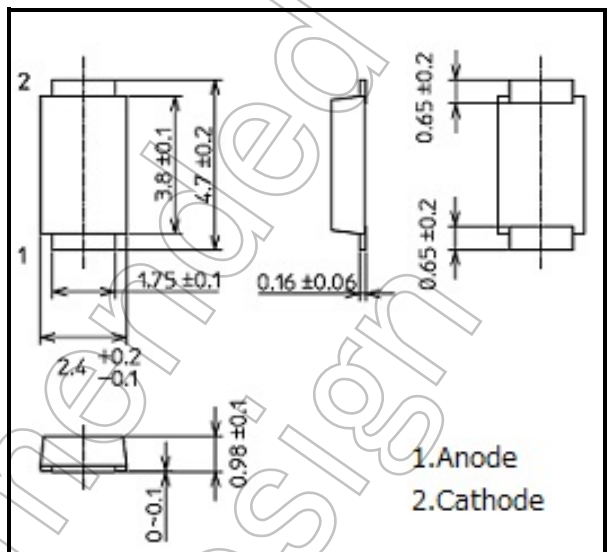
TOSHIBA Zener Diode Silicon Diffused Type

CMZB16, CMZB22, CMZB53

○ Communication, Control and Measurement Equipment
○ Constant Voltage Regulation
○ Transient Suppressors

- Average power dissipation: P = 1 W
- Zener voltage: V_Z = 16, 22, 53 V
- Suitable for high-density board assembly due to the use of a small surface-mount package, M−FLAT™

Unit: mm



JEDEC	—
JEITA	—
TOSHIBA	3-4E1S

Weight: 0.023 g (typ.)

Absolute Maximum Ratings (Ta = 25°C)

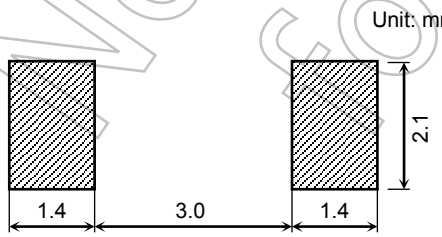
Characteristics	Symbol	Rating	Unit
Power dissipation	P	1 (Note 1)	W
Junction temperature	T_j	−40 to 150	°C
Storage temperature range	T_{stg}	−40 to 150	°C

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

Note 2: 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).

Land Pattern Dimensions (reference only)

Unit: mm



Start of commercial production
2005-09

Not Recommended for New Design

Electrical Characteristics (Ta = 25°C)

Type	Zener Voltage Vz (V)				Zener Impedance r_d (Ω)		Temperature Coefficient Of Zener 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)
CMZB16	14.4	16	17.6	10	30	10	12	19	1.2	0.2	10	11
CMZB22	19.8	22	24.2	10	30	10	18	28	1.2	0.2	10	16
CMZB53	47.7	53	58.3	5	85	5	49	77	1.2	0.2	10	42.4

Marking

Abbreviation Code	Part No.
B16	CMZB16
B22	CMZB22
B53	CMZB53

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.

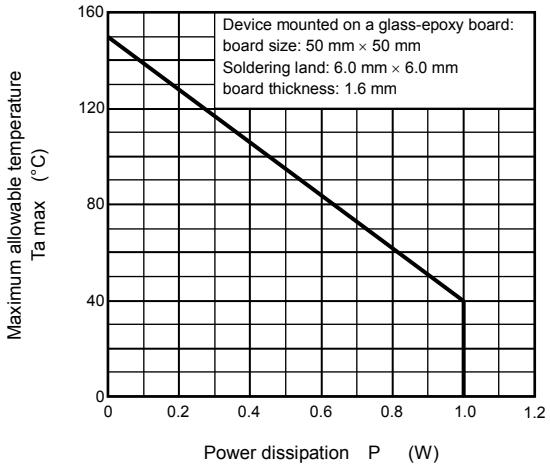
   T_j: Derate this rating when using a device in order to ensure high reliability. We recommend that the device be used at T_j of below 120°C.

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 soldering land size to match the appropriate thermal resistance value.

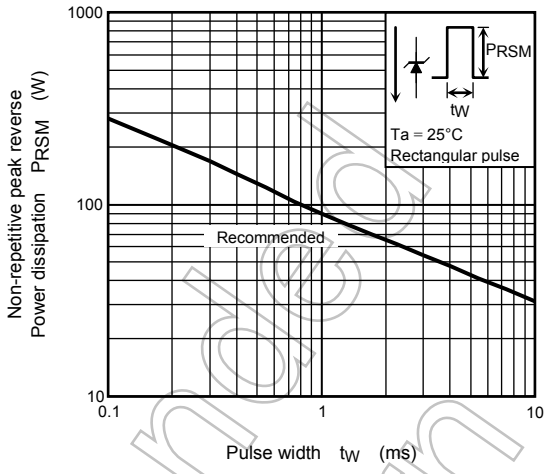
3) Please refer to the Rectifiers databook for further information.

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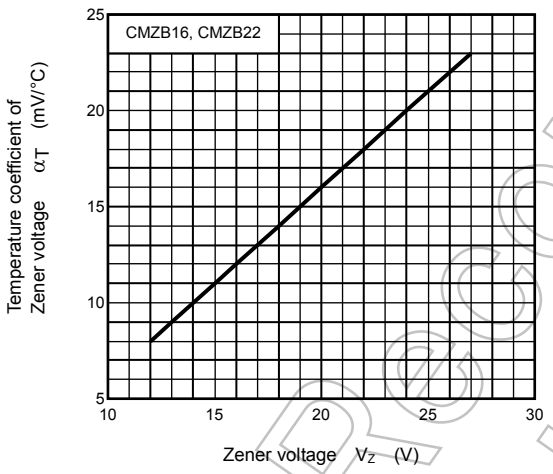
Ta max – P



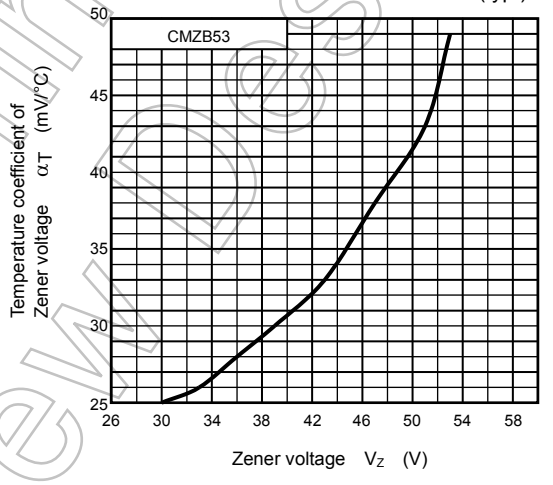
P_{RSM} – t_W (reference value)



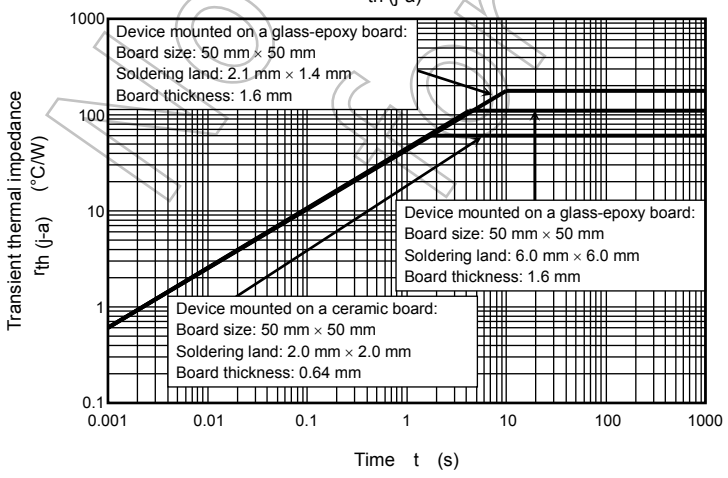
α_T – V_Z (typ.)



α_T – V_Z (typ.)



$r_{th\ (j\text{-}a)}$ – t



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