

# HZ Series

## Silicon Epitaxial Planar Zener Diode for Stabilized Power Supply

REJ03G0180-0300Z  
(Previous: ADE-208-117B)  
Rev.3.00  
Mar.11.2004

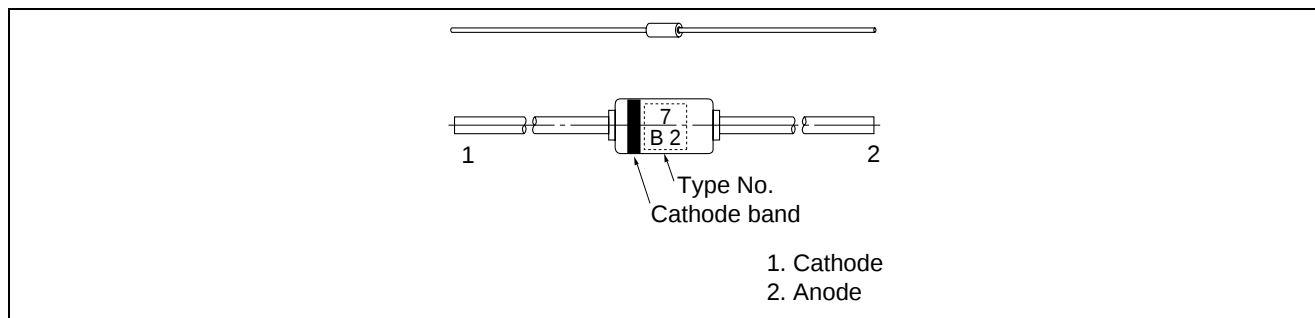
### Features

- Low leakage, low zener impedance and maximum power dissipation of 500 mW are ideally suited for stabilized power supply, etc.
- Wide spectrum from 1.6 V through 38 V of zener voltage provide flexible application.

### Ordering Information

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

### Pin Arrangement



**Absolute Maximum Ratings**

(Ta = 25°C)

| Item                 | Symbol | Value       | Unit |
|----------------------|--------|-------------|------|
| Power dissipation    | Pd     | 500         | mW   |
| Junction temperature | Tj     | 175         | °C   |
| Storage temperature  | Tstg   | -55 to +175 | °C   |

**Electrical Characteristics**

(Ta = 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                |
| HZ2  | A1    | 1.6                              | 1.8 | 5                   | 25                  | 0.5                | 100                |
|      | A2    | 1.7                              | 1.9 |                     |                     |                    |                    |
|      | A3    | 1.8                              | 2.0 |                     |                     |                    |                    |
|      | B1    | 1.9                              | 2.1 | 5                   | 5                   | 0.5                | 100                |
|      | B2    | 2.0                              | 2.2 |                     |                     |                    |                    |
|      | B3    | 2.1                              | 2.3 |                     |                     |                    |                    |
|      | C1    | 2.2                              | 2.4 |                     |                     |                    |                    |
|      | C2    | 2.3                              | 2.5 |                     |                     |                    |                    |
|      | C3    | 2.4                              | 2.6 |                     |                     |                    |                    |
| HZ3  | A1    | 2.5                              | 2.7 | 5                   | 5                   | 0.5                | 100                |
|      | A2    | 2.6                              | 2.8 |                     |                     |                    |                    |
|      | A3    | 2.7                              | 2.9 |                     |                     |                    |                    |
|      | B1    | 2.8                              | 3.0 | 5                   | 5                   | 0.5                | 100                |
|      | B2    | 2.9                              | 3.1 |                     |                     |                    |                    |
|      | B3    | 3.0                              | 3.2 |                     |                     |                    |                    |
|      | C1    | 3.1                              | 3.3 |                     |                     |                    |                    |
|      | C2    | 3.2                              | 3.4 |                     |                     |                    |                    |
|      | C3    | 3.3                              | 3.5 |                     |                     |                    |                    |
| HZ4  | A1    | 3.4                              | 3.6 | 5                   | 5                   | 1.0                | 100                |
|      | A2    | 3.5                              | 3.7 |                     |                     |                    |                    |
|      | A3    | 3.6                              | 3.8 |                     |                     |                    |                    |
|      | B1    | 3.7                              | 3.9 | 5                   | 5                   | 1.0                | 100                |
|      | B2    | 3.8                              | 4.0 |                     |                     |                    |                    |
|      | B3    | 3.9                              | 4.1 |                     |                     |                    |                    |
|      | C1    | 4.0                              | 4.2 |                     |                     |                    |                    |
|      | C2    | 4.1                              | 4.3 |                     |                     |                    |                    |
|      | C3    | 4.2                              | 4.4 |                     |                     |                    |                    |
| HZ5  | A1    | 4.3                              | 4.5 | 5                   | 5                   | 1.5                | 100                |
|      | A2    | 4.4                              | 4.6 |                     |                     |                    |                    |
|      | A3    | 4.5                              | 4.7 |                     |                     |                    |                    |
|      | B1    | 4.6                              | 4.8 | 5                   | 5                   | 1.5                | 100                |
|      | B2    | 4.7                              | 4.9 |                     |                     |                    |                    |
|      | B3    | 4.8                              | 5.0 |                     |                     |                    |                    |

Note: 1. Tested with DC.

## HZ Series

(Ta = 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) | Test Condition      |
|      |       | Min                              | Max  | I <sub>Z</sub> (mA) | Max                 | V <sub>R</sub> (V) | Max                | I <sub>Z</sub> (mA) |
| HZ5  | C1    | 4.9                              | 5.1  | 5                   | 5                   | 1.5                | 100                | 5                   |
|      | C2    | 5.0                              | 5.2  |                     |                     |                    |                    |                     |
|      | C3    | 5.1                              | 5.3  |                     |                     |                    |                    |                     |
| HZ6  | A1    | 5.2                              | 5.5  | 5                   | 5                   | 2.0                | 40                 | 5                   |
|      | A2    | 5.3                              | 5.6  |                     |                     |                    |                    |                     |
|      | A3    | 5.4                              | 5.7  |                     |                     |                    |                    |                     |
|      | B1    | 5.5                              | 5.8  |                     |                     |                    |                    |                     |
|      | B2    | 5.6                              | 5.9  |                     |                     |                    |                    |                     |
|      | B3    | 5.7                              | 6.0  |                     |                     |                    |                    |                     |
|      | C1    | 5.8                              | 6.1  |                     |                     |                    |                    |                     |
|      | C2    | 6.0                              | 6.3  |                     |                     |                    |                    |                     |
|      | C3    | 6.1                              | 6.4  |                     |                     |                    |                    |                     |
| HZ7  | A1    | 6.3                              | 6.6  | 5                   | 1                   | 3.5                | 15                 | 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  |                     |                     |                    |                    |                     |
| HZ9  | A1    | 7.7                              | 8.1  | 5                   | 1                   | 5.0                | 20                 | 5                   |
|      | 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  |                     |                     |                    |                    |                     |
| HZ11 | A1    | 9.5                              | 9.9  | 5                   | 1                   | 7.5                | 25                 | 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 |                     |                     |                    |                    |                     |

Note: 1. Tested with DC.

| 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) | Test Condition      |
|      |       | Min                              | Max  | I <sub>Z</sub> (mA) | Max                 | V <sub>R</sub> (V) | Max                | I <sub>Z</sub> (mA) |
| HZ12 | A1    | 11.6                             | 12.1 | 5                   | 1                   | 9.5                | 35                 | 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 |                     |                     |                    |                    |                     |
| HZ15 | 1     | 14.1                             | 14.7 | 5                   | 1                   | 11.0               | 40                 | 5                   |
|      | 2     | 14.5                             | 15.1 |                     |                     |                    |                    |                     |
|      | 3     | 14.9                             | 15.5 |                     |                     |                    |                    |                     |
| HZ16 | 1     | 15.3                             | 15.9 | 5                   | 1                   | 12.0               | 45                 | 5                   |
|      | 2     | 15.7                             | 16.5 |                     |                     |                    |                    |                     |
|      | 3     | 16.3                             | 17.1 |                     |                     |                    |                    |                     |
| HZ18 | 1     | 16.9                             | 17.7 | 5                   | 1                   | 13.0               | 55                 | 5                   |
|      | 2     | 17.5                             | 18.3 |                     |                     |                    |                    |                     |
|      | 3     | 18.1                             | 19.0 |                     |                     |                    |                    |                     |
| HZ20 | 1     | 18.8                             | 19.7 | 2                   | 1                   | 15.0               | 60                 | 2                   |
|      | 2     | 19.5                             | 20.4 |                     |                     |                    |                    |                     |
|      | 3     | 20.2                             | 21.1 |                     |                     |                    |                    |                     |
| HZ22 | 1     | 20.9                             | 21.9 | 2                   | 1                   | 17.0               | 65                 | 2                   |
|      | 2     | 21.6                             | 22.6 |                     |                     |                    |                    |                     |
|      | 3     | 22.3                             | 23.3 |                     |                     |                    |                    |                     |
| HZ24 | 1     | 22.9                             | 24.0 | 2                   | 1                   | 19.0               | 70                 | 2                   |
|      | 2     | 23.6                             | 24.7 |                     |                     |                    |                    |                     |
|      | 3     | 24.3                             | 25.5 |                     |                     |                    |                    |                     |
| HZ27 | 1     | 25.2                             | 26.6 | 2                   | 1                   | 21.0               | 80                 | 2                   |
|      | 2     | 26.2                             | 27.6 |                     |                     |                    |                    |                     |
|      | 3     | 27.2                             | 28.6 |                     |                     |                    |                    |                     |
| HZ30 | 1     | 28.2                             | 29.6 | 2                   | 1                   | 23.0               | 100                | 2                   |
|      | 2     | 29.2                             | 30.6 |                     |                     |                    |                    |                     |
|      | 3     | 30.2                             | 31.6 |                     |                     |                    |                    |                     |
| HZ33 | 1     | 31.2                             | 32.6 | 2                   | 1                   | 25.0               | 120                | 2                   |
|      | 2     | 32.2                             | 33.6 |                     |                     |                    |                    |                     |
|      | 3     | 33.2                             | 34.6 |                     |                     |                    |                    |                     |
| HZ36 | 1     | 34.2                             | 35.7 | 2                   | 1                   | 27.0               | 140                | 2                   |
|      | 2     | 35.3                             | 36.8 |                     |                     |                    |                    |                     |
|      | 3     | 36.4                             | 38.0 |                     |                     |                    |                    |                     |

Note: 1. Tested with DC.

2. Type No. is as follows; HZ2B1, HZ2B2, HZ36-3.

## Main Characteristic

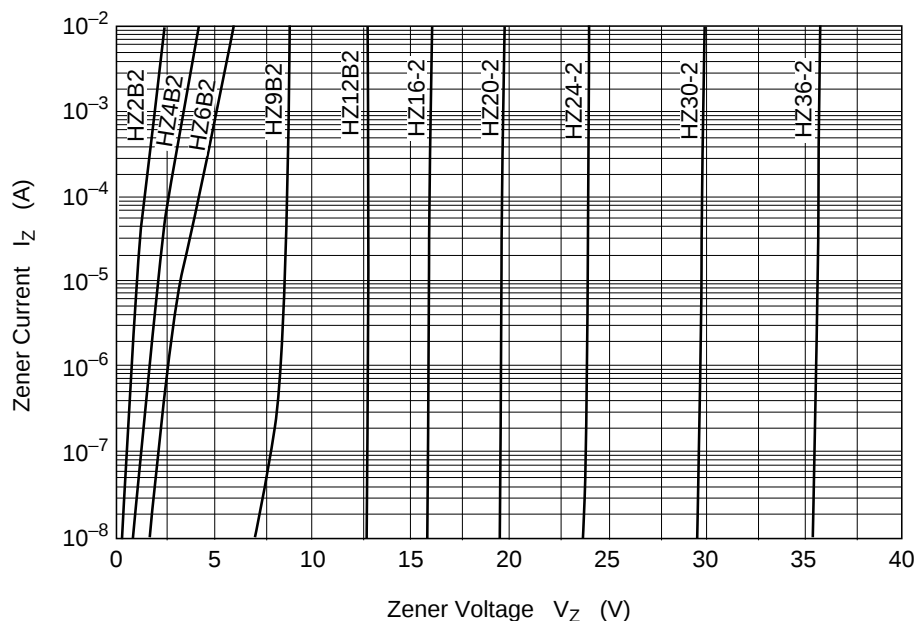


Fig.1 Zener current vs. Zener voltage

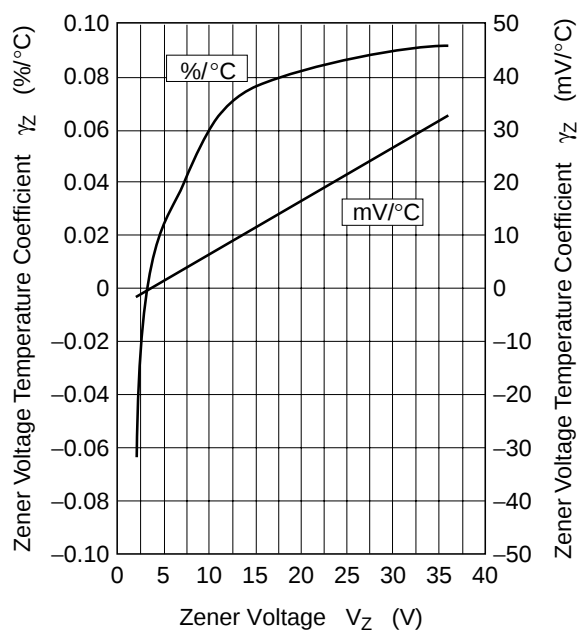


Fig.2 Temperature Coefficient vs. Zener voltage

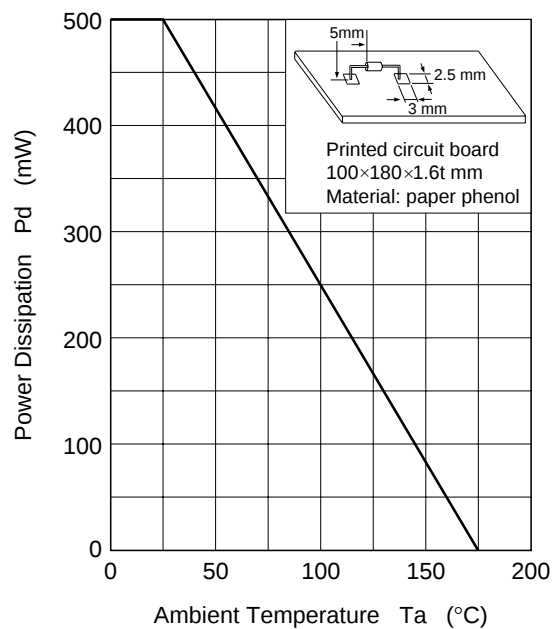
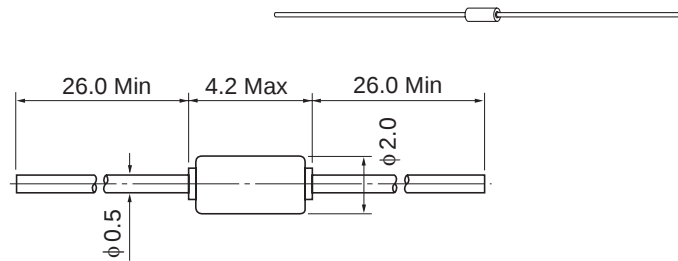


Fig.3 Power Dissipation vs. Ambient Temperature

## Package Dimensions

As of January, 2003  
Unit: mm



|                        |          |
|------------------------|----------|
| Package Code           | DO-35    |
| JEDEC                  | Conforms |
| JEITA                  | Conforms |
| Mass (reference value) | 0.13 g   |

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