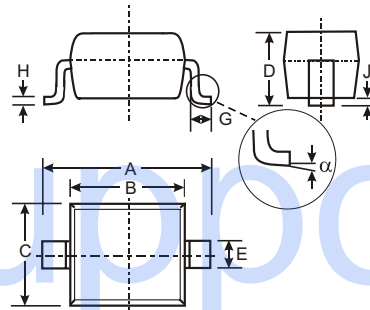


### Features

- Planar Die Construction
- Ultra-Small Surface Mount Package
- General Purpose
- Ideally suited for Automated Assembly Processes
- Also Available in Lead Free Version

### Mechanical Data

- Case: SOD-323, Plastic
- Case Material - 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 4, on Page 2
- Polarity: Cathode Band
- Marking: See Page 2
- Weight: 0.004 grams (approx.)



| SOD-323              |              |      |
|----------------------|--------------|------|
| Dim                  | Min          | Max  |
| A                    | 2.30         | 2.70 |
| B                    | 1.60         | 1.80 |
| C                    | 1.20         | 1.40 |
| D                    | 1.05 Typical |      |
| E                    | 0.25         | 0.35 |
| G                    | 0.20         | 0.40 |
| H                    | 0.10         | 0.15 |
| J                    | 0.05 Typical |      |
| $\alpha$             | 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)                           | $P_d$           | 200         | mW                 |
| Thermal Resistance, Junction to Ambient Air (Note 1) | $R_{\theta JA}$ | 625         | $^\circ\text{C/W}$ |
| Operating and Storage Temperature Range              | $T_J, T_{STG}$  | -65 to +150 | $^\circ\text{C}$   |

- Notes:
1. Part mounted on FR-4 PC board with recommended pad layout, which can be found on our website at <http://www.diodes.com/datasheets/ap02001.pdf>.
  2. Short duration pulse test used to minimize self-heating effect.

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

| Type Number | Marking Code | Zener Voltage Range (Note 1)     |         |         | Test Current | Maximum Zener Impedance (Note 2) |                                   | Maximum Reverse Leakage Current (Note 1)      |                |
|-------------|--------------|----------------------------------|---------|---------|--------------|----------------------------------|-----------------------------------|---|----------------|
|             |              | 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><br>= 0.25mA | I <sub>R</sub> |
|             |              | Nom (V)                          | Min (V) | Max (V) | mA           | Ω                                |                                   | μA  | V              |
| MMSZ5221BS  | C1           | 2.4                              | 2.28    | 2.52    | 20           | 30                               | 1200                              | 100   | 1.0            |
| MMSZ5223BS  | C3           | 2.7                              | 2.57    | 2.84    | 20           | 30                               | 1300                              | 75  | 1.0            |
| MMSZ5225BS  | C5           | 3.0                              | 2.85    | 3.15    | 20           | 30                               | 1600                              | 50  | 1.0            |
| MMSZ5226BS  | G1           | 3.3                              | 3.14    | 3.47    | 20           | 28                               | 1600                              | 25  | 1.0            |
| MMSZ5227BS  | G2           | 3.6                              | 3.42    | 3.78    | 20           | 24                               | 1700                              | 15  | 1.0            |
| MMSZ5228BS  | G3           | 3.9                              | 3.71    | 4.10    | 20           | 23                               | 1900                              | 10  | 1.0            |
| MMSZ5229BS  | G4           | 4.3                              | 4.09    | 4.52    | 20           | 22                               | 2000                              | 5.0   | 1.0            |
| MMSZ5230BS  | G5           | 4.7                              | 4.47    | 4.94    | 20           | 19                               | 1900                              | 5.0   | 2.0            |
| MMSZ5231BS  | E1           | 5.1                              | 4.85    | 5.36    | 20           | 17                               | 1600                              | 5.0   | 2.0            |
| MMSZ5232BS  | E2           | 5.6                              | 5.32    | 5.88    | 20           | 11                               | 1600                              | 5.0   | 3.0            |
| MMSZ5233BS  | E3           | 6.0                              | 5.70    | 6.30    | 20           | 7                                | 1600                              | 5.0   | 3.5            |
| MMSZ5234BS  | E4           | 6.2                              | 5.89    | 6.51    | 20           | 7                                | 1000                              | 5.0   | 4.0            |
| MMSZ5235BS  | E5           | 6.8                              | 6.46    | 7.14    | 20           | 5                                | 750                               | 3.0   | 5.0            |
| MMSZ5236BS  | F1           | 7.5                              | 7.13    | 7.88    | 20           | 6                                | 500                               | 3.0   | 6.0            |
| MMSZ5237BS  | F2           | 8.2                              | 7.79    | 8.61    | 20           | 8                                | 500                               | 3.0   | 6.5            |
| MMSZ5238BS  | F3           | 8.7                              | 8.27    | 9.14    | 20           | 8                                | 600                               | 3.0   | 6.5            |
| MMSZ5239BS  | F4           | 9.1                              | 8.65    | 9.56    | 20           | 10                               | 600                               | 3.0   | 7.0            |
| MMSZ5240BS  | F5           | 10                               | 9.50    | 10.50   | 20           | 17                               | 600                               | 3.0   | 8.0            |
| MMSZ5241BS  | H1           | 11                               | 10.45   | 11.55   | 20           | 22                               | 600                               | 2.0   | 8.4            |
| MMSZ5242BS  | H2           | 12                               | 11.40   | 12.60   | 20           | 30                               | 600                               | 1.0   | 9.1            |
| MMSZ5243BS  | H3           | 13                               | 12.35   | 13.65   | 9.5          | 13                               | 600                               | 0.5   | 9.9            |
| MMSZ5245BS  | H5           | 15                               | 14.25   | 15.75   | 8.5          | 16                               | 600                               | 0.1   | 11             |
| MMSZ5246BS  | J1           | 16                               | 15.20   | 16.80   | 7.8          | 17                               | 600                               | 0.1   | 12             |
| MMSZ5248BS  | J3           | 18                               | 17.10   | 18.90   | 7.0          | 21                               | 600                               | 0.1   | 14             |
| MMSZ5250BS  | J5           | 20                               | 19.00   | 21.00   | 6.2          | 25                               | 600                               | 0.1   | 15             |
| MMSZ5251BS  | K1           | 22                               | 20.90   | 23.10   | 5.6          | 29                               | 600                               | 0.1   | 17             |
| MMSZ5252BS  | K2           | 24                               | 22.80   | 25.20   | 5.2          | 33                               | 600                               | 0.1   | 18             |
| MMSZ5254BS  | K4           | 27                               | 25.65   | 28.35   | 5.0          | 41                               | 600                               | 0.1   | 21             |
| MMSZ5255BS  | K5           | 28                               | 26.60   | 29.40   | 4.5          | 44                               | 600                               | 0.1   | 21             |
| MMSZ5256BS  | M1           | 30                               | 28.50   | 31.50   | 4.2          | 49                               | 600                               | 0.1   | 23             |
| MMSZ5257BS  | M2           | 33                               | 31.35   | 34.65   | 3.8          | 58                               | 700                               | 0.1   | 25             |
| MMSZ5258BS  | M3           | 36                               | 34.20   | 37.80   | 3.4          | 70                               | 700                               | 0.1   | 27             |
| MMSZ5259BS  | M4           | 39                               | 37.05   | 40.95   | 3.2          | 80                               | 800                               | 0.1   | 30             |

Notes: 1. Short duration test pulse used to minimize self-heating effect.  
2. f = 1KHz.

## Ordering Information (Note 3)

| Device           | Packaging | Shipping         |
|------------------|-----------|------------------|
| (Type Number)-7* | SOD-323   | 3000/Tape & Reel |

Notes: 3. For Packaging Details, go to our website at: <http://www.diodes.com/datasheets/ap02007.pdf>.  
\*Add "-7" to the appropriate type number in Table 1 above example: 6.2V Zener = MMSZ5234BS-7.  
4. For Lead Free version (with Lead Free terminal finish) part number, please add "-F" suffix to part number above.  
Example: MMSZ5234BS -7-F.

## Marking Information



XX = Product Type Marking Code  
(See Table Above)

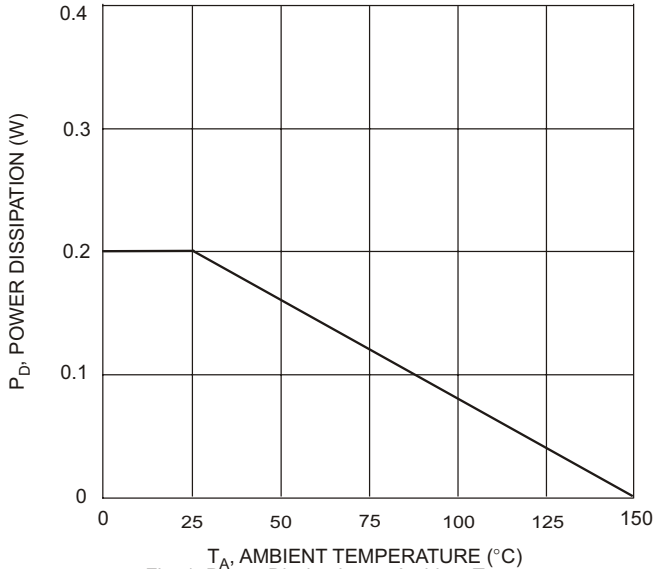


Fig. 1 Power Dissipation vs Ambient Temperature

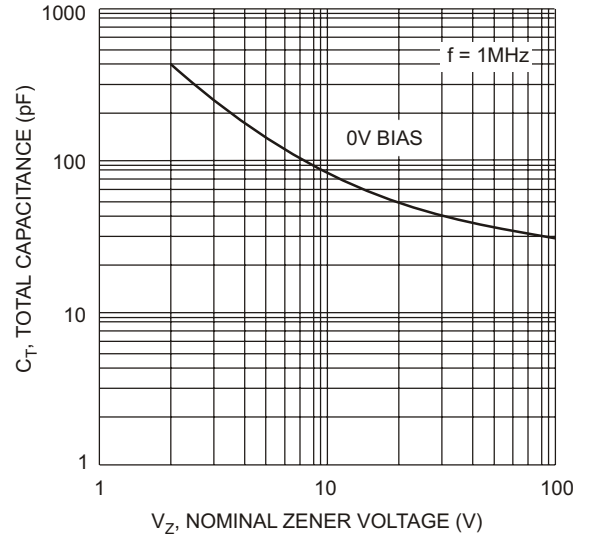


Fig. 2 Typical Capacitance

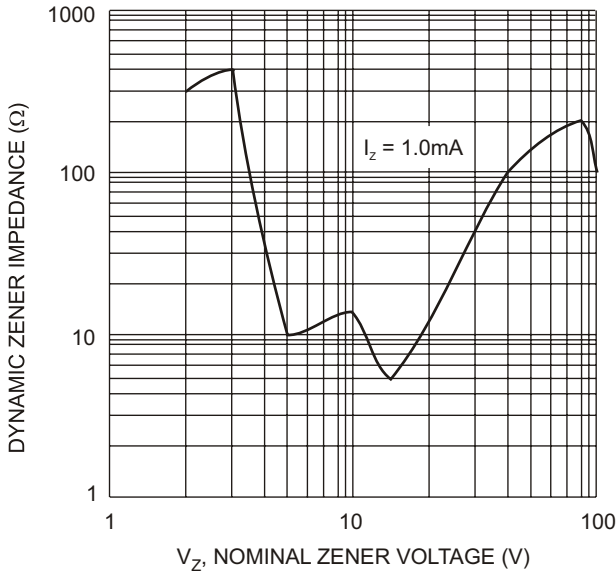


Fig. 3 Zener Impedance vs. Zener Voltage

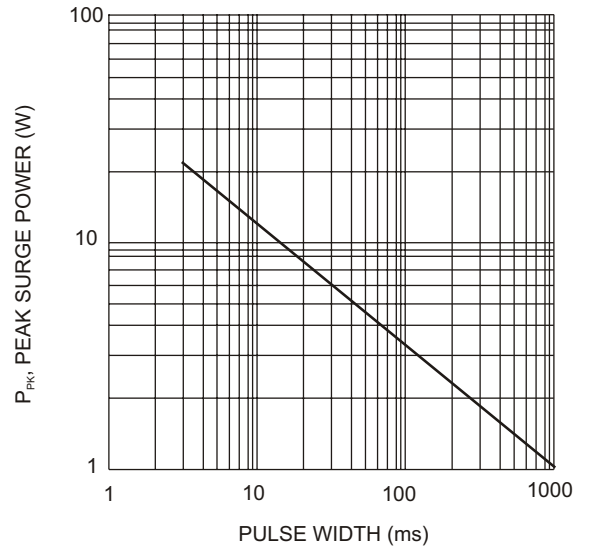


Fig. 4 Maximum Non-repetitive Surge Power

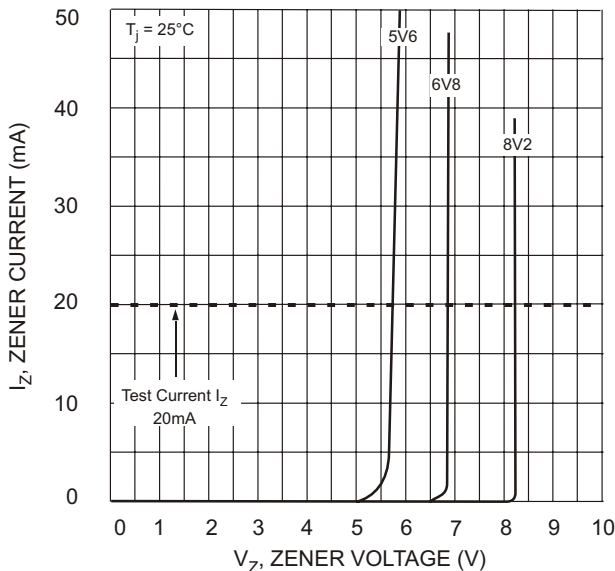


Fig. 5 Zener Breakdown Characteristics

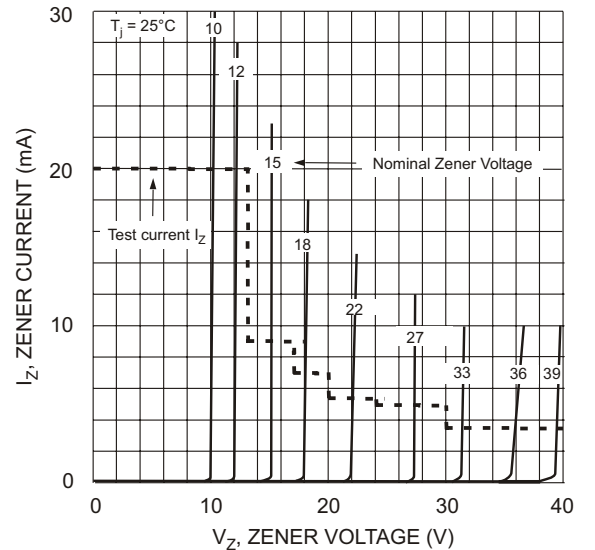


Fig. 6 Zener Breakdown Characteristics