



**THE DATASHEET OF
MMSZ5231A_R1_00001**





MMSZ5229A SERIES

SURFACE MOUNT SILICON ZENER DIODES

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

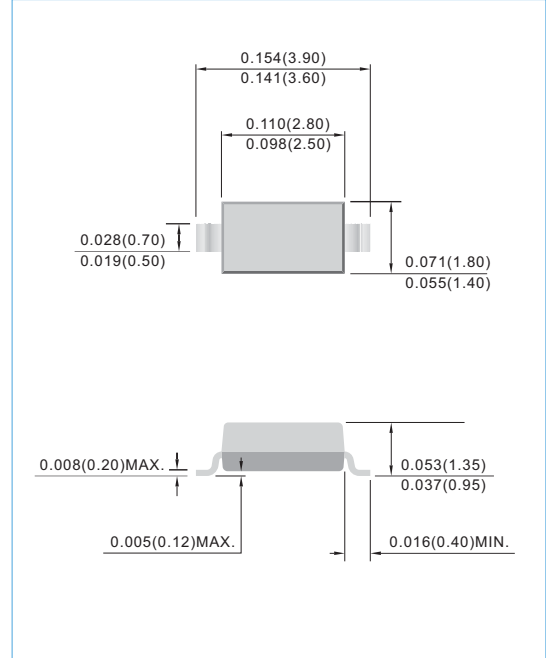
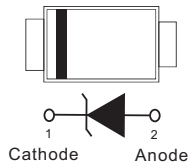
SOD-123 Unit : inch(mm)

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
- Apprx. Weight: 0.0004 ounces, 0.01 grams



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

| Parameter | Symbol | Value | Units |
|--|----------------|-------------|-------|
| Maximum Power Dissipation@T _A =25°C (Notes A) | P _D | 500 | mW |
| Operating Junction and Storage Temperature Range | T _J | -50 to +150 | °C |

NOTES:

- A. Mounted on 5.0mm²(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 _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 | 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

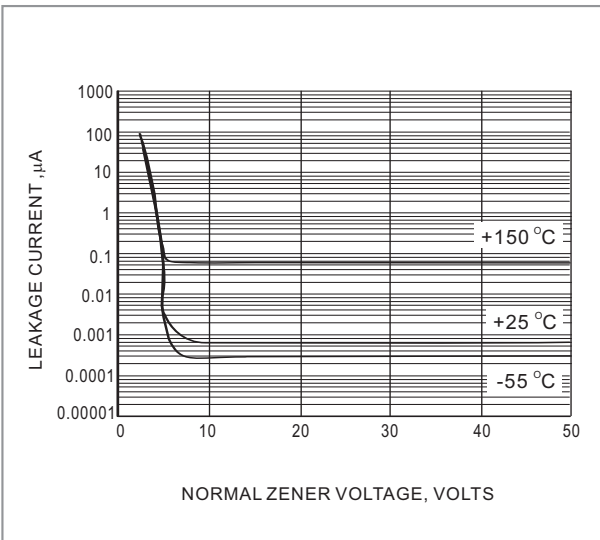


Fig. 3 TYPICAL LEAKAGE CURRENT

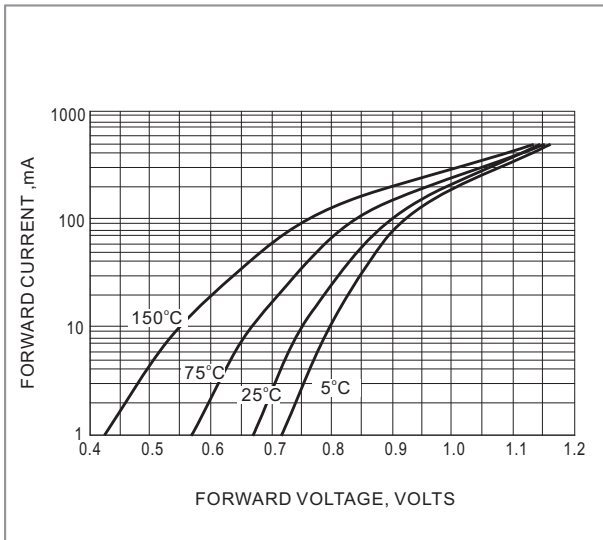


Fig. 4 TYPICAL FORWARD VOLTAGE



Fig. 5 STEADY STATE POWER DERATING



Fig. 6 TYPICAL CAPACITANCE



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Fig.7 ZENER VOLTAGE VERSUS ZENER CURRENT

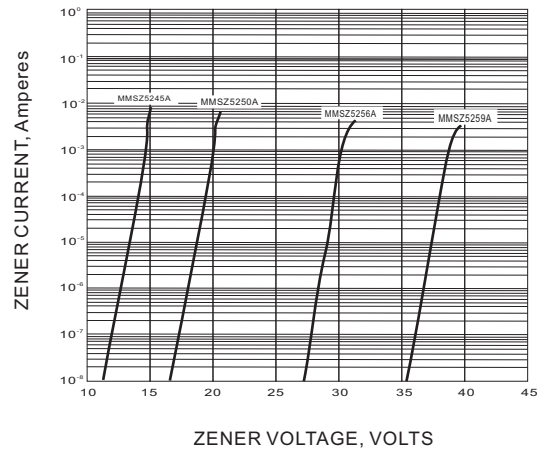
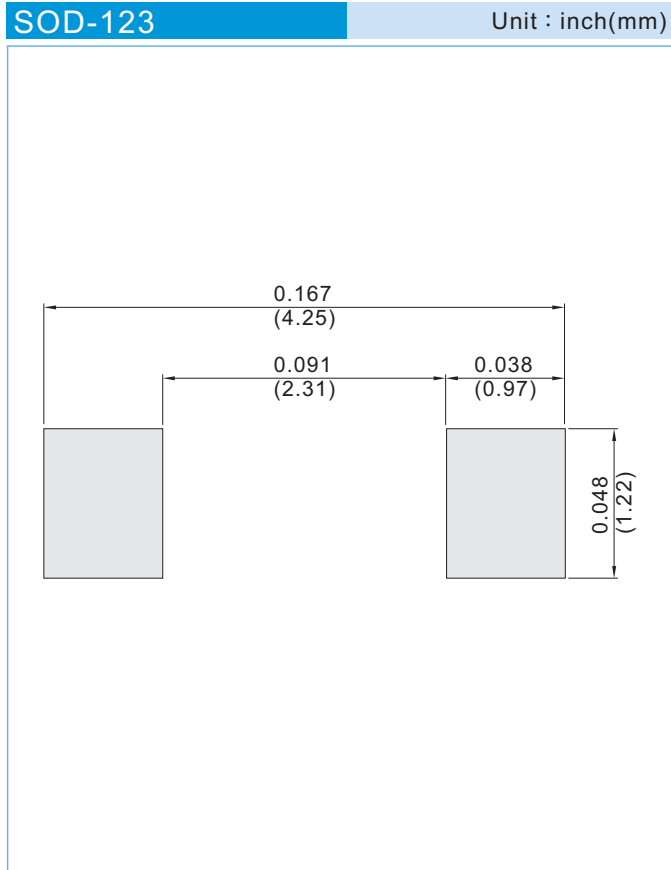


Fig.8 ZENER VOLTAGE VERSUS ZENER CURRENT



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 XX | | | | Version Code XXXXX | | |
|--------------------------------------|----------------------|----------------------------------|----------------------|---------------------------|----------------------|---------------------------------------|
| Packing type | 1 st Code | Packing size code | 2 nd Code | HF or RoHS | 1 st Code | 2 nd ~5 th 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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