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Renesas Technology Corp.  
Customer Support Dept.  
April 1, 2003

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# HZU Series

Silicon Epitaxial Planar Zener Diodes for Stabilizer



ADE-208-024G (Z)

Rev.7  
Dec. 2002

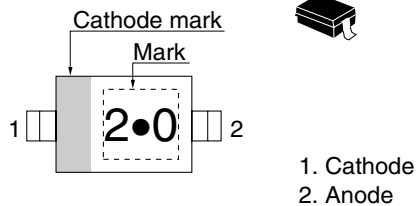
## Features

- Ultra small Resin Package (URP) is suitable for surface mount design.
- These diodes are delivered taped.

## Ordering Information

Type No.	Mark	Package Code
HZU Series	Let to Mark Code	URP

## 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. With P.C. Board.

## Electrical Characteristics

(Ta = 25°C)

Type	Grade	Zener Voltage		Reverse Current		Dynamic Resistance	
		V <sub>z</sub> (V) * <sup>1</sup>		Test Condition	I <sub>R</sub> (μA)	Test Condition	r <sub>d</sub> (Ω)
		Min	Max	I <sub>z</sub> (mA)	Max	V <sub>R</sub> (V)	Max
HZU2.0	B	1.90	2.20	5	120	0.5	100
HZU2.2	B	2.10	2.40	5	120	0.7	100
HZU2.4	B	2.30	2.60	5	120	1.0	100
HZU2.7	B	2.50	2.90	5	120	1.0	110
	B1	2.50	2.75				
	B2	2.65	2.90				
HZU3.0	B	2.80	3.20	5	50	1.0	120
	B1	2.80	3.05				
	B2	2.95	3.20				
HZU3.3	B	3.10	3.50	5	20	1.0	130
	B1	3.10	3.35				
	B2	3.25	3.50				
HZU3.6	B	3.40	3.80	5	10	1.0	130
	B1	3.40	3.65				
	B2	3.55	3.80				
HZU3.9	B	3.70	4.10	5	10	1.0	130
	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		Reverse Current		Dynamic Resistance	
		$V_z$ (V) *1		Test Condition	$I_R$ ( $\mu$ A)	Test Condition	$r_d$ ( $\Omega$ )
		Min	Max	$I_z$ (mA)	Max	$V_R$ (V)	Max
HZU4.3	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				
HZU4.7	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				
HZU5.1	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				
HZU5.6	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				
HZU6.2	B	5.86	6.53	5	2	3.0	50
	B1	5.86	6.12				
	B2	6.06	6.33				
	B3	6.26	6.53				
HZU6.8	B	6.47	7.14	5	2	3.5	30
	B1	6.47	6.73				
	B2	6.65	6.93				
	B3	6.86	7.14				
HZU7.5	B	7.06	7.84	5	2	4.0	30
	B1	7.06	7.36				
	B2	7.28	7.60				
	B3	7.52	7.84				
HZU8.2	B	7.76	8.64	5	2	5.0	30
	B1	7.76	8.10				
	B2	8.02	8.36				
	B3	8.28	8.64				

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

# HZU Series

Type	Grade	Zener Voltage		Reverse Current		Dynamic Resistance	
		$V_z$ (V) * <sup>1</sup>		Test Condition	$I_R$ (μA)	Test Condition	$r_d$ (Ω)
		Min	Max	$I_z$ (mA)	Max	$V_R$ (V)	Max
HZU9.1	B	8.56	9.55	5	2	6.0	30
	B1	8.56	8.93				
	B2	8.85	9.23				
	B3	9.15	9.55				
HZU10	B	9.45	10.55	5	2	7.0	30
	B1	9.45	9.87				
	B2	9.77	10.21				
	B3	10.11	10.55				
HZU11	B	10.44	11.56	5	2	8.0	30
	B1	10.44	10.88				
	B2	10.76	11.22				
	B3	11.10	11.56				
HZU12	B	11.42	12.60	5	2	9.0	35
	B1	11.42	11.90				
	B2	11.74	12.24				
	B3	12.08	12.60				
HZU13	B	12.47	13.96	5	2	10.0	35
	B1	12.47	13.03				
	B2	12.91	13.49				
	B3	13.37	13.96				
HZU15	B	13.84	15.52	5	2	11.0	40
	B1	13.84	14.46				
	B2	14.34	14.98				
	B3	14.85	15.52				
HZU16	B	15.37	17.09	5	2	12.0	40
	B1	15.37	16.01				
	B2	15.58	16.51				
	B3	16.35	17.09				
HZU18	B	16.94	19.03	5	2	13.0	45
	B1	16.94	17.70				
	B2	17.56	18.35				
	B3	18.21	19.03				

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

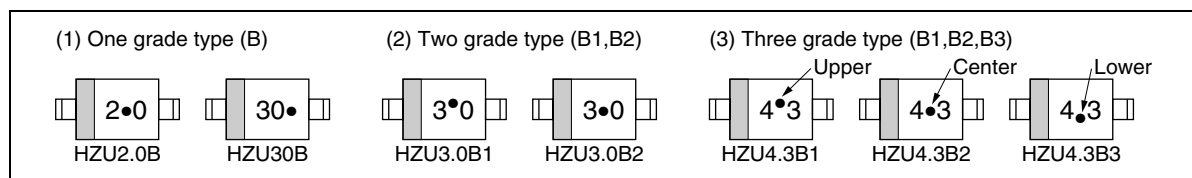
Type	Grade	Zener Voltage		Reverse Current		Dynamic Resistance	
		$V_z$ (V) * <sup>1</sup>		Test Condition	$I_R$ (μA)	Test Condition	$r_d$ (Ω)
		Min	Max	$I_z$ (mA)	Max	$V_R$ (V)	Max
HZU20	B	18.86	21.08	5	2	15.0	50
	B1	18.86	19.70				
	B2	19.52	20.39				
	B3	20.21	21.08				
HZU22	B	20.88	23.17	5	2	17.0	55
	B1	20.88	21.77				
	B2	21.54	22.47				
	B3	22.23	23.17				
HZU24	B	22.93	25.57	5	2	19.0	60
	B1	22.93	23.96				
	B2	23.72	24.78				
	B3	24.54	25.57				
HZU27	B	25.10	28.90	2	2	21.0	70
HZU30	B	28.00	32.00	2	2	23.0	80
HZU33	B	31.00	35.00	2	2	25.0	80
HZU36	B	34.00	38.00	2	2	27.0	90

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

## Mark Code

Type	Grade	Mark No.	Type	Grade	Mark No.	Type	Grade	Mark No.
HZU2.0	B	2 • 0	HZU6.2	B1	6 • 2	HZU13	B1	1 3 •
HZU2.2	B	2 • 2		B2	6 • 2		B2	1 3 •
HZU2.4	B	2 • 4		B3	6 • 2		B3	1 3 •
HZU2.7	B1	2 • 7	HZU6.8	B1	6 • 8	HZU15	B1	1 5 •
	B2	2 • 7		B2	6 • 8		B2	1 5 •
HZU3.0	B1	3 • 0		B3	6 • 8		B3	1 5 •
	B2	3 • 0	HZU7.5	B1	7 • 5	HZU16	B1	1 6 •
HZU3.3	B1	3 • 3		B2	7 • 5		B2	1 6 •
	B2	3 • 3		B3	7 • 5		B3	1 6 •
HZU3.6	B1	3 • 6	HZU8.2	B1	8 • 2	HZU18	B1	1 8 •
	B2	3 • 6		B2	8 • 2		B2	1 8 •
HZU3.9	B1	3 • 9		B3	8 • 2		B3	1 8 •
	B2	3 • 9	HZU9.1	B1	9 • 1	HZU20	B1	2 0 •
HZU4.3	B1	4 • 3		B2	9 • 1		B2	2 0 •
	B2	4 • 3		B3	9 • 1		B3	2 0 •
	B3	4 • 3	HZU10	B1	1 0 •	HZU22	B1	2 2 •
HZU4.7	B1	4 • 7		B2	1 0 •		B2	2 2 •
	B2	4 • 7		B3	1 0 •		B3	2 2 •
	B3	4 • 7	HZU11	B1	1 1 •	HZU24	B1	2 4 •
HZU5.1	B1	5 • 1		B2	1 1 •		B2	2 4 •
	B2	5 • 1		B3	1 1 •		B3	2 4 •
	B3	5 • 1	HZU12	B1	1 2 •	HZU27	B	2 7 •
HZU5.6	B1	5 • 6		B2	1 2 •	HZU30	B	3 0 •
	B2	5 • 6		B3	1 2 •	HZU33	B	3 3 •
	B3	5 • 6				HZU36	B	3 6 •

Notes: 1. Example of Marking



2. The grade B type includes from B1 min. to B3 (or B2) max.
3. B grade is standard and has better delivery, These are marked one of B1, B2, B3.
4. Type No. is as follows; HZU2.0B, HZU2.2B, ... HZU36B. (B grade)
5. Type No. is as follows; HZU2.7B1, HZU2.7B2, ... HZU24B3. (B 1, B2,B3 grade)

# Main Characteristic

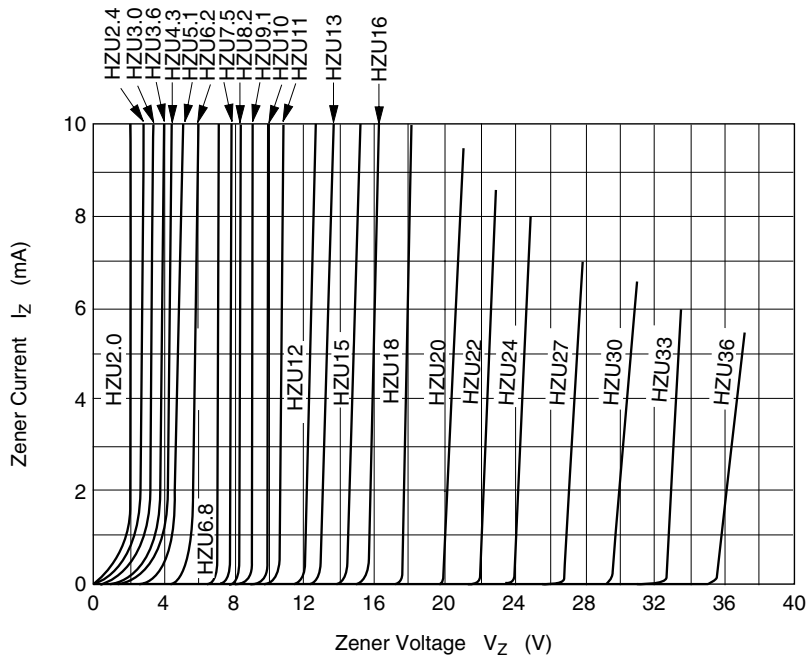


Fig.1 Zener current vs. Zener voltage

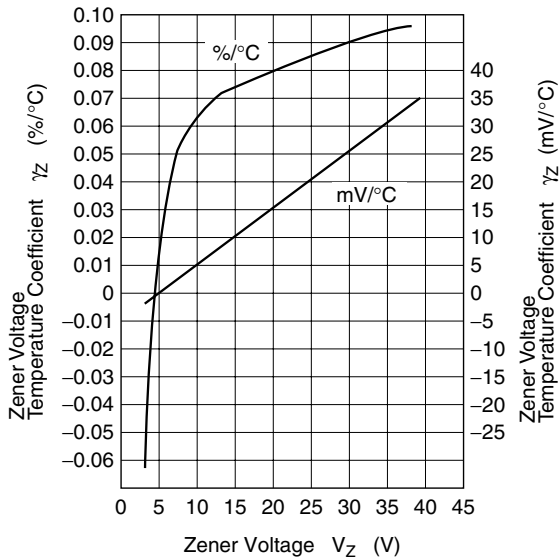


Fig.2 Temperature Coefficient vs. Zener voltage

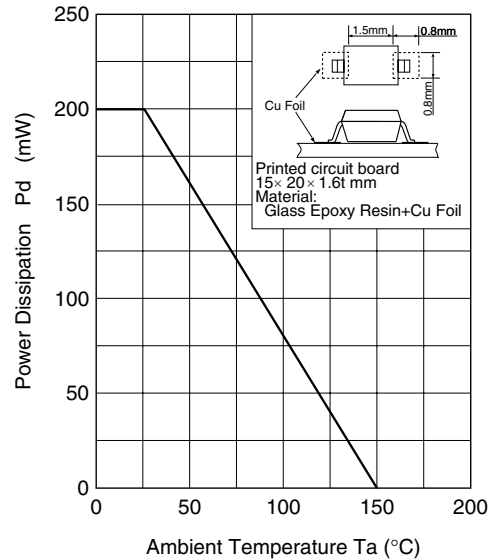
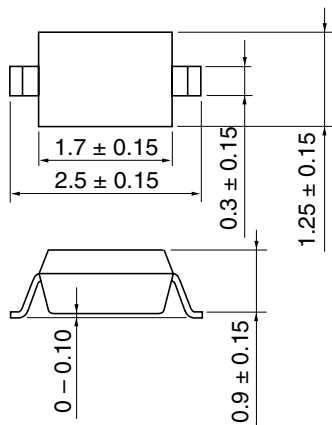


Fig.3 Power Dissipation vs. Ambient Temperature

Package Dimensions

As of July, 2002  
Unit: mm



Hitachi Code	URP
JEDEC	Conforms
JEITA	—
Mass (reference value)	0.004 g

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