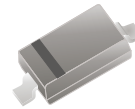


# MMSZ5221B-HF Thru. MMSZ5267B-HF

RoHS Device  
Halogen Free

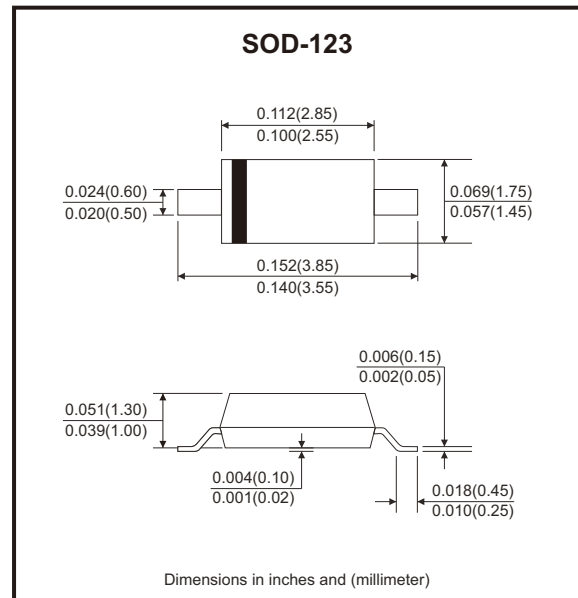


## Features

- Large selection of zener voltages: 2.4V~75V.
- Tight voltage tolerance:  $\pm 5\%$  for B-series.
- Ultra low-profile package well suited for automated assembly.
- MSL class 1 compatible.

## Mechanical data

- Case: Molded plastic, SOD-123
- Molding compound: UL flammability classification rating 94V-0.
- Terminals: Tin-plated; solderability per MIL-STD-202, method 208.



## Circuit Diagram



## Maximum Ratings (T<sub>A</sub>=25°C unless otherwise noted)

| Parameter                               | Symbol           | Value       | Unit |
|-----------------------------------------|------------------|-------------|------|
| Forward voltage @ I <sub>F</sub> =10mA  | V <sub>F</sub>   | 0.9         | V    |
| Power dissipation (collector)           | P <sub>C</sub>   | 500         | mW   |
| Thermal resistance, junction to ambient | R <sub>θJA</sub> | 250         | °C/W |
| Thermal resistance, junction to case    | R <sub>θJC</sub> | 140         | °C/W |
| Junction temperature range              | T <sub>J</sub>   | -55 to +150 | °C   |
| Storage temperature range               | T <sub>STG</sub> | -65 to +150 | °C   |

Note: 1. These ratings are limiting values above which the serviceability of the diodes may be impaired.

## Electrical Characteristics (TA=25°C unless otherwise noted)

| Part Number  | Zener Voltage Range |        |        | Test Current | Maximum Zener Impedance |                  | Maximum Reverse Leakage Current |     | Marking Code |
|--------------|---------------------|--------|--------|--------------|-------------------------|------------------|---------------------------------|-----|--------------|
|              | Vz @ IzT            |        |        | IzT          | ZzT @ IzT               | Zzk @ IzK=0.25mA | IR @ VR                         |     |              |
|              | Min(V)              | Typ(V) | Max(V) | (mA)         | (Ω)                     | (Ω)              | (μA)                            | (V) |              |
| MMSZ5221B-HF | 2.28                | 2.4    | 2.52   | 20           | 30                      | 1200             | 100                             | 1.0 | C1           |
| MMSZ5223B-HF | 2.57                | 2.7    | 2.84   | 20           | 30                      | 1300             | 75                              | 1.0 | C3           |
| MMSZ5225B-HF | 2.85                | 3.0    | 3.15   | 20           | 30                      | 1600             | 50                              | 1.0 | C5           |
| MMSZ5226B-HF | 3.14                | 3.3    | 3.47   | 20           | 28                      | 1600             | 25                              | 1.0 | G1           |
| MMSZ5227B-HF | 3.42                | 3.6    | 3.78   | 20           | 24                      | 1700             | 15                              | 1.0 | G2           |
| MMSZ5228B-HF | 3.71                | 3.9    | 4.10   | 20           | 23                      | 1900             | 10                              | 1.0 | G3           |
| MMSZ5229B-HF | 4.09                | 4.3    | 4.52   | 20           | 22                      | 2000             | 5.0                             | 1.0 | G4           |
| MMSZ5230B-HF | 4.47                | 4.7    | 4.94   | 20           | 19                      | 1900             | 5.0                             | 2.0 | G5           |
| MMSZ5231B-HF | 4.85                | 5.1    | 5.36   | 20           | 17                      | 1600             | 5.0                             | 2.0 | E1           |
| MMSZ5232B-HF | 5.32                | 5.6    | 5.88   | 20           | 11                      | 1600             | 5.0                             | 3.0 | E2           |
| MMSZ5233B-HF | 5.70                | 6.0    | 6.30   | 20           | 7                       | 1600             | 5.0                             | 3.5 | E3           |
| MMSZ5234B-HF | 5.89                | 6.2    | 6.51   | 20           | 7                       | 1000             | 5.0                             | 4.0 | E4           |
| MMSZ5235B-HF | 6.46                | 6.8    | 7.14   | 20           | 5                       | 750              | 3.0                             | 5.0 | E5           |
| MMSZ5236B-HF | 7.13                | 7.5    | 7.88   | 20           | 6                       | 500              | 3.0                             | 6.0 | F1           |
| MMSZ5237B-HF | 7.79                | 8.2    | 8.61   | 20           | 8                       | 500              | 3.0                             | 6.5 | F2           |
| MMSZ5238B-HF | 8.27                | 8.7    | 9.14   | 20           | 8                       | 600              | 3.0                             | 6.5 | F3           |
| MMSZ5239B-HF | 8.65                | 9.1    | 9.56   | 20           | 10                      | 600              | 3.0                             | 7.0 | F4           |
| MMSZ5240B-HF | 9.50                | 10     | 10.50  | 20           | 17                      | 600              | 3.0                             | 8.0 | F5           |
| MMSZ5241B-HF | 10.45               | 11     | 11.55  | 20           | 22                      | 600              | 2.0                             | 8.4 | H1           |
| MMSZ5242B-HF | 11.40               | 12     | 12.60  | 20           | 30                      | 600              | 1.0                             | 9.1 | H2           |
| MMSZ5243B-HF | 12.35               | 13     | 13.65  | 9.5          | 13                      | 600              | 0.5                             | 9.9 | H3           |
| MMSZ5244B-HF | 13.30               | 14     | 14.70  | 9.0          | 15                      | 600              | 0.1                             | 10  | H4           |
| MMSZ5245B-HF | 14.25               | 15     | 15.75  | 8.5          | 16                      | 600              | 0.1                             | 11  | H5           |
| MMSZ5246B-HF | 15.20               | 16     | 16.80  | 7.8          | 17                      | 600              | 0.1                             | 12  | J1           |
| MMSZ5247B-HF | 16.15               | 17     | 17.85  | 7.5          | 19                      | 600              | 0.1                             | 13  | J2           |
| MMSZ5248B-HF | 17.10               | 18     | 18.90  | 7.0          | 21                      | 600              | 0.1                             | 14  | J3           |
| MMSZ5250B-HF | 19.00               | 20     | 21.00  | 6.2          | 25                      | 600              | 0.1                             | 15  | J5           |
| MMSZ5251B-HF | 20.90               | 22     | 23.10  | 5.6          | 29                      | 600              | 0.1                             | 17  | K1           |
| MMSZ5252B-HF | 22.80               | 24     | 25.20  | 5.2          | 33                      | 600              | 0.1                             | 18  | K2           |
| MMSZ5253B-HF | 23.75               | 25     | 26.25  | 5.0          | 35                      | 600              | 0.1                             | 19  | K3           |

Company reserves the right to improve product design , functions and reliability without notice.

REV:A

## Electrical Characteristics (TA=25°C unless otherwise noted)

| Part Number  | Zener Voltage Range |        |        | Test Current | Maximum Zener Impedance |                  | Maximum Reverse Leakage Current |     | Marking Code |
|--------------|---------------------|--------|--------|--------------|-------------------------|------------------|---------------------------------|-----|--------------|
|              | Vz @ IzT            |        |        | IzT          | ZzT @ IzT               | Zzk @ Izk=0.25mA | IR @ VR                         |     |              |
|              | Min(V)              | Typ(V) | Max(V) | (mA)         | (Ω)                     | (Ω)              | (μA)                            | (V) |              |
| MMSZ5254B-HF | 25.65               | 27     | 28.35  | 5.0          | 41                      | 600              | 0.1                             | 21  | K4           |
| MMSZ5255B-HF | 26.60               | 28     | 29.40  | 4.5          | 44                      | 600              | 0.1                             | 21  | K5           |
| MMSZ5256B-HF | 28.50               | 30     | 31.50  | 4.2          | 49                      | 600              | 0.1                             | 23  | M1           |
| MMSZ5257B-HF | 31.35               | 33     | 34.65  | 3.8          | 58                      | 700              | 0.1                             | 25  | M2           |
| MMSZ5258B-HF | 34.20               | 36     | 37.80  | 3.4          | 70                      | 700              | 0.1                             | 27  | M3           |
| MMSZ5259B-HF | 37.05               | 39     | 40.95  | 3.2          | 80                      | 800              | 0.1                             | 30  | M4           |
| MMSZ5260B-HF | 40.85               | 43     | 45.15  | 3.0          | 93                      | 900              | 0.1                             | 33  | M5           |
| MMSZ5261B-HF | 44.65               | 47     | 49.35  | 2.7          | 105                     | 1000             | 0.1                             | 36  | N1           |
| MMSZ5262B-HF | 48.45               | 51     | 53.55  | 2.5          | 125                     | 1100             | 0.1                             | 39  | N2           |
| MMSZ5263B-HF | 53.20               | 56     | 58.80  | 2.2          | 150                     | 1300             | 0.1                             | 43  | M8           |
| MMSZ5265B-HF | 58.90               | 62     | 65.10  | 2.0          | 185                     | 1400             | 0.1                             | 47  | N5           |
| MMSZ5267B-HF | 71.25               | 75     | 78.75  | 1.7          | 270                     | 1700             | 0.1                             | 56  | P2           |

Rating and Characteristic Curves (MMSZ5221B-HF Thru. MMSZ5267B-HF)

Fig.1 - Power Dissipation vs Ambient Temperature

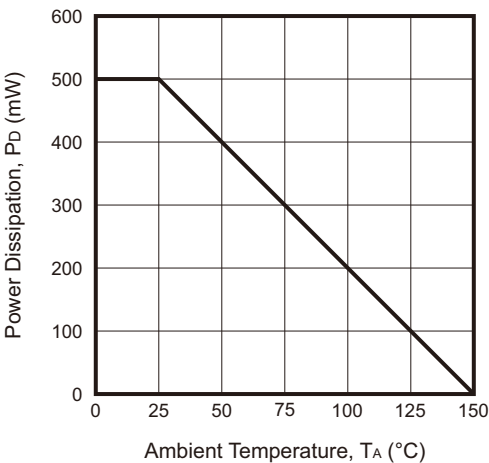


Fig.2 - Typical Capacitance

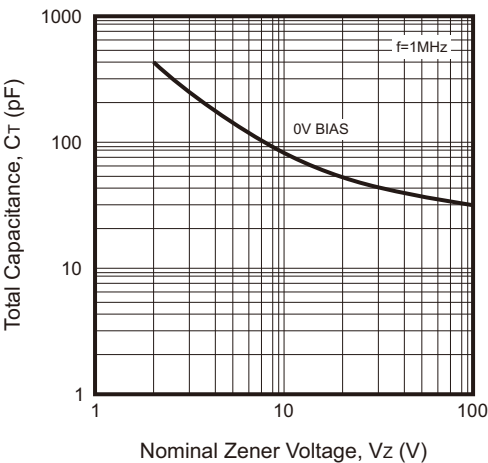


Fig.3 - Zener Breakdown Characteristics

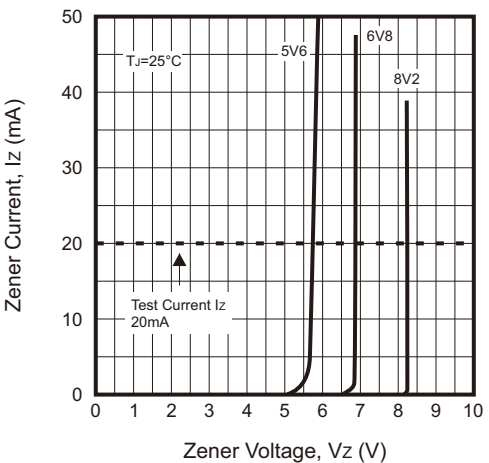
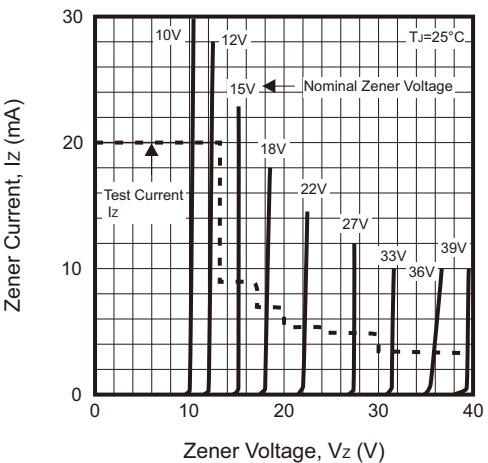
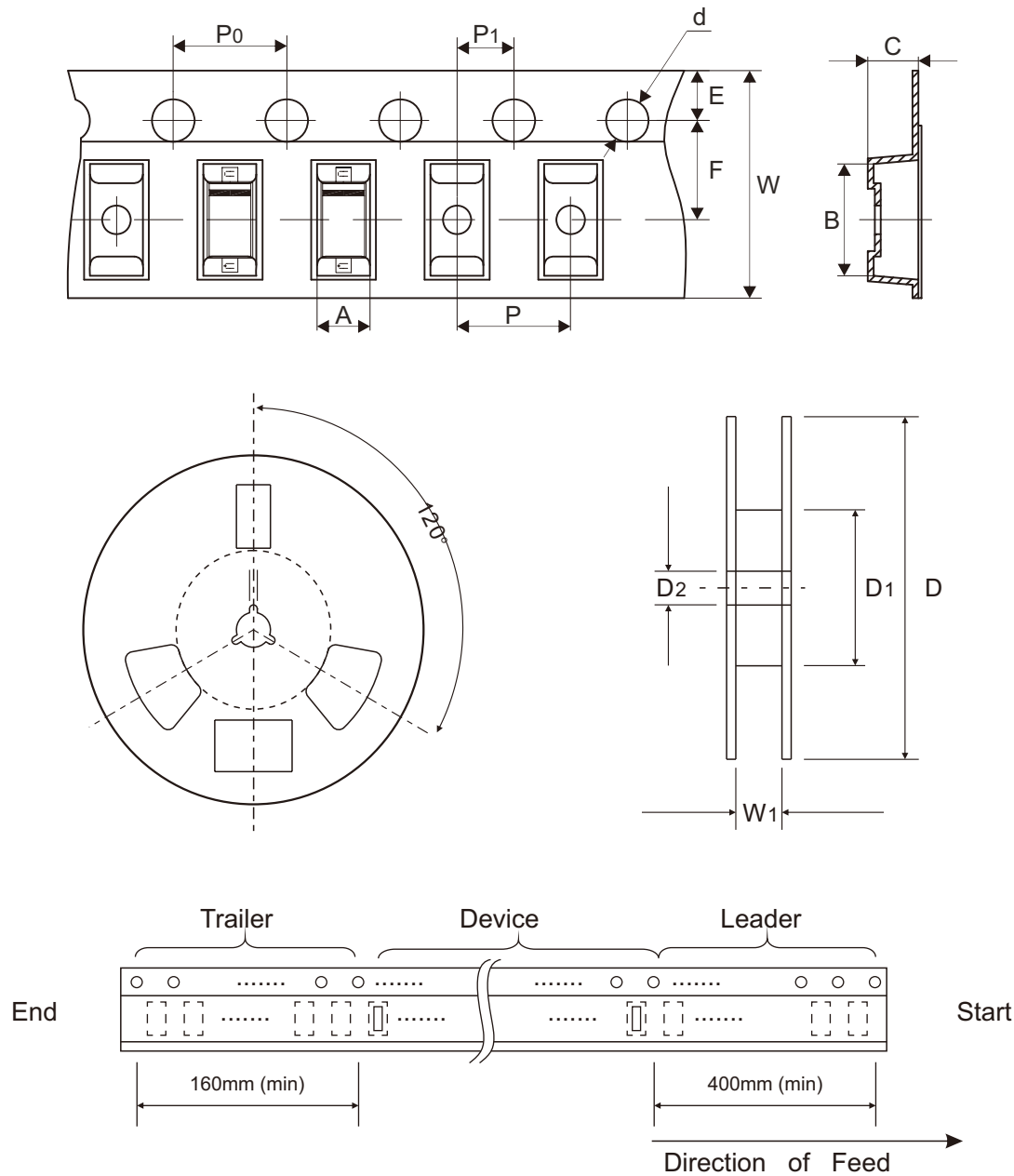


Fig.4 - Zener Breakdown Characteristics



Reel Taping Specification



| SOD-123 | SYMBOL | A             | B             | C             | d             | D             | D1            | D2            |
|---------|--------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
|         | (mm)   | 1.85 ± 0.10   | 3.94 ± 0.10   | 1.57 ± 0.10   | 1.55 ± 0.05   | 178.00 ± 1.00 | 54.00 ± 0.50  | 13.00 ± 0.50  |
|         | (inch) | 0.073 ± 0.004 | 0.155 ± 0.004 | 0.062 ± 0.004 | 0.061 ± 0.002 | 7.008 ± 0.039 | 2.126 ± 0.020 | 0.512 ± 0.020 |

| SOD-123 | SYMBOL | E             | F             | P             | P1            | P0            | W                        | W1            |
|---------|--------|---------------|---------------|---------------|---------------|---------------|--------------------------|---------------|
|         | (mm)   | 1.75 ± 0.10   | 3.50 ± 0.05   | 4.00 ± 0.10   | 2.00 ± 0.05   | 4.00 ± 0.10   | 8.00 + 0.30<br>- 0.10    | 9.50 ± 1.00   |
|         | (inch) | 0.069 ± 0.004 | 0.138 ± 0.002 | 0.157 ± 0.004 | 0.079 ± 0.002 | 0.157 ± 0.004 | 0.315 + 0.012<br>- 0.004 | 0.374 ± 0.039 |

Marking Code

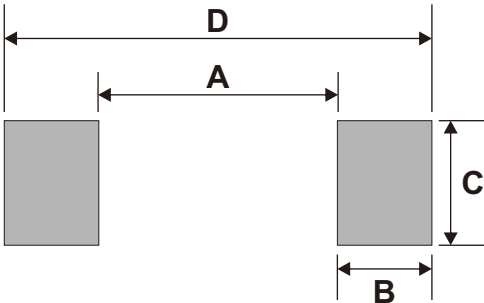
| Part Number                        | Marking Code |
|------------------------------------|--------------|
| MMSZ5221B-HF Thru.<br>MMSZ5267B-HF | See Page 2~3 |



XX = Product type marking code  
= Cathode band

Suggested PAD Layout

| SIZE | SOD-123 |        |
|------|---------|--------|
|      | (mm)    | (inch) |
| A    | 2.36    | 0.093  |
| B    | 0.91    | 0.036  |
| C    | 1.22    | 0.048  |
| D    | 4.19    | 0.165  |



Note: 1.The pad layout is for reference purposes only.

Standard Packaging

| Case Type | REEL PACK       |                     |
|-----------|-----------------|---------------------|
|           | REEL<br>( pcs ) | Reel Size<br>(inch) |
| SOD-123   | 3,000           | 7                   |