To all our customers

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Renesas Technology Corp.
Customer Support Dept.
April 1, 2003

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# HZ-L Series

Silicon Epitaxial Planar Zener Diode for Low Noise Application

ADE-208-118A(Z)

Rev. 1
Nov. 1996

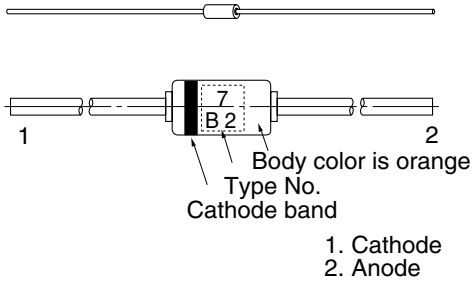
## Features

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

## Ordering Information

| Type No. | Mark | Package Code |
|---|---|---|
| HZ-L Series | Type No. | DO-35 |

## Pin Arrangement



## Absolute Maximum Ratings

(Ta = 25°C)

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

## Electrical Characteristics

(Ta = 25°C)

| | | Zener Voltage | | | Reverse Current | | Dynamic Resistance | |
|---|---|---|---|---|---|---|---|---|
| | | $V_Z$ (V)*[1] | | Test Condition | $I_R$ (μA) | Test Condition | $r_d$ (Ω) | Test Condition |
| Type | Grade | Min | Max | $I_Z$ (mA) | Max | $V_R$ (V) | Max | $I_Z$ (mA) |
| HZ6L | A1 | 5.2 | 5.5 | 0.5 | 1 | 2.0 | 150 | 0.5 |
| | A2 | 5.3 | 5.6 | | | | | |
| | A3 | 5.4 | 5.7 | | | | | |
| | B1 | 5.5 | 5.8 | | | | 80 | 0.5 |
| | B2 | 5.6 | 5.9 | | | | | |
| | B3 | 5.7 | 6.0 | | | | | |
| | C1 | 5.8 | 6.1 | | | | 60 | 0.5 |
| | C2 | 6.0 | 6.3 | | | | | |
| | C3 | 6.1 | 6.4 | | | | | |
| HZ7L | A1 | 6.3 | 6.6 | 0.5 | 1 | 3.5 | 60 | 0.5 |
| | 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 | | | | | |
| HZ9L | A1 | 7.7 | 8.1 | 0.5 | 1 | 6.0 | 60 | 0.5 |
| | A2 | 7.9 | 8.3 | | | | | |
| | A3 | 8.1 | 8.5 | | | | | |

Note: 1. Tested with DC.

| | | Zener Voltage | | | Reverse Current | | Dynamic Resistance | |
|---|---|---|---|---|---|---|---|---|
| | | $V_Z$ (V)*[1] | | Test Condition | $I_R$ (μA) | Test Condition | $r_d$ (Ω) | Test Condition |
| Type | Grade | Min | Max | $I_Z$ (mA) | Max | $V_R$ (V) | Max | $I_Z$ (mA) |
| HZ9L | B1 | 8.3 | 8.7 | 0.5 | 1 | 6.0 | 60 | 0.5 |
| | 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 | | | | | |
| HZ11L | A1 | 9.5 | 9.9 | 0.5 | 1 | 8.0 | 80 | 0.5 |
| | 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 | | | | | |
| HZ12L | A1 | 11.6 | 12.1 | 0.5 | 1 | 10.5 | 80 | 0.5 |
| | 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 | | | | | |
| HZ15L | 1 | 14.1 | 14.7 | 0.5 | 1 | 13.0 | 80 | 0.5 |
| | 2 | 14.5 | 15.1 | | | | | |
| | 3 | 14.9 | 15.5 | | | | | |
| HZ16L | 1 | 15.3 | 15.9 | 0.5 | 1 | 14.0 | 80 | 0.5 |
| | 2 | 15.7 | 16.5 | | | | | |
| | 3 | 16.3 | 17.1 | | | | | |

Note: 1. Tested with DC.

| | | Zener Voltage | | | Reverse Current | | Dynamic Resistance | |
|---|---|---|---|---|---|---|---|---|
| | | $V_Z$ (V)*[1] | | Test Condition | $I_R$ (μA) | Test Condition | $r_d$ (Ω) | Test Condition |
| Type | Grade | Min | Max | $I_Z$ (mA) | Max | $V_R$ (V) | Max | $I_Z$ (mA) |
| HZ18L | 1 | 16.9 | 17.7 | 0.5 | 1 | 15.0 | 80 | 0.5 |
| | 2 | 17.5 | 18.3 | | | | | |
| | 3 | 18.1 | 19.0 | | | | | |
| HZ20L | 1 | 18.8 | 19.7 | 0.5 | 1 | 18.0 | 100 | 0.5 |
| | 2 | 19.5 | 20.4 | | | | | |
| | 3 | 20.2 | 21.1 | | | | | |
| HZ22L | 1 | 20.9 | 21.9 | 0.5 | 1 | 20.0 | 100 | 0.5 |
| | 2 | 21.6 | 22.6 | | | | | |
| | 3 | 22.3 | 23.3 | | | | | |
| HZ24L | 1 | 22.9 | 24.0 | 0.5 | 1 | 22.0 | 120 | 0.5 |
| | 2 | 23.6 | 24.7 | | | | | |
| | 3 | 24.3 | 25.5 | | | | | |
| HZ27L | 1 | 25.2 | 26.6 | 0.5 | 1 | 24.0 | 150 | 0.5 |
| | 2 | 26.2 | 27.6 | | | | | |
| | 3 | 27.2 | 28.6 | | | | | |
| HZ30L | 1 | 28.2 | 29.6 | 0.5 | 1 | 27.0 | 200 | 0.5 |
| | 2 | 29.2 | 30.6 | | | | | |
| | 3 | 30.2 | 31.6 | | | | | |
| HZ33L | 1 | 31.2 | 32.6 | 0.5 | 1 | 30.0 | 250 | 0.5 |
| | 2 | 32.2 | 33.6 | | | | | |
| | 3 | 33.2 | 34.6 | | | | | |
| HZ36L | 1 | 34.2 | 35.7 | 0.5 | 1 | 33.0 | 300 | 0.5 |
| | 2 | 35.3 | 36.8 | | | | | |
| | 3 | 36.4 | 38.0 | | | | | |

Note: 1. Tested with DC.

Note: 2. Type No. is as follows; HZ6A1L, HZ6A2L, HZ36-3L

## Main Characteristic

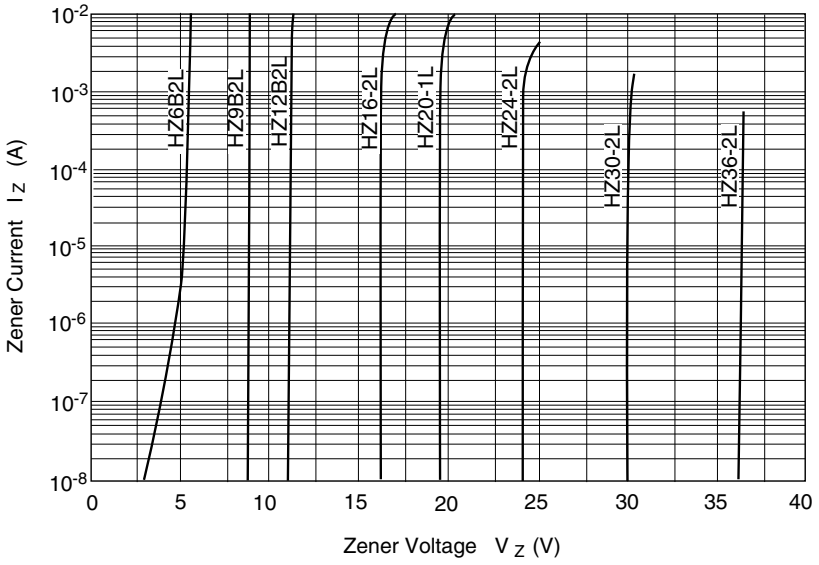



Fig.1 Zener current Vs. Zener voltage

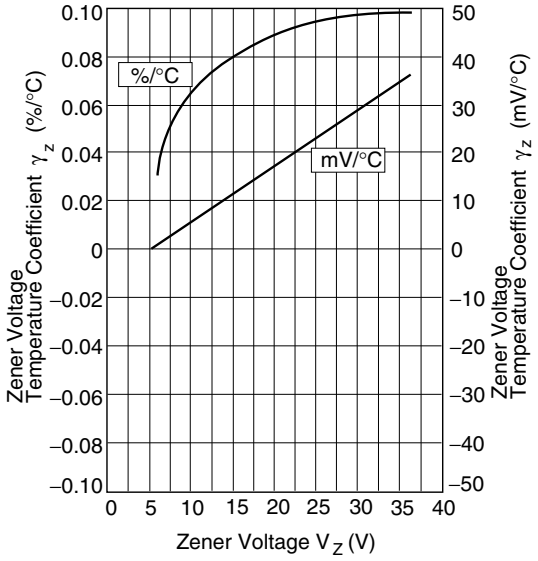



Fig.2 Temperature Coefficient Vs. Zener voltage

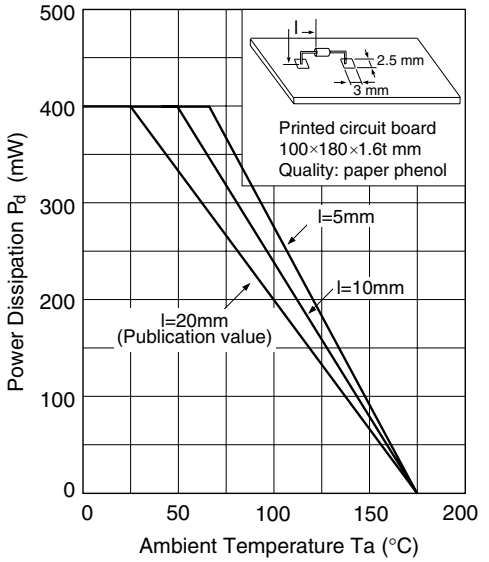
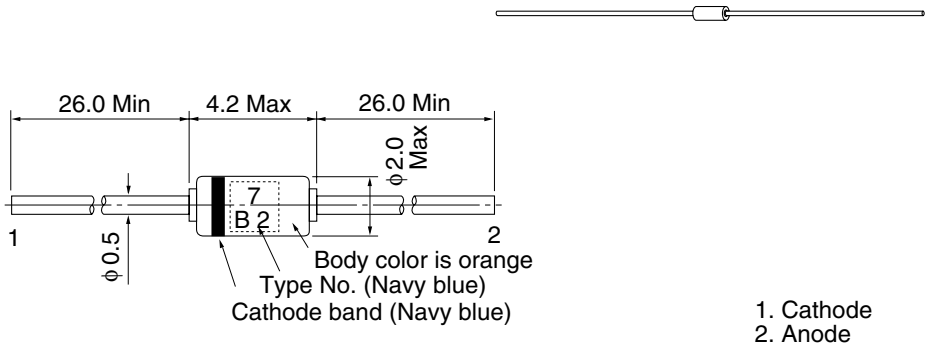


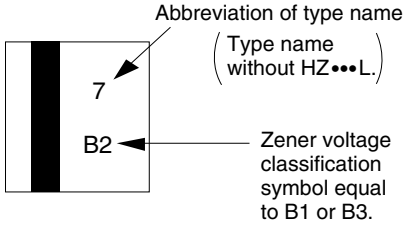

Fig.3 Power Dissipation Vs. Ambient Temperature

## Package Dimensions

Unit: mm




1. Cathode
2. Anode




Expanded drawing of marking

| | |
|---|---|
| Hitachi Code | DO-35 |
| JEDECCode | DO-35 |
| EIAJCode | SC-48 |
| Weight(g) | 0.13 |

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