# HZC Series

Silicon Epitaxial Planar Zener Diode for Surge Absorb

HITACHI

ADE-208-1436A (Z)

Rev.1
Jan. 2002

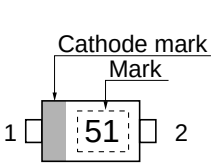
## Features

- These diodes are delivered taped.
- Ultra small Flat Package (UFP) is suitable for surface mount design.

## Ordering Information

| Type No. | Laser Mark | Package Code |
|---|---|---|
| HZC Series | Let to Mark Code | UFP |

## Pin Arrangement




1. Cathode
2. Anode

Hitachi semiconductor

## Absolute Maximum Ratings

(Ta = 25°C)

| Item | Symbol | Value | Unit |
|---|---|---|---|
| Power dissipation | Pd *[1] | 150 | mW |
| Junction temperature | Tj | 150 | °C |
| Storage temperature | Tstg | –55 to +150 | °C |

Note: 1. See Fig2.

## Electrical Characteristics

(Ta = 25°C)

| | Zener voltage | | | Reverse current | | Dynamic resistance | | ESD-Capability *[2] |
|---|---|---|---|---|---|---|---|---|
| | $V_Z$ (V) *[1] | | Test Condition | $I_R$ (μA) | Test Condition | $r_d$ (Ω) | Test Condition | — (kV) *[2] |
| Type | Min | Max | $I_Z$ (mA) | Max | $V_R$ (V) | Max | $I_Z$ (mA) | Min |
| HZC2.0 | 1.90 | 2.20 | 5 | 120.0 | 0.5 | 100 | 5 | 30 |
| HZC2.2 | 2.10 | 2.40 | 5 | 120.0 | 0.7 | 100 | 5 | 30 |
| HZC2.4 | 2.30 | 2.60 | 5 | 120.0 | 1.0 | 100 | 5 | 30 |
| HZC2.7 | 2.50 | 2.90 | 5 | 120.0 | 1.0 | 110 | 5 | 30 |
| HZC3.0 | 2.80 | 3.20 | 5 | 50.0 | 1.0 | 120 | 5 | 30 |
| HZC3.3 | 3.10 | 3.50 | 5 | 20.0 | 1.0 | 130 | 5 | 30 |
| HZC3.6 | 3.40 | 3.80 | 5 | 10.0 | 1.0 | 130 | 5 | 30 |
| HZC3.9 | 3.70 | 4.10 | 5 | 10.0 | 1.0 | 130 | 5 | 30 |
| HZC4.3 | 4.01 | 4.48 | 5 | 10.0 | 1.0 | 130 | 5 | 30 |
| HZC4.7 | 4.42 | 4.90 | 5 | 10.0 | 1.0 | 130 | 5 | 30 |
| HZC5.1 | 4.84 | 5.37 | 5 | 5.0 | 1.5 | 130 | 5 | 30 |
| HZC5.6 | 5.31 | 5.92 | 5 | 5.0 | 2.5 | 80 | 5 | 30 |
| HZC6.2 | 5.86 | 6.53 | 5 | 2.0 | 3.0 | 50 | 5 | 30 |
| HZC6.8 | 6.47 | 7.14 | 5 | 1.0 | 3.5 | 30 | 5 | 30 |
| HZC7.5 | 7.06 | 7.84 | 5 | 1.0 | 4.0 | 30 | 5 | 30 |
| HZC8.2 | 7.76 | 8.64 | 5 | 0.5 | 5.0 | 30 | 5 | 30 |
| HZC9.1 | 8.56 | 9.55 | 5 | 0.5 | 6.0 | 30 | 5 | 30 |
| HZC10 | 9.45 | 10.55 | 5 | 0.5 | 7.0 | 30 | 5 | 30 |
| HZC11 | 10.44 | 11.56 | 5 | 0.5 | 8.0 | 30 | 5 | 30 |

Notes: 1. Tested with pulse (Pw = 40 ms).
2. C =150 pF, R = 330 Ω, Both forward and reverse direction 10 pulse
Failure criterion ; According to IR spec

| Type | Zener voltage | | | Reverse current | | Dynamic resistance | | ESD-Capability *2 |
|---|---|---|---|---|---|---|---|---|
| | $V_Z$ (V) *1 | | Test Condition | $I_R$ (μA) | Test Condition | $r_d$ (Ω) | Test Condition | — (kV) *2 |
| | Min | Max | $I_Z$ (mA) | Max | $V_R$ (V) | Max | $I_Z$ (mA) | Min |
| HZC12 | 11.42 | 12.60 | 5 | 0.5 | 9.0 | 35 | 5 | 30 |
| HZC13 | 12.47 | 13.96 | 5 | 0.5 | 10.0 | 35 | 5 | 30 |
| HZC15 | 13.84 | 15.52 | 5 | 0.5 | 11.0 | 40 | 5 | 30 |
| HZC16 | 15.37 | 17.09 | 5 | 0.5 | 12.0 | 40 | 5 | 30 |
| HZC18 | 16.94 | 19.03 | 5 | 0.5 | 13.0 | 45 | 5 | 30 |
| HZC20 | 18.86 | 21.08 | 5 | 0.5 | 15.0 | 50 | 5 | 30 |
| HZC22 | 20.88 | 23.17 | 5 | 0.5 | 17.0 | 55 | 5 | 30 |
| HZC24 | 22.93 | 25.57 | 5 | 0.5 | 19.0 | 60 | 5 | 30 |
| HZC27 | 25.10 | 28.90 | 2 | 0.5 | 21.0 | 70 | 2 | 30 |
| HZC30 | 28.00 | 32.00 | 2 | 0.5 | 23.0 | 80 | 2 | 30 |
| HZC33 | 31.00 | 35.00 | 2 | 0.5 | 25.0 | 80 | 2 | 25 |
| HZC36 | 34.00 | 38.00 | 2 | 0.5 | 27.0 | 90 | 2 | 20 |

Notes: 1. Tested with pulse (Pw = 40 ms).

2. C =150 pF, R = 330 Ω, Both forward and reverse direction 10 pulse
Failure criterion ; According to IR spec

## Mark Code

| Type | Mark No. | Type | Mark No. | Type | Mark No. |
|---|---|---|---|---|---|
| HZC2.0 | 20 | HZC5.6 | 56 | HZC15 | 15 * |
| HZC2.2 | 22 | HZC6.2 | 62 | HZC16 | 16 * |
| HZC2.4 | 24 | HZC6.8 | 68 | HZC18 | 18 * |
| HZC2.7 | 27 | HZC7.5 | 75 | HZC20 | 20 * |
| HZC3.0 | 30 | HZC8.2 | 82 | HZC22 | 22 * |
| HZC3.3 | 33 | HZC9.1 | 91 | HZC24 | 24 * |
| HZC3.6 | 36 | HZC10 | 10 * | HZC27 | 27 * |
| HZC3.9 | 39 | HZC11 | 11 * | HZC30 | 30 * |
| HZC4.3 | 43 | HZC12 | 12 * | HZC33 | 33 * |
| HZC4.7 | 47 | HZC13 | 13 * | HZC36 | 36 * |
| HZC5.1 | 51 | | | | |

Note: 1. HZC10 To HZC36 has ■, on the right of Laser Mark.

## Main Characteristic

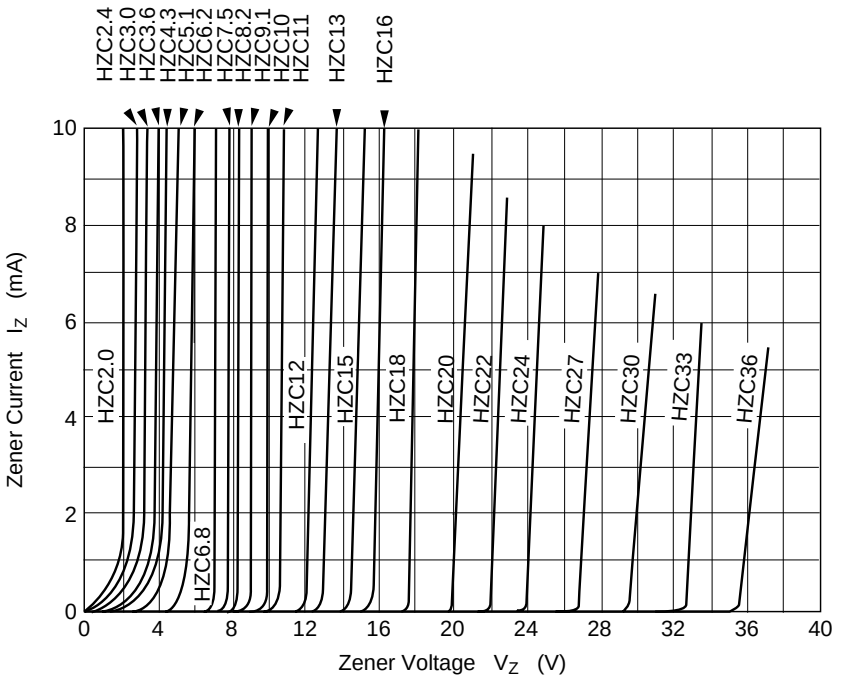



Fig.1 Zener current vs. Zener voltage

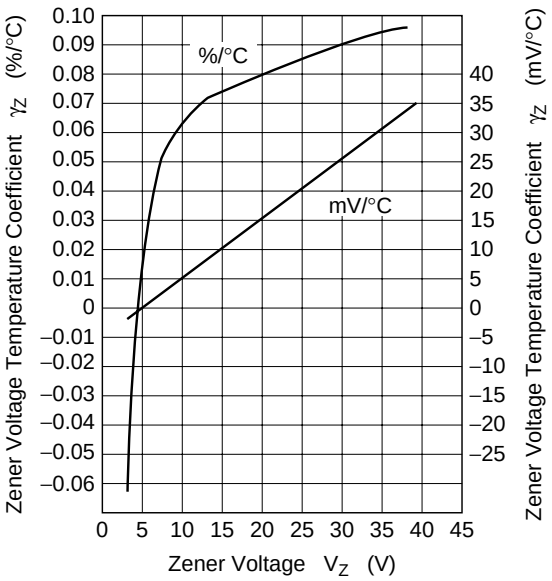



Fig.2 Temperature Coefficient vs. Zener voltage

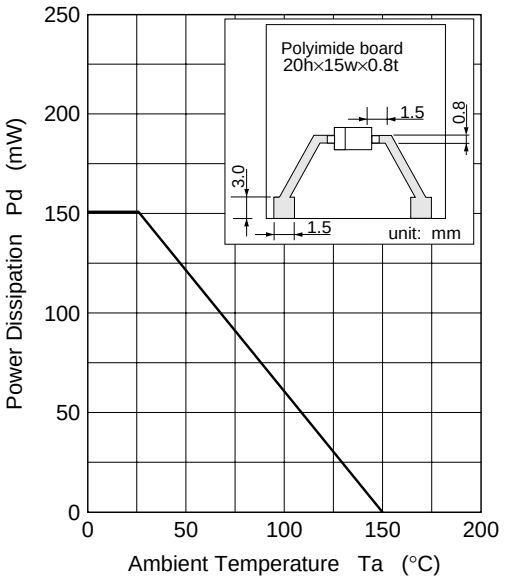
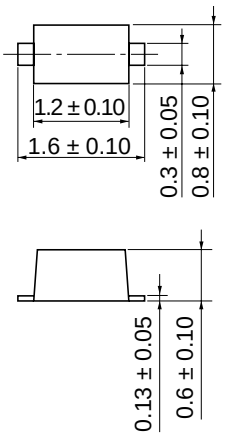



Fig.2 Power Dissipation vs. Ambient Temperature

## Package Dimensions

As of July, 2001

Unit: mm




| | |
|---|---|
| Hitachi Code | UFP |
| JEDEC | — |
| JEITA | Conforms |
| Mass (reference value) | 0.0016 g |

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HITACHI

**Hitachi, Ltd.**
Semiconductor & Integrated Circuits
Nippon Bldg., 2-6-2, Ohte-machi, Chiyoda-ku, Tokyo 100-0004, Japan
Tel: (03) 3270-2111 Fax: (03) 3270-5109

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**For further information write to:**

Hitachi Semiconductor
(America) Inc.
179 East Tasman Drive
San Jose,CA 95134
Tel: <1> (408) 433-1990
Fax: <1>(408) 433-0223

Hitachi Europe Ltd.
Electronic Components Group
Whitebrook Park
Lower Cookham Road
Maidenhead
Berkshire SL6 8YA, United Kingdom
Tel: <44> (1628) 585000
Fax: <44> (1628) 585200

Hitachi Europe GmbH
Electronic Components Group
Dornacher Straße 3
D-85622 Feldkirchen
Postfach 201, D-85619 Feldkirchen
Germany
Tel: <49> (89) 9 9180-0
Fax: <49> (89) 9 29 30 00

Hitachi Asia Ltd.
Hitachi Tower
16 Collyer Quay #20-00
Singapore 049318
Tel : <65>-538-6533/538-8577
Fax : <65>-538-6933/538-3877
URL : http://semiconductor.hitachi.com.sg

Hitachi Asia Ltd.
(Taipei Branch Office)
4/F, No. 167, Tun Hwa North Road
Hung-Kuo Building
Taipei (105), Taiwan
Tel : <886>-(2)-2718-3666
Fax : <886>-(2)-2718-8180
Telex : 23222 HAS-TP
URL : http://www.hitachi.com.tw

Hitachi Asia (Hong Kong) Ltd.
Group III (Electronic Components)
7/F., North Tower
World Finance Centre,
Harbour City, Canton Road
Tsim Sha Tsui, Kowloon Hong Kong
Tel : <852>-(2)-735-9218
Fax : <852>-(2)-730-0281
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