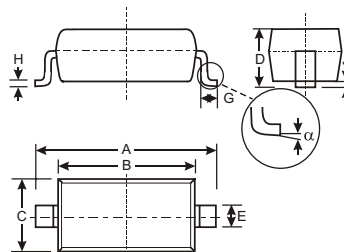


### Features

- Planar Die Construction
- 500mW Power Dissipation
- General Purpose, Medium Current
- Ideally Suited for Automated Assembly Processes
- Also Available in Lead Free Version

### Mechanical Data

- Case: SOD-123, Plastic
- UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020A
- Terminals: Solderable per MIL-STD-202, Method 208
- Also Available in Lead Free Plating (Matte Tin Finish). Please see Ordering Information, Note 5, on Page 2
- Polarity: Cathode Band
- Marking: See Below
- Weight: 0.01 grams (approx.)
- Ordering Information: See Page 2



| SOD-123              |              |      |
|----------------------|--------------|------|
| Dim                  | Min          | Max  |
| A                    | 3.55         | 3.85 |
| B                    | 2.55         | 2.85 |
| C                    | 1.40         | 1.70 |
| D                    | —            | 1.35 |
| E                    | 0.55 Typical |      |
| G                    | 0.25         | —    |
| H                    | 0.11 Typical |      |
| J                    | —            | 0.10 |
| $\alpha$             | 0°           | 8°   |
| All Dimensions in mm |              |      |

### Maximum Ratings @ $T_A = 25^\circ\text{C}$ unless otherwise specified

| Characteristic                                       | Symbol          | Value       | Unit               |
|------------------------------------------------------|-----------------|-------------|--------------------|
| Forward Voltage (Note 2) @ $I_F = 10\text{mA}$       | $V_F$           | 0.9         | V                  |
| Power Dissipation (Note 1)                           | $P_d$           | 500         | mW                 |
| Thermal Resistance, Junction to Ambient Air (Note 1) | $R_{\theta JA}$ | 350         | $^\circ\text{C/W}$ |
| Operating and Storage Temperature Range              | $T_J, T_{STG}$  | -65 to +150 | $^\circ\text{C}$   |

- Notes: 1. Device mounted on ceramic PCB; 7.6 mm x 9.4 mm x 0.87 mm with pad areas 25 mm<sup>2</sup>.  
2. Short duration test pulse used to minimize self-heating effect.

### Marking Information



XX = Product Type Marking Code (See Page 2)  
YM = Date Code Marking  
Y = Year (ex: N = 2002)  
M = Month (ex: 9 = September)

#### Date Code Key

| Year | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 |
|------|------|------|------|------|------|------|------|------|
| Code | J    | K    | L    | M    | N    | P    | R    | S    |

| Month | Jan | Feb | March | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|-------|-----|-----|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Code  | 1   | 2   | 3     | 4   | 5   | 6   | 7   | 8   | 9   | O   | N   | D   |

**Electrical Characteristics** @ T<sub>A</sub> = 25°C unless otherwise specified

| Type Number | Type Code      | Zener Voltage Range (Note 2)     |         |         | Test Current    | Maximum Zener Impedance (Note 3)  |                                            | Maximum Reverse Leakage Current (Note 2) |                  |
|-------------|----------------|----------------------------------|---------|---------|-----------------|-----------------------------------|--------------------------------------------|------------------------------------------|------------------|
|             |                | V <sub>Z</sub> @ I <sub>ZT</sub> |         |         | I <sub>ZT</sub> | Z <sub>ZT</sub> @ I <sub>ZT</sub> | Z <sub>ZK</sub> @ I <sub>ZK</sub> = 0.25mA | I <sub>R</sub>                           | @ V <sub>R</sub> |
|             |                | Nom (V)                          | Min (V) | Max (V) | mA              | Ω                                 |                                            | μA                                       | V                |
| MMSZ5221B   | C1, <u>C</u> 1 | 2.4                              | 2.28    | 2.52    | 20              | 30                                | 1200                                       | 100                                      | 1.0              |
| MMSZ5223B   | C3, <u>C</u> 3 | 2.7                              | 2.57    | 2.84    | 20              | 30                                | 1300                                       | 75                                       | 1.0              |
| MMSZ5225B   | C5, <u>C</u> 5 | 3.0                              | 2.85    | 3.15    | 20              | 30                                | 1600                                       | 50                                       | 1.0              |
| MMSZ5226B   | G1, <u>G</u> 1 | 3.3                              | 3.14    | 3.47    | 20              | 28                                | 1600                                       | 25                                       | 1.0              |
| MMSZ5227B   | G2, <u>G</u> 2 | 3.6                              | 3.42    | 3.78    | 20              | 24                                | 1700                                       | 15                                       | 1.0              |
| MMSZ5228B   | G3, <u>G</u> 3 | 3.9                              | 3.71    | 4.10    | 20              | 23                                | 1900                                       | 10                                       | 1.0              |
| MMSZ5229B   | G4, <u>G</u> 4 | 4.3                              | 4.09    | 4.52    | 20              | 22                                | 2000                                       | 5.0                                      | 1.0              |
| MMSZ5230B   | G5, <u>G</u> 5 | 4.7                              | 4.47    | 4.94    | 20              | 19                                | 1900                                       | 5.0                                      | 2.0              |
| MMSZ5231B   | E1, <u>E</u> 1 | 5.1                              | 4.85    | 5.36    | 20              | 17                                | 1600                                       | 5.0                                      | 2.0              |
| MMSZ5232B   | E2, <u>E</u> 2 | 5.6                              | 5.32    | 5.88    | 20              | 11                                | 1600                                       | 5.0                                      | 3.0              |
| MMSZ5233B   | E3, <u>E</u> 3 | 6.0                              | 5.70    | 6.30    | 20              | 7                                 | 1600                                       | 5.0                                      | 3.5              |
| MMSZ5234B   | E4, <u>E</u> 4 | 6.2                              | 5.89    | 6.51    | 20              | 7                                 | 1000                                       | 5.0                                      | 4.0              |
| MMSZ5235B   | E5, <u>E</u> 5 | 6.8                              | 6.46    | 7.14    | 20              | 5                                 | 750                                        | 3.0                                      | 5.0              |
| MMSZ5236B   | F1, <u>F</u> 1 | 7.5                              | 7.13    | 7.88    | 20              | 6                                 | 500                                        | 3.0                                      | 6.0              |
| MMSZ5237B   | F2, <u>F</u> 2 | 8.2                              | 7.79    | 8.61    | 20              | 8                                 | 500                                        | 3.0                                      | 6.5              |
| MMSZ5238B   | F3, <u>F</u> 3 | 8.7                              | 8.27    | 9.14    | 20              | 8                                 | 600                                        | 3.0                                      | 6.5              |
| MMSZ5239B   | F4, <u>F</u> 4 | 9.1                              | 8.65    | 9.56    | 20              | 10                                | 600                                        | 3.0                                      | 7.0              |
| MMSZ5240B   | F5, <u>F</u> 5 | 10                               | 9.50    | 10.50   | 20              | 17                                | 600                                        | 3.0                                      | 8.0              |
| MMSZ5241B   | H1, <u>H</u> 1 | 11                               | 10.45   | 11.55   | 20              | 22                                | 600                                        | 2.0                                      | 8.4              |
| MMSZ5242B   | H2, <u>H</u> 2 | 12                               | 11.40   | 12.60   | 20              | 30                                | 600                                        | 1.0                                      | 9.1              |
| MMSZ5243B   | H3, <u>H</u> 3 | 13                               | 12.35   | 13.65   | 9.5             | 13                                | 600                                        | 0.5                                      | 9.9              |
| MMSZ5245B   | H5, <u>H</u> 5 | 15                               | 14.25   | 15.75   | 8.5             | 16                                | 600                                        | 0.1                                      | 11               |
| MMSZ5246B   | J1, <u>J</u> 1 | 16                               | 15.20   | 16.80   | 7.8             | 17                                | 600                                        | 0.1                                      | 12               |
| MMSZ5248B   | J3, <u>J</u> 3 | 18                               | 17.10   | 18.90   | 7.0             | 21                                | 600                                        | 0.1                                      | 14               |
| MMSZ5250B   | J5, <u>J</u> 5 | 20                               | 19.00   | 21.00   | 6.2             | 25                                | 600                                        | 0.1                                      | 15               |
| MMSZ5251B   | K1, <u>K</u> 1 | 22                               | 20.90   | 23.10   | 5.6             | 29                                | 600                                        | 0.1                                      | 17               |
| MMSZ5252B   | K2, <u>K</u> 2 | 24                               | 22.80   | 25.20   | 5.2             | 33                                | 600                                        | 0.1                                      | 18               |
| MMSZ5254B   | K4, <u>K</u> 4 | 27                               | 25.65   | 28.35   | 5.0             | 41                                | 600                                        | 0.1                                      | 21               |
| MMSZ5255B   | K5, <u>K</u> 5 | 28                               | 26.60   | 29.40   | 4.5             | 44                                | 600                                        | 0.1                                      | 21               |
| MMSZ5256B   | M1, <u>M</u> 1 | 30                               | 28.50   | 31.50   | 4.2             | 49                                | 600                                        | 0.1                                      | 23               |
| MMSZ5257B   | M2, <u>M</u> 2 | 33                               | 31.35   | 34.65   | 3.8             | 58                                | 700                                        | 0.1                                      | 25               |
| MMSZ5258B   | M3, <u>M</u> 3 | 36                               | 34.20   | 37.80   | 3.4             | 70                                | 700                                        | 0.1                                      | 27               |
| MMSZ5259B   | M4, <u>M</u> 4 | 39                               | 37.05   | 40.95   | 3.2             | 80                                | 800                                        | 0.1                                      | 30               |

- Notes: 1. Device mounted on ceramic PCB; 7.6 mm x 9.4 mm x 0.87 mm with pad areas 25 mm<sup>2</sup>.  
 2. Short duration test pulse used to minimize self-heating effect.  
 3. f = 1KHz.

**Ordering Information** (Note 4)

| Device           | Packaging | Shipping         |
|------------------|-----------|------------------|
| (Type Number)-7* | SOD-123   | 3000/Tape & Reel |

\* Add "-7" to the appropriate type number in Table 1 above example: 6.2V Zener = MMSZ5234B-7.

- Notes: 4. For Packaging Details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.  
 5. For Lead Free version (with Lead Free terminal finish) part number, please add "-F" suffix to part number above.  
 Example: MMSZ5259B-7-F.

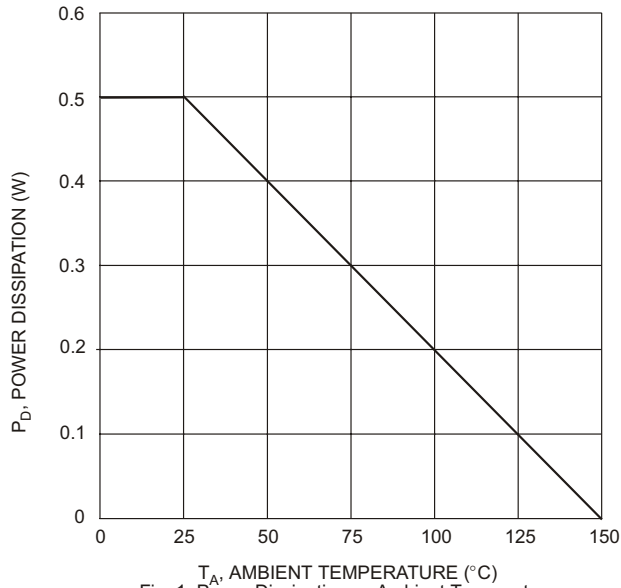


Fig. 1 Power Dissipation vs Ambient Temperature

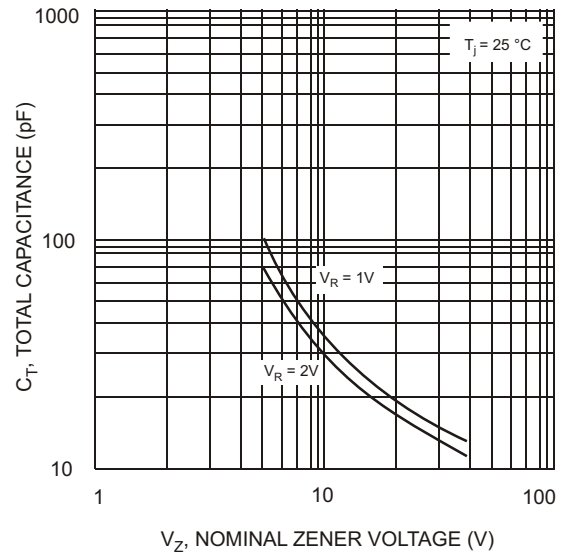


Fig. 2 Total Capacitance vs Nominal Zener Voltage

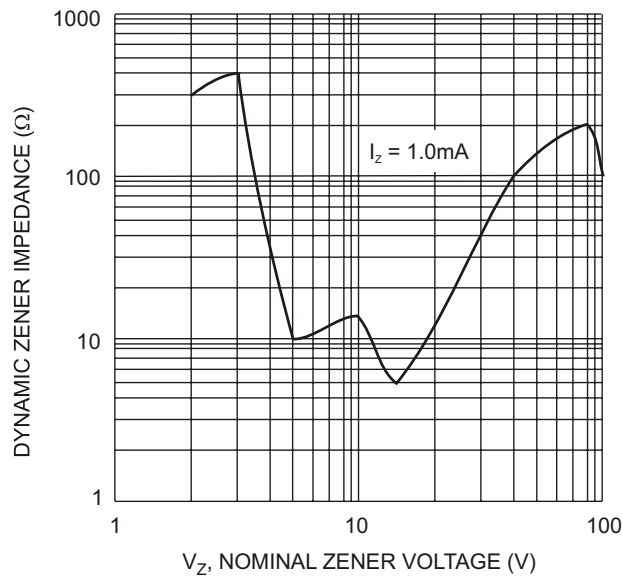


Fig. 3 Zener Voltage vs. Zener Impedance

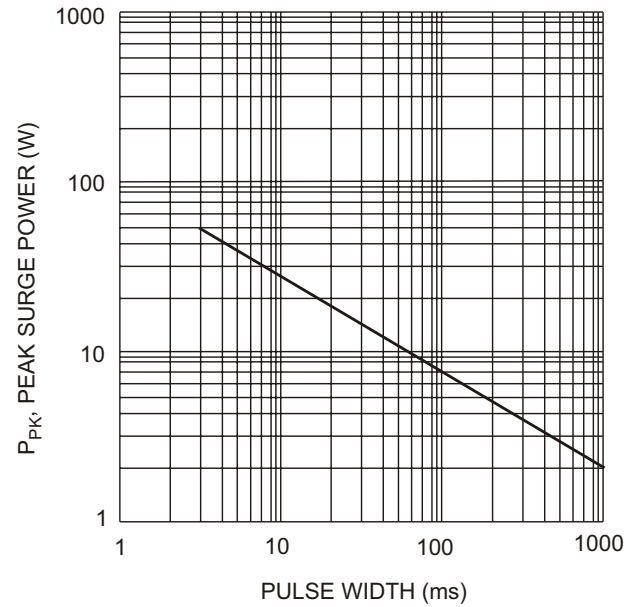


Fig. 4 Maximum Non-repetitive Surge Power

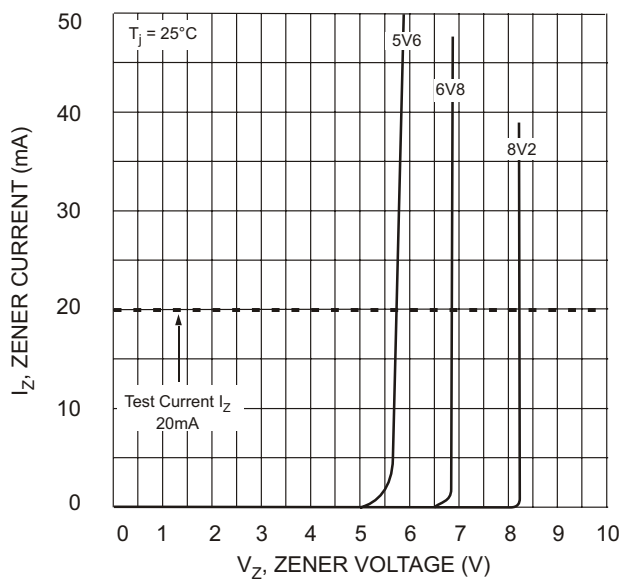


Fig. 5 Zener Breakdown Characteristics

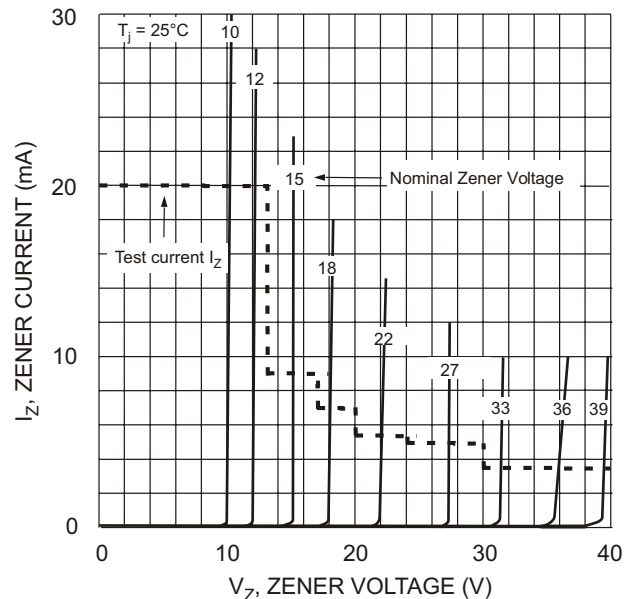


Fig. 6 Zener Breakdown Characteristics