

## HZS-L Series

Silicon Epitaxial Planar Zener Diode for  
Low Noise Application

REJ03G0166-0200Z  
(Previous: ADE-208-121A)  
Rev.2.00  
Jan.06.2004

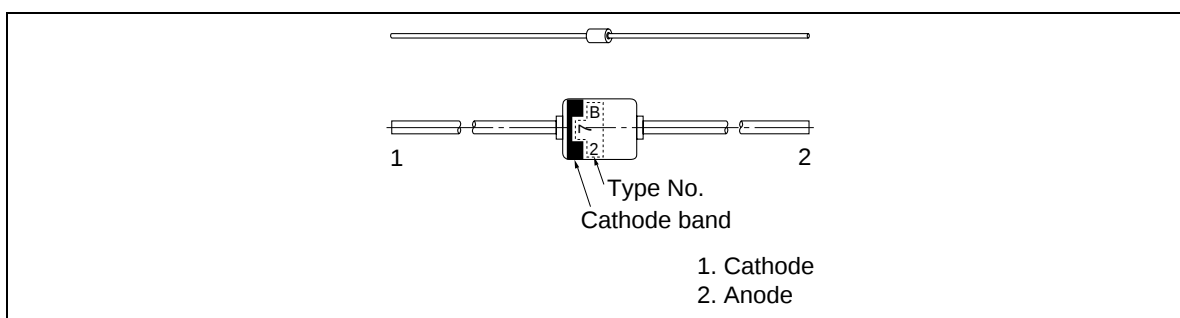
### Features

- Diode noise level of this series is approximately 1/3-1/10 lower than the HZ series.
- Low leakage, low zener impedance and maximum power dissipation of 400 mW are ideally suited for stabilized power supply, etc.
- Wide spectrum from 5.2V through 38V of zener voltage provide flexible application.
- Suitable for 5mm-pitch high speed automatic insertion.

### Ordering Information

| Type No.     | Mark     | Package Code |
|--------------|----------|--------------|
| HZS-L Series | Type No. | MHD          |

### Pin Arrangement



## HZS-L Series

### Absolute Maximum Ratings

(T<sub>a</sub> = 25°C)

| Item                 | Symbol           | Value       | Unit |
|----------------------|------------------|-------------|------|
| Power dissipation    | P <sub>d</sub>   | 400         | mW   |
| Junction temperature | T <sub>j</sub>   | 200         | °C   |
| Storage temperature  | T <sub>stg</sub> | –55 to +175 | °C   |

### Electrical Characteristics

(T<sub>a</sub> = 25°C)

| Type  | Grade | Zener Voltage                    |     | Reverse Current     |                     | Dynamic Resistance |                    |
|-------|-------|----------------------------------|-----|---------------------|---------------------|--------------------|--------------------|
|       |       | V <sub>Z</sub> (V)* <sup>1</sup> |     | Test Condition      | I <sub>R</sub> (μA) | Test Condition     | r <sub>d</sub> (Ω) |
|       |       | Min                              | Max | I <sub>Z</sub> (mA) | Max                 | V <sub>R</sub> (V) | Max                |
| HZS6L | A1    | 5.2                              | 5.5 | 0.5                 | 1                   | 2.0                | 150                |
|       | A2    | 5.3                              | 5.6 |                     |                     |                    |                    |
|       | A3    | 5.4                              | 5.7 |                     |                     |                    |                    |
|       | B1    | 5.5                              | 5.8 |                     |                     |                    | 80                 |
|       | B2    | 5.6                              | 5.9 |                     |                     |                    |                    |
|       | B3    | 5.7                              | 6.0 |                     |                     |                    |                    |
|       | C1    | 5.8                              | 6.1 |                     |                     |                    | 60                 |
|       | C2    | 6.0                              | 6.3 |                     |                     |                    |                    |
|       | C3    | 6.1                              | 6.4 |                     |                     |                    |                    |
| HZS7L | A1    | 6.3                              | 6.6 | 0.5                 | 1                   | 3.5                | 60                 |
|       | A2    | 6.4                              | 6.7 |                     |                     |                    |                    |
|       | A3    | 6.6                              | 6.9 |                     |                     |                    |                    |
|       | B1    | 6.7                              | 7.0 |                     |                     |                    |                    |
|       | B2    | 6.9                              | 7.2 |                     |                     |                    |                    |
|       | B3    | 7.0                              | 7.3 |                     |                     |                    |                    |
|       | C1    | 7.2                              | 7.6 |                     |                     |                    |                    |
|       | C2    | 7.3                              | 7.7 |                     |                     |                    |                    |
|       | C3    | 7.5                              | 7.9 |                     |                     |                    |                    |

Note: 1. Tested with DC.

## HZS-L Series

| Type   | Grade | Zener Voltage                    |      | Reverse Current     |                     | Dynamic Resistance |                    |
|--------|-------|----------------------------------|------|---------------------|---------------------|--------------------|--------------------|
|        |       | V <sub>Z</sub> (V)* <sup>1</sup> |      | Test Condition      | I <sub>R</sub> (μA) | Test Condition     | r <sub>d</sub> (Ω) |
|        |       | Min                              | Max  | I <sub>Z</sub> (mA) | Max                 | V <sub>R</sub> (V) | Max                |
| HZS9L  | A1    | 7.7                              | 8.1  | 0.5                 | 1                   | 6.0                | 60                 |
|        | A2    | 7.9                              | 8.3  |                     |                     |                    |                    |
|        | A3    | 8.1                              | 8.5  |                     |                     |                    |                    |
|        | B1    | 8.3                              | 8.7  |                     |                     |                    |                    |
|        | B2    | 8.5                              | 8.9  |                     |                     |                    |                    |
|        | B3    | 8.7                              | 9.1  |                     |                     |                    |                    |
|        | C1    | 8.9                              | 9.3  |                     |                     |                    |                    |
|        | C2    | 9.1                              | 9.5  |                     |                     |                    |                    |
|        | C3    | 9.3                              | 9.7  |                     |                     |                    |                    |
| HZS11L | A1    | 9.5                              | 9.9  | 0.5                 | 1                   | 8.0                | 80                 |
|        | A2    | 9.7                              | 10.1 |                     |                     |                    |                    |
|        | A3    | 9.9                              | 10.3 |                     |                     |                    |                    |
|        | B1    | 10.2                             | 10.6 |                     |                     |                    |                    |
|        | B2    | 10.4                             | 10.8 |                     |                     |                    |                    |
|        | B3    | 10.7                             | 11.1 |                     |                     |                    |                    |
|        | C1    | 10.9                             | 11.3 |                     |                     |                    |                    |
|        | C2    | 11.1                             | 11.6 |                     |                     |                    |                    |
|        | C3    | 11.4                             | 11.9 |                     |                     |                    |                    |
| HZS12L | A1    | 11.6                             | 12.1 | 0.5                 | 1                   | 10.5               | 80                 |
|        | A2    | 11.9                             | 12.4 |                     |                     |                    |                    |
|        | A3    | 12.2                             | 12.7 |                     |                     |                    |                    |
|        | B1    | 12.4                             | 12.9 |                     |                     |                    |                    |
|        | B2    | 12.6                             | 13.1 |                     |                     |                    |                    |
|        | B3    | 12.9                             | 13.4 |                     |                     |                    |                    |
|        | C1    | 13.2                             | 13.7 |                     |                     |                    |                    |
|        | C2    | 13.5                             | 14.0 |                     |                     |                    |                    |
|        | C3    | 13.8                             | 14.3 |                     |                     |                    |                    |
| HZS15L | 1     | 14.1                             | 14.7 | 0.5                 | 1                   | 13.0               | 80                 |
|        | 2     | 14.5                             | 15.1 |                     |                     |                    |                    |
|        | 3     | 14.9                             | 15.5 |                     |                     |                    |                    |
| HZS16L | 1     | 15.3                             | 15.9 | 0.5                 | 1                   | 14.0               | 80                 |
|        | 2     | 15.7                             | 16.5 |                     |                     |                    |                    |
|        | 3     | 16.3                             | 17.1 |                     |                     |                    |                    |

Note: 1. Tested with DC.

## HZS-L Series

| Type   | Grade | Zener Voltage                    |      | Reverse Current     |                     | Dynamic Resistance |                    |
|--------|-------|----------------------------------|------|---------------------|---------------------|--------------------|--------------------|
|        |       | V <sub>Z</sub> (V)* <sup>1</sup> |      | Test Condition      | I <sub>R</sub> (μA) | Test Condition     | r <sub>d</sub> (Ω) |
|        |       | Min                              | Max  | I <sub>Z</sub> (mA) | Max                 | V <sub>R</sub> (V) | Max                |
| HZS18L | 1     | 16.9                             | 17.7 | 0.5                 | 1                   | 15.0               | 80                 |
|        | 2     | 17.5                             | 18.3 |                     |                     |                    |                    |
|        | 3     | 18.1                             | 19.0 |                     |                     |                    |                    |
| HZS20L | 1     | 18.8                             | 19.7 | 0.5                 | 1                   | 18.0               | 100                |
|        | 2     | 19.5                             | 20.4 |                     |                     |                    |                    |
|        | 3     | 20.2                             | 21.1 |                     |                     |                    |                    |
| HZS22L | 1     | 20.9                             | 21.9 | 0.5                 | 1                   | 20.0               | 100                |
|        | 2     | 21.6                             | 22.6 |                     |                     |                    |                    |
|        | 3     | 22.3                             | 23.3 |                     |                     |                    |                    |
| HZS24L | 1     | 22.9                             | 24.0 | 0.5                 | 1                   | 22.0               | 120                |
|        | 2     | 23.6                             | 24.7 |                     |                     |                    |                    |
|        | 3     | 24.3                             | 25.5 |                     |                     |                    |                    |
| HZS27L | 1     | 25.2                             | 26.6 | 0.5                 | 1                   | 24.0               | 150                |
|        | 2     | 26.2                             | 27.6 |                     |                     |                    |                    |
|        | 3     | 27.2                             | 28.6 |                     |                     |                    |                    |
| HZS30L | 1     | 28.2                             | 29.6 | 0.5                 | 1                   | 27.0               | 200                |
|        | 2     | 29.2                             | 30.6 |                     |                     |                    |                    |
|        | 3     | 30.2                             | 31.6 |                     |                     |                    |                    |
| HZS33L | 1     | 31.2                             | 32.6 | 0.5                 | 1                   | 30.0               | 250                |
|        | 2     | 32.2                             | 33.6 |                     |                     |                    |                    |
|        | 3     | 33.2                             | 34.6 |                     |                     |                    |                    |
| HZS36L | 1     | 34.2                             | 35.7 | 0.5                 | 1                   | 33.0               | 300                |
|        | 2     | 35.3                             | 36.8 |                     |                     |                    |                    |
|        | 3     | 36.4                             | 38.0 |                     |                     |                    |                    |

Notes: 1. Tested with DC.

2. Type No. is as follows; HZS6A1L, HZS6A2L, HZS36-3L

## Main Characteristic

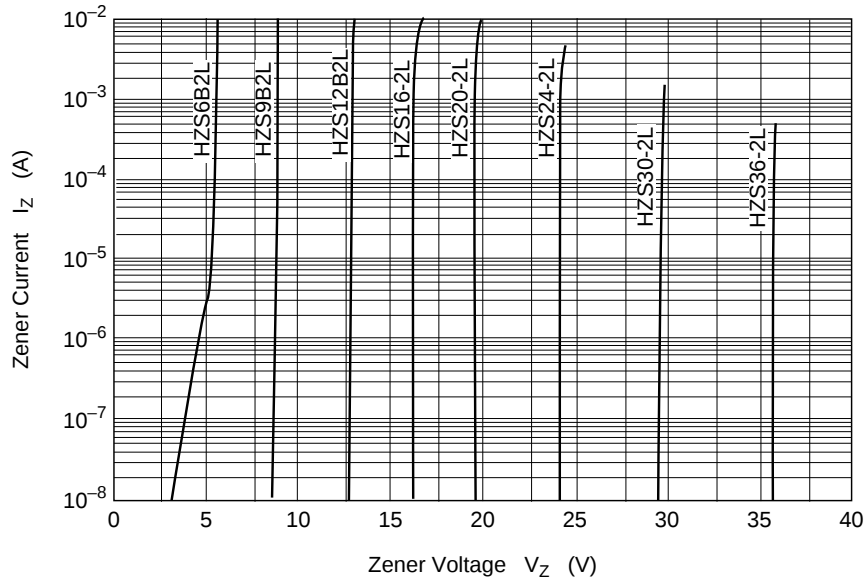


Fig.1 Zener current vs. Zener voltage

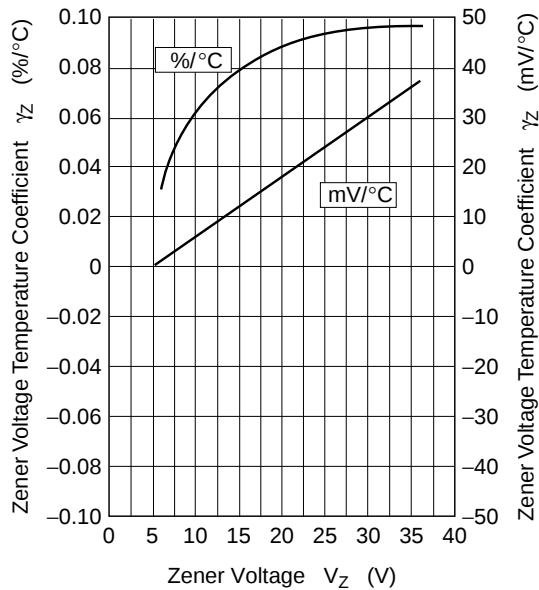


Fig.2 Temperature Coefficient vs. Zener voltage

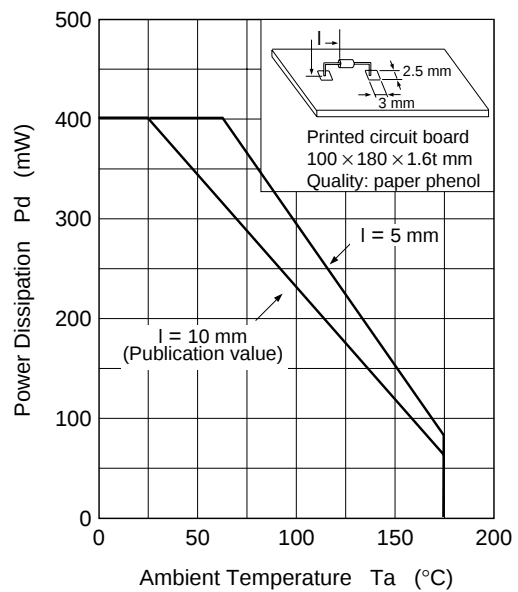
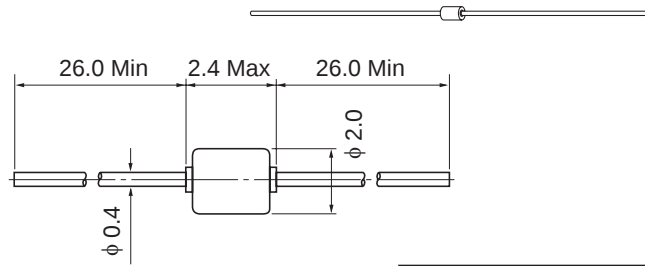


Fig.3 Power Dissipation vs. Ambient Temperature

Package Dimensions

As of January, 2003

Unit: mm



|                        |          |
|------------------------|----------|
| Package Code           | MHD      |
| JEDEC                  | Conforms |
| JEITA                  | —        |
| Mass (reference value) | 0.084 g  |

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