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

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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.

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HZU Series

Silicon Epitaxial Planar Zener Diodes for Stabilizer



ADE-208-024G (Z)

Rev.7
Dec. 2002

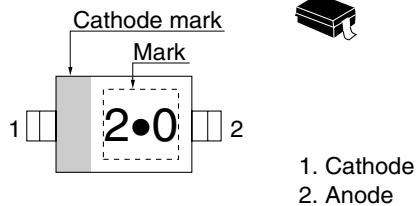
Features

- 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 * ¹	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 _z (V) * ¹		Test Condition	I _R (μA)	Test Condition	r _d (Ω)
		Min	Max	I _z (mA)	Max	V _R (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_w = 40 ms).

Type	Grade	Zener Voltage		Reverse Current		Dynamic Resistance	
		V_z (V) *1		Test Condition	I_R (μ A)	Test Condition	r_d (Ω)
		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) * ¹		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) * ¹		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

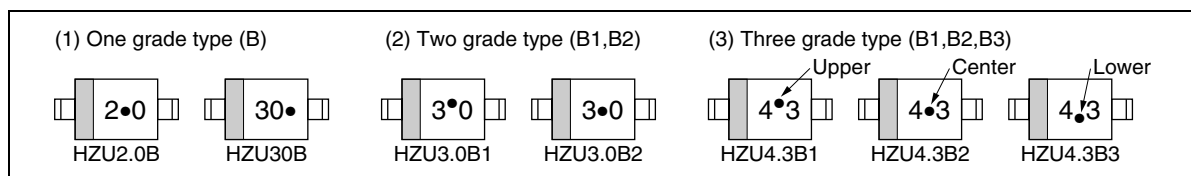
Note: 1. Tested with pulse (P_w = 40 ms).

HZU Series

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

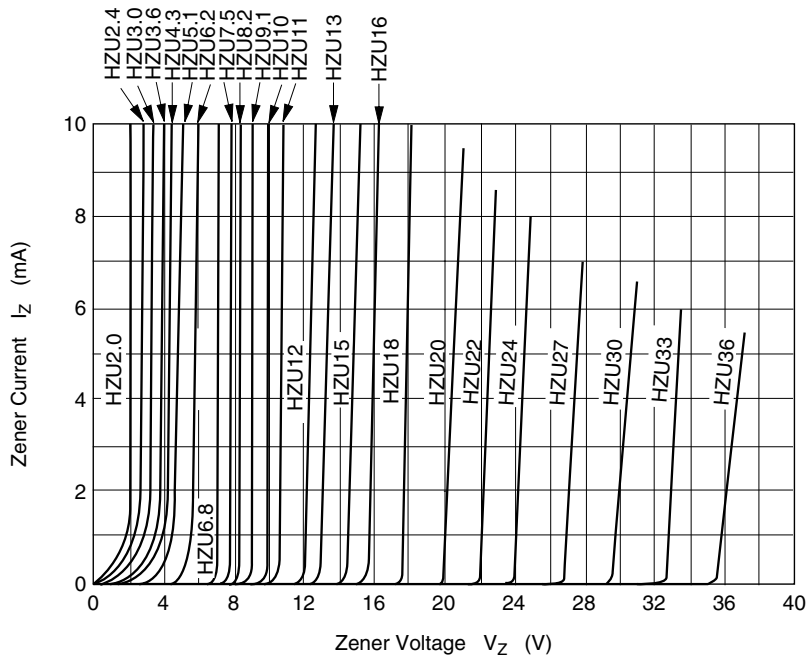


Fig.1 Zener current vs. Zener voltage

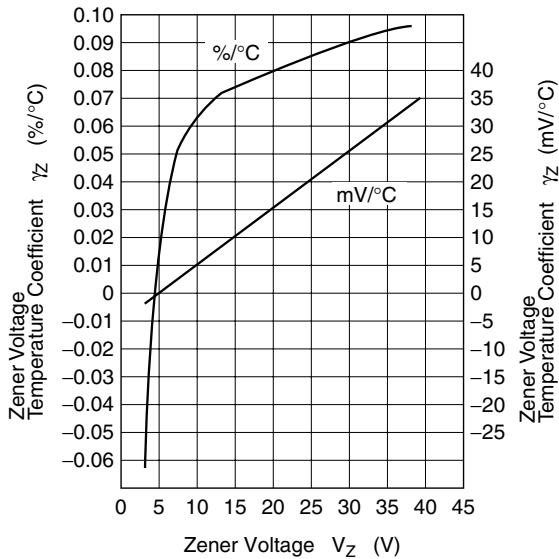


Fig.2 Temperature Coefficient vs. Zener voltage

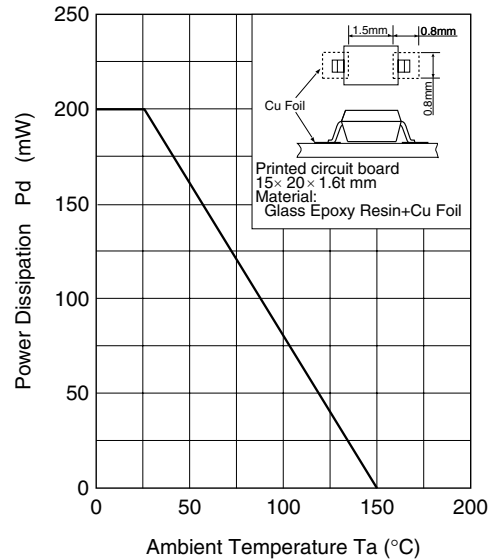
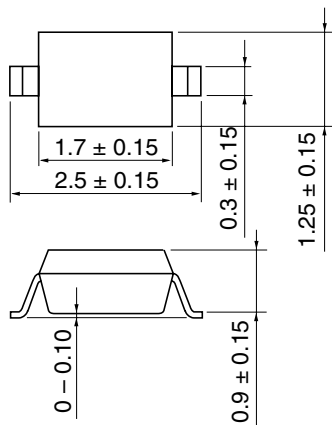


Fig.3 Power Dissipation vs. Ambient Temperature

Package Dimensions

As of July, 2002
Unit: mm



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

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