

HZS-N Series

Silicon Epitaxial Planar Zener Diode for Stabilized Power Supply

REJ03G0185-0100Z
(Previous: ADE-208-124)
Rev.1.00
Mar.11.2004

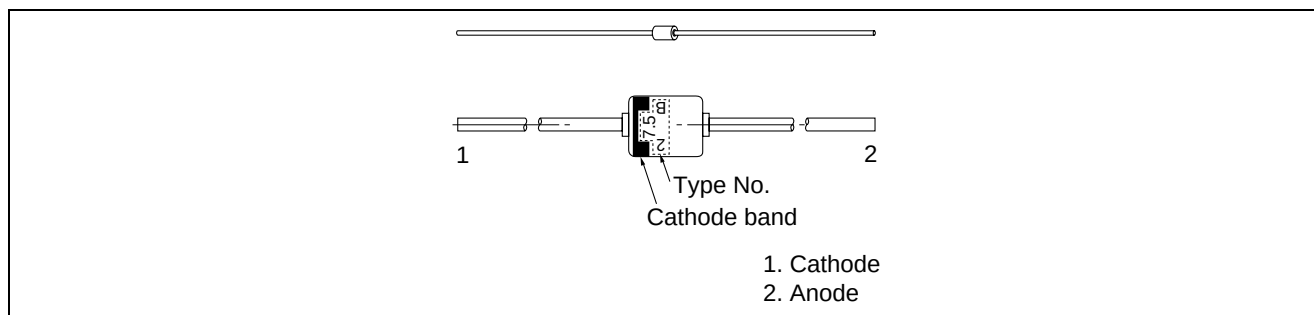
Features

- Low leakage, low zener impedance and maximum power dissipation of 400 mW are ideally suited for stabilized power supply, etc.
- Wide spectrum from 1.88 V through 38.52 V of zener voltage provide flexible application.
- Suitable for 5mm-pitch high speed automatic insertion.

Ordering Information

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

Pin Arrangement



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		Reverse Current		Dynamic Resistance	
		V _Z (V)* ¹		Test Condition	I _R (μA)	Test Condition	r _d (Ω)
		Min	Max	I _Z (mA)	Max	V _R (V)	Max
HZS2.0N	B1	1.88	2.10	5	120	0.5	100
	B2	2.02	2.20				
HZS2.2N	B1	2.12	2.30	5	120	0.7	100
	B2	2.22	2.41				
HZS2.4N	B1	2.33	2.52	5	120	1.0	100
	B2	2.43	2.63				
HZS2.7N	B1	2.54	2.75	5	100	1.0	110
	B2	2.69	2.91				
HZS3.0N	B1	2.85	3.07	5	50	1.0	120
	B2	3.01	3.22				
HZS3.3N	B1	3.16	3.38	5	20	1.0	120
	B2	3.32	3.53				
HZS3.6N	B1	3.47	3.68	5	10	1.0	120
	B2	3.62	3.83				
HZS3.9N	B1	3.77	3.98	5	5	1.0	120
	B2	3.92	4.14				
HZS4.3N	B1	4.05	42.6	5	5	1.0	120
	B2	4.20	4.40				
	B3	4.34	4.53				
HZS4.7N	B1	4.47	4.65	5	5	1.0	100
	B2	4.59	4.77				
	B3	4.71	4.91				
HZS5.1N	B1	4.85	5.03	5	5	1.5	70
	B2	4.97	5.18				
	B3	5.12	5.35				
HZS5.6N	B1	5.29	5.52	5	5	2.5	40
	B2	5.46	5.70				
	B3	5.64	5.88				
HZS6.2N	B1	5.81	6.06	5	5	3.0	30
	B2	5.99	6.24				
	B3	6.16	6.40				
HZS6.8N	B1	6.32	6.59	5	2	3.5	25
	B2	6.52	6.79				
	B3	6.70	6.97				

Note: 1. Tested with pulse (P_w = 40 ms)

HZS-N Series

(Ta = 25°C)

Type	Grade	Zener Voltage		Reverse Current		Dynamic Resistance	
		V _Z (V)* ¹	Test Condition	I _R (μA)	Test Condition	r _d (Ω)	Test Condition
		Min	Max	I _Z (mA)	V _R (V)	Max	I _Z (mA)
HZS7.5N	B1	6.88	7.19	5	0.5	4.0	5
	B2	7.11	7.41				
	B3	7.33	7.64				
HZS8.2N	B1	7.56	7.90	5	0.5	5.0	5
	B2	7.82	8.15				
	B3	8.07	8.41				
HZS9.1N	B1	8.33	8.70	5	0.5	6.0	5
	B2	8.61	8.99				
	B3	8.89	9.29				
HZS10N	B1	9.19	9.59	5	0.2	7.0	5
	B2	9.48	9.90				
	B3	9.82	10.30				
HZS11N	B1	10.18	10.63	5	0.2	8.0	5
	B2	10.50	10.95				
	B3	10.82	11.26				
HZS12N	B1	11.13	11.63	5	0.2	9.0	5
	B2	11.50	11.92				
	B3	11.80	12.30				
HZS13N	B1	12.18	12.71	5	0.2	10	5
	B2	12.59	13.16				
	B3	13.03	13.62				
HZS15N	B1	13.48	14.09	5	0.2	11	5
	B2	13.95	14.56				
	B3	14.42	15.02				
HZS16N	B1	14.87	15.50	5	0.2	12	5
	B2	15.33	15.96				
	B3	15.79	16.50				
HZS18N	B1	16.34	17.06	5	0.2	13	5
	B2	16.90	17.67				
	B3	17.51	18.30				
HZS20N	B1	18.14	18.96	5	0.2	15	5
	B2	18.80	19.68				
	B3	19.52	20.45				
HZS22N	B1	20.23	21.08	5	0.2	17	5
	B2	20.76	21.65				
	B3	21.22	22.09				
	B4	21.68	22.61				
HZS24N	B1	22.26	23.12	5	0.2	19	5
	B2	22.75	23.73				
	B3	23.29	24.27				
	B4	23.81	24.81				
HZS27N	B1	24.26	25.52	5	0.2	21	5
	B2	24.97	26.26				
	B3	25.63	26.95				
	B4	26.29	27.64				

Note: 1. Tested with pulse (P_W = 40 ms)

		Zener Voltage		Reverse Current		Dynamic Resistance		
Type	Grade	V _Z (V)* ¹		Test Condition	I _R (μA)	Test Condition	r _d (Ω)	Test Condition
		Min	Max	I _Z (mA)	Max	V _R (V)	Max	I _Z (mA)
HZS30N	B1	26.99	28.39	5	0.2	23	55	5
	B2	27.70	29.13					
	B3	28.36	29.82					
	B4	29.02	30.51					
HZS33N	B1	29.68	31.22	5	0.2	25	65	5
	B2	30.32	31.88					
	B3	30.90	32.50					
	B4	31.49	33.11					
HZS36N	B1	32.14	33.79	5	0.2	27	75	5
	B2	32.79	34.49					
	B3	33.40	35.13					
	B4	34.01	35.77					
HZS39N	B1	34.68	36.47	5	0.2	30	85	5
	B2	35.36	37.19					
	B3	36.00	37.85					
	B4	36.63	38.52					

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

2. Type No. is as follows: HZS2.0NB1, HZS2.0NB2, ••• HZS39NB4.

Main Characteristic

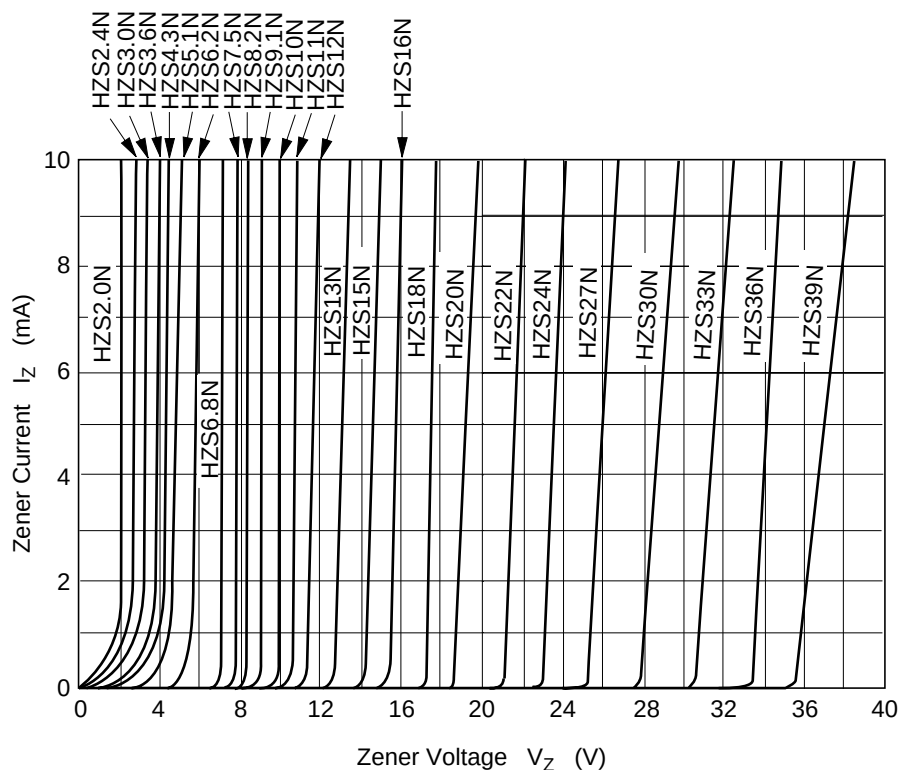


Fig.1 Zener current vs. Zener voltage

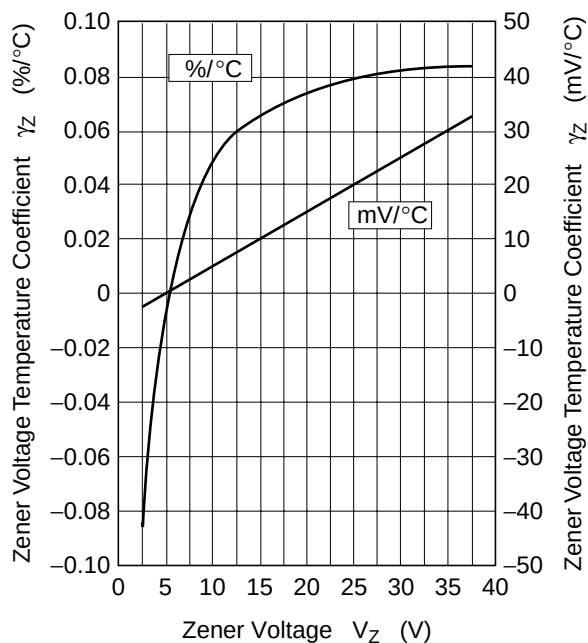


Fig.2 Temperature Coefficient vs. Zener voltage

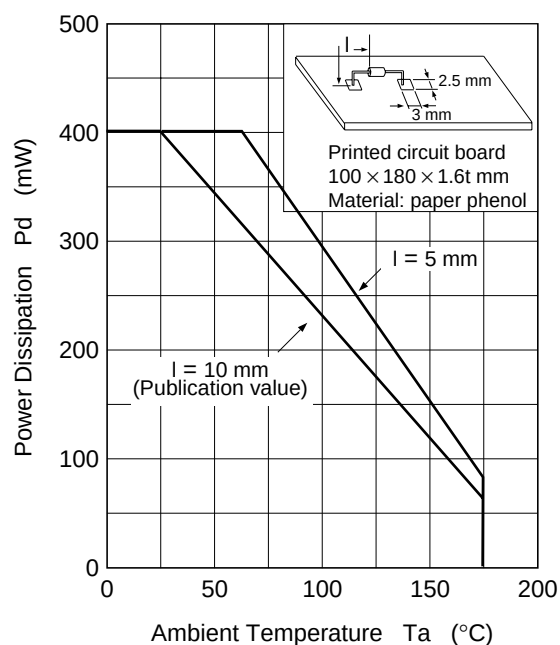
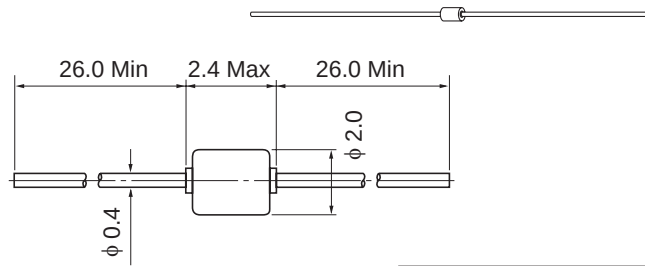


Fig.3 Power Dissipation vs. Ambient Temperature

Package Dimensions

As of January, 2003
Unit: mm



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

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 rising 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