

## ZMM5221B~ZMM5266B

### SURFACE MOUNT ZENER DIODES

**VOLTAGE** 2.4 to 68 Volts

**POWER** 500 mWatts

**MINI-MELF / LL34**

Unit : inch(mm)

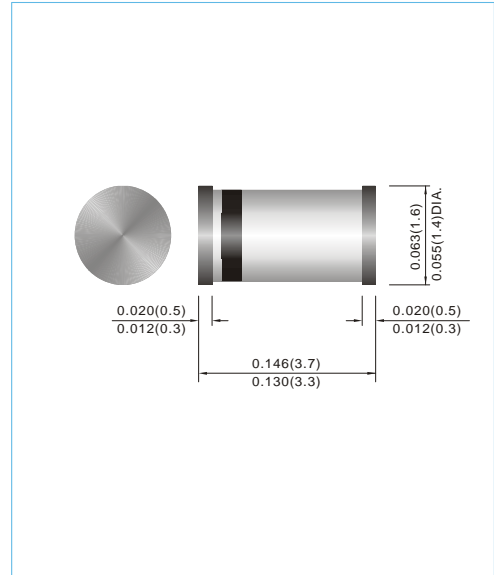
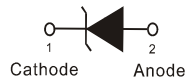
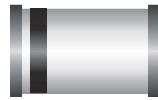
#### FEATURES

- Planar Die construction
- 500mW Power Dissipation
- Ideally Suited for Automated Assembly Processes
- Lead free in comply with EU RoHS 2011/65/EU directives

#### MECHANICAL DATA

- Case: Molded Glass MINI-MELF
- Terminals: Solderable per MIL-STD-750, Method 2026
- Approx. Weight: 0.03 grams
- Packing information

T/R - 2.5K per 7" plastic Reel



### MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

| Parameter                                     | Symbol    | Value       | Units            |
|---|-----------|-------------|------------------|
| Power Dissipation at $T_A = 25^\circ\text{C}$ | $P_{TOT}$ | 500         | mW               |
| Operating Junction Temperature Range          | $T_J$     | -65 to +175 | $^\circ\text{C}$ |
| Storage Temperature Range                     | $T_{STG}$ | -65 to +175 | $^\circ\text{C}$ |

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 | $R_{\theta JA}$ | --   | --   | 0.3  | $^\circ\text{C}/\text{mW}$ |
| Forward Voltage at $I_F = 200\text{mA}$    | $V_F$           | --   | --   | 1.1  | V                          |

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

## ZMM5221B~ZMM5266B

| Part Number | Nominal Zener Voltage |        |        | Max. Zener Impedance |     |           |      | Max Reverse Leakage Current |     | Marking code |
|-------------|-----------------------|--------|--------|----------------------|-----|-----------|------|-----------------------------|-----|--------------|
|             | Vz @ IzT              |        |        | ZzT @ IzT            |     | Zzk @ Izk |      | Ir @ VR                     |     |              |
|             | Nom. V                | Min. V | Max. V | Ω                    | mA  | Ω         | mA   | uA                          | V   |              |
| ZMM5221B    | 2.4                   | 2.28   | 2.52   | 30                   | 20  | 1200      | 0.25 | 100                         | 1   | 5221         |
| ZMM5222B    | 2.5                   | 2.38   | 2.63   | 30                   | 20  | 1250      | 0.25 | 100                         | 1   | 5222         |
| ZMM5223B    | 2.7                   | 2.57   | 2.84   | 30                   | 20  | 1300      | 0.25 | 75                          | 1   | 5223         |
| ZMM5224B    | 2.8                   | 2.66   | 2.94   | 30                   | 20  | 1400      | 0.25 | 75                          | 1   | 5224         |
| ZMM5225B    | 3                     | 2.85   | 3.15   | 29                   | 20  | 1600      | 0.25 | 50                          | 1   | 5225         |
| ZMM5226B    | 3.3                   | 3.14   | 3.47   | 28                   | 20  | 1600      | 0.25 | 25                          | 1   | 5226         |
| ZMM5227B    | 3.6                   | 3.42   | 3.78   | 24                   | 20  | 1700      | 0.25 | 15                          | 1   | 5227         |
| ZMM5228B    | 3.9                   | 3.71   | 4.1    | 23                   | 20  | 1900      | 0.25 | 10                          | 1   | 5228         |
| ZMM5229B    | 4.3                   | 4.09   | 4.52   | 22                   | 20  | 2000      | 0.25 | 5                           | 1   | 5229         |
| ZMM5230B    | 4.7                   | 4.47   | 4.94   | 19                   | 20  | 1900      | 0.25 | 5                           | 2   | 5230         |
| ZMM5231B    | 5.1                   | 4.85   | 5.36   | 17                   | 20  | 1600      | 0.25 | 5                           | 2   | 5231         |
| ZMM5232B    | 5.6                   | 5.32   | 5.88   | 11                   | 20  | 1600      | 0.25 | 5                           | 3   | 5232         |
| ZMM5233B    | 6.0                   | 5.7    | 6.3    | 7                    | 20  | 1600      | 0.25 | 5                           | 3.5 | 5233         |
| ZMM5234B    | 6.2                   | 5.89   | 6.51   | 7                    | 20  | 1000      | 0.25 | 5                           | 4   | 5234         |
| ZMM5235B    | 6.8                   | 6.46   | 7.14   | 5                    | 20  | 750       | 0.25 | 3                           | 5   | 5235         |
| ZMM5236B    | 7.5                   | 7.13   | 7.88   | 6                    | 20  | 500       | 0.25 | 3                           | 6   | 5236         |
| ZMM5237B    | 8.2                   | 7.79   | 8.61   | 8                    | 20  | 500       | 0.25 | 3                           | 6.5 | 5237         |
| ZMM5238B    | 8.7                   | 8.27   | 9.14   | 8                    | 20  | 600       | 0.25 | 3                           | 6.5 | 5238         |
| ZMM5239B    | 9.1                   | 8.65   | 9.56   | 10                   | 20  | 600       | 0.25 | 3                           | 7   | 5239         |
| ZMM5240B    | 10                    | 9.5    | 10.5   | 17                   | 20  | 600       | 0.25 | 3                           | 8   | 5240         |
| ZMM5241B    | 11                    | 10.45  | 11.55  | 22                   | 20  | 600       | 0.25 | 2                           | 8.4 | 5241         |
| ZMM5242B    | 12                    | 11.4   | 12.6   | 30                   | 20  | 600       | 0.25 | 1                           | 9.1 | 5242         |
| ZMM5243B    | 13                    | 12.35  | 13.65  | 13                   | 9.5 | 600       | 0.25 | 0.5                         | 9.9 | 5243         |
| ZMM5244B    | 14                    | 13.3   | 14.7   | 15                   | 9   | 600       | 0.25 | 0.1                         | 10  | 5244         |
| ZMM5245B    | 15                    | 14.25  | 15.75  | 16                   | 8.5 | 600       | 0.25 | 0.1                         | 11  | 5245         |
| ZMM5246B    | 16                    | 15.2   | 16.8   | 17                   | 7.8 | 600       | 0.25 | 0.1                         | 12  | 5246         |
| ZMM5247B    | 17                    | 16.15  | 17.85  | 19                   | 7.4 | 600       | 0.25 | 0.1                         | 13  | 5247         |
| ZMM5248B    | 18                    | 17.1   | 18.9   | 21                   | 7   | 600       | 0.25 | 0.1                         | 14  | 5248         |
| ZMM5249B    | 19                    | 18.05  | 19.95  | 23                   | 6.6 | 600       | 0.25 | 0.1                         | 14  | 5249         |
| ZMM5250B    | 20                    | 19     | 21     | 25                   | 6.2 | 600       | 0.25 | 0.1                         | 15  | 5250         |
| ZMM5251B    | 22                    | 20.9   | 23.1   | 29                   | 5.6 | 600       | 0.25 | 0.1                         | 17  | 5251         |
| ZMM5252B    | 24                    | 22.8   | 25.2   | 33                   | 5.2 | 600       | 0.25 | 0.1                         | 18  | 5252         |
| ZMM5253B    | 25                    | 23.75  | 26.25  | 35                   | 5   | 600       | 0.25 | 0.1                         | 19  | 5253         |
| ZMM5254B    | 27                    | 25.65  | 28.35  | 41                   | 4.6 | 600       | 0.25 | 0.1                         | 21  | 5254         |
| ZMM5255B    | 28                    | 26.6   | 29.4   | 44                   | 4.5 | 600       | 0.25 | 0.1                         | 21  | 5255         |
| ZMM5256B    | 30                    | 28.5   | 31.5   | 49                   | 4.2 | 600       | 0.25 | 0.1                         | 23  | 5256         |
| ZMM5257B    | 33                    | 31.35  | 34.65  | 58                   | 3.8 | 700       | 0.25 | 0.1                         | 25  | 5257         |
| ZMM5258B    | 36                    | 34.2   | 37.8   | 70                   | 3.4 | 700       | 0.25 | 0.1                         | 27  | 5258         |
| ZMM5259B    | 39                    | 37.05  | 40.95  | 80                   | 3.2 | 800       | 0.25 | 0.1                         | 30  | 5259         |
| ZMM5260B    | 43                    | 40.85  | 45.15  | 93                   | 3   | 900       | 0.25 | 0.1                         | 33  | 5260         |
| ZMM5261B    | 47                    | 44.65  | 49.35  | 150                  | 2.7 | 1000      | 0.25 | 0.1                         | 36  | 5261         |
| ZMM5262B    | 51                    | 48.45  | 53.55  | 125                  | 2.5 | 1100      | 0.25 | 0.1                         | 39  | 5262         |
| ZMM5263B    | 56                    | 53.2   | 58.8   | 150                  | 2.2 | 1300      | 0.25 | 0.1                         | 43  | 5263         |
| ZMM5264B    | 60                    | 57     | 63     | 170                  | 2.1 | 1400      | 0.25 | 0.1                         | 46  | 5264         |
| ZMM5265B    | 62                    | 58.9   | 65.1   | 185                  | 2   | 1400      | 0.25 | 0.1                         | 47  | 5265         |
| ZMM5266B    | 68                    | 64.6   | 71.4   | 230                  | 1.8 | 1600      | 0.25 | 0.1                         | 52  | 5266         |

**Notes.**

STANDARD VOLTAGE TOLERANCE IS + 5% AND :

SUFFIX " A " FOR + 3%

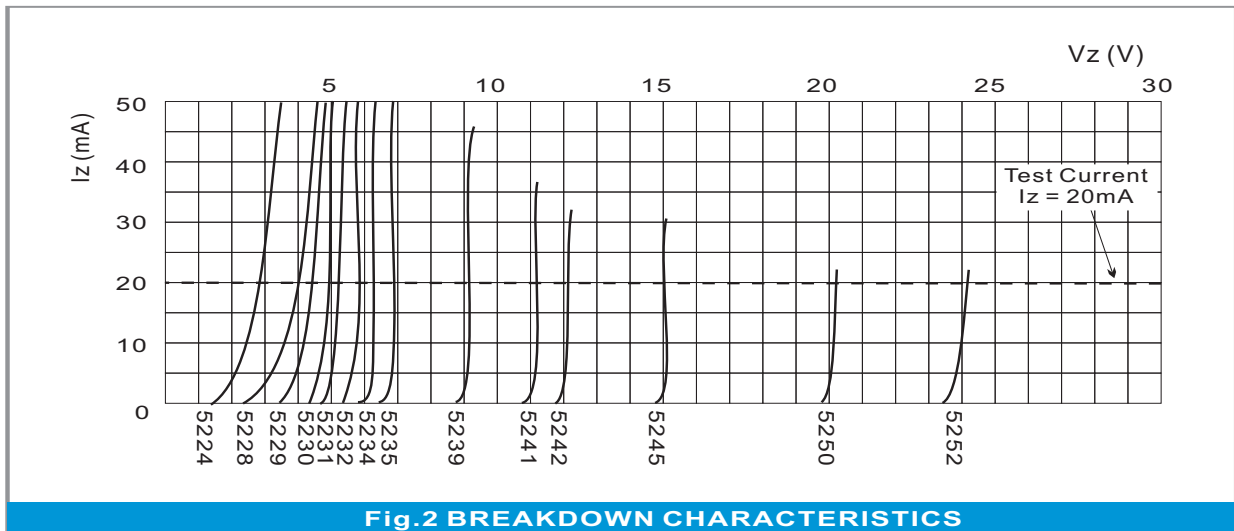
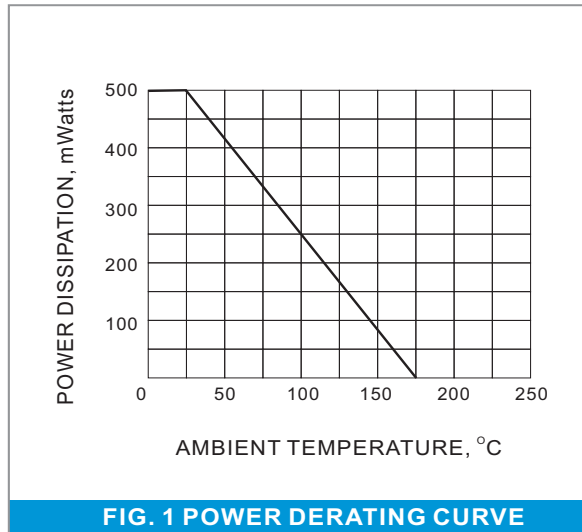
SUFFIX " B " FOR + 5%

SUFFIX " C " FOR + 10%

SUFFIX " D " FOR + 20%

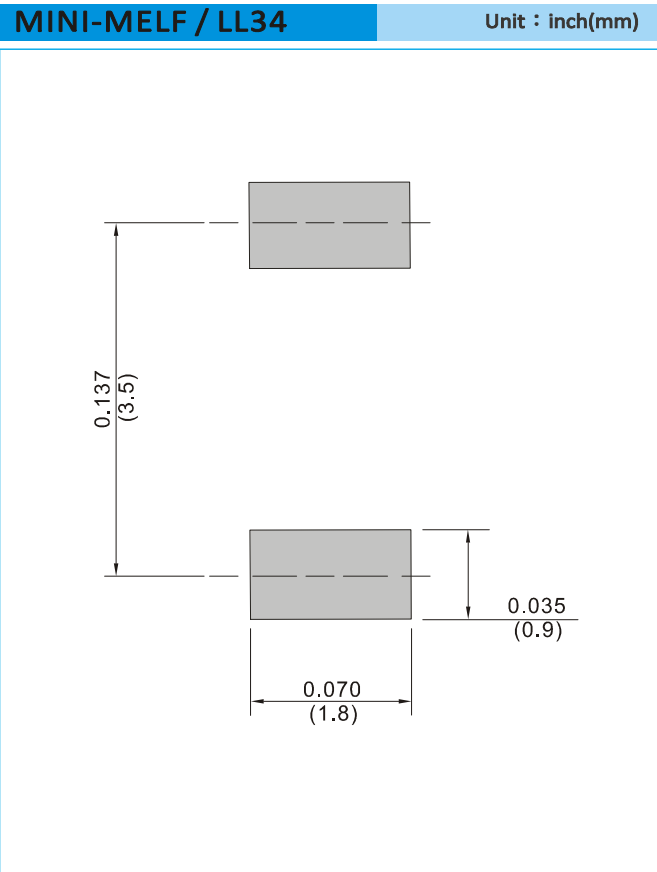
# ZMM5221B~ZMM5266B

## RATING AND CHARACTERISTIC CURVES



## ZMM5221B~ZMM5266B

### MOUNTING PAD LAYOUT



### ORDER INFORMATION

- Packing information
  - T/R - 10K per 13" plastic Reel
  - T/R - 2.5K per 7" plastic Reel

## ZMM5221B~ZMM5266B

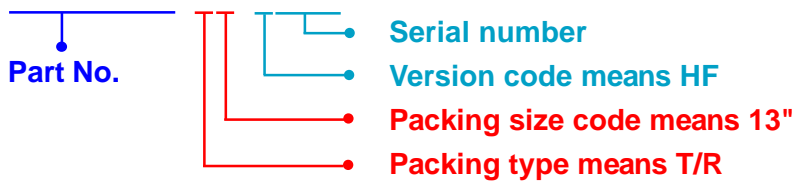
### Part No\_packing code\_Version

ZMM5221B\_R1\_10001

ZMM5221B\_R2\_10001

For example :

**RB500V-40\_R2\_00001**



| Packing Code <b>XX</b>               |                      |                                  |                      | Version Code <b>XXXXX</b> |                      |                                       |
|--------------------------------------|----------------------|----------------------------------|----------------------|---------------------------|----------------------|---------------------------------------|
| Packing type                         | 1 <sup>st</sup> Code | Packing size code                | 2 <sup>nd</sup> Code | HF or RoHS                | 1 <sup>st</sup> Code | 2 <sup>nd</sup> ~5 <sup>th</sup> Code |
| Tape and Ammunition Box (T/B)        | A                    | N/A                              | 0                    | HF                        | 0                    | serial number                         |
| Tape and Reel (T/R)                  | R                    | 7"                               | 1                    | RoHS                      | 1                    | serial number                         |
| Bulk Packing (B/P)                   | B                    | 13"                              | 2                    |                           |                      |                                       |
| Tube Packing (T/P)                   | T                    | 26mm                             | X                    |                           |                      |                                       |
| Tape and Reel (Right Oriented) (TRR) | S                    | 52mm                             | Y                    |                           |                      |                                       |
| Tape and Reel (Left Oriented) (TRL)  | L                    | PANASERT T/B CATHODE UP (PBCU)   | U                    |                           |                      |                                       |
| FORMING                              | F                    | PANASERT T/B CATHODE DOWN (PBCD) | D                    |                           |                      |                                       |

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