

# HZS-L Series

## Silicon Planar Zener Diode for Low Noise Application

REJ03G0166-0300

Rev.3.00

Nov 06, 2007

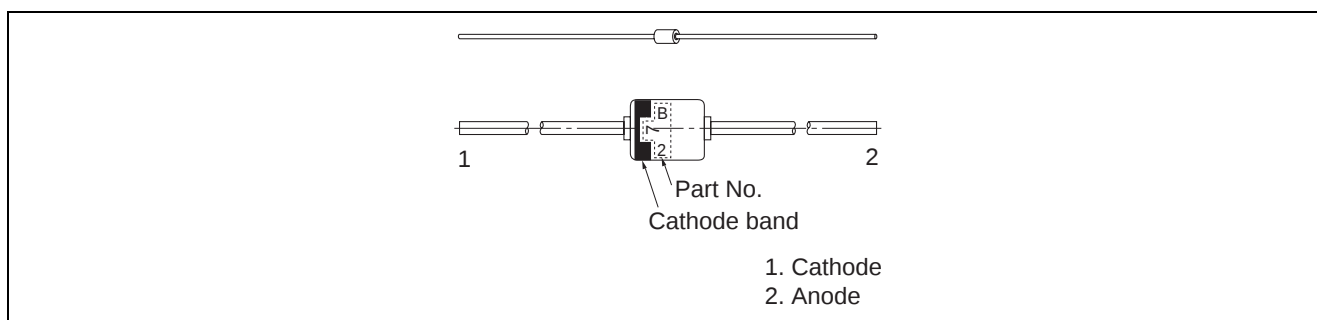
### Features

- 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 voltage range from 5.2 V through 38 V of zener voltage provide flexible application.
- Suitable for 5mm-pitch high speed automatic insertion.

### Ordering Information

| Part No.     | Cathode Band | Package Name | Package Code |
|--------------|--------------|--------------|--------------|
| HZS-L Series | Black        | MHD          | GRZZ0002ZC-A |

### Pin Arrangement



## Absolute Maximum Ratings

(Ta = 25°C)

| Item                 | Symbol | Value       | Unit |
|----------------------|--------|-------------|------|
| Power dissipation    | Pd     | 400         | mW   |
| Junction temperature | Tj     | 200         | °C   |
| Storage temperature  | Tstg   | -55 to +175 | °C   |

## Electrical Characteristics

(Ta = 25°C)

| Part No. | 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) | Test Condition      |
|          | Min                               | Max  | I <sub>Z</sub> (mA) | Max                 | V <sub>R</sub> (V) | Max                | I <sub>Z</sub> (mA) |
| HZS6A1L  | 5.2                               | 5.5  | 0.5                 | 1                   | 2.0                | 150                | 0.5                 |
| HZS6A2L  | 5.3                               | 5.6  |                     |                     |                    |                    |                     |
| HZS6A3L  | 5.4                               | 5.7  |                     |                     |                    |                    |                     |
| HZS6B1L  | 5.5                               | 5.8  | 0.5                 | 1                   | 2.0                | 80                 | 0.5                 |
| HZS6B2L  | 5.6                               | 5.9  |                     |                     |                    |                    |                     |
| HZS6B3L  | 5.7                               | 6.0  |                     |                     |                    |                    |                     |
| HZS6C1L  | 5.8                               | 6.1  | 0.5                 | 1                   | 2.0                | 60                 | 0.5                 |
| HZS6C2L  | 6.0                               | 6.3  |                     |                     |                    |                    |                     |
| HZS6C3L  | 6.1                               | 6.4  |                     |                     |                    |                    |                     |
| HZS7A1L  | 6.3                               | 6.6  | 0.5                 | 1                   | 3.5                | 60                 | 0.5                 |
| HZS7A2L  | 6.4                               | 6.7  |                     |                     |                    |                    |                     |
| HZS7A3L  | 6.6                               | 6.9  |                     |                     |                    |                    |                     |
| HZS7B1L  | 6.7                               | 7.0  |                     |                     |                    |                    |                     |
| HZS7B2L  | 6.9                               | 7.2  |                     |                     |                    |                    |                     |
| HZS7B3L  | 7.0                               | 7.3  |                     |                     |                    |                    |                     |
| HZS7C1L  | 7.2                               | 7.6  |                     |                     |                    |                    |                     |
| HZS7C2L  | 7.3                               | 7.7  |                     |                     |                    |                    |                     |
| HZS7C3L  | 7.5                               | 7.9  |                     |                     |                    |                    |                     |
| HZS9A1L  | 7.7                               | 8.1  | 0.5                 | 1                   | 6.0                | 60                 | 0.5                 |
| HZS9A2L  | 7.9                               | 8.3  |                     |                     |                    |                    |                     |
| HZS9A3L  | 8.1                               | 8.5  |                     |                     |                    |                    |                     |
| HZS9B1L  | 8.3                               | 8.7  |                     |                     |                    |                    |                     |
| HZS9B2L  | 8.5                               | 8.9  |                     |                     |                    |                    |                     |
| HZS9B3L  | 8.7                               | 9.1  |                     |                     |                    |                    |                     |
| HZS9C1L  | 8.9                               | 9.3  |                     |                     |                    |                    |                     |
| HZS9C2L  | 9.1                               | 9.5  |                     |                     |                    |                    |                     |
| HZS9C3L  | 9.3                               | 9.7  |                     |                     |                    |                    |                     |
| HZS11A1L | 9.5                               | 9.9  | 0.5                 | 1                   | 8.0                | 80                 | 0.5                 |
| HZS11A2L | 9.7                               | 10.1 |                     |                     |                    |                    |                     |
| HZS11A3L | 9.9                               | 10.3 |                     |                     |                    |                    |                     |
| HZS11B1L | 10.2                              | 10.6 |                     |                     |                    |                    |                     |
| HZS11B2L | 10.4                              | 10.8 |                     |                     |                    |                    |                     |
| HZS11B3L | 10.7                              | 11.1 |                     |                     |                    |                    |                     |
| HZS11C1L | 10.9                              | 11.3 |                     |                     |                    |                    |                     |
| HZS11C2L | 11.1                              | 11.6 |                     |                     |                    |                    |                     |
| HZS11C3L | 11.4                              | 11.9 |                     |                     |                    |                    |                     |

Note: 1. Tested with DC.

| Part No. | Zener Voltage                     |      | Test Condition      | Reverse Current     |                    | Dynamic Resistance |                     |
|----------|-----------------------------------|------|---------------------|---------------------|--------------------|--------------------|---------------------|
|          | V <sub>Z</sub> (V) * <sup>1</sup> |      |                     | I <sub>R</sub> (μA) | Test Condition     | r <sub>d</sub> (Ω) | Test Condition      |
|          | Min                               | Max  | I <sub>Z</sub> (mA) | Max                 | V <sub>R</sub> (V) | Max                | I <sub>Z</sub> (mA) |
| HZS12A1L | 11.6                              | 12.1 | 0.5                 | 1                   | 10.5               | 80                 | 0.5                 |
| HZS12A2L | 11.9                              | 12.4 |                     |                     |                    |                    |                     |
| HZS12A3L | 12.2                              | 12.7 |                     |                     |                    |                    |                     |
| HZS12B1L | 12.4                              | 12.9 |                     |                     |                    |                    |                     |
| HZS12B2L | 12.6                              | 13.1 |                     |                     |                    |                    |                     |
| HZS12B3L | 12.9                              | 13.4 |                     |                     |                    |                    |                     |
| HZS12C1L | 13.2                              | 13.7 |                     |                     |                    |                    |                     |
| HZS12C2L | 13.5                              | 14.0 |                     |                     |                    |                    |                     |
| HZS12C3L | 13.8                              | 14.3 | 0.5                 | 1                   | 13.0               | 80                 | 0.5                 |
| HZS15-1L | 14.1                              | 14.7 |                     |                     |                    |                    |                     |
| HZS15-2L | 14.5                              | 15.1 |                     |                     |                    |                    |                     |
| HZS15-3L | 14.9                              | 15.5 | 0.5                 | 1                   | 14.0               | 80                 | 0.5                 |
| HZS16-1L | 15.3                              | 15.9 |                     |                     |                    |                    |                     |
| HZS16-2L | 15.7                              | 16.5 |                     |                     |                    |                    |                     |
| HZS16-3L | 16.3                              | 17.1 | 0.5                 | 1                   | 15.0               | 80                 | 0.5                 |
| HZS18-1L | 16.9                              | 17.7 |                     |                     |                    |                    |                     |
| HZS18-2L | 17.5                              | 18.3 |                     |                     |                    |                    |                     |
| HZS18-3L | 18.1                              | 19.0 | 0.5                 | 1                   | 18.0               | 100                | 0.5                 |
| HZS20-1L | 18.8                              | 19.7 |                     |                     |                    |                    |                     |
| HZS20-2L | 19.5                              | 20.4 |                     |                     |                    |                    |                     |
| HZS20-3L | 20.2                              | 21.1 | 0.5                 | 1                   | 20.0               | 100                | 0.5                 |
| HZS22-1L | 20.9                              | 21.9 |                     |                     |                    |                    |                     |
| HZS22-2L | 21.6                              | 22.6 |                     |                     |                    |                    |                     |
| HZS22-3L | 22.3                              | 23.3 | 0.5                 | 1                   | 22.0               | 120                | 0.5                 |
| HZS24-1L | 22.9                              | 24.0 |                     |                     |                    |                    |                     |
| HZS24-2L | 23.6                              | 24.7 |                     |                     |                    |                    |                     |
| HZS24-3L | 24.3                              | 25.5 | 0.5                 | 1                   | 24.0               | 150                | 0.5                 |
| HZS27-1L | 25.2                              | 26.6 |                     |                     |                    |                    |                     |
| HZS27-2L | 26.2                              | 27.6 |                     |                     |                    |                    |                     |
| HZS27-3L | 27.2                              | 28.6 | 0.5                 | 1                   | 27.0               | 200                | 0.5                 |
| HZS30-1L | 28.2                              | 29.6 |                     |                     |                    |                    |                     |
| HZS30-2L | 29.2                              | 30.6 |                     |                     |                    |                    |                     |
| HZS30-3L | 30.2                              | 31.6 | 0.5                 | 1                   | 30.0               | 250                | 0.5                 |
| HZS33-1L | 31.2                              | 32.6 |                     |                     |                    |                    |                     |
| HZS33-2L | 32.2                              | 33.6 |                     |                     |                    |                    |                     |
| HZS33-3L | 33.2                              | 34.6 | 0.5                 | 1                   | 33.0               | 300                | 0.5                 |
| HZS36-1L | 34.2                              | 35.7 |                     |                     |                    |                    |                     |
| HZS36-2L | 35.3                              | 36.8 |                     |                     |                    |                    |                     |
| HZS36-3L | 36.4                              | 38.0 |                     |                     |                    |                    |                     |

Note: 1. Tested with DC.

Main Characteristic

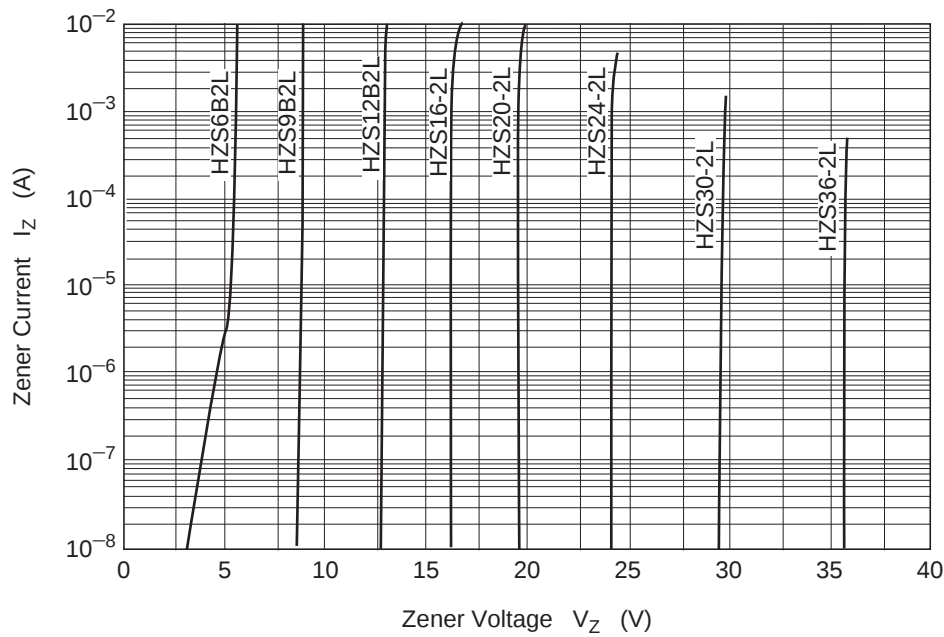


Fig.1 Zener current vs. Zener voltage

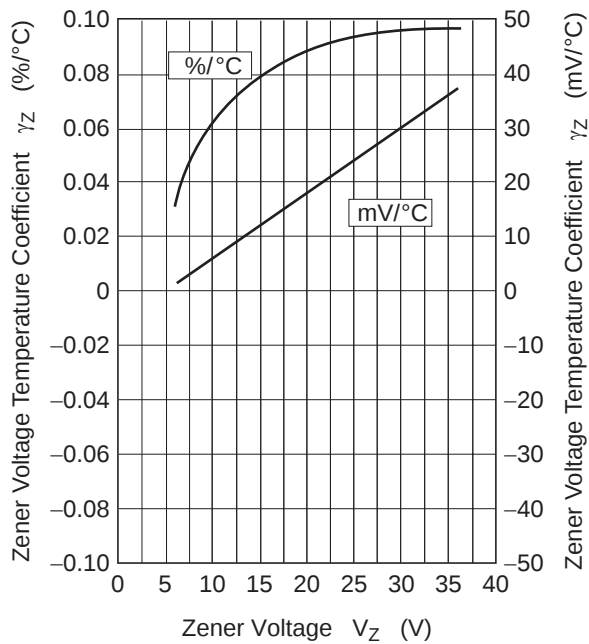


Fig.2 Temperature Coefficient vs. Zener voltage

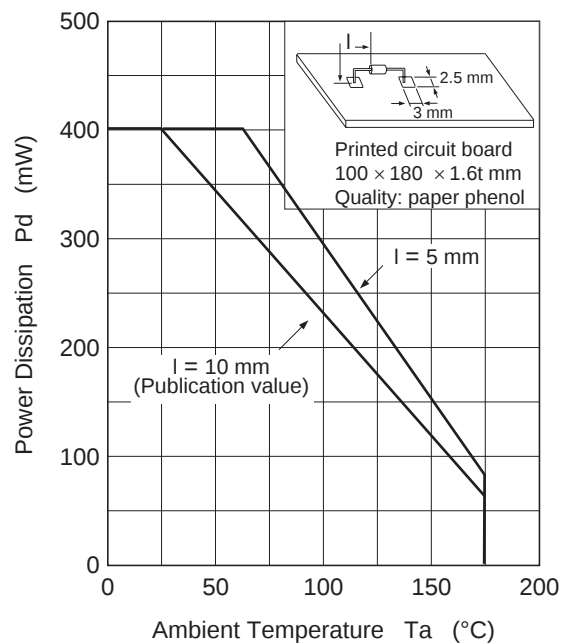


Fig.3 Power Dissipation vs. Ambient Temperature

Package Dimensions

|              |                    |              |               |            |
|--------------|--------------------|--------------|---------------|------------|
| Package Name | JEITA Package Code | RENESAS Code | Previous Code | MASS[Typ.] |
| MHD          | —                  | GRZZ0002ZC-A | MHD / MHDV    | 0.084g     |

The diagram shows a top-down view of the MHD package. It is a rectangular component with a central square pad. The distance from the left edge to the center of the pad is labeled 'L'. The distance from the center of the pad to the right edge is also labeled 'L'. The width of the central square pad is labeled 'E'. The diameter of the central pad is labeled 'phi D'. The diameter of the circular mounting holes on either side is labeled 'phi b'.

| Reference Symbol | Dimension in Millimeters |     |     |
|------------------|--------------------------|-----|-----|
|                  | Min                      | Nom | Max |
| phi b            | -                        | 0.4 | -   |
| phi D            | -                        | 2.0 | -   |
| E                | -                        | -   | 2.4 |
| L                | 26.0                     | -   | -   |

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