

To our customers,

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## Old Company Name in Catalogs and Other Documents

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April 1<sup>st</sup>, 2010  
Renesas Electronics Corporation

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# HZK-LL Series

## Silicon Planar Zener Diode for Hard Knee Low Noise

REJ03G0020-0300  
 Rev.3.00  
 Nov 09, 2007

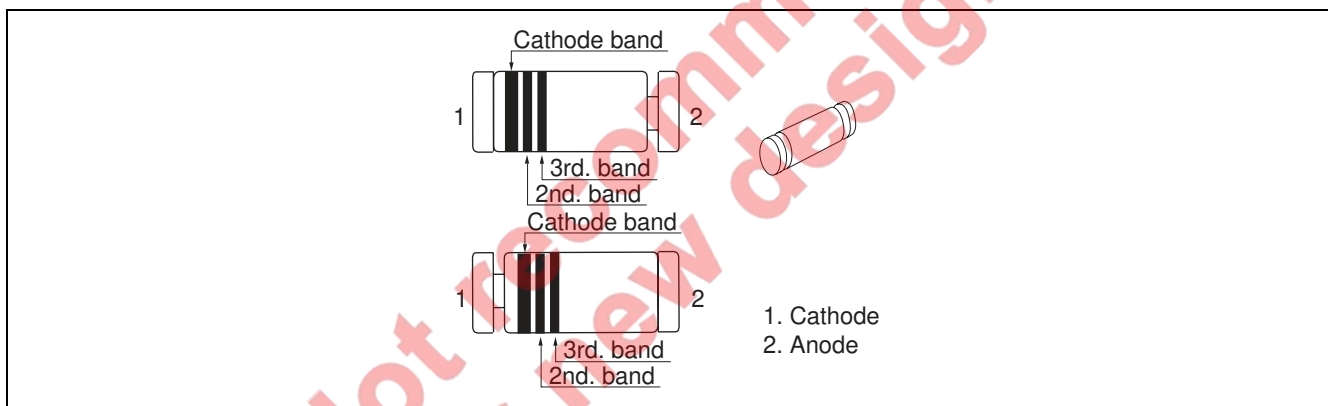
### Features

- Low dynamic impedance and low noise in the low current region (approximately 1/10 lower than the current zeners).
- LLD package is suitable for high density surface mounting and high speed assembly.

### Ordering Information

| Part No.      | Mark       | Package Name | Package Code |
|---------------|------------|--------------|--------------|
| HZK-LL Series | Color Code | LLD          | GLZZ0002ZA-A |

### Pin Arrangement



## Absolute Maximum Ratings

(Ta = 25°C)

| Item                 | Symbol | Value       | Unit |
|----------------------|--------|-------------|------|
| Power dissipation    | Pd *   | 250         | mW   |
| Junction temperature | Tj     | 175         | °C   |
| Storage temperature  | Tstg   | -55 to +175 | °C   |

Note: With P.C. Board.

## Electrical Characteristics

(Ta = 25°C)

| Part No. | Zener Voltage       |     | Reverse Current |         |                    | Dynamic Resistance |          |                       |          | Linearity <sup>*3</sup> |         |
|----------|---------------------|-----|-----------------|---------|--------------------|--------------------|----------|-----------------------|----------|-------------------------|---------|
|          | Vz(V) <sup>*1</sup> |     | Iz (mA)         | IR (nA) |                    | ZzT (Ω)            |          | ZzK (Ω) <sup>*2</sup> |          | ΔVz1 (V)                | ΔVz2(V) |
|          | Min                 | Max |                 | Max     | V <sub>R</sub> (V) | Max                | IzT (mA) | Typ                   | IzK (μA) | Max                     | Max     |
| HZK2ALL  | 1.6                 | 2.0 | 0.5             | 100     | 0.5                | 350                | 0.5      | (1.2)                 | 50       | 0.5                     | 0.6     |
| HZK2BLL  | 1.9                 | 2.3 |                 |         |                    |                    |          |                       |          |                         |         |
| HZK2CLL  | 2.2                 | 2.6 |                 |         |                    |                    |          |                       |          |                         |         |
| HZK3ALL  | 2.5                 | 2.9 | 0.5             | 100     | 1.0                | 360                | 0.5      | (1.2)                 | 50       | 0.5                     | 0.6     |
| HZK3BLL  | 2.8                 | 3.2 |                 |         |                    |                    |          |                       |          |                         |         |
| HZK3CLL  | 3.1                 | 3.5 |                 |         |                    |                    |          |                       |          |                         |         |
| HZK4ALL  | 3.4                 | 3.8 | 0.5             | 100     | 2.0                | 370                | 0.5      | (1.5)                 | 50       | 0.5                     | 0.6     |
| HZK4BLL  | 3.7                 | 4.1 |                 |         |                    |                    |          |                       |          |                         |         |
| HZK4CLL  | 4.0                 | 4.4 |                 |         |                    |                    |          |                       |          |                         |         |
| HZK5ALL  | 4.3                 | 4.7 | 0.5             | 100     | 3.0                | 380                | 0.5      | (1.5)                 | 50       | 0.5                     | 0.6     |
| HZK5BLL  | 4.6                 | 5.0 |                 |         |                    |                    |          |                       |          |                         |         |
| HZK5CLL  | 4.9                 | 5.3 |                 |         |                    |                    |          |                       |          |                         |         |

Notes: 1. Tested with DC.

2. Reference only.

3.  $\Delta V_{z1} = V_z (I_z = 0.5 \text{ mA}) - V_{z1} (I_z = 0.05 \text{ mA})$      $\Delta V_{z2} = V_{z1} (I_z = 0.05 \text{ mA}) - V_{z2} (I_z = 0.001 \text{ mA})$

## Mark Color Code

| Type    | Cathode Band | Second Band  | Third Band |
|---------|--------------|--------------|------------|
| HZK2ALL | Verdure      | Yellow Ocher | Pink       |
| HZK2BLL | Verdure      | Yellow Ocher | Blue       |
| HZK2CLL | Verdure      | Yellow Ocher | Light Blue |
| HZK3ALL | Verdure      | Pink         | Pink       |
| HZK3BLL | Verdure      | Pink         | Blue       |
| HZK3CLL | Verdure      | Pink         | Light Blue |
| HZK4ALL | Verdure      | Orange       | Pink       |
| HZK4BLL | Verdure      | Orange       | Blue       |
| HZK4CLL | Verdure      | Orange       | Light Blue |
| HZK5ALL | Verdure      | Yellow       | Pink       |
| HZK5BLL | Verdure      | Yellow       | Blue       |
| HZK5CLL | Verdure      | Yellow       | Light Blue |

Main Characteristic

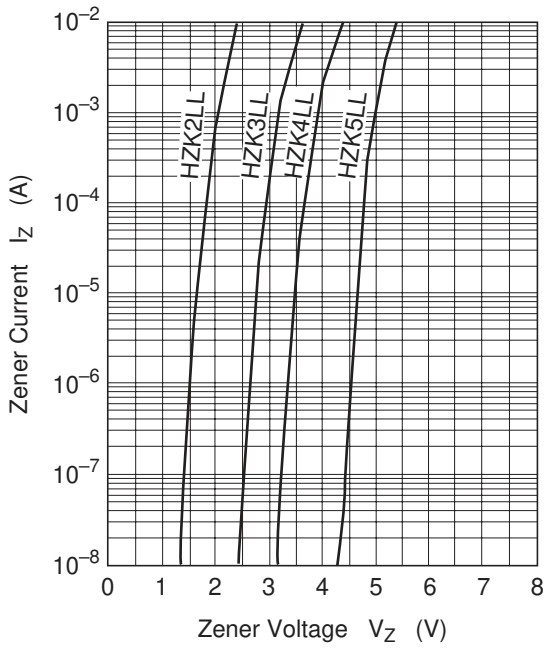


Fig.1 Zener current vs. Zener voltage

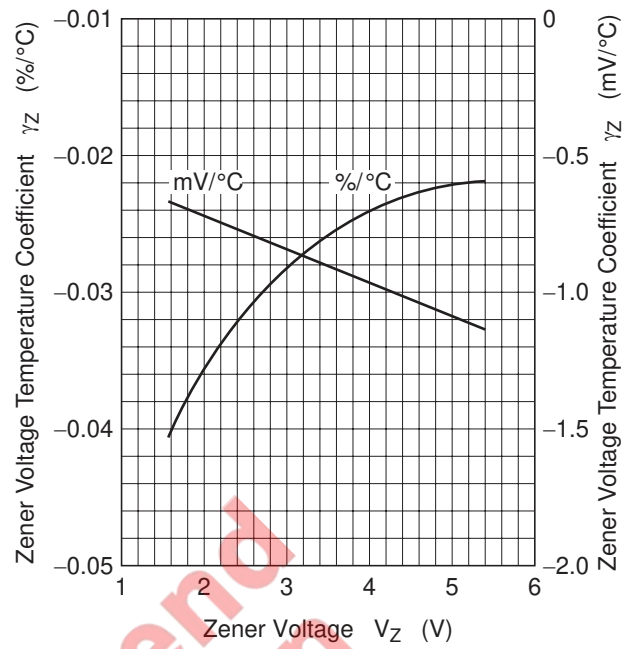


Fig.2 Temperature Coefficient vs. Zener voltage

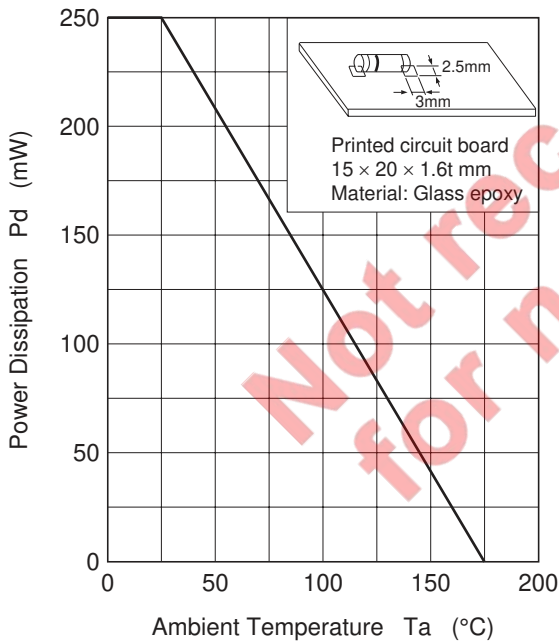
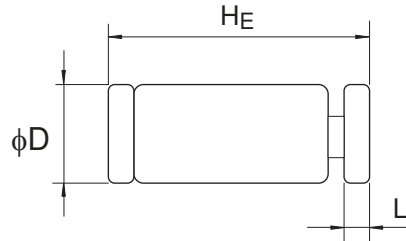


Fig.3 Power Dissipation vs. Ambient Temperature

Package Dimensions

|              |                    |              |               |            |
|--------------|--------------------|--------------|---------------|------------|
| Package Name | JEITA Package Code | RENESAS Code | Previous Code | MASS[Typ.] |
| LLD          | —                  | GLZZ0002ZA-A | LLD / LLDV    | 0.027g     |



| Reference Symbol | Dimension in Millimeters |      |      |
|------------------|--------------------------|------|------|
|                  | Min                      | Nom  | Max  |
| $\phi D$         | 1.25                     | 1.35 | 1.45 |
| $H_E$            | 3.30                     | 3.50 | 3.60 |
| L                | -                        | 0.35 | -    |

Not recommend for new design

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