



# MMSZ5229A SERIES

## SURFACE MOUNT SILICON ZENER DIODES

**VOLTAGE** 4.3 to 51 Volt      **POWER** 500 mWatt

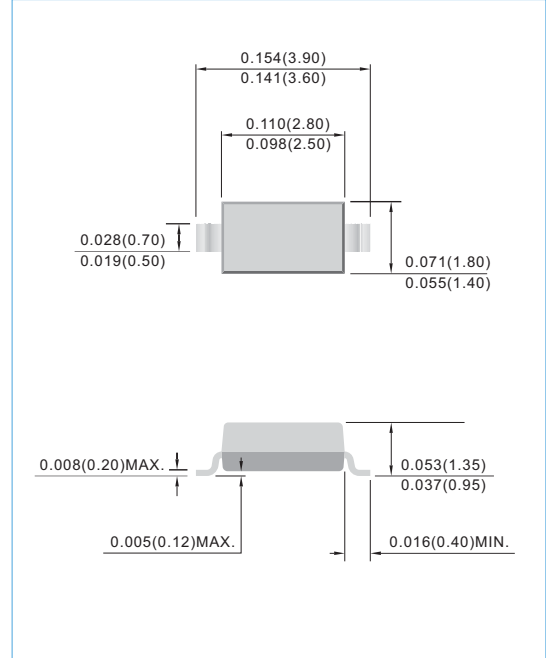
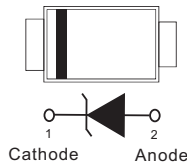
**SOD-123**      Unit : inch(mm)

### 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
- Polarity: See Diagram Below
- Approx. Weight: 0.0004 ounces, 0.01 grams



## MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

| Parameter  | Symbol         | Value       | Units |
|--|----------------|-------------|-------|
| Maximum Power Dissipation@T <sub>A</sub> =25°C (Notes A) | P <sub>D</sub> | 500         | mW    |
| Operating Junction and Storage Temperature Range         | T <sub>J</sub> | -50 to +150 | °C    |

### NOTES:

- A. Mounted on 5.0mm<sup>2</sup>(0.013mm thick) land areas.
- B. Measured on 8.3ms, single half sine-wave or equivalent square wave, duty cycle = 4 pulses per minute maximum.



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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    |              |
| 500 mWatts Zener Diodes |                                  |        |        |                                   |      |                                   |      |                                 |      |              |
| MMSZ5229A               | 4.3                              | 4.21   | 4.39   | 22                                | 20.0 | 2000                              | 0.25 | 5.0                             | 1.0  | D4           |
| MMSZ5230A               | 4.7                              | 4.61   | 4.79   | 19                                | 20.0 | 1900                              | 0.25 | 5.0                             | 2.0  | D5           |
| MMSZ5231A               | 5.1                              | 5.00   | 5.20   | 17                                | 20.0 | 1600                              | 0.25 | 5.0                             | 2.0  | E1           |
| MMSZ5232A               | 5.6                              | 5.49   | 5.71   | 11                                | 20.0 | 1600                              | 0.25 | 5.0                             | 3.0  | E2           |
| MMSZ5234A               | 6.2                              | 6.08   | 6.32   | 7                                 | 20.0 | 1000                              | 0.25 | 5.0                             | 4.0  | E4           |
| MMSZ5235A               | 6.8                              | 6.66   | 6.94   | 5                                 | 20.0 | 750                               | 0.25 | 3.0                             | 5.0  | E5           |
| MMSZ5236A               | 7.5                              | 7.35   | 7.65   | 6                                 | 20.0 | 500                               | 0.25 | 3.0                             | 6.0  | F1           |
| MMSZ5237A               | 8.2                              | 8.04   | 8.36   | 8                                 | 20.0 | 500                               | 0.25 | 3.0                             | 6.0  | F2           |
| MMSZ5238A               | 8.7                              | 8.53   | 8.87   | 8                                 | 20   | 600                               | 0.25 | 3.0                             | 6.5  | F3           |
| MMSZ5239A               | 9.1                              | 8.92   | 9.28   | 10                                | 20.0 | 600                               | 0.25 | 3.0                             | 6.5  | F4           |
| MMSZ5240A               | 10                               | 9.80   | 10.20  | 17                                | 20.0 | 600                               | 0.25 | 3.0                             | 8.0  | F5           |
| MMSZ5241A               | 11                               | 10.78  | 11.22  | 22                                | 20.0 | 600                               | 0.25 | 3.0                             | 8.4  | H1           |
| MMSZ5242A               | 12                               | 11.76  | 12.24  | 30                                | 20.0 | 600                               | 0.25 | 2.0                             | 9.1  | H2           |
| MMSZ5243A               | 13                               | 12.74  | 13.26  | 13                                | 9.5  | 600                               | 0.25 | 1.0                             | 9.9  | H3           |
| MMSZ5244A               | 14                               | 13.72  | 14.28  | 15                                | 9.0  | 600                               | 0.25 | 0.5                             | 10.5 | H4           |
| MMSZ5245A               | 15                               | 14.70  | 15.30  | 16                                | 8.5  | 600                               | 0.25 | 0.5                             | 11.0 | H5           |
| MMSZ5246A               | 16                               | 15.68  | 16.32  | 17                                | 7.8  | 600                               | 0.25 | 0.1                             | 12.0 | J1           |
| MMSZ5247A               | 17                               | 16.66  | 17.34  | 19                                | 7.5  | 600                               | 0.25 | 0.1                             | 13.0 | J2           |
| MMSZ5248A               | 18                               | 17.64  | 18.36  | 21                                | 7.0  | 600                               | 0.25 | 0.1                             | 14.0 | J3           |
| MMSZ5250A               | 20                               | 19.60  | 20.40  | 25                                | 6.2  | 600                               | 0.25 | 0.1                             | 15.0 | J5           |
| MMSZ5251A               | 22                               | 21.56  | 22.44  | 29                                | 5.6  | 600                               | 0.25 | 0.1                             | 17.0 | K1           |
| MMSZ5252A               | 24                               | 23.52  | 24.48  | 33                                | 5.2  | 600                               | 0.25 | 0.1                             | 18.0 | K2           |
| MMSZ5254A               | 27                               | 26.46  | 27.54  | 41                                | 5.0  | 600                               | 0.25 | 0.1                             | 21.0 | K4           |
| MMSZ5255A               | 28                               | 27.44  | 28.56  | 44                                | 4.5  | 600                               | 0.25 | 0.1                             | 21.0 | K5           |
| MMSZ5256A               | 30                               | 29.40  | 30.60  | 49                                | 4.2  | 600                               | 0.25 | 0.1                             | 23.0 | M1           |
| MMSZ5257A               | 33                               | 32.34  | 33.66  | 58                                | 3.8  | 700                               | 0.25 | 0.1                             | 25.0 | M2           |
| MMSZ5258A               | 36                               | 35.28  | 36.72  | 70                                | 3.4  | 700                               | 0.25 | 0.1                             | 27.0 | M3           |
| MMSZ5259A               | 39                               | 38.22  | 39.78  | 80                                | 3.2  | 800                               | 0.25 | 0.1                             | 30.0 | M4           |
| MMSZ5260A               | 43                               | 42.14  | 43.86  | 93                                | 3.0  | 900                               | 0.25 | 0.1                             | 33.0 | M5           |
| MMSZ5261A               | 47                               | 46.06  | 47.94  | 105                               | 2.7  | 1000                              | 0.25 | 0.1                             | 36.0 | N1           |
| MMSZ5262A               | 51                               | 49.98  | 52.02  | 125                               | 2.5  | 1100                              | 0.25 | 0.1                             | 39.0 | 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 STEADY STATE POWER DERATING**



**Fig. 6 TYPICAL CAPACITANCE**



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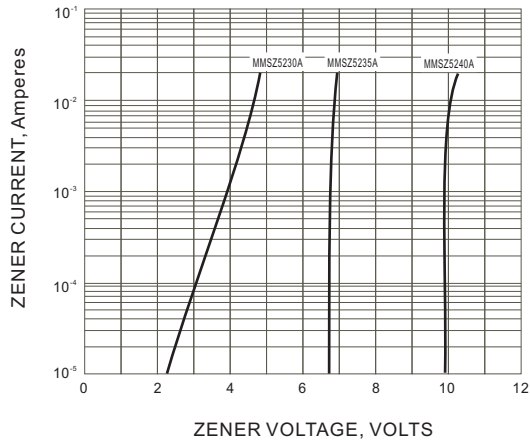


Fig.7 ZENER VOLTAGE VERSUS ZENER CURRENT

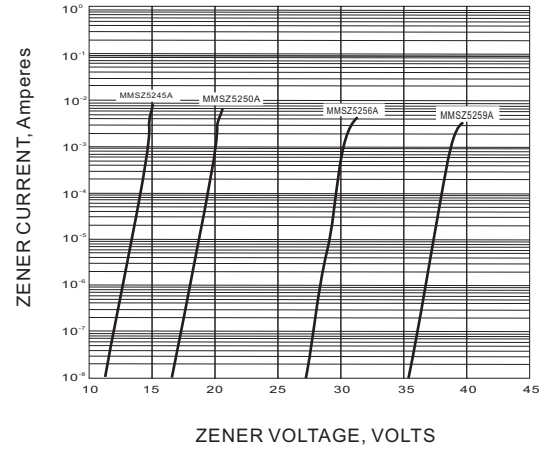
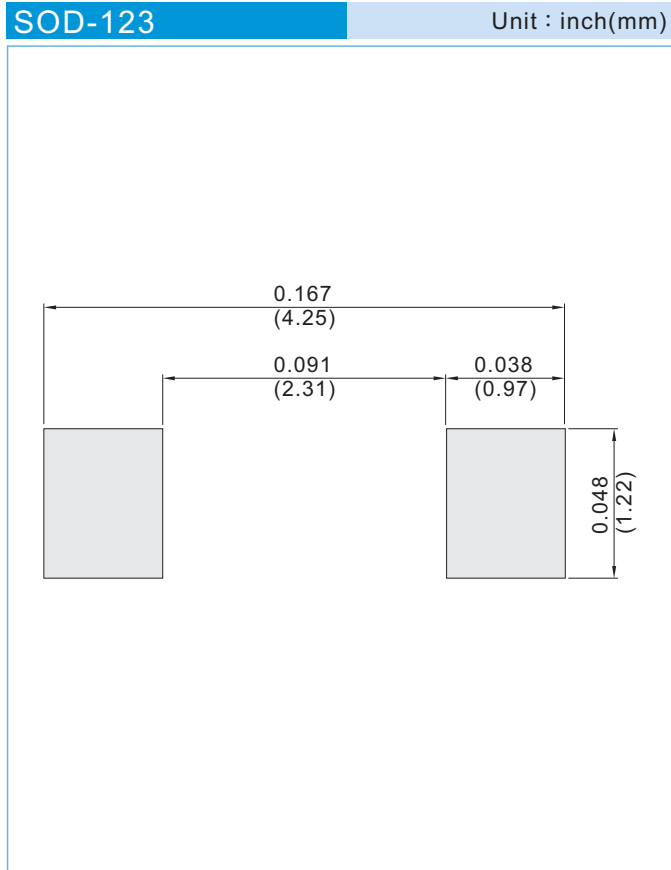


Fig.8 ZENER VOLTAGE VERSUS ZENER CURRENT



## MMSZ5229A SERIES

### 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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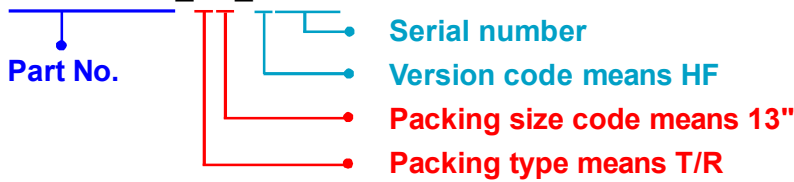
### Part No\_packing code\_Version

MMSZ5229A\_R1\_00001

MMSZ5229A\_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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