

## HZS Series

### Silicon Epitaxial Planar Zener Diode for Stabilized Power Supply

REJ03G0184-0300Z  
(Previous: ADE-208-120B)  
Rev.3.00  
Mar.11.2004

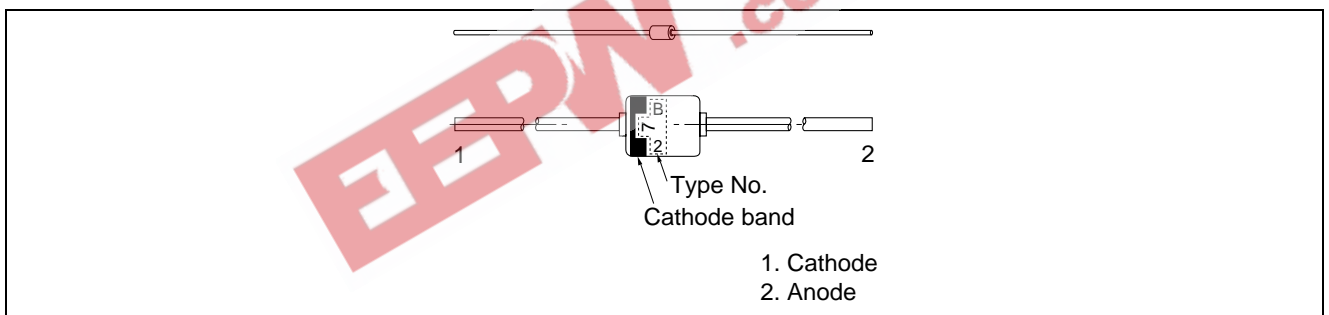
#### Features

- Low leakage, low zener impedance and maximum power dissipation of 400 mW are ideally suited for stabilized power supply, etc.
- Wide spectrum from 1.6V through 38V of zener voltage provide flexible application.
- Suitable for 5mm-pitch high speed automatic insertion.

#### Ordering Information

Type No.	Mark	Package Code
HZS Series	Type No.	MHD

#### Pin Arrangement



## HZS Series

### 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)

Type	Grade	Zener Voltage		Test Condition	Reverse Current		Dynamic Resistance	
		V <sub>Z</sub> (V)*1			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)
HZS2	A1	1.6	1.8	5	25	0.5	100	5
	A2	1.7	1.9					
	A3	1.8	2.0					
	B1	1.9	2.1	5	5	0.5	100	5
	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					
HZS3	A1	2.5	2.7	5	5	0.5	100	5
	A2	2.6	2.8					
	A3	2.7	2.9					
	B1	2.8	3.0					
	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					
HZS4	A1	3.4	3.6	5	5	1.0	100	5
	A2	3.5	3.7					
	A3	3.6	3.8					
	B1	3.7	3.9					
	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					
HZS5	A1	4.3	4.5	5	5	1.5	100	5
	A2	4.4	4.6					
	A3	4.5	4.7					
	B1	4.6	4.8					
	B2	4.7	4.9					
	B3	4.8	5.0					

Note: 1. Tested with DC.

## HZS Series

(Ta = 25°C)

Type	Grade	Zener Voltage		Test Condition I <sub>Z</sub> (mA)	Reverse Current		Dynamic Resistance	
		V <sub>Z</sub> (V) <sup>*1</sup>			I <sub>R</sub> (μA) Max	Test Condition V <sub>R</sub> (V)	r <sub>d</sub> (Ω) Max	Test Condition I <sub>Z</sub> (mA)
		Min	Max					
HZS5	C1	4.9	5.1	5	5	1.5	100	5
	C2	5.0	5.2					
	C3	5.1	5.3					
HZS6	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					
HZS7	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					
HZS9	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					
HZS11	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					
HZS12	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					

Note: 1. Tested with DC.

## HZS Series

(Ta = 25°C)

Type	Grade	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)
HZS12	C1	13.2	13.7	5	1	9.5	35	5
	C2	13.5	14.0					
	C3	13.8	14.3					
HZS15	1	14.1	14.7	5	1	11.0	40	5
	2	14.5	15.1					
	3	14.9	15.5					
HZS16	1	15.3	15.9	5	1	12.0	45	5
	2	15.7	16.5					
	3	16.3	17.1					
HZS18	1	16.9	17.7	5	1	13.0	55	5
	2	17.5	18.3					
	3	18.1	19.0					
HZS20	1	18.8	19.7	2	1	15.0	60	2
	2	19.5	20.4					
	3	20.2	21.1					
HZS22	1	20.9	21.9	2	1	17.0	65	2
	2	21.6	22.6					
	3	22.3	23.3					
HZS24	1	22.9	24.0	2	1	19.0	70	2
	2	23.6	24.7					
	3	24.3	25.5					
HZS27	1	25.2	26.6	2	1	21.0	80	2
	2	26.2	27.6					
	3	27.2	28.6					
HZS30	1	28.2	29.6	2	1	23.0	100	2
	2	29.2	30.6					
	3	30.2	31.6					
HZS33	1	31.2	32.6	2	1	25.0	120	2
	2	32.2	33.6					
	3	33.2	34.6					
HZS36	1	34.2	35.7	2	1	27.0	140	2
	2	35.3	36.8					
	3	36.4	38.0					

Notes: 1. Tested with DC.

2. Type No. is as follows; HZS2B1, HZS2B2, HZS36-3.

Main Characteristic

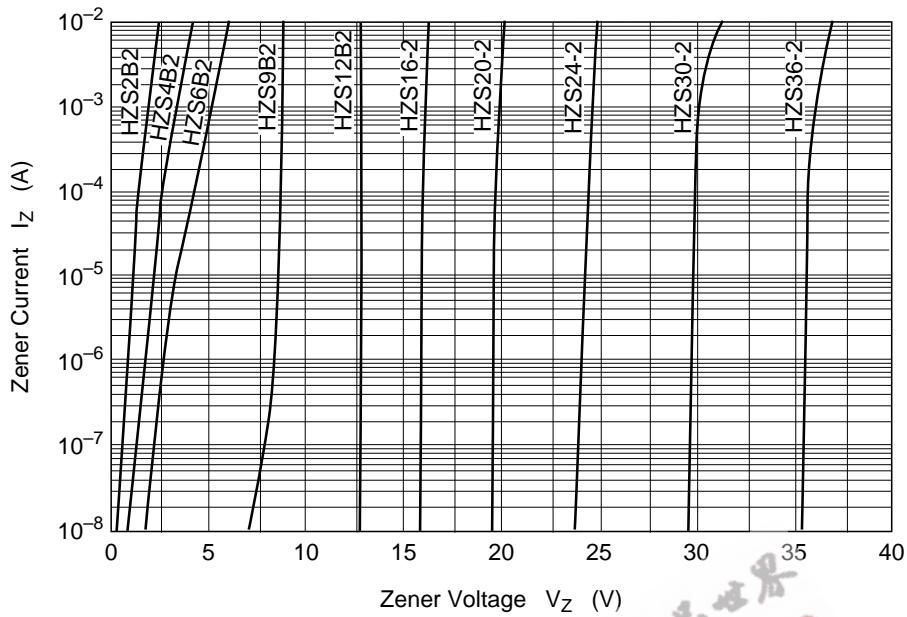


Fig.1 Zener current vs. Zener voltage

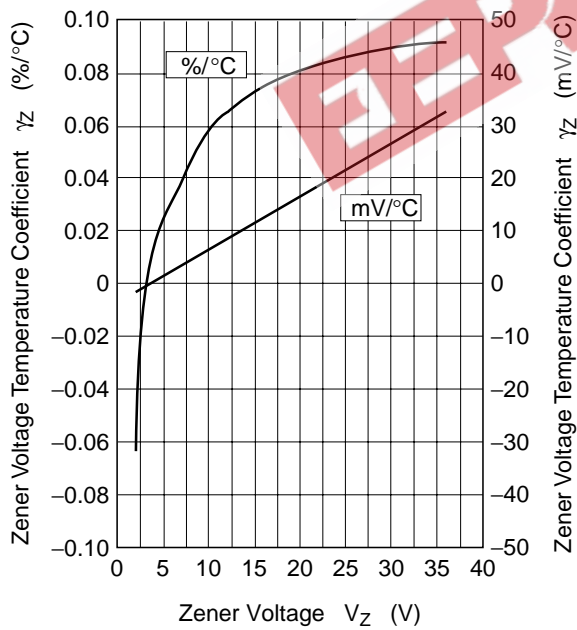


Fig.2 Temperature Coefficient vs. Zener voltage

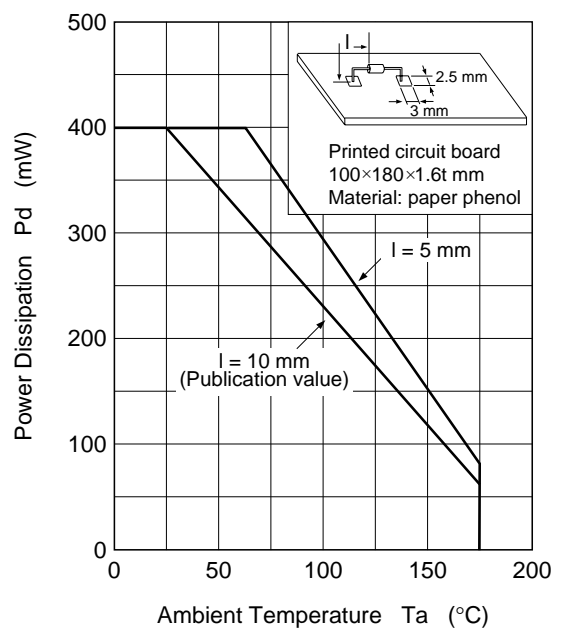
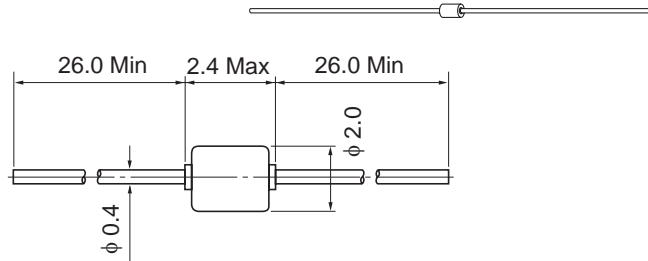


Fig.3 Power Dissipation vs. Ambient Temperature

## HZS Series

### Package Dimensions

As of January, 2003  
Unit: mm



Package Code	MHD
JEDEC	Conforms
JEITA	—
Mass (reference value)	0.084 g

EEPW.com.cn 电子产品世界

**Renesas Technology Corp.** Sales Strategic Planning Div. Nippon Bldg., 2-6-2, Ohte-machi, Chiyoda-ku, Tokyo 100-0004, Japan

Keep safety first in your circuit designs!

1. Renesas Technology Corp. puts the maximum effort into making semiconductor products better and more reliable, but there is always the possibility that trouble may occur with them. Trouble with semiconductors may lead to personal injury, fire or property damage.  
Remember to give due consideration to safety when making your circuit designs, with appropriate measures such as (i) placement of substitutive, auxiliary circuits, (ii) use of nonflammable material or (iii) prevention against any malfunction or mishap.

Notes regarding these materials

1. These materials are intended as a reference to assist our customers in the selection of the Renesas Technology Corp. product best suited to the customer's application; they do not convey any license under any intellectual property rights, or any other rights, belonging to Renesas Technology Corp. or a third party.
2. Renesas Technology Corp. assumes no responsibility for any damage, or infringement of any third-party's rights, originating in the use of any product data, diagrams, charts, programs, algorithms, or circuit application examples contained in these materials.
3. All information contained in these materials, including product data, diagrams, charts, programs and algorithms represents information on products at the time of publication of these materials, and are subject to change by Renesas Technology Corp. without notice due to product improvements or other reasons. It is therefore recommended that customers contact Renesas Technology Corp. or an authorized Renesas Technology Corp. product distributor for the latest product information before purchasing a product listed herein.  
The information described here may contain technical inaccuracies or typographical errors.  
Renesas Technology Corp. assumes no responsibility for any damage, liability, or other loss arising from these inaccuracies or errors.  
Please also pay attention to information published by Renesas Technology Corp. by various means, including the Renesas Technology Corp. Semiconductor home page (<http://www.renesas.com>).
4. When using any or all of the information contained in these materials, including product data, diagrams, charts, programs, and algorithms, please be sure to evaluate all information as a total system before making a final decision on the applicability of the information and products. Renesas Technology Corp. assumes no responsibility for any damage, liability or other loss resulting from the information contained herein.
5. Renesas Technology Corp. semiconductors are not designed or manufactured for use in a device or system that is used under circumstances in which human life is potentially at stake. Please contact Renesas Technology Corp. or an authorized Renesas Technology Corp. product distributor when considering the use of a product contained herein for any specific purposes, such as apparatus or systems for transportation, vehicular, medical, aerospace, nuclear, or undersea repeater use.
6. The prior written approval of Renesas Technology Corp. is necessary to reprint or reproduce in whole or in part these materials.
7. If these products or technologies are subject to the Japanese export control restrictions, they must be exported under a license from the Japanese government and cannot be imported into a country other than the approved destination.  
Any diversion or reexport contrary to the export control laws and regulations of Japan and/or the country of destination is prohibited.
8. Please contact Renesas Technology Corp. for further details on these materials or the products contained therein.

**RENESAS SALES OFFICES**



<http://www.renesas.com>

**Renesas Technology America, Inc.**  
450 Holger Way, San Jose, CA 95134-1368, U.S.A  
Tel: <1> (408) 382-7500 Fax: <1> (408) 382-7501

**Renesas Technology Europe Limited.**  
Dukes Meadow, Millboard Road, Bourne End, Buckinghamshire, SL8 5FH, United Kingdom  
Tel: <44> (1628) 585 100, Fax: <44> (1628) 585 900

**Renesas Technology Europe GmbH**  
Dornacher Str. 3, D-85622 Feldkirchen, Germany  
Tel: <49> (89) 380 70 0, Fax: <49> (89) 929 30 11

**Renesas Technology Hong Kong Ltd.**  
7/F., North Tower, World Finance Centre, Harbour City, Canton Road, Hong Kong  
Tel: <852> 2265-6688, Fax: <852> 2375-6836

**Renesas Technology Taiwan Co., Ltd.**  
FL 10, #99, Fu-Hsing N. Rd., Taipei, Taiwan  
Tel: <886> (2) 2715-2888, Fax: <886> (2) 2713-2999

**Renesas Technology (Shanghai) Co., Ltd.**  
26/F., Ruijin Building, No.205 Maoming Road (S), Shanghai 200020, China  
Tel: <86> (21) 6472-1001, Fax: <86> (21) 6415-2952

**Renesas Technology Singapore Pte. Ltd.**  
1, Harbour Front Avenue, #06-10, Keppel Bay Tower, Singapore 098632  
Tel: <65> 6213-0200, Fax: <65> 6278-8001