



# MMSZ5221B~MMSZ5262B

## SURFACE MOUNT SILICON ZENER DIODES

**VOLTAGE** 2.4 to 51 Volt      **POWER** 500 mWatt

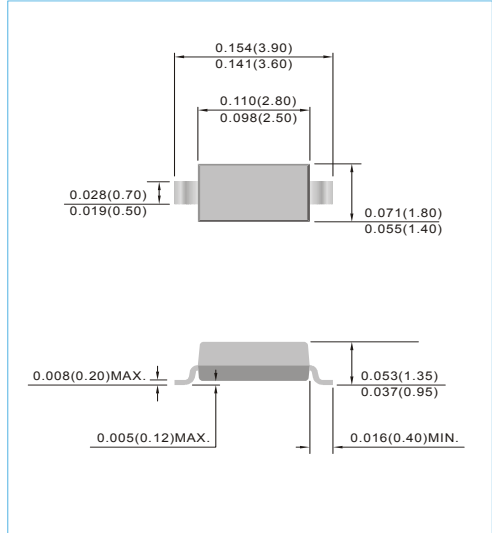
**SOD-123**      Unit : inch(mm)

### FEATURES

- Planar Die construction
- 500mW Power Dissipation
- Ideally Suited for Automated Assembly Processes
- Lead free in compliance with EU RoHS 2.0
- Green molding compound as per IEC 61249 standard

### MECHANICAL DATA

- Case: SOD-123, Molded Plastic
- Terminals: Solderable per MIL-STD-750, Method 2026
- Approx. Weight: 0.0003 ounce, 0.0103 gram



## MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

| Parameter   | Symbol           | Value       | Units |
|---|------------------|-------------|-------|
| Total Power Dissipation (Notes A)                 | P <sub>D</sub>   | 500         | mW    |
| Typical Thermal Resistance (Notes B)<br>(Notes A) | R <sub>θJA</sub> | 430<br>325  | °C/W  |
| Operating Junction and Storage Temperature Range  | T <sub>J</sub>   | -55 to +150 | °C    |

NOTES : A. Mounted on 100cm<sup>2</sup>(1mm thick) copper areas.

B. Mounted on a FR4 PCB, single-sided copper, mini pad.

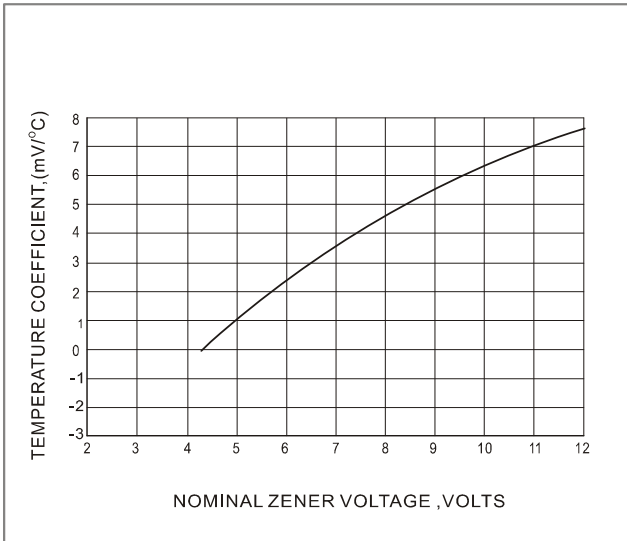


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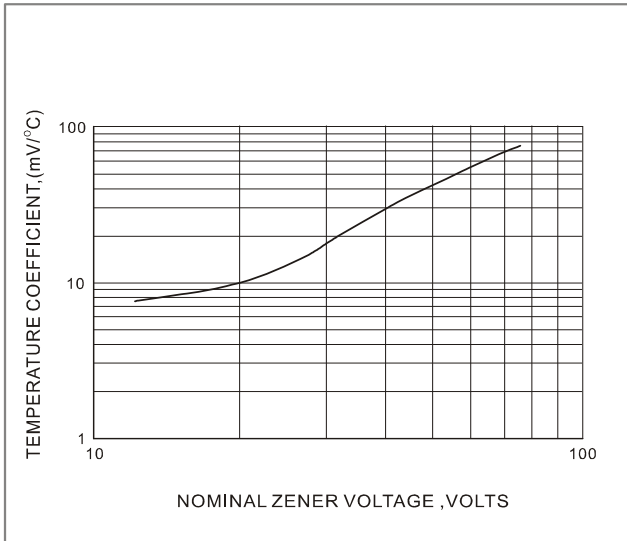
| Part Number | Nominal Zener Voltage            |        |        | Max. Zener Impedance              |     |                                   |      | Max Reverse Leakage Current     |      | Marking Code |
|-------------|----------------------------------|--------|--------|-----------------------------------|-----|-----------------------------------|------|---------------------------------|------|--------------|
|             | V <sub>Z</sub> @ I <sub>ZT</sub> |        |        | Z <sub>zT</sub> @ I <sub>ZT</sub> |     | Z <sub>zK</sub> @ I <sub>zK</sub> |      | I <sub>R</sub> @ V <sub>R</sub> |      |              |
|             | Nom. V                           | Min. V | Max. V | Ω                                 | mA  | Ω                                 | mA   | μA                              | V    |              |
| MMSZ5221B   | 2.4                              | 2.28   | 2.52   | 30                                | 20  | 1200                              | 0.25 | 100                             | 1    | C1           |
| MMSZ5222B   | 2.5                              | 2.38   | 2.63   | 30                                | 20  | 1250                              | 0.25 | 100                             | 1    | C2           |
| MMSZ5223B   | 2.7                              | 2.57   | 2.84   | 30                                | 20  | 1300                              | 0.25 | 75                              | 1    | C3           |
| MMSZ5224B   | 2.8                              | 2.66   | 2.94   | 30                                | 20  | 1400                              | 0.25 | 75                              | 1    | C4           |
| MMSZ5225B   | 3                                | 2.85   | 3.15   | 30                                | 20  | 1600                              | 0.25 | 50                              | 1    | C5           |
| MMSZ5226B   | 3.3                              | 3.14   | 3.47   | 28                                | 20  | 1600                              | 0.25 | 25                              | 1    | D1           |
| MMSZ5227B   | 3.6                              | 3.42   | 3.78   | 24                                | 20  | 1700                              | 0.25 | 15                              | 1    | D2           |
| MMSZ5228B   | 3.9                              | 3.71   | 4.1    | 23                                | 20  | 1900                              | 0.25 | 10                              | 1    | D3           |
| MMSZ5229B   | 4.3                              | 4.09   | 4.52   | 22                                | 20  | 2000                              | 0.25 | 5                               | 1    | D4           |
| MMSZ5230B   | 4.7                              | 4.47   | 4.94   | 19                                | 20  | 1900                              | 0.25 | 5                               | 2    | D5           |
| MMSZ5231B   | 5.1                              | 4.85   | 5.36   | 17                                | 20  | 1600                              | 0.25 | 5                               | 2    | E1           |
| MMSZ5232B   | 5.6                              | 5.32   | 5.88   | 11                                | 20  | 1600                              | 0.25 | 5                               | 3    | E2           |
| MMSZ5233B   | 6.0                              | 5.70   | 6.30   | 7                                 | 20  | 1600                              | 0.25 | 5                               | 3.5  | E3           |
| MMSZ5234B   | 6.2                              | 5.89   | 6.51   | 7                                 | 20  | 1000                              | 0.25 | 5                               | 4    | E4           |
| MMSZ5235B   | 6.8                              | 6.46   | 7.14   | 5                                 | 20  | 750                               | 0.25 | 3                               | 5    | E5           |
| MMSZ5236B   | 7.5                              | 7.13   | 7.88   | 6                                 | 20  | 500                               | 0.25 | 3                               | 6    | F1           |
| MMSZ5237B   | 8.2                              | 7.79   | 8.61   | 8                                 | 20  | 500                               | 0.25 | 3                               | 6    | F2           |
| MMSZ5238B   | 8.7                              | 8.27   | 9.14   | 8                                 | 20  | 600                               | 0.25 | 3                               | 6.5  | F3           |
| MMSZ5239B   | 9.1                              | 8.65   | 9.56   | 10                                | 20  | 600                               | 0.25 | 3                               | 6.5  | F4           |
| MMSZ5240B   | 10                               | 9.5    | 10.5   | 17                                | 20  | 600                               | 0.25 | 3                               | 8    | F5           |
| MMSZ5241B   | 11                               | 10.45  | 11.55  | 22                                | 20  | 600                               | 0.25 | 2                               | 8.4  | H1           |
| MMSZ5242B   | 12                               | 11.4   | 12.6   | 30                                | 20  | 600                               | 0.25 | 1                               | 9.1  | H2           |
| MMSZ5243B   | 13                               | 12.35  | 13.65  | 13                                | 9.5 | 600                               | 0.25 | 0.5                             | 9.9  | H3           |
| MMSZ5244B   | 14                               | 13.3   | 14.7   | 15                                | 9   | 600                               | 0.25 | 0.1                             | 10.5 | H4           |
| MMSZ5245B   | 15                               | 14.25  | 15.75  | 16                                | 8.5 | 600                               | 0.25 | 0.1                             | 11   | H5           |
| MMSZ5246B   | 16                               | 15.2   | 16.8   | 17                                | 7.8 | 600                               | 0.25 | 0.1                             | 12   | J1           |
| MMSZ5247B   | 17                               | 16.15  | 17.85  | 19                                | 7.5 | 600                               | 0.25 | 0.1                             | 13   | J2           |
| MMSZ5248B   | 18                               | 17.1   | 18.9   | 21                                | 7   | 600                               | 0.25 | 0.1                             | 14   | J3           |
| MMSZ5249B   | 19                               | 18.05  | 19.95  | 23                                | 6.6 | 600                               | 0.25 | 0.1                             | 14   | J4           |
| MMSZ5250B   | 20                               | 19     | 21     | 25                                | 6.2 | 600                               | 0.25 | 0.1                             | 15   | J5           |
| MMSZ5251B   | 22                               | 20.9   | 23.1   | 29                                | 5.6 | 600                               | 0.25 | 0.1                             | 17   | K1           |
| MMSZ5252B   | 24                               | 22.8   | 25.2   | 33                                | 5.2 | 600                               | 0.25 | 0.1                             | 18   | K2           |
| MMSZ5253B   | 25                               | 23.75  | 26.25  | 35                                | 5.0 | 600                               | 0.25 | 0.1                             | 19   | K3           |
| MMSZ5254B   | 27                               | 25.65  | 28.35  | 41                                | 5   | 600                               | 0.25 | 0.1                             | 21   | K4           |
| MMSZ5255B   | 28                               | 26.6   | 29.4   | 44                                | 4.5 | 600                               | 0.25 | 0.1                             | 21   | K5           |
| MMSZ5256B   | 30                               | 28.5   | 31.5   | 49                                | 4.2 | 600                               | 0.25 | 0.1                             | 23   | M1           |
| MMSZ5257B   | 33                               | 31.35  | 34.65  | 58                                | 3.8 | 700                               | 0.25 | 0.1                             | 25   | M2           |
| MMSZ5258B   | 36                               | 34.2   | 37.8   | 70                                | 3.4 | 700                               | 0.25 | 0.1                             | 27   | M3           |
| MMSZ5259B   | 39                               | 37.05  | 40.95  | 80                                | 3.2 | 800                               | 0.25 | 0.1                             | 30   | M4           |
| MMSZ5260B   | 43                               | 40.85  | 45.15  | 93                                | 3   | 900                               | 0.25 | 0.1                             | 33   | M5           |
| MMSZ5261B   | 47                               | 44.65  | 49.35  | 105                               | 2.7 | 1000                              | 0.25 | 0.1                             | 36   | N1           |
| MMSZ5262B   | 51                               | 48.45  | 53.55  | 125                               | 2.5 | 1100                              | 0.25 | 0.1                             | 39   | N2           |



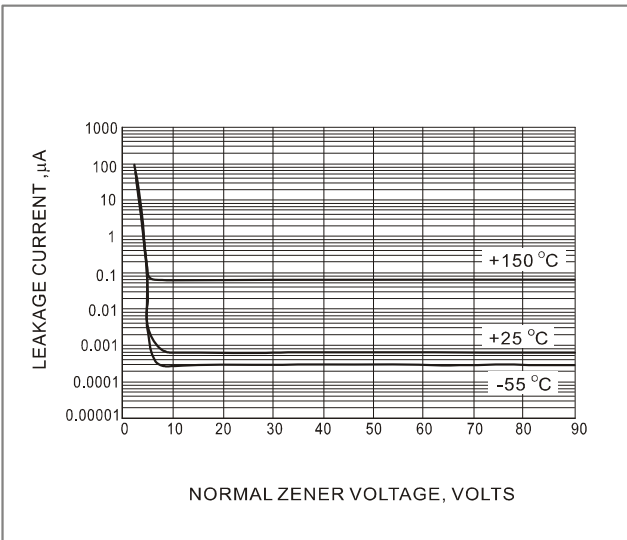
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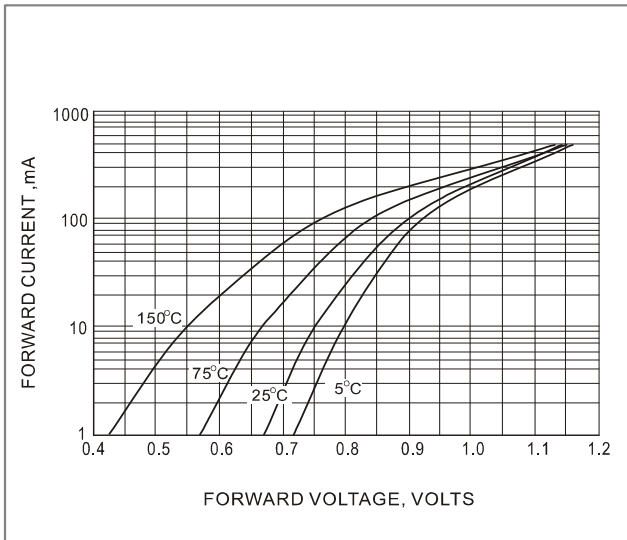
**Fig.1 TEMPERATURE COEFFICIENTS**



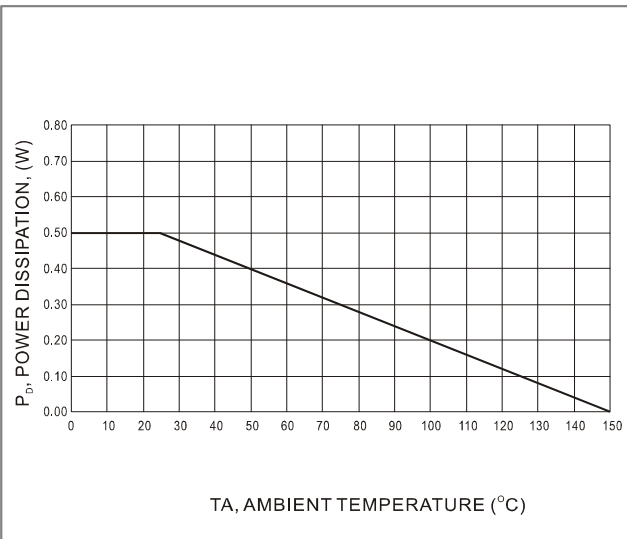
**Fig.2 TEMPERATURE COEFFICIENTS**



**Fig.3 TYPICAL LEAKAGE CURRENT**



**Fig.4 TYPICAL FORWARD VOLTAGE**

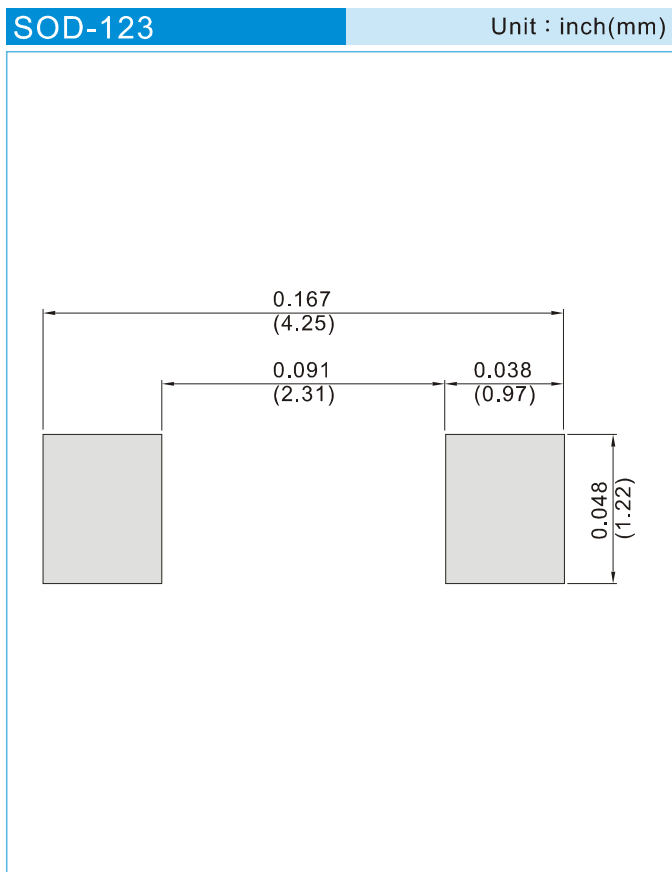


**Fig.5 POWER DERATING CURVE**



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### MOUNTING PAD LAYOUT



### ORDER INFORMATION

- Packing information  
T/R - 10K per 13" plastic Reel  
T/R - 3K per 7" plastic Reel



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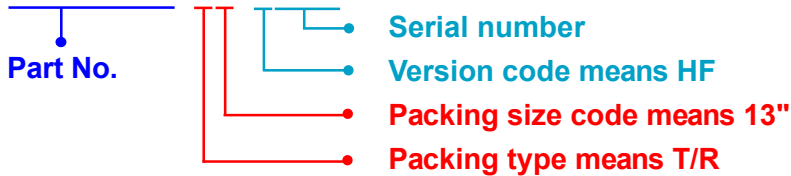
### Part No\_packing code\_Version

MMSZ5221B\_R1\_00001

MMSZ5221B\_R2\_00001

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)        | <b>A</b>             | N/A                              | <b>0</b>             | <b>HF</b>                 | <b>0</b>             | serial number                         |
| Tape and Reel (T/R)                  | <b>R</b>             | 7"                               | <b>1</b>             | <b>RoHS</b>               | <b>1</b>             | serial number                         |
| Bulk Packing (B/P)                   | <b>B</b>             | 13"                              | <b>2</b>             |                           |                      |                                       |
| Tube Packing (T/P)                   | <b>T</b>             | 26mm                             | <b>X</b>             |                           |                      |                                       |
| Tape and Reel (Right Oriented) (TRR) | <b>S</b>             | 52mm                             | <b>Y</b>             |                           |                      |                                       |
| Tape and Reel (Left Oriented) (TRL)  | <b>L</b>             | PANASERT T/B CATHODE UP (PBCU)   | <b>U</b>             |                           |                      |                                       |
| FORMING                              | <b>F</b>             | PANASERT T/B CATHODE DOWN (PBCD) | <b>D</b>             |                           |                      |                                       |



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