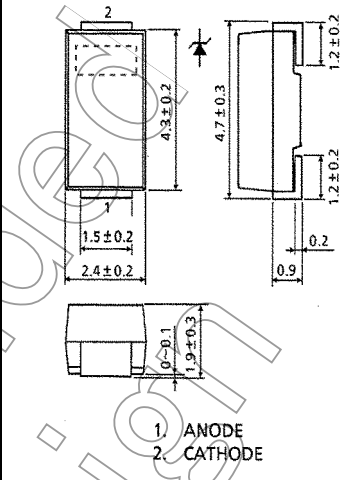
TOSHIBA ZENER DIODE SILICON DIFFUSED TYPE

U1ZB6.8~U1ZB390

CONSTANT VOLTAGE REGULATION
TRANSIENT SUPPRESSORS

- Average Power Dissipation : P = 1.0 W
- Zener Voltage : V_Z = 6.8 V to 390 V
- Surface Mounting Plastic Mold Package

Unit: mm



JEDEC	—
JEITA	—
TOSHIBA	3−4D1A

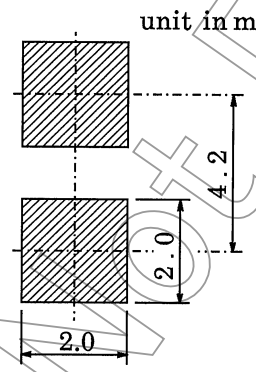
Weight: 0.06g

ABSOLUTE MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Power Dissipation	P	1.0	W
Junction Temperature	T_j	−40 to 150	°C
Storage Temperature Range	T_{stg}	−40 to 150	°C

Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) are within the absolute maximum ratings. Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook (“Handling Precautions”/Derating Concept and Methods) and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

STANDARD SOLDERING PAD



ELECTRICAL CHARACTERISTICS (Ta = 25°C)

TYPE	ZENER CHARACTERISTICS					TEMPERATURE COEFFICIENT OF ZENER VOLTAGE		FORWARD VOLTAGE		REVERSE CURRENT	
	ZENER VOLTAGE V_Z (V)			ZENER IMPEDANCE r_d (Ω)	MEASUREMENT CURRENT I_Z (mA)	α_T (mV / °C)		V_F (V)	MEASUREMENT CURRENT I_F (A)	I_R (μA)	MEASUREMENT VOLTAGE V_R (V)
	MIN	TYP.	MAX	MAX		TYP.	MAX	MAX		MAX	
U1ZB6.8	6.2	6.8	7.4	60	10	3	4	1.2	0.2	10	3
U1ZB7.5	6.8	7.5	8.3	30	10	4	5	1.2	0.2	10	4.5
U1ZB8.2	7.4	8.2	9.1	30	10	4	6	1.2	0.2	10	4.9
U1ZB9.1	8.2	9.1	10.1	30	10	5	8	1.2	0.2	10	5.5
U1ZB10	9.0	10	11.0	30	10	6	9	1.2	0.2	10	6
U1ZB11	9.9	11	12.1	30	10	7	11	1.2	0.2	10	7
U1ZB12	10.8	12	13.2	30	10	8	13	1.2	0.2	10	8
U1ZB13	11.7	13	14.3	30	10	9	14	1.2	0.2	10	9
U1ZB15	13.5	15	16.5	30	10	11	17	1.2	0.2	10	10
U1ZB16	14.4	16	17.6	30	10	12	19	1.2	0.2	10	11
U1ZB18	16.2	18	19.8	30	10	14	23	1.2	0.2	10	13
U1ZB20	18.0	20	22.0	30	10	16	26	1.2	0.2	10	14
U1ZB22	19.8	22	24.2	30	10	18	28	1.2	0.2	10	16
U1ZB24	21.6	24	26.4	30	10	20	32	1.2	0.2	10	17
U1ZB27	24.3	27	29.7	30	10	23	36	1.2	0.2	10	19
U1ZB30	27.0	30	33.0	30	10	25	40	1.2	0.2	10	21
U1ZB33	29.7	33	36.3	30	10	26	41	1.2	0.2	10	26.4
U1ZB36	32.4	36	39.6	30	9	28	45	1.2	0.2	10	28.8
U1ZB43	38.7	43	47.3	40	7	33	53	1.2	0.2	10	34.4
U1ZB47	42.3	47	51.7	65	6	38	60	1.2	0.2	10	37.6
U1ZB51	45.9	51	56.1	65	6	43	68	1.2	0.2	10	40.8
U1ZB68	61.2	68	74.8	120	4	57	90	1.2	0.2	10	54.4
U1ZB75	67.5	75	82.5	150	4	66	104	1.2	0.2	10	60
U1ZB82	73.8	82	90.2	170	3	71	113	1.2	0.2	10	65.4
U1ZB100	90	100	110	300	3	87	138	1.2	0.2	10	80
U1ZB110	99	110	121	300	3	96	152	1.2	0.2	10	88
U1ZB150	135	150	165	450	2	136	212	1.2	0.2	10	120
U1ZB180	162	180	198	500	1.5	161	255	1.2	0.2	10	144
U1ZB200	180	200	220	500	0.5	170	269	1.2	0.2	10	160
U1ZB200-Y	190	200	210			170	269				160
U1ZB200-Z	200	210	220			178	286				168
U1ZB220	198	220	242	5000	0.5	200	309	1.2	0.2	10	176
U1ZB220-Y	210	220	230			200	309				176
U1ZB220-Z	220	230	240			207	320				184
U1ZB240	216	240	264	5000	0.5	215	325	1.2	0.2	10	192
U1ZB240-Y	230	240	250			215	325				216
U1ZB240-Z	240	250	260			225	338				225

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	ZENER VOLTAGE V_Z (V)			ZENER IMPEDANCE r_d (Ω)	MEASUREMENT CURRENT I_Z (mA)	α_T (mV / °C)		V_F (V)	MEASUREMENT CURRENT I_F (A)	I_R (μA)	MEASUREMENT VOLTAGE V_R (V)
	MIN	TYP.	MAX	MAX.		TYP.	MAX	MAX		MAX	
U1ZB270	243	270	297	5000	0.5	243	385	1.2	0.2	10	216
U1ZB270−X	250	260	270			221	350				234
U1ZB270−Y	260	270	280			228	362				243
U1ZB270−Z	270	280	290			236	374				252
U1ZB300	270	300	330	5000	0.5	270	428	1.2	0.2	10	240
U1ZB300−X	280	290	300			244	388				261
U1ZB300−Y	290	300	310			253	402				270
U1ZB300−Z	300	310	320			261	415				279
U1ZB330	297	330	363	5000	0.5	296	470	1.2	0.2	10	264
U1ZB330−X	310	320	330			270	428				288
U1ZB330−Y	320	330	340			278	441				297
U1ZB330−Z	330	340	350			287	455				306
U1ZB390	351	390	429	10000	0.5	350	555	1.2	0.2	10	312

MARKING

Abbreviation Code	Part No.
6.8	U1ZB6.8
7.5	U1ZB7.5
8.2	U1ZB8.2
9.1	U1ZB9.1
10	U1ZB10
11	U1ZB11
12	U1ZB12
13	U1ZB13
15	U1ZB15
16	U1ZB16
18	U1ZB18
20	U1ZB20
22	U1ZB22
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68	U1ZB68
75	U1ZB75
82	U1ZB82
100	U1ZB100
110	U1ZB110
150	U1ZB150
180	U1ZB180
200	U1ZB200
200Y	U1ZB200-Y
200Z	U1ZB200-Z
220	U1ZB220
220Y	U1ZB220-Y
220Z	U1ZB220-Z
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240Y	U1ZB240-Y
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270	U1ZB270
270X	U1ZB270-X
270Y	U1ZB270-Y
270Z	U1ZB270-Z
300	U1ZB300
300X	U1ZB300-X
300Y	U1ZB300-Y
300Z	U1ZB300-Z
330	U1ZB330
330X	U1ZB330-X
330Y	U1ZB330-Y
330Z	U1ZB330-Z
390	U1ZB390

Handling Precaution

The absolute maximum ratings denote the absolute maximum ratings, which are rated values and must not be exceeded during operation, even for an instant. The following are the general derating methods that we recommend when you design a circuit with a device.

P: We recommend that the worst case power dissipation be no greater than 50% of the absolute maximum rating of power dissipation. Carry out adequate heat design.

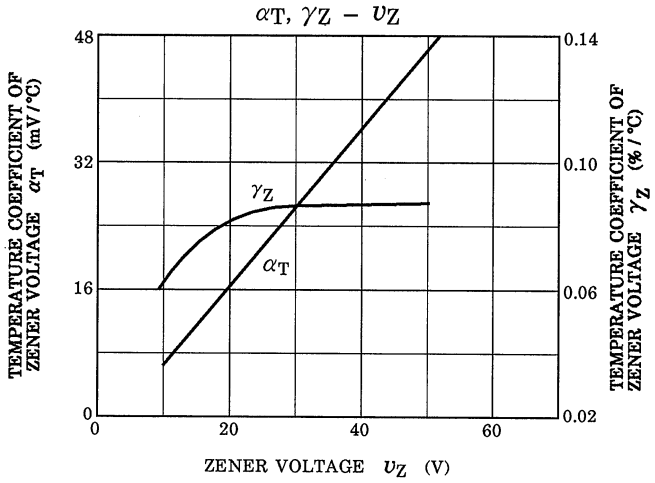
P_{RSM}: We recommend that a device be used within the recommended area in the figure, P_{RSM}-tw.

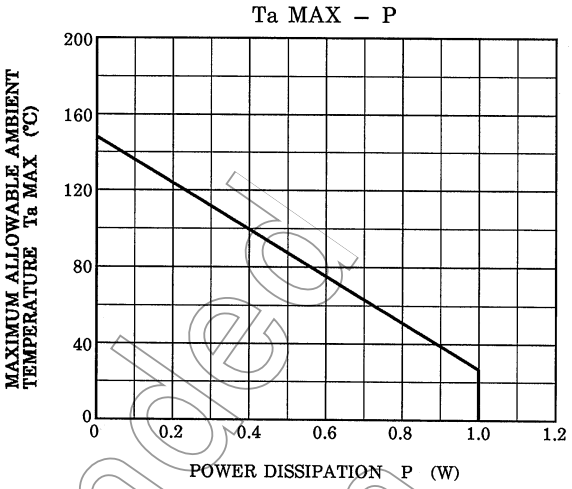
T_j: Derate this rating when using a device in order to ensure high reliability. We recommend that the device be used at a T_j of below 120°C.

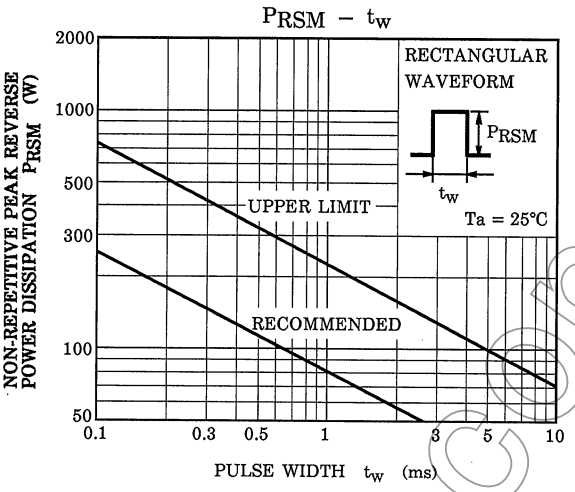
Thermal resistance between junction and ambient fluctuates depending on the device's mounting condition. When using a device, design a circuit board and a soldering land size to match the appropriate thermal resistance value.

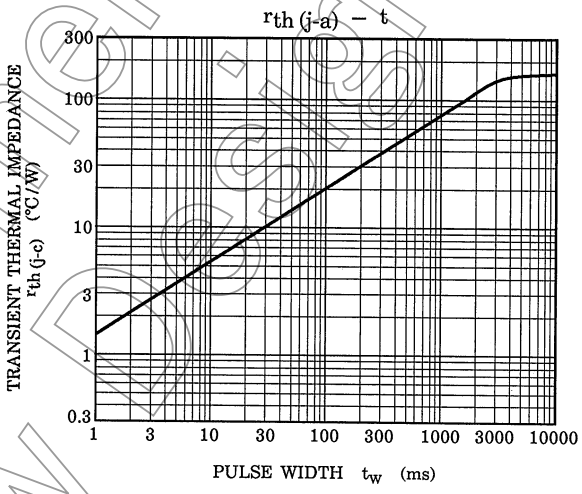
Organic silicon is used as encapsulation material for this product, which is resin seal product. Therefore, it is difficult to seal siloxane coming from silicone completely in this product. When using this product, please consider above.

Please refer to the Rectifiers databook for further information.









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