

HZM-N Series

Silicon Epitaxial Planar Zener Diode for Stabilizer

REJ03G0483-0500
(Previous: ADE-208-130D)
Rev.5.00
Dec 14, 2004

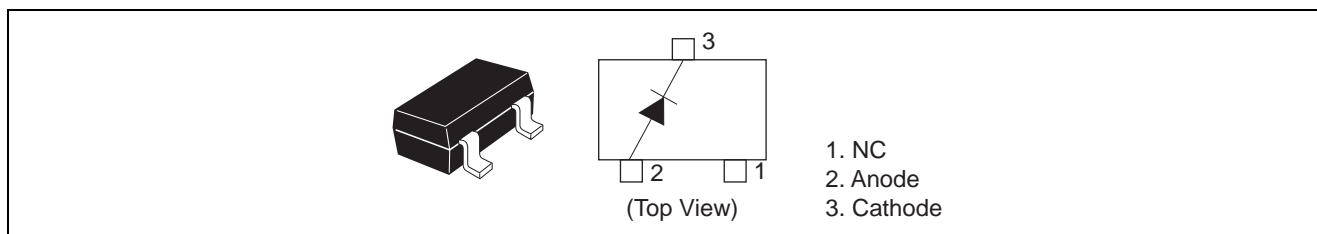
Features

- Wide spectrum from 1.9 V through 38 V of zener voltage provide flexible application.
- MPAK Package is suitable for high density surface mounting and high speed assembly.

Ordering Information

Type No.	Laser Mark	Package Code
HZM-N Series	Let to Mark Code	MPAK

Pin Arrangement



Absolute Maximum Ratings

(Ta = 25°C)

Item	Symbol	Value	Unit
Power dissipation	Pd *1	200	mW
Junction temperature	Tj	150	°C
Storage temperature	Tstg	-55 to +150	°C

Note: 1. See Fig. 3.

Electrical Characteristics

(Ta = 25°C)

Type	Grade	Zener Voltage		Reverse Current		Dynamic Resistance	
		Vz (V)*1		Test Condition	Ir (μA)	Test Condition	rd (Ω)
		Min	Max	Iz (mA)	Max	Vr (V)	Max
H2M2.0N	B	1.90	2.20	5	120	0.5	100
H2M2.2N	B	2.10	2.40	5	120	0.7	100
H2M2.4N	B	2.30	2.60	5	120	1.0	100
H2M2.7N	B	2.50	2.90	5	120	1.0	110
	B1	2.50	2.75				
	B2	2.65	2.90				
H2M3.0N	B	2.80	3.20	5	50	1.0	120
	B1	2.80	3.05				
	B2	2.95	3.20				
H2M3.3N	B	3.10	3.50	5	20	1.0	130
	B1	3.10	3.35				
	B2	3.25	3.50				
H2M3.6N	B	3.40	3.80	5	10	1.0	130
	B1	3.40	3.65				
	B2	3.55	3.80				
H2M3.9N	B	3.70	4.10	5	10	1.0	130
	B1	3.70	3.97				
	B2	3.87	4.10				
H2M4.3N	B	4.01	4.48	5	10	1.0	130
	B1	4.01	4.21				
	B2	4.15	4.34				
	B3	4.28	4.48				
H2M4.7N	B	4.42	4.90	5	10	1.0	130
	B1	4.42	4.61				
	B2	4.55	4.75				
	B3	4.69	4.90				
H2M5.1N	B	4.84	5.37	5	5	1.5	130
	B1	4.84	5.04				
	B2	4.98	5.20				
	B3	5.14	5.37				
H2M5.6N	B	5.31	5.92	5	5	2.5	80
	B1	5.31	5.55				
	B2	5.49	5.73				
	B3	5.67	5.92				

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

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)	Max	V _R (V)	Max	I _Z (mA)
HZM6.2N	B	5.86	6.53	5	2	3.0	50	5
	B1	5.86	6.12					
	B2	6.06	6.33					
	B3	6.26	6.53					
HZM6.8N	B	6.47	7.14	5	2	3.5	30	5
	B1	6.47	6.73					
	B2	6.65	6.93					
	B3	6.86	7.14					
HZM7.5N	B	7.06	7.84	5	2	4.0	30	5
	B1	7.06	7.36					
	B2	7.28	7.60					
	B3	7.52	7.84					
HZM8.2N	B	7.76	8.64	5	2	5.0	30	5
	B1	7.76	8.10					
	B2	8.02	8.36					
	B3	8.28	8.64					
HZM9.1N	B	8.56	9.55	5	2	6.0	30	5
	B1	8.56	8.93					
	B2	8.85	9.23					
	B3	9.15	9.55					
HZM10N	B	9.45	10.55	5	2	7.0	30	5
	B1	9.45	9.87					
	B2	9.77	10.21					
	B3	10.11	10.55					
HZM11N	B	10.44	11.56	5	2	8.0	30	5
	B1	10.44	10.88					
	B2	10.76	11.22					
	B3	11.10	11.56					
HZM12N	B	11.42	12.60	5	2	9.0	35	5
	B1	11.42	11.90					
	B2	11.74	12.24					
	B3	12.08	12.60					
HZM13N	B	12.47	13.96	5	2	10.0	35	5
	B1	12.47	13.03					
	B2	12.91	13.49					
	B3	13.37	13.96					
5M15N	B	13.84	15.52	5	2	11.0	40	5
	B1	13.84	14.46					
	B2	14.34	14.98					
	B3	14.85	15.52					
HZM16N	B	15.37	17.09	5	2	12.0	40	5
	B1	15.37	16.01					
	B2	15.85	16.51					
	B3	16.35	17.09					
HZM18N	B	16.94	19.03	5	2	13.0	45	5
	B1	16.94	17.70					
	B2	17.56	18.35					
	B3	18.21	19.03					

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

Type	Grade	Zener Voltage		Test Condition	Reverse Current		Dynamic Resistance	
		V_Z (V)* ¹			I_R (μA)	Test Condition	r_d (Ω)	Test Condition
		Min	Max	I_Z (mA)	Max	V_R (V)	Max	I_Z (mA)
HZM20N	B	18.86	21.08	5	2	15.0	50	5
	B1	18.86	19.70					
	B2	19.52	20.39					
	B3	20.21	21.08					
HZM22N	B	20.88	23.17	5	2	17.0	55	5
	B1	20.88	21.77					
	B2	21.54	22.47					
	B3	22.23	23.17					
HZM24N	B	22.93	25.57	5	2	19.0	60	5
	B1	22.93	23.96					
	B2	23.72	24.78					
	B3	24.54	25.57					
HZM27N	B	25.10	28.90	2	2	21.0	70	2
HZM30N	B	28.00	32.00	2	2	23.0	80	2
HZM33N	B	31.00	35.00	2	2	25.0	80	2
HZM36N	B	34.00	38.00	2	2	27.0	90	2

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

Mark Code

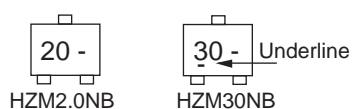
Type	Grade	Mark No.
H2M2.0N	B	2 0 –
H2M2.2N	B	2 2 –
H2M2.4N	B	2 4 –
H2M2.7N	B1	2 7 1
	B2	2 7 2
H2M3.0N	B1	3 0 1
	B2	3 0 2
H2M3.3N	B1	3 3 1
	B2	3 3 2
H2M3.6N	B1	3 6 1
	B2	3 6 2
H2M3.9N	B1	3 9 1
	B2	3 9 2
H2M4.3N	B1	4 3 1
	B2	4 3 2
	B3	4 3 3
H2M4.7N	B1	4 7 1
	B2	4 7 2
	B3	4 7 3
H2M5.1N	B1	5 1 1
	B2	5 1 2
	B3	5 1 3
H2M5.6N	B1	5 6 1
	B2	5 6 2
	B3	5 6 3

Type	Grade	Mark No.
H2M6.2N	B1	6 2 1
	B2	6 2 2
	B3	6 2 3
H2M6.8N	B1	6 8 1
	B2	6 8 2
	B3	6 8 3
H2M7.5N	B1	7 5 1
	B2	7 5 2
	B3	7 5 3
H2M8.2N	B1	8 2 1
	B2	8 2 2
	B3	8 2 3
H2M9.1N	B1	9 1 1
	B2	9 1 2
	B3	9 1 3
H2M10N	B1	<u>1</u> 0 1
	B2	<u>1</u> 0 2
	B3	<u>1</u> 0 3
H2M11N	B1	<u>1</u> 1 1
	B2	<u>1</u> 1 2
	B3	<u>1</u> 1 3
H2M12N	B1	<u>1</u> 2 1
	B2	<u>1</u> 2 2
	B3	<u>1</u> 2 3

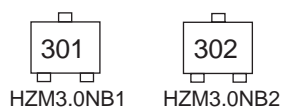
Type	Grade	Mark No.
H2M13N	B1	<u>1</u> 3 1
	B2	<u>1</u> 3 2
	B3	<u>1</u> 3 3
H2M15N	B1	<u>1</u> 5 1
	B2	<u>1</u> 5 2
	B3	<u>1</u> 5 3
H2M16N	B1	<u>1</u> 6 1
	B2	<u>1</u> 6 2
	B3	<u>1</u> 6 3
H2M18N	B1	<u>1</u> 8 1
	B2	<u>1</u> 8 2
	B3	<u>1</u> 8 3
H2M20N	B1	<u>2</u> 0 1
	B2	<u>2</u> 0 2
	B3	<u>2</u> 0 3
H2M22N	B1	<u>2</u> 2 1
	B2	<u>2</u> 2 2
	B3	<u>2</u> 2 3
H2M24N	B1	<u>2</u> 4 1
	B2	<u>2</u> 4 2
	B3	<u>2</u> 4 3
H2M27N	B	<u>2</u> 7 –
H2M30N	B	<u>3</u> 0 –
H2M33N	B	<u>3</u> 3 –
H2M36N	B	<u>3</u> 6 –

Example of Marking

1. One grade type (grade type B)



2. Two grade type (B1, B2)



3. Three grade type (B1, B2, B3)



- Notes: 1. The grade B type includes from B1 min. to B3 (or B2) max.
 2. B grade is standard and has better delivery, These are marked one of B1, B2, B3.
 3. Ordering P/N H2M-N series are delivered taped (TL/TR).
 Choose one taping code and adhere to parts No.
 Example: H2M2.0NBTL (or TR), H2M2.2NBTL (or TR), H2M36NBTL (or TR).
 (Grade B type)
 H2M2.7NB1TL (or TR), H2M2.7NB2TL (or TR), H2M24NB3TL (or TR).
 (Grade B1, B2, B3 type)

Main Characteristic

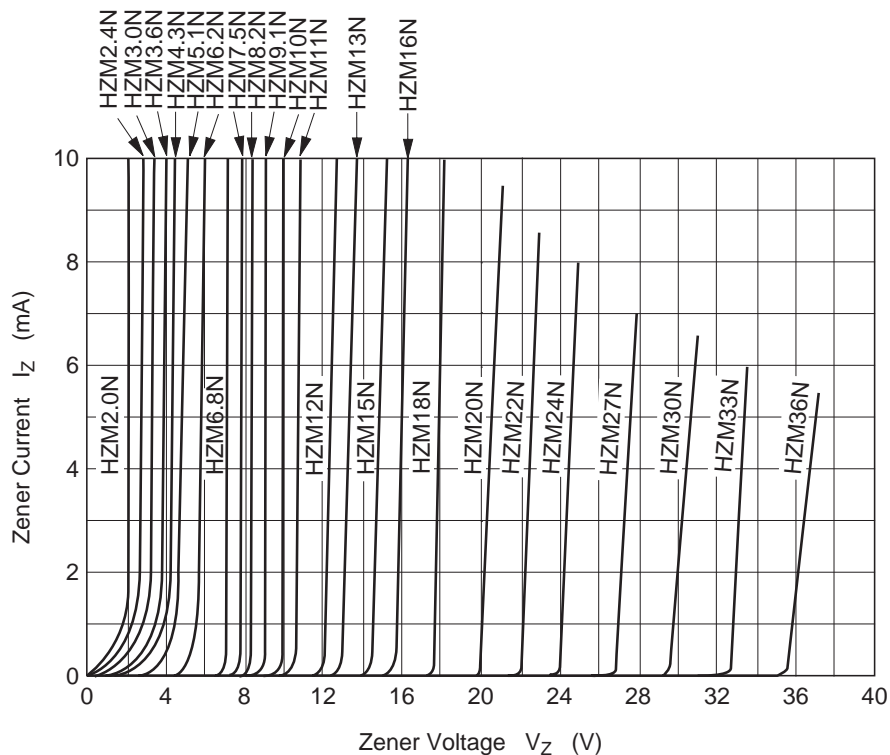


Fig.1 Zener current vs. Zener voltage

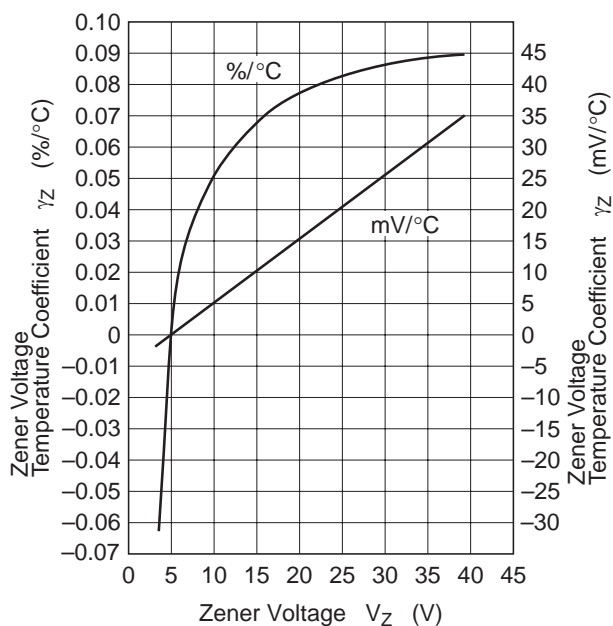


Fig.2 Temperature Coefficient vs. Zener voltage

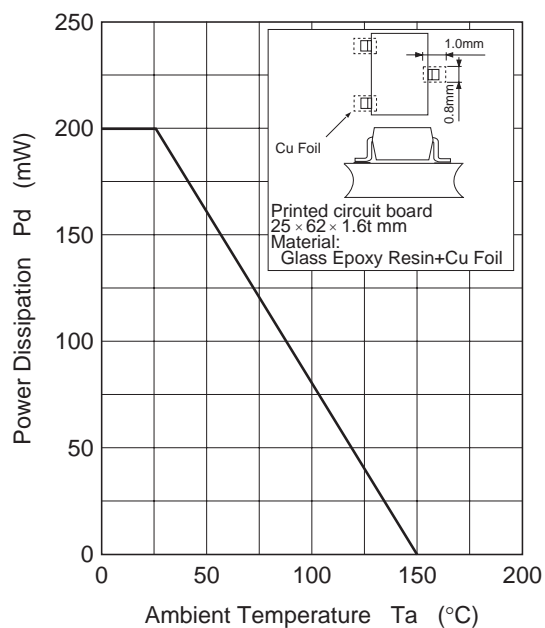
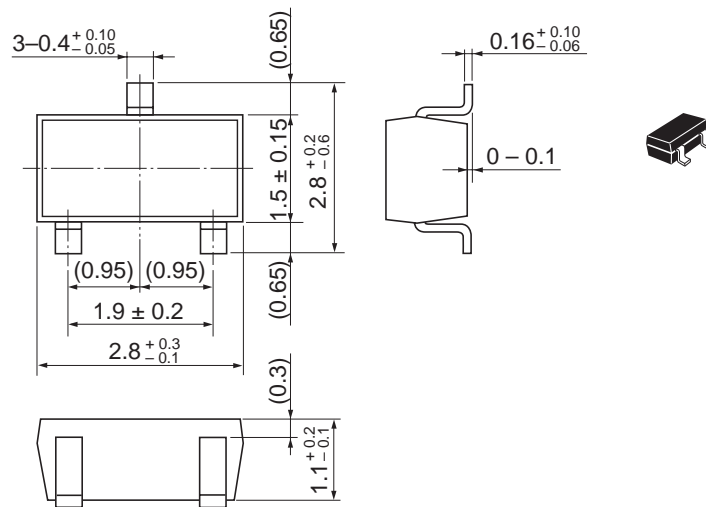


Fig.3 Power Dissipation vs. Ambient Temperature

Package Dimensions

As of January, 2003
Unit: mm



Package Code	MPAK
JEDEC	—
JEITA	Conforms
Mass (reference value)	0.011 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>

Refer to "<http://www.renesas.com/en/network>" for the latest and detailed information.

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, U.K.
Tel: <44> (1628) 585-100, Fax: <44> (1628) 585-900

Renesas Technology Hong Kong Ltd.

7th Floor, North Tower, World Finance Centre, Harbour City, 1 Canton Road, Tsimshatsui, Kowloon, Hong Kong
Tel: <852> 2265-6688, Fax: <852> 2730-6071

Renesas Technology Taiwan Co., Ltd.

10th Floor, No.99, Fushing North Road, Taipei, Taiwan
Tel: <886> (2) 2715-2888, Fax: <886> (2) 2713-2999

Renesas Technology (Shanghai) Co., Ltd.

Unit2607 Ruijing 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