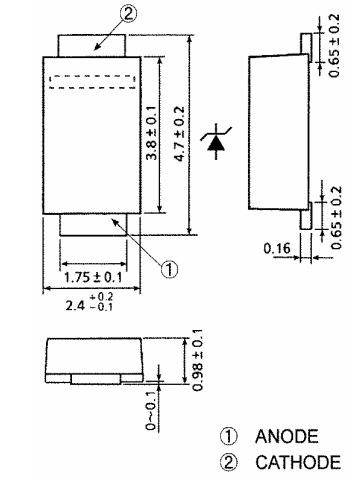
TOSHIBA Zener Diode Silicon Diffused Type

CMZB18~CMZB51

Applications:
Communication, Control and
Measurement Equipment
Constant Voltage Regulation
Transient Suppressors

- Average power dissipation : P = 1.0 W
- Zener voltage : V_Z = 18 V ~ 51 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)

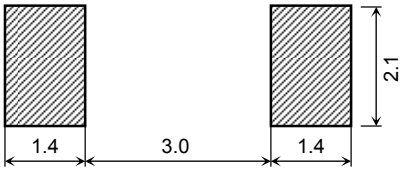
Characteristics	Symbol	Rating	Unit
Power dissipation	P	1.0 (Note 1)	W
Junction temperature	T_j	−40~150	°C
Storage temperature range	T_{stg}	−40~150	°C

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 t

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).

Standard Soldering Pad

Unit: mm



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)
CMZB18	16.2	18	19.8	10	30	10	14	23	1.2	0.2	10	13
CMZB27	24.3	27	29.7	10	30	10	23	36	1.2	0.2	10	19
CMZB33	29.7	33	36.3	10	30	10	26	41	1.2	0.2	10	26.4
CMZB36	32.4	36	39.6	9	30	9	28	45	1.2	0.2	10	28.8
CMZB39	35.1	39	42.9	8	35	8	30	48	1.2	0.2	10	31.2
CMZB47	42.3	47	51.7	6	65	6	38	60	1.2	0.2	10	37.6
CMZB51	45.9	51	56.1	6	65	6	43	68	1.2	0.2	10	40.8

Marking

Abbreviation Code	Part No.
B18	CMZB18
B27	CMZB27
B33	CMZB33
B36	CMZB36
B39	CMZB39
B47	CMZB47
B51	CMZB51

Handling Precaution

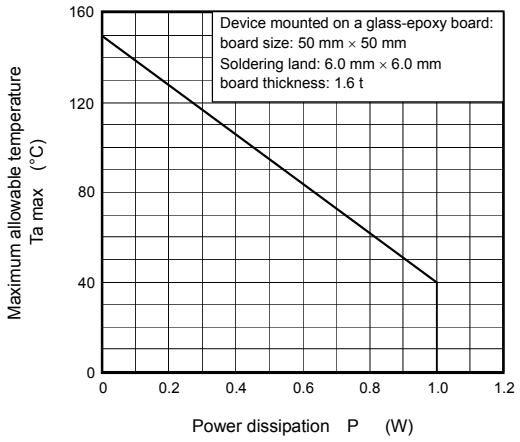
1) The absolute maximum ratings are rated values and must not be exceeded during operation, even for an instant. The following are the general derating methods that we recommend when you design a circuit with a device.

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

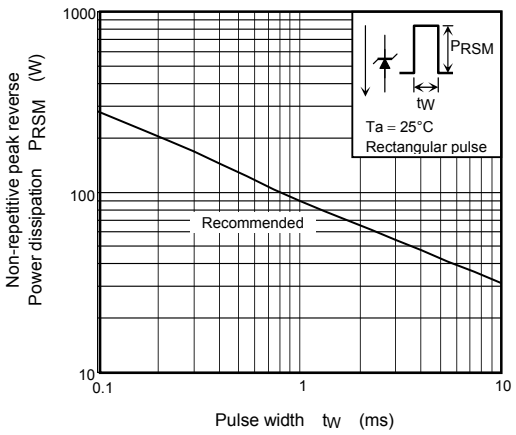
2) Thermal resistance between junction and ambient fluctuates depending on the device's mounting condition. When using a device, design a circuit board and a soldering land size to match the appropriate thermal resistance value.

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

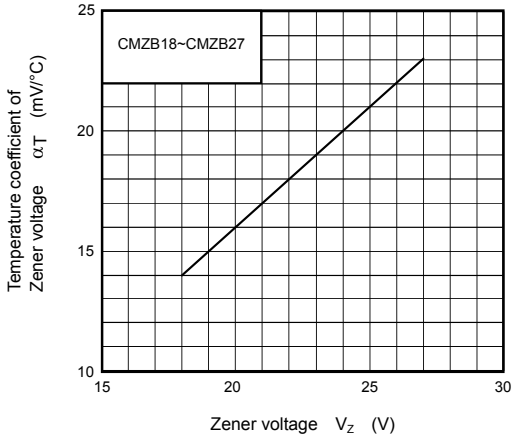
Ta max – P



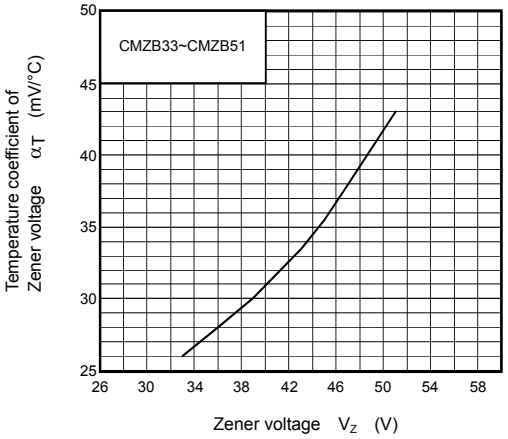
P_{RSM} – t_W (reference value)



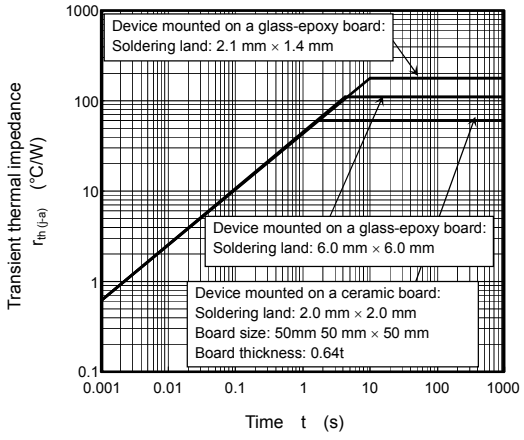
α_T – V_Z (typ.)



α_T – V_Z (typ.)



$r_{th\ (j\text{-}a)}$ – t



RESTRICTIONS ON PRODUCT USE

20070701-EN GENERAL

- The information contained herein is subject to change without notice.
- TOSHIBA is continually working to improve the quality and reliability of its products. Nevertheless, semiconductor devices in general can malfunction or fail due to their inherent electrical sensitivity and vulnerability to physical stress. It is the responsibility of the buyer, when utilizing TOSHIBA products, to comply with the standards of safety in making a safe design for the entire system, and to avoid situations in which a malfunction or failure of such TOSHIBA products could cause loss of human life, bodily injury or damage to property.
  In developing your designs, please ensure that TOSHIBA products are used within specified operating ranges as set forth in the most recent TOSHIBA products specifications. Also, please keep in mind the precautions and conditions set forth in the “Handling Guide for Semiconductor Devices,” or “TOSHIBA Semiconductor Reliability Handbook” etc.
- The TOSHIBA products listed in this document are intended for usage in general electronics applications (computer, personal equipment, office equipment, measuring equipment, industrial robotics, domestic appliances, etc.).These TOSHIBA products are neither intended nor warranted for usage in equipment that requires extraordinarily high quality and/or reliability or a malfunction or failure of which may cause loss of human life or bodily injury (“Unintended Usage”). Unintended Usage include atomic energy control instruments, airplane or spaceship instruments, transportation instruments, traffic signal instruments, combustion control instruments, medical instruments, all types of safety devices, etc.. Unintended Usage of TOSHIBA products listed in his document shall be made at the customer’s own risk.
- The products described in this document shall not be used or embedded to any downstream products of which manufacture, use and/or sale are prohibited under any applicable laws and regulations.
- The information contained herein is presented only as a guide for the applications of our products. No responsibility is assumed by TOSHIBA for any infringements of patents or other rights of the third parties which may result from its use. No license is granted by implication or otherwise under any patents or other rights of TOSHIBA or the third parties.
- Please contact your sales representative for product-by-product details in this document regarding RoHS compatibility. Please use these products in this document in compliance with all applicable laws and regulations that regulate the inclusion or use of controlled substances. Toshiba assumes no liability for damage or losses occurring as a result of noncompliance with applicable laws and regulations.