

To all our customers

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Customer Support Dept.  
April 1, 2003

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# HZM-N Series

Silicon Epitaxial Planar Zener Diode for Stabilizer



ADE-208-130D (Z)

Rev.4  
Dec. 2002

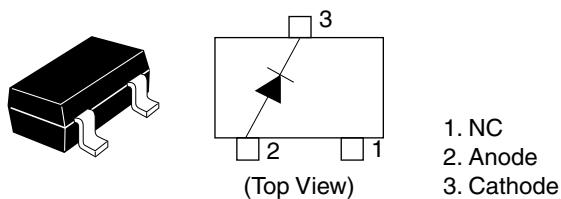
## Features

- 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 * <sup>1</sup>	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 * <sup>1</sup>			Reverse Current		Dynamic Resistance	
		V <sub>z</sub> (V)		Test Condition	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)
HZM2.0N	B	1.90	2.20	5	120	0.5	100	5
HZM2.2N	B	2.10	2.40	5	120	0.7	100	5
HZM2.4N	B	2.30	2.60	5	120	1.0	100	5
HZM2.7N	B	2.50	2.90	5	120	1.0	110	5
	B1	2.50	2.75					
	B2	2.65	2.90					
HZM3.0N	B	2.80	3.20	5	50	1.0	120	5
	B1	2.80	3.05					
	B2	2.95	3.20					
HZM3.3N	B	3.10	3.50	5	20	1.0	130	5
	B1	3.10	3.35					
	B2	3.25	3.50					
HZM3.6N	B	3.40	3.80	5	10	1.0	130	5
	B1	3.40	3.65					
	B2	3.55	3.80					
HZM3.9N	B	3.70	4.10	5	10	1.0	130	5
	B1	3.70	3.97					
	B2	3.87	4.10					

Note: 1. Tested with pulse (P<sub>w</sub> = 40 ms)

Type	Grade	Zener Voltage <sup>*1</sup>			Reverse Current		Dynamic Resistance	
		V <sub>z</sub> (V)		Test Condition	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)
HZM4.3N	B	4.01	4.48	5	10	1.0	130	5
	B1	4.01	4.21					
	B2	4.15	4.34					
	B3	4.28	4.48					
HZM4.7N	B	4.42	4.90	5	10	1.0	130	5
	B1	4.42	4.61					
	B2	4.55	4.75					
	B3	4.69	4.90					
HZM5.1N	B	4.84	5.37	5	5	1.5	130	5
	B1	4.84	5.04					
	B2	4.98	5.20					
	B3	5.14	5.37					
HZM5.6N	B	5.31	5.92	5	5	2.5	80	5
	B1	5.31	5.55					
	B2	5.49	5.73					
	B3	5.67	5.92					
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					

Note: 1. Tested with pulse (P<sub>w</sub> = 40 ms)

# HZM-N Series

Type	Grade	Zener Voltage <sup>*1</sup>			Reverse Current		Dynamic Resistance	
		V <sub>z</sub> (V)		Test Condition	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)
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					
HZM15N	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<sub>w</sub> = 40 ms)

Type	Grade	Zener Voltage <sup>*1</sup>			Reverse Current		Dynamic Resistance	
		V <sub>z</sub> (V)		Test Condition	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)
HBM20N	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					
HBM22N	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					
HBM24N	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					
HBM27N	B	25.10	28.90	2	2	21.0	70	2
HBM30N	B	28.00	32.00	2	2	23.0	80	2
HBM33N	B	31.00	35.00	2	2	25.0	80	2
HBM36N	B	34.00	38.00	2	2	27.0	90	2

Note: 1. Tested with pulse (P<sub>w</sub> = 40 ms)

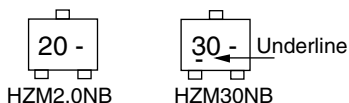
## Mark Code

Type	Grade	MARK No.	Type	Grade	MARK No.	Type	Grade	MARK No.
HZM2.0N	B	2 0 –	HZM7.5N	B1	7 5 1	HZM20N	B1	<u>2</u> 0 1
HZM2.2N	B	2 2 –		B2	7 5 2		B2	<u>2</u> 0 2
HZM2.4N	B	2 4 –		B3	7 5 3		B3	<u>2</u> 0 3
HZM2.7N	B1	2 7 1	HZM8.2N	B1	8 2 1	HZM22N	B1	<u>2</u> 2 1
	B2	2 7 2		B2	8 2 2		B2	<u>2</u> 2 2
HZM3.0N	B1	3 0 1		B3	8 2 3		B3	<u>2</u> 2 3
	B2	3 0 2	HZM9.1N	B1	9 1 1	HZM24N	B1	<u>2</u> 4 1
HZM3.3N	B1	3 3 1		B2	9 1 2		B2	<u>2</u> 4 2
	B2	3 3 2		B3	9 1 3		B3	<u>2</u> 4 3
HZM3.6N	B1	3 6 1	HZM10N	B1	<u>1</u> 0 1	HZM27N	B	<u>2</u> 7 –
	B2	3 6 2		B2	<u>1</u> 0 2	HZM30N	B	<u>3</u> 0 –
HZM3.9N	B1	3 9 1		B3	<u>1</u> 0 3	HZM33N	B	<u>3</u> 3 –
	B2	3 9 2	HZM11N	B1	<u>1</u> 1 1	HZM36N	B	<u>3</u> 6 –
HZM4.3N	B1	4 3 1		B2	<u>1</u> 1 2			
	B2	4 3 2		B3	<u>1</u> 1 3			
	B3	4 3 3	HZM12N	B1	<u>1</u> 2 1			
HZM4.7N	B1	4 7 1		B2	<u>1</u> 2 2			
	B2	4 7 2		B3	<u>1</u> 2 3			
	B3	4 7 3	HZM13N	B1	<u>1</u> 3 1			
HZM5.1N	B1	5 1 1		B2	<u>1</u> 3 2			
	B2	5 1 2		B3	<u>1</u> 3 3			
	B3	5 1 3	HZM15N	B1	<u>1</u> 5 1			
HZM5.6N	B1	5 6 1		B2	<u>1</u> 5 2			
	B2	5 6 2		B3	<u>1</u> 5 3			
	B3	5 6 3	HZM16N	B1	<u>1</u> 6 1			
HZM6.2N	B1	6 2 1		B2	<u>1</u> 6 2			
	B2	6 2 2		B3	<u>1</u> 6 3			
	B3	6 2 3	HZM18N	B1	<u>1</u> 8 1			
HZM6.8N	B1	6 8 1		B2	<u>1</u> 8 2			
	B2	6 8 2		B3	<u>1</u> 8 3			
	B3	6 8 3						

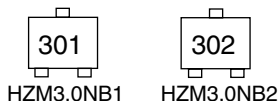


## Example of Marking

### 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 HZM-N series are delivered taped (TL/TR).  
Choose one taping code and adhere to parts No.  
Example: HZM2.0NBTL (or TR), HZM2.2NBTL (or TR), HZM36NBTL (or TR).  
(Grade B type)  
HZM2.7NB1TL (or TR), HZM2.7NB2TL (or TR), HZM24NB3TL (or TR).  
(Grade B1, B2, B3 type)

Main Characteristic

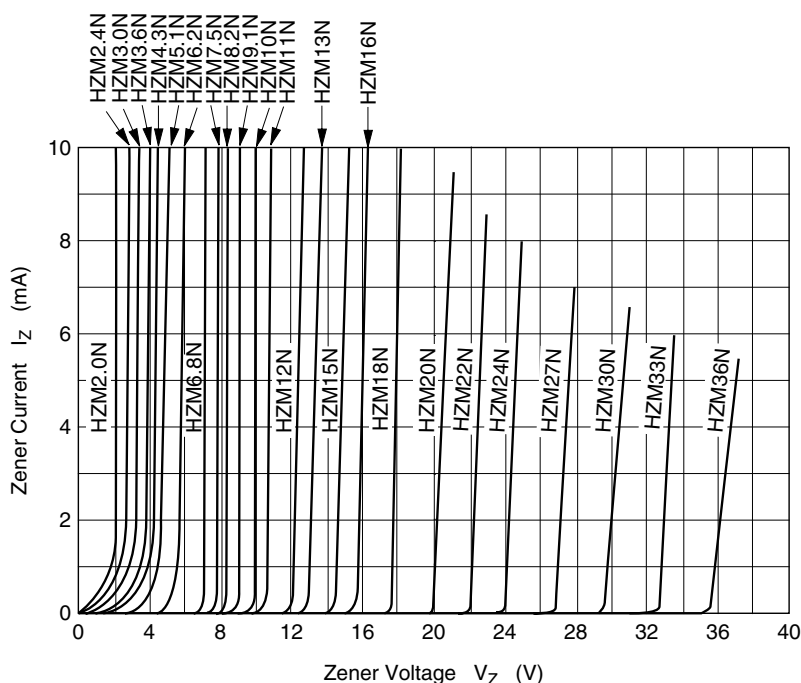


Fig.1 Zener current vs. Zener voltage

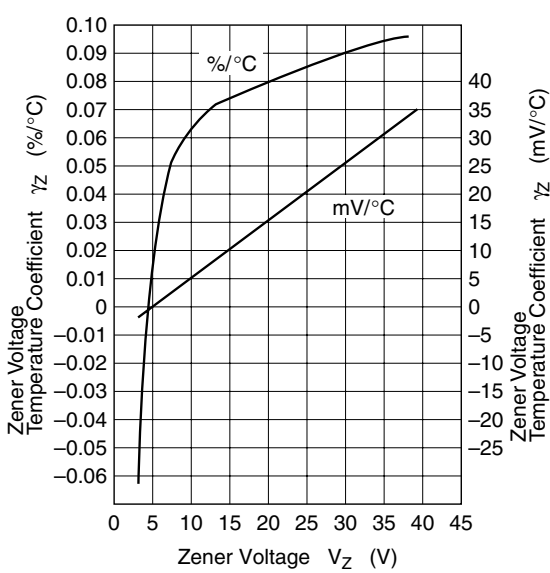


Fig.2 Temperature Coefficient vs. Zener voltage

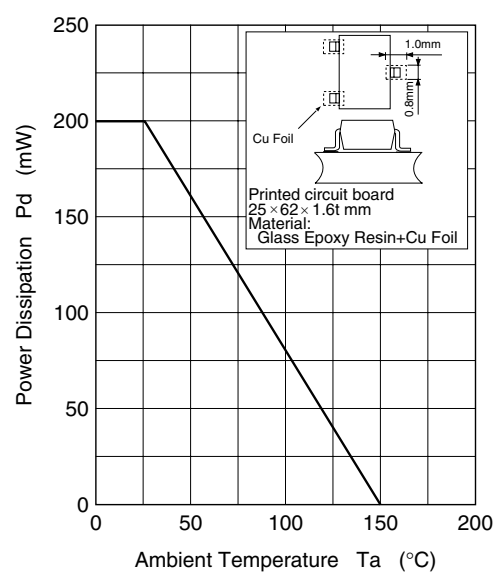
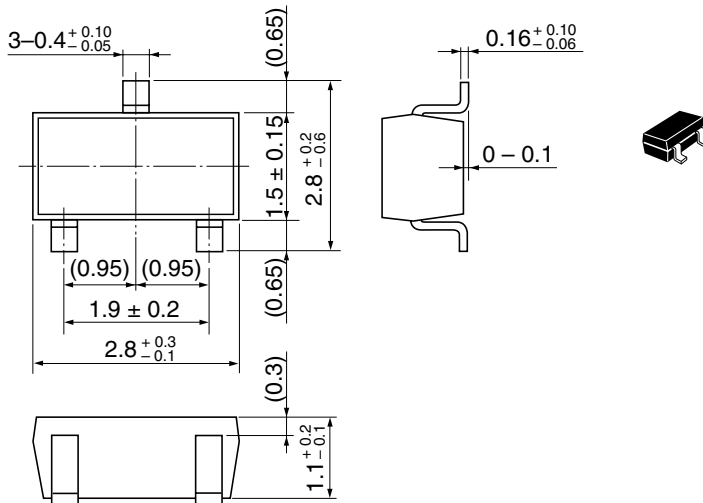


Fig.3 Power Dissipation vs. Ambient Temperature

# Package Dimensions

As of July, 2002  
Unit: mm



Hitachi Code	MPAK
JEDEC	—
JEITA	Conforms
Mass (reference value)	0.011 g

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