

# MM3Z2V2B~MM3Z39B

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## Silicon Planar Zener Diodes

### Features

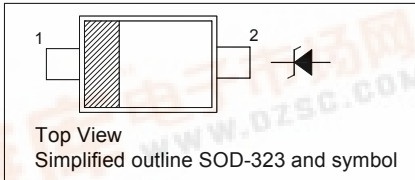
- Total power dissipation : max. 300 mW
- Small plastic package suitable for surface mounted design
- High reliability

### Description

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

### PINNING

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



### Absolute Maximum Ratings ( $T_a = 25\text{ }^{\circ}\text{C}$ )

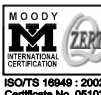
| Parameter                 | Symbol    | Value         | Unit               |
|---------------------------|-----------|---------------|--------------------|
| Power Dissipation         | $P_{tot}$ | 300           | mW                 |
| Junction Temperature      | $T_j$     | 150           | $^{\circ}\text{C}$ |
| Storage Temperature Range | $T_{stg}$ | - 55 to + 150 | $^{\circ}\text{C}$ |

### Characteristics at $T_a = 25\text{ }^{\circ}\text{C}$

| Parameter                                  | Symbol    | Max. | Unit                 |
|--------------------------------------------|-----------|------|----------------------|
| Thermal Resistance Junction to Ambient Air | $R_{thA}$ | 417  | $^{\circ}\text{C/W}$ |
| Forward Voltage<br>at $I_F = 10\text{ mA}$ | $V_F$     | 0.9  | V                    |

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Dated : 12/06/2009

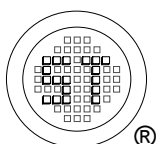
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## Characteristics at $T_a = 25\text{ }^{\circ}\text{C}$

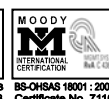
| Type     | Marking Code | Zener Voltage Range <sup>1)</sup> |                |                   | Dynamic Impedance           |                   | Reverse Leakage Current       |               |
|----------|--------------|-----------------------------------|----------------|-------------------|-----------------------------|-------------------|-------------------------------|---------------|
|          |              | $V_{znom}$<br>V                   | $I_{ZT}$<br>mA | for $V_{ZT}$<br>V | $Z_{ZT}$ (Max.)<br>$\Omega$ | at $I_{ZT}$<br>mA | $I_R$ (Max.)<br>$\mu\text{A}$ | at $V_R$<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>  $V_Z$  is tested with pulses (20 ms).



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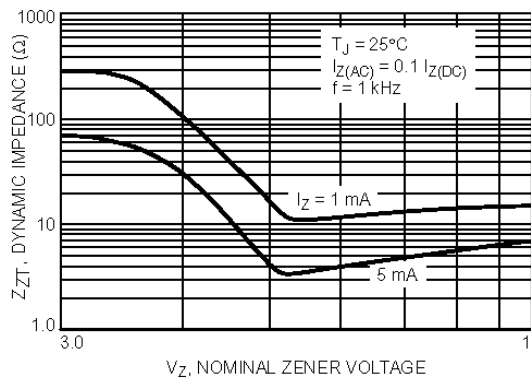
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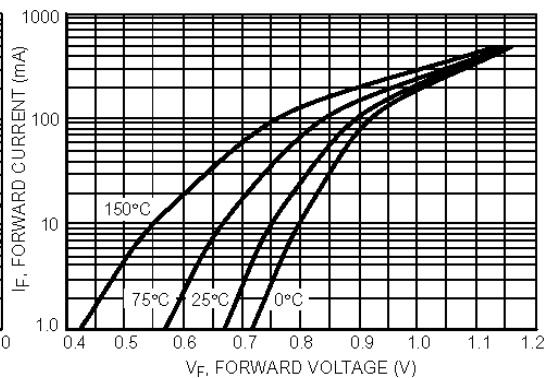
Dated : 12/06/2009

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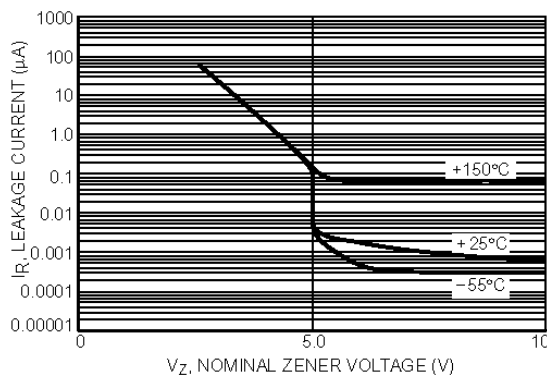
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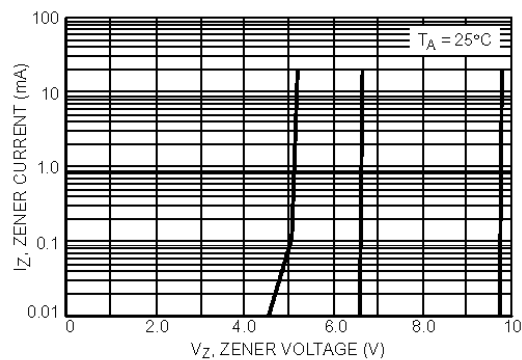
Effect of Zener Voltage on Zener Impedance



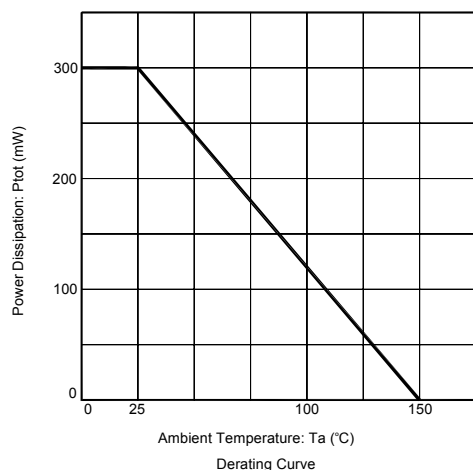
Typical Forward Voltage



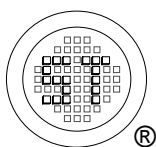
Typical Leakage Current



Zener Voltage versus Zener Current ( $V_Z$  Up to 9 V)

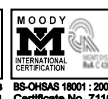


Derating Curve



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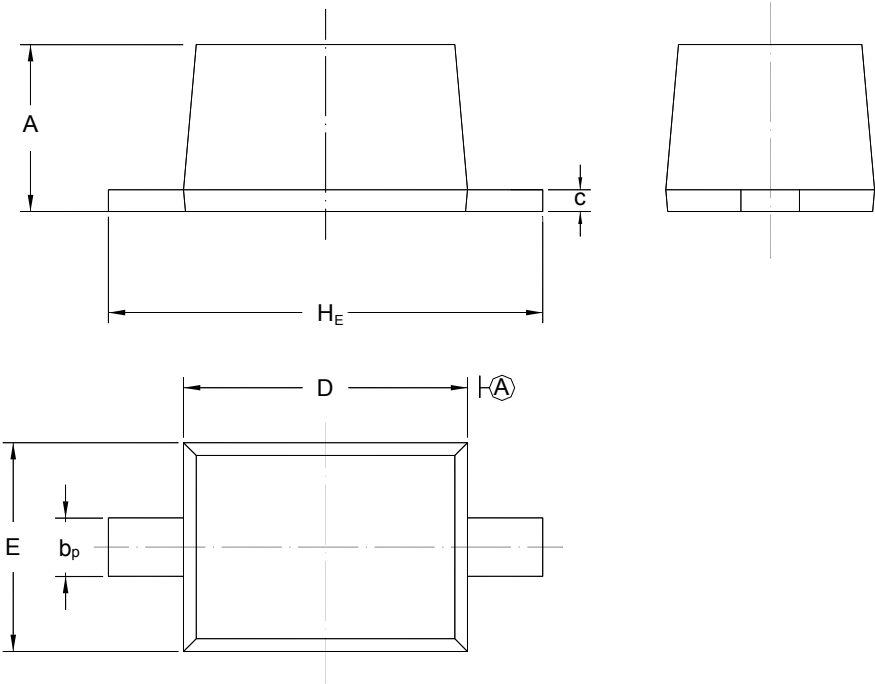


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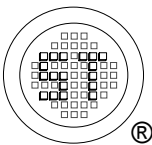
PACKAGE OUTLINE

Plastic surface mounted package; 2 leads

SOD-323



| UNIT | A            | b <sub>p</sub> | C            | D            | E            | H <sub>E</sub> |
|------|--------------|----------------|--------------|--------------|--------------|----------------|
| 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   |



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