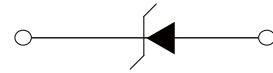


FEATURES

- | Low Zener Impedance
- | Power Dissipation of 500mW
- | High Stability and High Reliability
- | Polarity: Color band denotes cathode end
- | Epoxy UL: 94V-0
- | Mounting Position: Any



SOD-123



Schematic Symbol

APPROVALS

- RoHS** | Compliance with 2011/65/EU
- HF** | Compliance with IEC61249-2-21:2003

MAXIMUM RATINGS ($T_A=25^{\circ}\text{C}$)

| Parameter | Symbol | Value | Unit |
|---|-----------------|-------------------|-----------------------------|
| Power Dissipation | P_D | 500 ¹⁾ | mW |
| Forward Voltage@ $I_F=10\text{mA}$ | V_F | 0.9 ²⁾ | V |
| Thermal Resistance, Junction-to-Ambient | $R_{\theta JA}$ | 340 ³⁾ | $^{\circ}\text{C}/\text{W}$ |
| Thermal Resistance, Junction-to-Lead | $R_{\theta JL}$ | 150 ³⁾ | $^{\circ}\text{C}/\text{W}$ |
| Storage temperature range | T_S | -65 to +150 | $^{\circ}\text{C}$ |

Note:

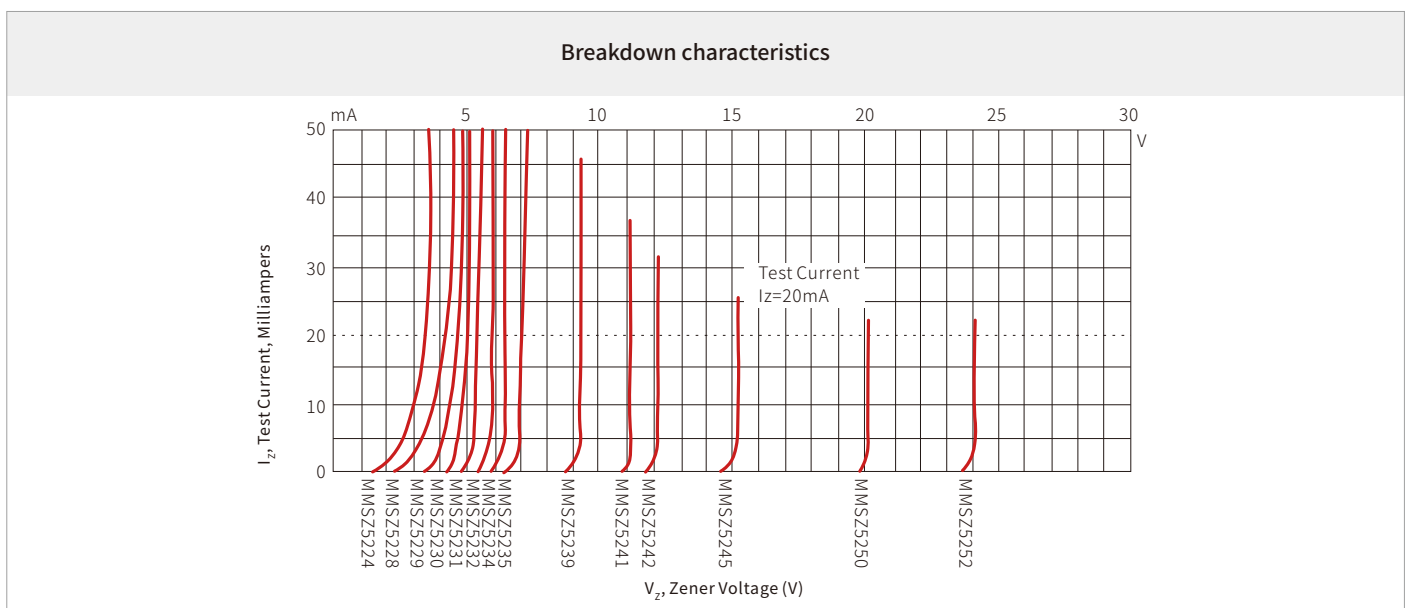
- 1) Device mounted on ceramic PCB: 7.6mm x 9.4mm x 0.87mm with pad areas 25mm²
- 2) Short duration test pulse used to minimize self-heating effect
- 3) Thermal Resistance measurement obtained via infrared Scan Method
- 4) f=1KHz

ELECTRICAL CHARACTERISTICS

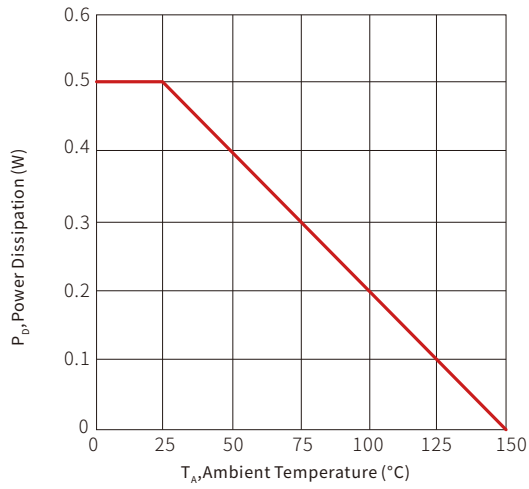
| Part Number | Device Marking Code | Zener Voltage Range | | | Maximum Zener Impedance | | | Maximum Reverse Current | |
|-------------|---------------------|---------------------|---------|----------|-------------------------|------------------|----------|-------------------------|-------|
| | | $V_Z@I_{ZT}$ | | I_{ZT} | $Z_{ZT}@I_{ZT}$ | $Z_{ZK}@I_{ZK}$ | I_{ZK} | I_R | V_R |
| | | Min.(V) | Max.(V) | mA | Max.(Ω) | Max.(Ω) | mA | uA | V |
| MMSZ5221B | C1 | 2.28 | 2.52 | 20 | 30 | 1200 | 0.25 | 100 | 1.0 |
| MMSZ5222B | C2 | 2.38 | 2.63 | 20 | 30 | 1250 | 0.25 | 100 | 1.0 |
| MMSZ5223B | C3 | 2.57 | 2.84 | 20 | 30 | 1300 | 0.25 | 75 | 1.0 |
| MMSZ5224B | C4 | 2.66 | 2.94 | 20 | 30 | 1400 | 0.25 | 75 | 1.0 |
| MMSZ5225B | C5 | 2.85 | 3.15 | 20 | 30 | 1600 | 0.25 | 50 | 1.0 |
| MMSZ5226B | G1 | 3.14 | 3.47 | 20 | 28 | 1600 | 0.25 | 25 | 1.0 |
| MMSZ5227B | G2 | 3.42 | 3.78 | 20 | 24 | 1700 | 0.25 | 15 | 1.0 |
| MMSZ5228B | G3 | 3.71 | 4.10 | 20 | 23 | 1900 | 0.25 | 10 | 1.0 |
| MMSZ5229B | G4 | 4.09 | 4.52 | 20 | 22 | 2000 | 0.25 | 5.0 | 1.0 |
| MMSZ5230B | G5 | 4.47 | 4.94 | 20 | 19 | 1900 | 0.25 | 5.0 | 2.0 |
| MMSZ5231B | E1 | 4.85 | 5.36 | 20 | 17 | 1600 | 0.25 | 5.0 | 2.0 |
| MMSZ5232B | E2 | 5.32 | 5.88 | 20 | 11 | 1600 | 0.25 | 5.0 | 3.0 |
| MMSZ5233B | E3 | 5.70 | 6.30 | 20 | 7 | 1600 | 0.25 | 5.0 | 3.5 |
| MMSZ5234B | E4 | 5.89 | 6.51 | 20 | 7 | 1000 | 0.25 | 5.0 | 4.0 |
| MMSZ5235B | E5 | 6.46 | 7.14 | 20 | 5 | 750 | 0.25 | 3 | 5.0 |
| MMSZ5236B | F1 | 7.13 | 7.88 | 20 | 6 | 500 | 0.25 | 3 | 6.0 |
| MMSZ5237B | F2 | 7.79 | 8.61 | 20 | 8 | 500 | 0.25 | 3 | 6.5 |
| MMSZ5238B | F3 | 8.27 | 9.14 | 20 | 8 | 600 | 0.25 | 3 | 6.5 |
| MMSZ5239B | F4 | 8.65 | 9.56 | 20 | 10 | 600 | 0.25 | 3 | 7.0 |
| MMSZ5240B | F5 | 9.50 | 10.50 | 20 | 17 | 600 | 0.25 | 3 | 8.0 |
| MMSZ5241B | H1 | 10.45 | 11.55 | 20 | 22 | 600 | 0.25 | 2.0 | 8.4 |
| MMSZ5242B | H2 | 11.40 | 12.60 | 20 | 30 | 600 | 0.25 | 1.0 | 9.1 |
| MMSZ5243B | H3 | 12.35 | 13.65 | 9.5 | 13 | 600 | 0.25 | 0.5 | 9.9 |
| MMSZ5244B | H4 | 13.30 | 14.70 | 9.0 | 15 | 600 | 0.25 | 0.1 | 10 |
| MMSZ5245B | H5 | 14.25 | 15.75 | 8.5 | 16 | 600 | 0.25 | 0.1 | 11 |
| MMSZ5246B | J1 | 15.20 | 16.80 | 7.8 | 17 | 600 | 0.25 | 0.1 | 12 |
| MMSZ5247B | J2 | 16.15 | 17.85 | 7.5 | 19 | 600 | 0.25 | 0.1 | 13 |
| MMSZ5248B | J3 | 17.10 | 18.90 | 7.0 | 21 | 600 | 0.25 | 0.1 | 14 |
| MMSZ5249B | J4 | 18.05 | 19.95 | 6.6 | 23 | 600 | 0.25 | 0.1 | 14 |
| MMSZ5250B | J5 | 19.00 | 21.00 | 6.2 | 25 | 600 | 0.25 | 0.1 | 15 |
| MMSZ5251B | K1 | 20.90 | 23.10 | 5.6 | 29 | 600 | 0.25 | 0.1 | 17 |
| MMSZ5252B | K2 | 22.80 | 25.20 | 5.2 | 33 | 600 | 0.25 | 0.1 | 18 |
| MMSZ5253B | K3 | 23.75 | 26.25 | 5.0 | 35 | 600 | 0.25 | 0.1 | 19 |

| Part Number | Device Marking Code | Zener Voltage Range | | | Maximum Zener Impedance | | | Maximum Reverse Current | |
|-------------|---------------------|---------------------|---------|----------|-------------------------|-----------------|----------|-------------------------|-------|
| | | $V_z@I_{ZT}$ | | I_{ZT} | $Z_{ZT}@I_{ZT}$ | $Z_{ZK}@I_{ZK}$ | I_{ZK} | I_R | V_R |
| | | Min.(V) | Max.(V) | mA | Max.(Ω) | Max.(Ω) | mA | μA | V |
| MMSZ5254B | K4 | 25.65 | 28.35 | 5.0 | 41 | 600 | 0.25 | 0.1 | 21 |
| MMSZ5255B | K5 | 26.60 | 29.40 | 4.5 | 44 | 600 | 0.25 | 0.1 | 21 |
| MMSZ5256B | M1 | 28.50 | 31.50 | 4.2 | 49 | 600 | 0.25 | 0.1 | 23 |
| MMSZ5257B | M2 | 31.35 | 34.65 | 3.8 | 58 | 700 | 0.25 | 0.1 | 25 |
| MMSZ5258B | M3 | 34.20 | 37.80 | 3.4 | 70 | 700 | 0.25 | 0.1 | 27 |
| MMSZ5259B | M4 | 37.05 | 40.95 | 3.2 | 80 | 800 | 0.25 | 0.1 | 30 |
| MMSZ5260B | M5 | 40.85 | 45.15 | 3.0 | 93 | 900 | 0.25 | 0.1 | 33 |
| MMSZ5261B | N1 | 44.65 | 49.35 | 2.7 | 105 | 1000 | 0.25 | 0.1 | 36 |
| MMSZ5262B | N2 | 48.45 | 53.55 | 2.5 | 125 | 1100 | 0.25 | 0.1 | 39 |
| MMSZ5263B | N3 | 53.20 | 58.80 | 2.2 | 150 | 1300 | 0.25 | 0.1 | 43 |
| MMSZ5264B | N4 | 57.00 | 63.00 | 2.1 | 170 | 1400 | 0.25 | 0.1 | 46 |
| MMSZ5265B | N5 | 58.90 | 65.10 | 2.0 | 185 | 1400 | 0.25 | 0.1 | 47 |
| MMSZ5266B | P1 | 64.60 | 71.40 | 1.8 | 230 | 1600 | 0.25 | 0.1 | 52 |
| MMSZ5267B | P2 | 71.25 | 78.75 | 1.7 | 270 | 1700 | 0.25 | 0.1 | 56 |

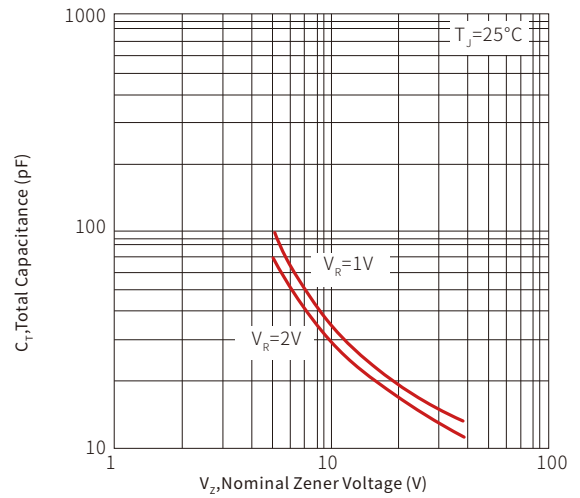
CHARACTERISTIC CURVES



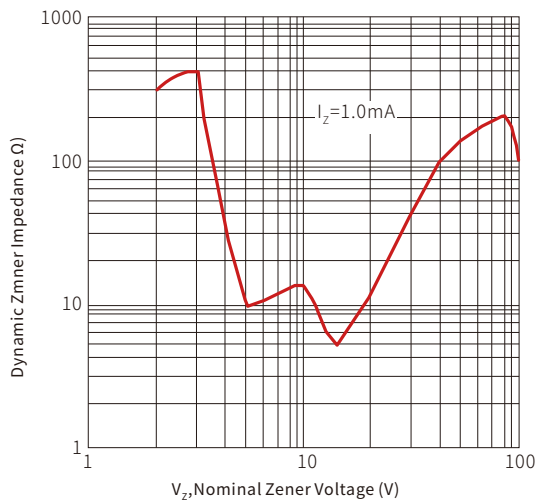
Power Dissipation vs Ambient Temperature



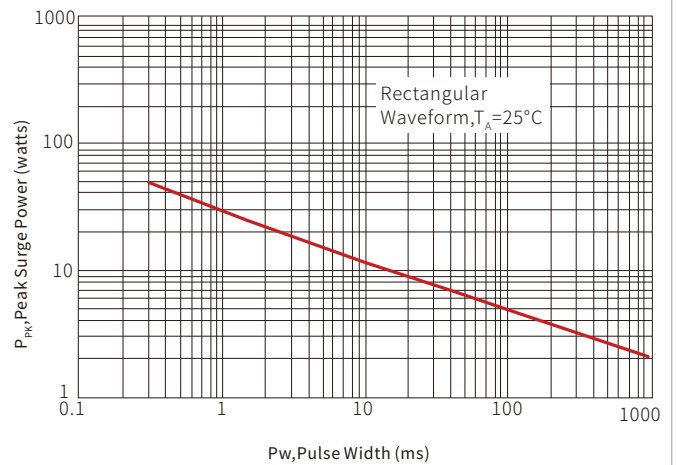
Total Capacitance vs Nominal Zener Voltage



Zener Voltage ns. Zener Impedance

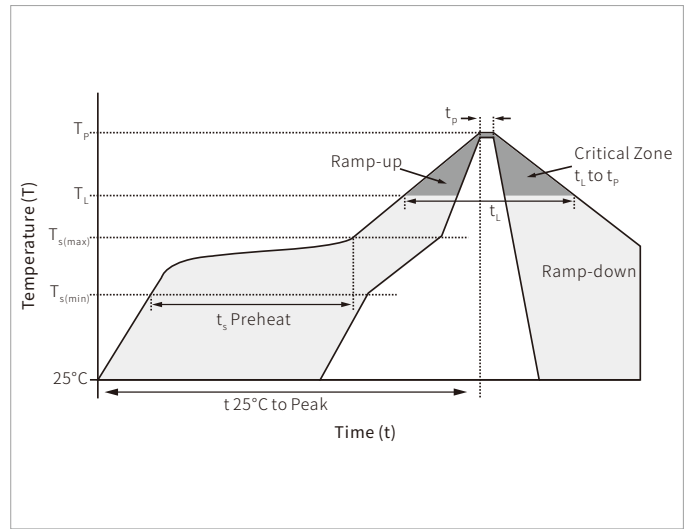


Maximum Nonrepetitive Surge Power

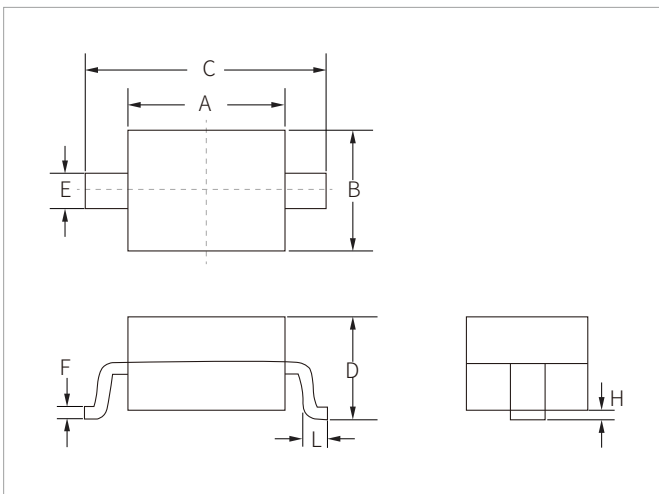


SOLDERING PARAMETERS

| Reflow Condition | | Lead-free assembly |
|--|----------------------------------|--------------------|
| Pre Heat | Temperature Max ($T_{s(min)}$) | 150°C |
| | Temperature Max ($T_{s(max)}$) | 200°C |
| | Time (min to max) (t_s) | 60 – 180 secs |
| Average ramp up rate (Liquidus Temp (T_L) to peak) | | 3°C/second max |
| $T_{s(max)}$ to T_L - Ramp-up Rate | | 3°C/second max |
| Reflow | Temperature (T_L) (Liquidus) | 217°C |
| | Time (min to max) (t_L) | 60 – 150 seconds |
| Peak Temperature (T_p) | | 260°C |
| Time within 5°C of actual peak Temperature (t_p) | | 20 – 40 seconds |
| Ramp-down Rate | | 6°C/second max |
| Time 25°C to peak Temperature (T_p) | | 8 minutes max. |
| Do not exceed | | 260°C |

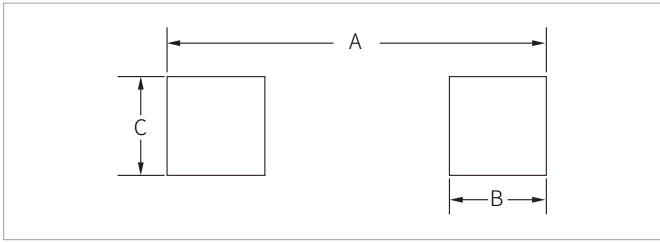


SOD-123 PACKAGE INFORMATION



| Ref. | Millimeters | | Inches | |
|------|-------------|------|--------|-------|
| | Min. | Max. | Min. | Max. |
| A | 2.60 | 2.80 | 0.102 | 0.110 |
| B | 1.50 | 1.70 | 0.059 | 0.067 |
| C | 3.55 | 3.85 | 0.140 | 0.152 |
| D | 1.05 | 1.25 | 0.041 | 0.049 |
| E | 0.45 | 0.65 | 0.018 | 0.026 |
| F | 0.08 | 0.15 | 0.003 | 0.006 |
| H | 0.00 | 0.10 | 0.000 | 0.004 |
| L | 0.25 | 0.45 | 0.010 | 0.018 |

RECOMMENDED PAD LAYOUT DIMENSIONS



| Ref. | Millimeters | | Inches | |
|------|-------------|------|--------|-------|
| | Min. | Max. | Min. | Max. |
| A | 4.00 | 4.30 | 0.157 | 0.169 |
| B | 0.75 | 0.85 | 0.030 | 0.033 |
| C | 0.95 | 1.05 | 0.037 | 0.041 |

ORDERING INFORMATION

| Part Number | Component Package | QTY/Reel | Reel Size |
|---------------------|-------------------|----------|-----------|
| MMSE5221B-MMSZ5267B | SOD-123 | 3000PCS | 7" |

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