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# HZS-N Series

## Silicon Epitaxial Planar Zener Diodes for Stabilized Power Supply

# HITACHI

ADE-208-124 (Z)  
Preliminary  
Rev. 0  
Aug. 1993

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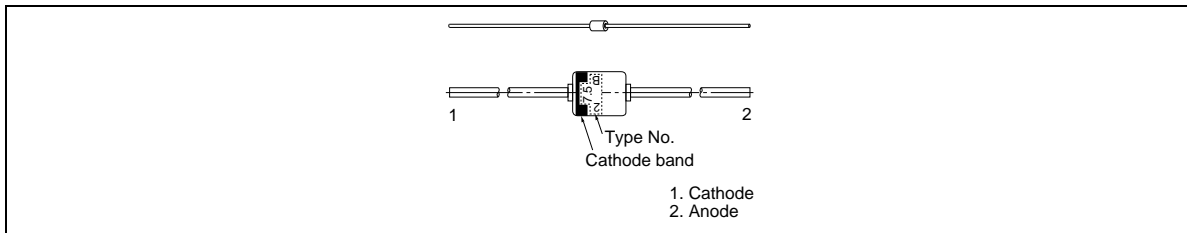
### Features

- Low leakage, low zener impedance and maximum power dissipation of 400mW are ideally suited for stabilized power supply, etc.
- Wide spectrum from 1.88V through 38.52V 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

### Outline



### 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

## HZS-N Series

### Electrical Characteristics (Ta = 25°C)

Type	Grade	Zener Voltage		Test Condition	Reverse Current		Dynamic Resistance	
		V <sub>z</sub> (V)*			I <sub>R</sub> (μA)	Test Condition	r <sub>d</sub> (½)	Test Condition
		Min	Max	I <sub>z</sub> (mA)	Max	V <sub>R</sub> (V)	Max	I <sub>z</sub> (mA)
HZS2.0N	B1	1.88	2.10	5	120	0.5	100	5
	B2	2.02	2.20					
HZS2.2N	B1	2.12	2.30	5	120	0.7	100	5
	B2	2.22	2.41					
HZS2.4N	B1	2.33	2.52	5	120	1.0	100	5
	B2	2.43	2.63					
HZS2.7N	B1	2.54	2.75	5	100	1.0	110	5
	B2	2.69	2.91					
HZS3.0N	B1	2.85	3.07	5	50	1.0	120	5
	B2	3.01	3.22					
HZS3.3N	B1	3.16	3.38	5	20	1.0	120	5
	B2	3.32	3.53					
HZS3.6N	B1	3.47	3.68	5	10	1.0	120	5
	B2	3.62	3.83					
HZS3.9N	B1	3.77	3.98	5	5	1.0	120	5
	B2	3.92	4.14					
HZS4.3N	B1	4.05	4.26	5	5	1.0	120	5
	B2	4.20	4.40					
	B3	4.34	4.53					
HZS4.7N	B1	4.47	4.65	5	5	1.0	100	5
	B2	4.59	4.77					
	B3	4.71	4.91					
HZS5.1N	B1	4.85	5.03	5	5	1.5	70	5
	B2	4.97	5.18					
	B3	5.12	5.35					
HZS5.6N	B1	5.29	5.52	5	5	2.5	40	5
	B2	5.46	5.70					
	B3	5.64	5.88					
HZS6.2N	B1	5.81	6.06	5	5	3.0	30	5
	B2	5.99	6.24					
	B3	6.16	6.40					

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

## HVS-N Series

### Electrical Characteristics (Ta = 25°C) (cont)

Type	Grade	Zener Voltage		Test Condition	Reverse Current		Dynamic Resistance	
		V <sub>z</sub> (V)*			I <sub>R</sub> (μA)	Test Condition	r <sub>d</sub> (½)	Test Condition
		Min	Max	I <sub>z</sub> (mA)	Max	V <sub>R</sub> (V)	Max	I <sub>z</sub> (mA)
HVS6.8N	B1	6.32	6.59	5	2	3.5	25	5
	B2	6.52	6.79					
	B3	6.70	6.97					
HVS7.5N	B1	6.88	7.19	5	0.5	4.0	25	5
	B2	7.11	7.41					
	B3	7.33	7.64					
HVS8.2N	B1	7.56	7.90	5	0.5	5.0	20	5
	B2	7.82	8.15					
	B3	8.07	8.41					
HVS9.1N	B1	8.33	8.70	5	0.5	6.0	20	5
	B2	8.61	8.99					
	B3	8.89	9.29					
HVS10N	B1	9.19	9.59	5	0.2	7.0	20	5
	B2	9.48	9.90					
	B3	9.82	10.30					
HVS11N	B1	10.18	10.63	5	0.2	8.0	20	5
	B2	10.50	10.95					
	B3	10.82	11.26					
HVS12N	B1	11.13	11.63	5	0.2	9.0	25	5
	B2	11.50	11.92					
	B3	11.80	12.30					
HVS13N	B1	12.18	12.71	5	0.2	10	25	5
	B2	12.59	13.16					
	B3	13.03	13.62					
HVS15N	B1	13.48	14.09	5	0.2	11	25	5
	B2	13.95	14.56					
	B3	14.42	15.02					
HVS16N	B1	14.87	15.50	5	0.2	12	25	5
	B2	15.33	15.96					
	B3	15.79	16.50					

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

## HZS-N Series

### Electrical Characteristics (Ta = 25°C) (cont)

Type	Grade	Zener Voltage		Test Condition I <sub>z</sub> (mA)	Reverse Current		Dynamic Resistance	
		V <sub>z</sub> (V)*			I <sub>R</sub> (μA)	Test Condition	r <sub>d</sub> (½)	Test Condition
		Min	Max		Max	V <sub>R</sub> (V)	Max	I <sub>z</sub> (mA)
HZS18N	B1	16.34	17.06	5	0.2	13	30	5
	B2	16.90	17.67					
	B3	17.51	18.30					
HZS20N	B1	18.14	18.96	5	0.2	15	30	5
	B2	18.80	19.68					
	B3	19.52	20.45					
HZS22N	B1	20.23	21.08	5	0.2	17	30	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	35	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	45	5
	B2	24.97	26.26					
	B3	25.63	26.95					
	B4	26.29	27.64					
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					

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

Electrical Characteristics (Ta = 25°C) (cont)

Type	Grade	Zener Voltage		Test Condition $I_z$ (mA)	Reverse Current		Dynamic Resistance	
		$V_z$ (V)*			$I_R$ ( $\mu$ A)	Test Condition $V_R$ (V)	$r_d$ ( $\frac{1}{2}$ )	Test Condition $I_z$ (mA)
		Min	Max					
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					

Note: Tested with pulse ( $P_w = 40ms$ )

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

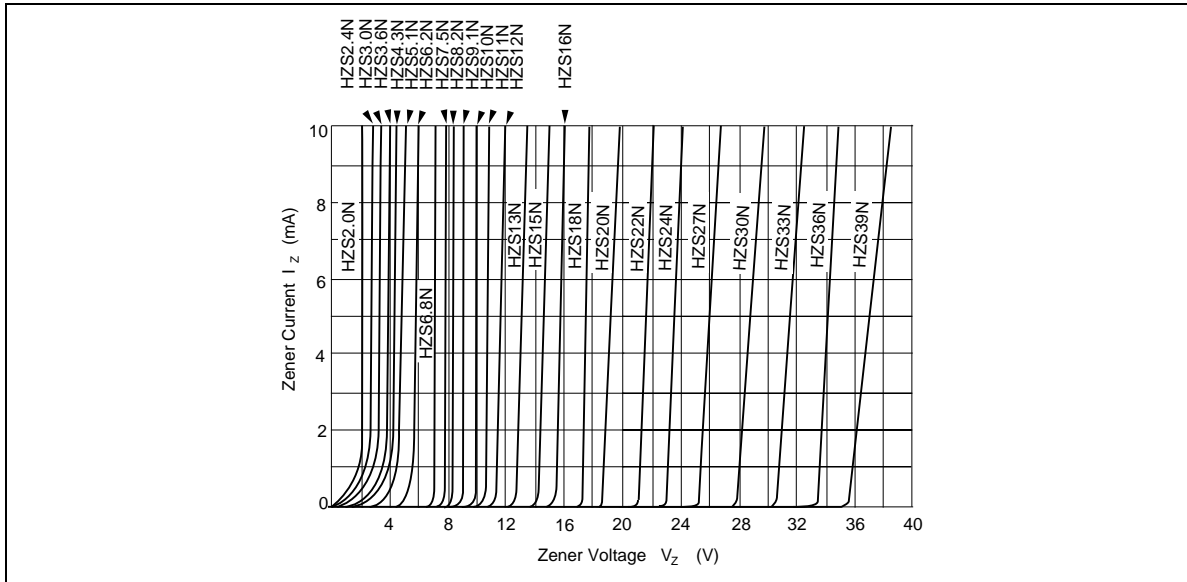
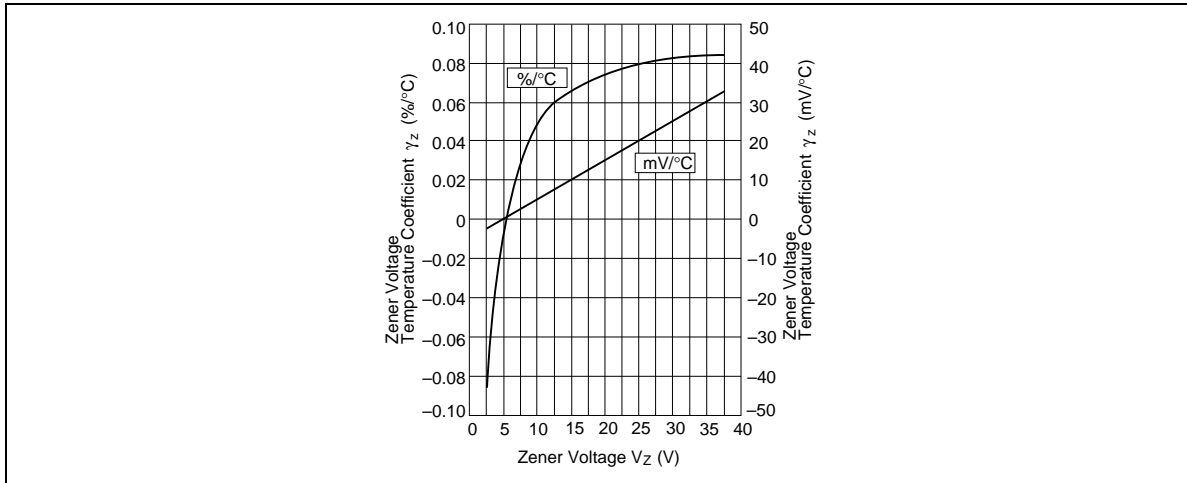
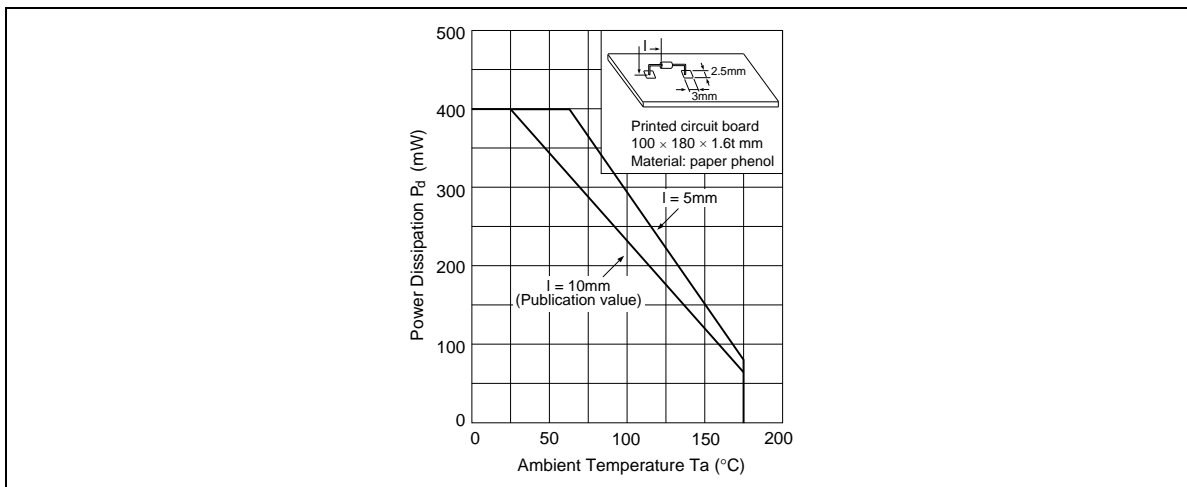


Fig.1 Zener current Vs. Zener voltage

## HZS-N Series



**Fig.2 Temperature Coefficient Vs. Zener voltage**



**Fig.3 Power Dissipation Vs. Ambient Temperature**

**Package Dimensions**

