TOSHIBA Zener Diode Silicon Junction

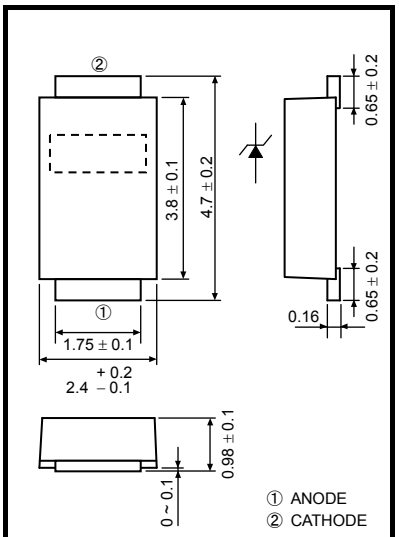
CMZB68~CMZB390

○ Communication, Control and Measurement Equipment

○ Constant Voltage Regulation

- Power dissipation: P = 1.0 W
- Zener voltage: V_Z = 68 to 390 V
- Suitable for high-density board assembly due to the use of a small surface-mount package, M−FLAT™

Unit: mm



JEDEC	—
JEITA	—
TOSHIBA	3-4E1A

Weight: 0.023 g (typ.)

Absolute Maximum Ratings (Ta = 25°C)

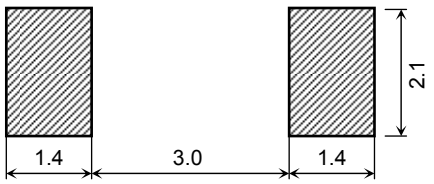
Characteristics	Symbol	Rating	Unit
Power dissipation	P	1.0 (Note 1)	W
Junction temperature	T_j	150	°C
Storage temperature range	T_{stg}	−55 to 150	°C

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).

Note 1: Ta = 40°C
Device mounted on a glass-epoxy board
Board size: 50 mm × 50 mm
Land pattern: 6 mm × 6 mm
Board thickness: 1.6 mm

Land pattern dimensions for reference only

Unit: mm



Electrical Characteristics (Ta = 25°C)

Type	Zener Voltage Vz (V)				Dynamic Resistance r_d (Ω)		Temperature Coefficient αT (mV/°C)		Forward Voltage V_F (V)		Reverse Current I_R (μA)	
	Min	Typ.	Max	Measurement Current I_Z (mA)	Max	Measurement Current I_Z (mA)	Typ.	Max	Max	Measurement Current I_F (A)	Max	Measurement Voltage V_R (V)
CMZB68	61.2	68	74.8	4	120	4	57	90	1.2	0.2	10	54.4
CMZB75	67.5	75	82.5	4	150	4	66	104	1.2	0.2	10	60
CMZB82	73.8	82	90.2	3	170	3	71	113	1.2	0.2	10	65.6
CMZB100	90	100	110	3	300	3	87	138	1.2	0.2	10	80
CMZB110	99	110	121	3	300	3	96	152	1.2	0.2	10	88
CMZB150	135	150	165	2	450	2	136	210	1.2	0.2	10	120
CMZB180	162	180	198	1.5	500	1.5	161	254	1.2	0.2	10	144
CMZB200	180	200	220	1.5	500	1.5	170	269	1.2	0.2	10	160
CMZB220	198	220	242	0.5	5000	0.5	200	309	1.2	0.2	10	176
CMZB240	216	240	264	0.5	5000	0.5	215	343	1.2	0.2	10	192
CMZB270	243	270	297	0.5	5000	0.5	243	385	1.2	0.2	10	216
CMZB300	270	300	330	0.5	5000	0.5	270	428	1.2	0.2	10	240
CMZB330	297	330	363	0.5	5000	0.5	296	473	1.2	0.2	10	264
CMZB390	351	390	429	0.5	10000	0.5	350	555	1.2	0.2	10	312

Marking

Abbreviation Code	Part No.	Abbreviation Code	Part No.
B68	CMZB68	B2A	CMZB200
B75	CMZB75	B2C	CMZB220
B82	CMZB82	B2E	CMZB240
B1A	CMZB100	B2H	CMZB270
B1B	CMZB110	B3A	CMZB300
B1F	CMZB150	B3D	CMZB330
B1J	CMZB180	B3K	CMZB390

Handling Precaution

1) The absolute maximum ratings of a semiconductor device are a set of ratings that must not be exceeded,even for a moment. Do not exceed any of these ratings. 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.

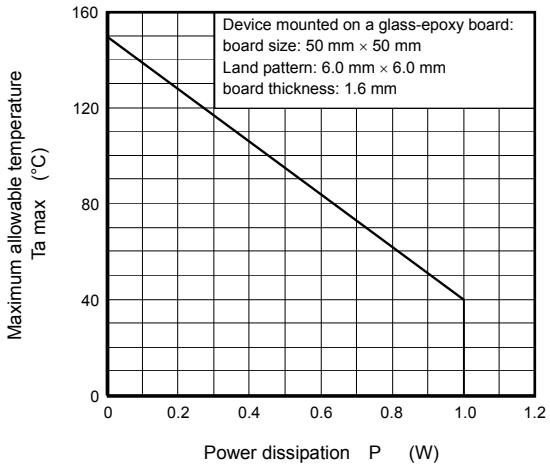
   P_{RSM}: We recommend that a device be used within the recommended area in the figure, P_{RSM}-tw.

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

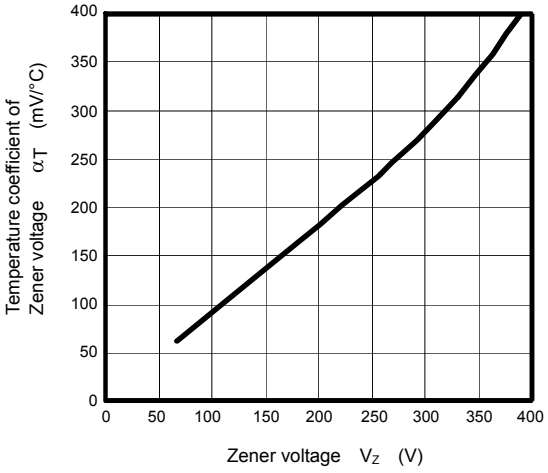
2) Thermal resistance between junction and ambient fluctuates depending on the device's mounting condition. When using a device, design a circuit board and a land pattern to match the appropriate thermal resistance value.

3) Please refer to the Rectifiers databook for further information.

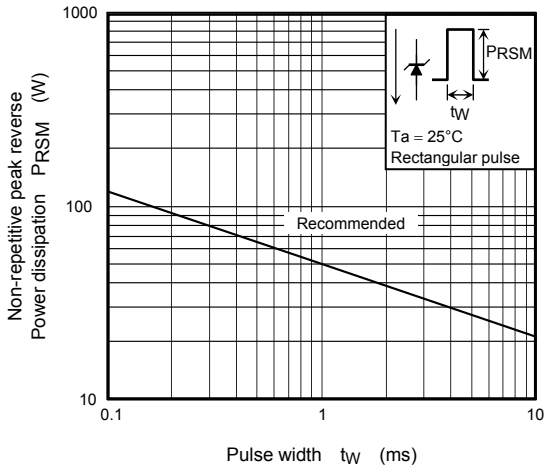
Ta max – P



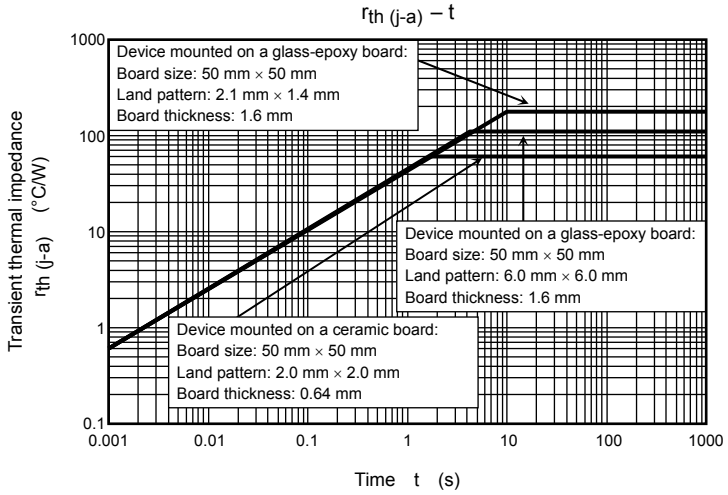
$\alpha_{T-}V_Z$ (typ.)



P_{RSM} – t_W (reference value)



$r_{th\ (j\text{-}a)}$ – t



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