | V _F | — | — | 1.1 | V |

Valid provided that leads at a distance of 10mm from case are kept at ambient temperature.

| Part Number | Nominal Zener Voltage | | | Max. Zener Impedance | | | | Max Reverse Leakage Current | | Marking code |
|-------------|----------------------------------|--------|--------|-----------------------------------|------|-----------------------------------|------|---------------------------------|------|--------------|
| | V _Z @ I _{ZT} | | | Z _{ZT} @ I _{ZT} | | Z _{ZK} @ I _{ZK} | | I _R @ V _R | | |
| | Nom. V | Min. V | Max. V | Ω | mA | Ω | mA | uA | V | |
| ZMM5221B | 2.40 | 2.28 | 2.52 | 30 | 20.0 | 1200 | 0.25 | 100 | 1.0 | 5221 |
| ZMM5222B | 2.50 | 2.38 | 2.63 | 30 | 20.0 | 1250 | 0.25 | 100 | 1.0 | 5222 |
| ZMM5223B | 2.70 | 2.57 | 2.84 | 30 | 20.0 | 1300 | 0.25 | 75 | 1.0 | 5223 |
| ZMM5224B | 2.80 | 2.66 | 2.94 | 30 | 20.0 | 1400 | 0.25 | 75 | 1.0 | 5224 |
| ZMM5225B | 3.00 | 2.85 | 3.15 | 29 | 20.0 | 1600 | 0.25 | 50 | 1.0 | 5225 |
| ZMM5226B | 3.30 | 3.14 | 3.47 | 28 | 20.0 | 1600 | 0.25 | 25 | 1.0 | 5226 |
| ZMM5227B | 3.60 | 3.42 | 3.78 | 24 | 20.0 | 1700 | 0.25 | 15 | 1.0 | 5227 |
| ZMM5228B | 3.90 | 3.71 | 4.10 | 23 | 20.0 | 1900 | 0.25 | 10 | 1.0 | 5228 |
| ZMM5229B | 4.30 | 4.09 | 4.52 | 22 | 20.0 | 2000 | 0.25 | 5.0 | 1.0 | 5229 |
| ZMM5230B | 4.70 | 4.47 | 4.94 | 19 | 20.0 | 1900 | 0.25 | 5.0 | 2.0 | 5230 |
| ZMM5231B | 5.10 | 4.85 | 5.36 | 17 | 20.0 | 1600 | 0.25 | 5.0 | 2.0 | 5231 |
| ZMM5232B | 5.60 | 5.32 | 5.88 | 11 | 20.0 | 1600 | 0.25 | 5.0 | 3.0 | 5232 |
| ZMM5233B | 6.00 | 5.70 | 6.30 | 7 | 20.0 | 1600 | 0.25 | 5.0 | 3.5 | 5233 |
| ZMM5234B | 6.20 | 5.89 | 6.51 | 7 | 20.0 | 1000 | 0.25 | 5.0 | 4.0 | 5234 |
| ZMM5235B | 6.80 | 6.46 | 7.14 | 5 | 20.0 | 750 | 0.25 | 3.0 | 5.0 | 5235 |
| ZMM5236B | 7.50 | 7.13 | 7.88 | 6 | 20.0 | 500 | 0.25 | 3.0 | 6.0 | 5236 |
| ZMM5237B | 8.20 | 7.79 | 8.61 | 8 | 20.0 | 500 | 0.25 | 3.0 | 6.5 | 5237 |
| ZMM5238B | 8.70 | 8.27 | 9.14 | 8 | 20.0 | 600 | 0.25 | 3.0 | 6.5 | 5238 |
| ZMM5239B | 9.10 | 8.65 | 9.56 | 10 | 20.0 | 600 | 0.25 | 3.0 | 7.0 | 5239 |
| ZMM5240B | 10.00 | 9.50 | 10.50 | 17 | 20.0 | 600 | 0.25 | 3.0 | 8.0 | 5240 |
| ZMM5241B | 11.00 | 10.45 | 11.55 | 22 | 20.0 | 600 | 0.25 | 2.0 | 8.4 | 5241 |
| ZMM5242B | 12.00 | 11.40 | 12.60 | 30 | 20.0 | 600 | 0.25 | 1.0 | 9.1 | 5242 |
| ZMM5243B | 13.00 | 12.35 | 13.65 | 13 | 9.5 | 600 | 0.25 | 0.5 | 9.9 | 5243 |
| ZMM5244B | 14.00 | 13.30 | 14.70 | 15 | 9.0 | 600 | 0.25 | 0.1 | 10.0 | 5244 |
| ZMM5245B | 15.00 | 14.25 | 15.75 | 16 | 8.5 | 600 | 0.25 | 0.1 | 11.0 | 5245 |
| ZMM5246B | 16.00 | 15.20 | 16.80 | 17 | 7.8 | 600 | 0.25 | 0.1 | 12.0 | 5246 |
| ZMM5247B | 17.00 | 16.15 | 17.85 | 19 | 7.4 | 600 | 0.25 | 0.1 | 13.0 | 5247 |
| ZMM5248B | 18.00 | 17.10 | 18.90 | 21 | 7.0 | 600 | 0.25 | 0.1 | 14.0 | 5248 |
| ZMM5249B | 19.00 | 18.05 | 19.95 | 23 | 6.6 | 600 | 0.25 | 0.1 | 14.0 | 5249 |
| ZMM5250B | 20.00 | 19.00 | 21.00 | 25 | 6.2 | 600 | 0.25 | 0.1 | 15.0 | 5250 |
| ZMM5251B | 22.00 | 20.90 | 23.10 | 29 | 5.6 | 600 | 0.25 | 0.1 | 17.0 | 5251 |
| ZMM5252B | 24.00 | 22.80 | 25.20 | 33 | 5.2 | 600 | 0.25 | 0.1 | 18.0 | 5252 |
| ZMM5253B | 25.00 | 23.75 | 26.25 | 35 | 5.0 | 600 | 0.25 | 0.1 | 19.0 | 5253 |
| ZMM5254B | 27.00 | 25.65 | 28.35 | 41 | 4.6 | 600 | 0.25 | 0.1 | 21.0 | 5254 |
| ZMM5255B | 28.00 | 26.60 | 29.40 | 44 | 4.5 | 600 | 0.25 | 0.1 | 21.0 | 5255 |
| ZMM5256B | 30.00 | 28.50 | 31.50 | 49 | 4.2 | 600 | 0.25 | 0.1 | 23.0 | 5256 |
| ZMM5257B | 33.00 | 31.35 | 34.65 | 58 | 3.8 | 700 | 0.25 | 0.1 | 25.0 | 5257 |
| ZMM5258B | 36.00 | 34.20 | 37.80 | 70 | 3.4 | 700 | 0.25 | 0.1 | 27.0 | 5258 |
| ZMM5259B | 39.00 | 37.05 | 40.95 | 80 | 3.2 | 800 | 0.25 | 0.1 | 30.0 | 5259 |
| ZMM5260B | 43.00 | 40.85 | 45.15 | 93 | 3.0 | 900 | 0.25 | 0.1 | 33.0 | 5260 |
| ZMM5261B | 47.00 | 44.65 | 49.35 | 150 | 2.7 | 1000 | 0.25 | 0.1 | 36.0 | 5261 |

Notes.

STANDARD VOLTAGE TOLERANCE IS + 5% AND :

SUFFIX " A " FOR + 3%

SUFFIX " B " FOR + 5%

SUFFIX " C " FOR + 10%

SUFFIX " D " FOR + 20%

RATING AND CHARACTERISTIC CURVES

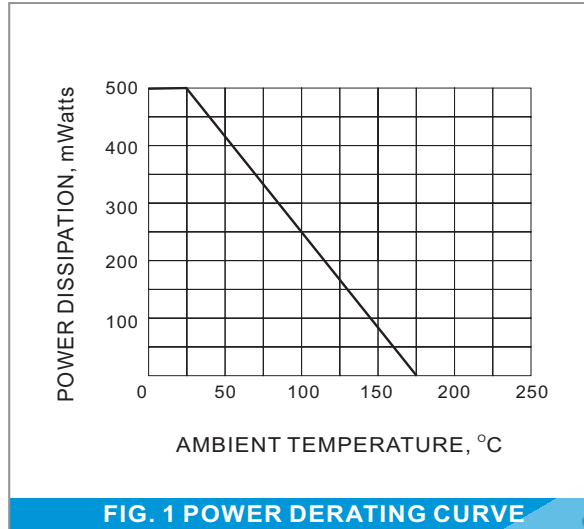


FIG. 1 POWER DERATING CURVE

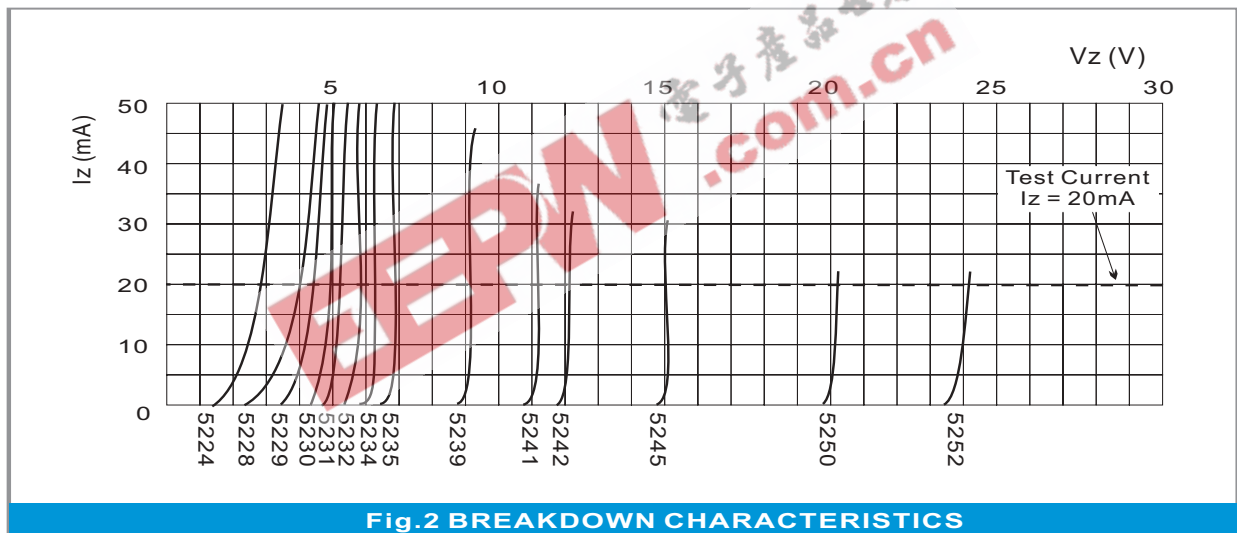


Fig.2 BREAKDOWN CHARACTERISTICS