

**Silicon Planar Zener Diodes**

**MM3Z2V2B~MM3Z39B**

**Features**

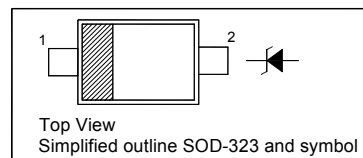
- Total power dissipation : max. 300 mW
- Small plastic package suitable for surface mounted design
- High reliability

**Description**

Silicon planar Zener diode in a small plastic SMD SOD-323 package

PINNING

| PIN | DESCRIPTION |
|-----|-------------|
| 1   | Cathode     |
| 2   | Anode       |



**Absolute Maximum Ratings (T<sub>a</sub> = 25 °C)**

| Parameter                 | Symbol           | Value         | Unit |
|---------------------------|------------------|---------------|------|
| Power Dissipation         | P <sub>tot</sub> | 300           | mW   |
| Junction Temperature      | T <sub>j</sub>   | 150           | °C   |
| Storage Temperature Range | T <sub>stg</sub> | - 55 to + 150 | °C   |

**Characteristics at T<sub>a</sub> = 25 °C**

| Parameter                                    | Symbol           | Max. | Unit |
|--|------------------|------|------|
| Thermal Resistance Junction to Ambient Air   | R <sub>thA</sub> | 417  | °C/W |
| Forward Voltage<br>at I <sub>F</sub> = 10 mA | V <sub>F</sub>   | 0.9  | V    |

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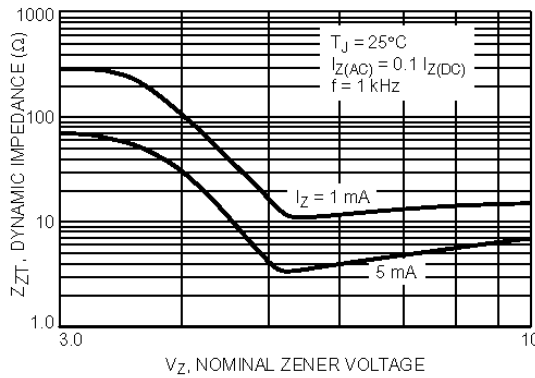
Characteristics at  $T_a = 25\text{ °C}$

| Type     | Marking Code | Zener Voltage Range <sup>1)</sup> |                       |                          | Dynamic Impedance           |                          | Reverse Leakage Current     |                        |
|----------|--------------|-----------------------------------|-----------------------|--------------------------|-----------------------------|--------------------------|-----------------------------|------------------------|
|          |              | V <sub>znom</sub><br>V            | I <sub>ZT</sub><br>mA | for V <sub>ZT</sub><br>V | Z <sub>ZT</sub> (Max.)<br>Ω | at I <sub>ZT</sub><br>mA | I <sub>R</sub> (Max.)<br>μA | at V <sub>R</sub><br>V |
| MM3Z2V2B | MF           | 2.2                               | 5                     | 2.1...2.4                | 100                         | 5                        | 120                         | 0.7                    |
| MM3Z2V4B | 7C           | 2.4                               | 5                     | 2.3...2.65               | 100                         | 5                        | 120                         | 1                      |
| MM3Z2V7B | 7D           | 2.7                               | 5                     | 2.65...2.95              | 110                         | 5                        | 120                         | 1                      |
| MM3Z3V0B | 7E           | 3.0                               | 5                     | 2.95...3.25              | 120                         | 5                        | 50                          | 1                      |
| MM3Z3V3B | 7F           | 3.3                               | 5                     | 3.25...3.55              | 120                         | 5                        | 20                          | 1                      |
| MM3Z3V6B | 7H           | 3.6                               | 5                     | 3.6...3.845              | 100                         | 5                        | 10                          | 1                      |
| MM3Z3V9B | 7J           | 3.9                               | 5                     | 3.89...4.16              | 100                         | 5                        | 5                           | 1                      |
| MM3Z4V3B | 7K           | 4.3                               | 5                     | 4.17...4.43              | 100                         | 5                        | 5                           | 1                      |
| MM3Z4V7B | 7M           | 4.7                               | 5                     | 4.55...4.75              | 100                         | 5                        | 2                           | 1                      |
| MM3Z5V1B | 7N           | 5.1                               | 5                     | 4.98...5.2               | 80                          | 5                        | 2                           | 1.5                    |
| MM3Z5V6B | 7P           | 5.6                               | 5                     | 5.49...5.73              | 60                          | 5                        | 1                           | 2.5                    |
| MM3Z6V2B | 7R           | 6.2                               | 5                     | 6.06...6.33              | 60                          | 5                        | 1                           | 3                      |
| MM3Z6V8B | 7X           | 6.8                               | 5                     | 6.65...6.93              | 40                          | 5                        | 0.5                         | 3.5                    |
| MM3Z7V5B | 7Y           | 7.5                               | 5                     | 7.28...7.6               | 30                          | 5                        | 0.5                         | 4                      |
| MM3Z8V2B | 7Z           | 8.2                               | 5                     | 8.02...8.36              | 30                          | 5                        | 0.5                         | 5                      |
| MM3Z9V1B | 8A           | 9.1                               | 5                     | 8.85...9.23              | 30                          | 5                        | 0.5                         | 6                      |
| MM3Z10B  | 8B           | 10                                | 5                     | 9.77...10.21             | 30                          | 5                        | 0.1                         | 7                      |
| MM3Z11B  | 8C           | 11                                | 5                     | 10.76...11.22            | 30                          | 5                        | 0.1                         | 8                      |
| MM3Z12B  | 8D           | 12                                | 5                     | 11.74...12.24            | 30                          | 5                        | 0.1                         | 9                      |
| MM3Z13B  | 8E           | 13                                | 5                     | 12.91...13.49            | 37                          | 5                        | 0.1                         | 10                     |
| MM3Z15B  | 8F           | 15                                | 5                     | 14.34...14.98            | 42                          | 5                        | 0.1                         | 11                     |
| MM3Z16B  | 8H           | 16                                | 5                     | 15.85...16.51            | 50                          | 5                        | 0.1                         | 12                     |
| MM3Z18B  | 8J           | 18                                | 5                     | 17.56...18.35            | 65                          | 5                        | 0.1                         | 13                     |
| MM3Z20B  | 8K           | 20                                | 5                     | 19.52...20.39            | 85                          | 5                        | 0.1                         | 15                     |
| MM3Z22B  | 8M           | 22                                | 5                     | 21.54...22.47            | 100                         | 5                        | 0.1                         | 17                     |
| MM3Z24B  | 8N           | 24                                | 5                     | 23.72...24.78            | 120                         | 5                        | 0.1                         | 19                     |
| MM3Z27B  | 8P           | 27                                | 5                     | 26.19...27.53            | 150                         | 5                        | 0.1                         | 21                     |
| MM3Z30B  | 8R           | 30                                | 5                     | 29.19...30.69            | 200                         | 5                        | 0.1                         | 23                     |
| MM3Z33B  | 8X           | 33                                | 5                     | 32.15...33.79            | 250                         | 5                        | 0.1                         | 25                     |
| MM3Z36B  | 8Y           | 36                                | 5                     | 35.07...36.87            | 300                         | 5                        | 0.1                         | 27                     |
| MM3Z39B  | 8Z           | 39                                | 5                     | 37...41                  | 100                         | 5                        | 2                           | 30                     |

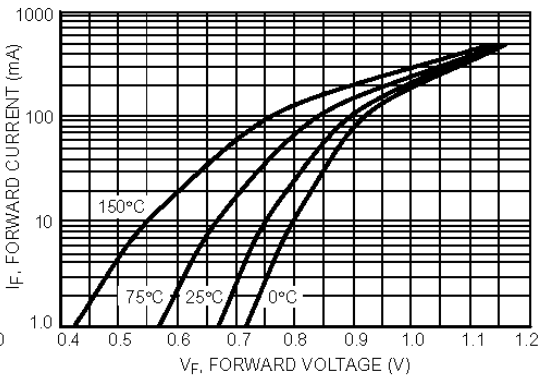
<sup>1)</sup> V<sub>Z</sub> is tested with pulses (20 ms).

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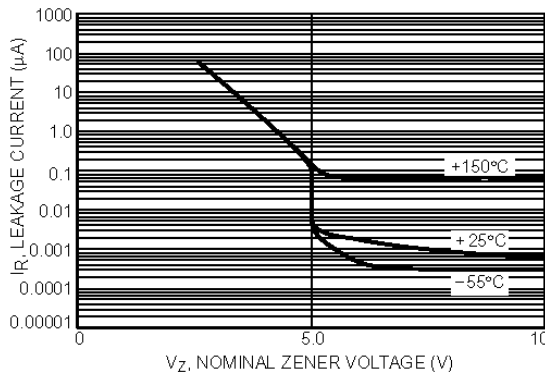
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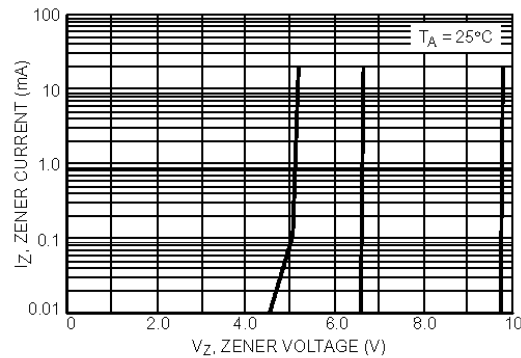
Effect of Zener Voltage on Zener Impedance



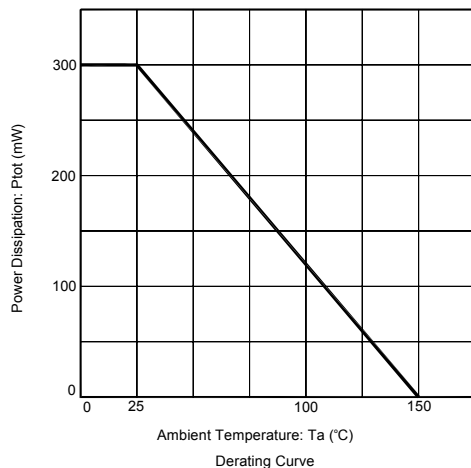
Typical Forward Voltage



Typical Leakage Current



Zener Voltage versus Zener Current (V<sub>Z</sub> Up to 9 V)



Derating Curve

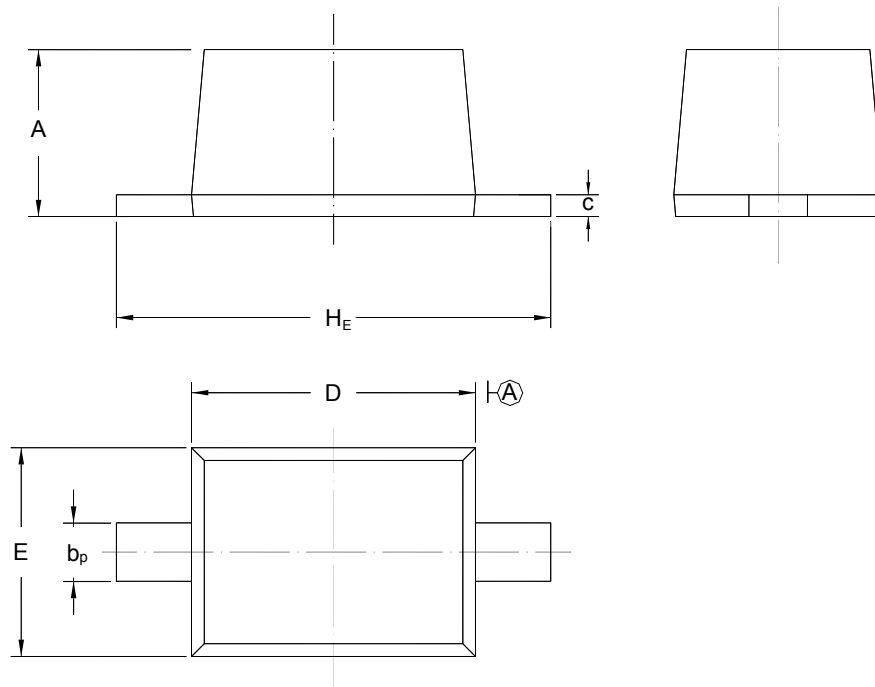
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PACKAGE OUTLINE

Plastic surface mounted package; 2 leads

SOD-323



| UNIT | A            | $b_p$        | C            | D            | E            | $H_E$        |
|------|--------------|--------------|--------------|--------------|--------------|--------------|
| mm   | 1.10<br>0.80 | 0.40<br>0.25 | 0.15<br>0.10 | 1.80<br>1.60 | 1.35<br>1.15 | 2.80<br>2.30 |