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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

**RENESAS**

ADE-208-024G (Z)

Rev.7  
Dec. 2002

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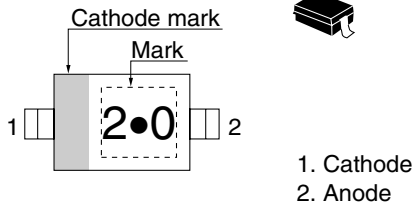
## Features

- 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



# HZU Series

## 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 <sub>z</sub> (V) *1		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)
HZU2.0	B	1.90	2.20	5	120	0.5	100	5
HZU2.2	B	2.10	2.40	5	120	0.7	100	5
HZU2.4	B	2.30	2.60	5	120	1.0	100	5
HZU2.7	B	2.50	2.90	5	120	1.0	110	5
	B1	2.50	2.75					
	B2	2.65	2.90					
HZU3.0	B	2.80	3.20	5	50	1.0	120	5
	B1	2.80	3.05					
	B2	2.95	3.20					
HZU3.3	B	3.10	3.50	5	20	1.0	130	5
	B1	3.10	3.35					
	B2	3.25	3.50					
HZU3.6	B	3.40	3.80	5	10	1.0	130	5
	B1	3.40	3.65					
	B2	3.55	3.80					
HZU3.9	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		Reverse Current			Dynamic Resistance	
		$V_z$ (V) *1		Test Condition	$I_R$ ( $\mu$ A)	Test Condition	$r_d$ ( $\Omega$ )	Test Condition
		Min	Max	$I_z$ (mA)	Max	$V_R$ (V)	Max	$I_z$ (mA)
HZU4.3	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					
HZU4.7	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					
HZU5.1	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					
HZU5.6	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					
HZU6.2	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					
HZU6.8	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					
HZU7.5	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					
HZU8.2	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 ( $P_w = 40$  ms).

# HZU Series

Type	Grade	Zener Voltage		Reverse Current		Dynamic Resistance		
		$V_z$ (V) * <sup>1</sup>		Test Condition	$I_R$ ( $\mu$ A)	Test Condition	$r_d$ ( $\Omega$ )	Test Condition
		Min	Max	$I_z$ (mA)	Max	$V_R$ (V)	Max	$I_z$ (mA)
HZU9.1	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					
HZU10	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					
HZU11	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					
HZU12	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					
HZU13	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					
HZU15	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					
HZU16	B	15.37	17.09	5	2	12.0	40	5
	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	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		Reverse Current		Dynamic Resistance		
		$V_z$ (V) * <sup>1</sup>		Test Condition	$I_R$ ( $\mu$ A)	Test Condition	$r_d$ ( $\Omega$ )	Test Condition
		Min	Max	$I_z$ (mA)	Max	$V_R$ (V)	Max	$I_z$ (mA)
HZU20	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					
HZU22	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					
HZU24	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					
HZU27	B	25.10	28.90	2	2	21.0	70	2
HZU30	B	28.00	32.00	2	2	23.0	80	2
HZU33	B	31.00	35.00	2	2	25.0	80	2
HZU36	B	34.00	38.00	2	2	27.0	90	2

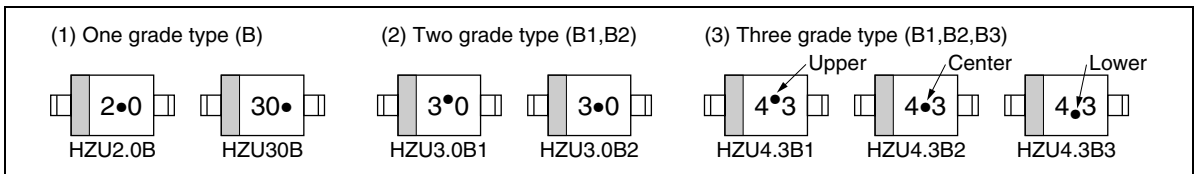
Note: 1. Tested with pulse ( $P_w = 40$  ms).

# 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	13•
HZU2.2	B	2•2		B2	6•2		B2	13•
HZU2.4	B	2•4		B3	6•2		B3	13•
HZU2.7	B1	2•7	HZU6.8	B1	6•8	HZU15	B1	15•
	B2	2•7		B2	6•8		B2	15•
HZU3.0	B1	3•0		B3	6•8		B3	15•
	B2	3•0	HZU7.5	B1	7•5	HZU16	B1	16•
HZU3.3	B1	3•3		B2	7•5		B2	16•
	B2	3•3		B3	7•5		B3	16•
HZU3.6	B1	3•6	HZU8.2	B1	8•2	HZU18	B1	18•
	B2	3•6		B2	8•2		B2	18•
HZU3.9	B1	3•9		B3	8•2		B3	18•
	B2	3•9	HZU9.1	B1	9•1	HZU20	B1	20•
HZU4.3	B1	4•3		B2	9•1		B2	20•
	B2	4•3		B3	9•1		B3	20•
	B3	4•3	HZU10	B1	10•	HZU22	B1	22•
HZU4.7	B1	4•7		B2	10•		B2	22•
	B2	4•7		B3	10•		B3	22•
	B3	4•7	HZU11	B1	11•	HZU24	B1	24•
HZU5.1	B1	5•1		B2	11•		B2	24•
	B2	5•1		B3	11•		B3	24•
	B3	5•1	HZU12	B1	12•	HZU27	B	27•
HZU5.6	B1	5•6		B2	12•	HZU30	B	30•
	B2	5•6		B3	12•	HZU33	B	33•
	B3	5•6				HZU36	B	36•

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

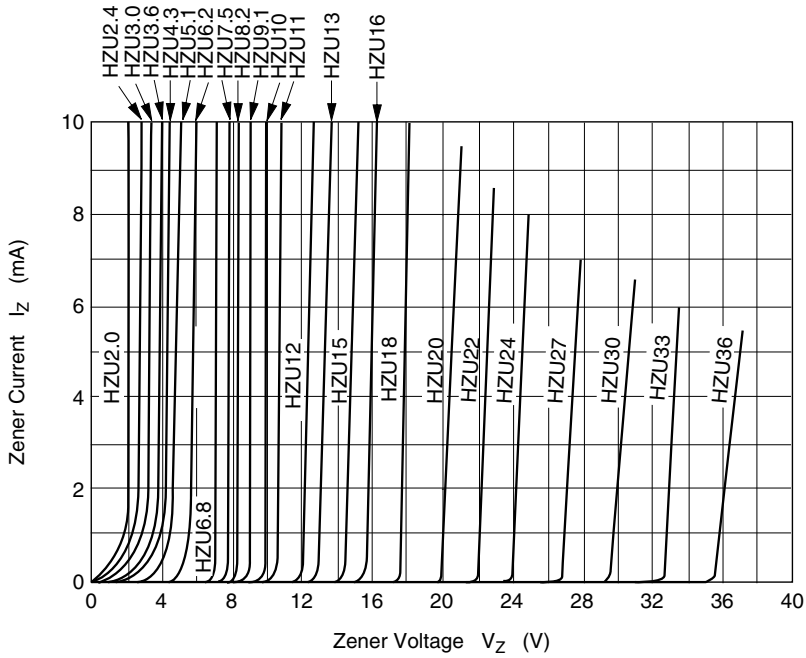


Fig.1 Zener current vs. Zener voltage

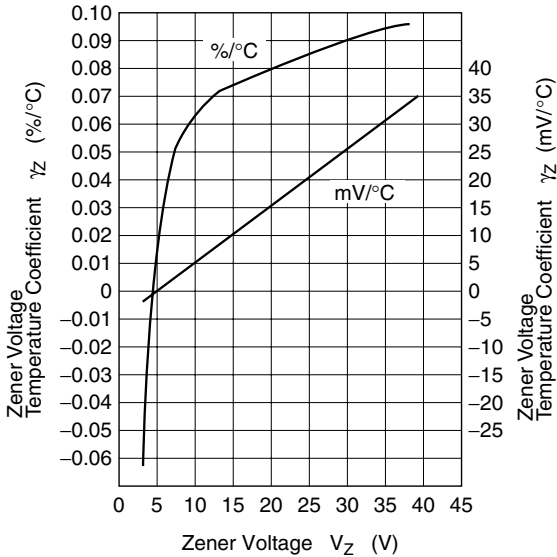


Fig.2 Temperature Coefficient vs. Zener voltage

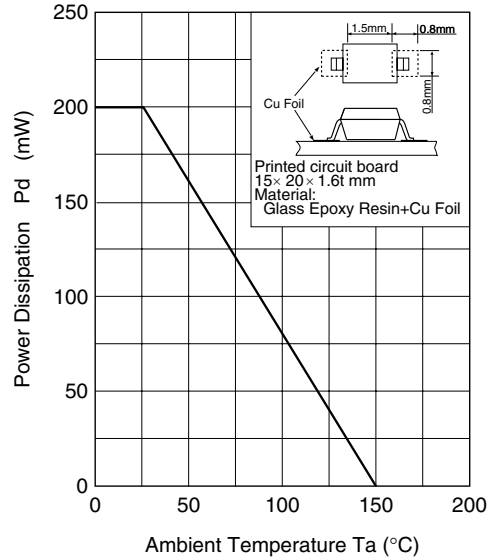
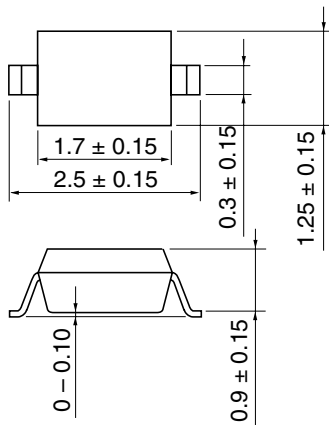


Fig.3 Power Dissipation vs. Ambient Temperature

## Package Dimensions

As of July, 2002

Unit: mm



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

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