

# CMZB68~CMZB390

○ Communication, Control and Measurement Equipment

○ Constant Voltage Regulation

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

## Absolute Maximum Ratings ( $T_a = 25^\circ\text{C}$ )

| Characteristics           | Symbol           | Rating       | Unit             |
|---------------------------|------------------|--------------|------------------|
| Power dissipation         | P                | 1.0 (Note 1) | W                |
| Junction temperature      | $T_j$            | 150          | $^\circ\text{C}$ |
| Storage temperature range | $T_{\text{stg}}$ | -55 to 150   | $^\circ\text{C}$ |

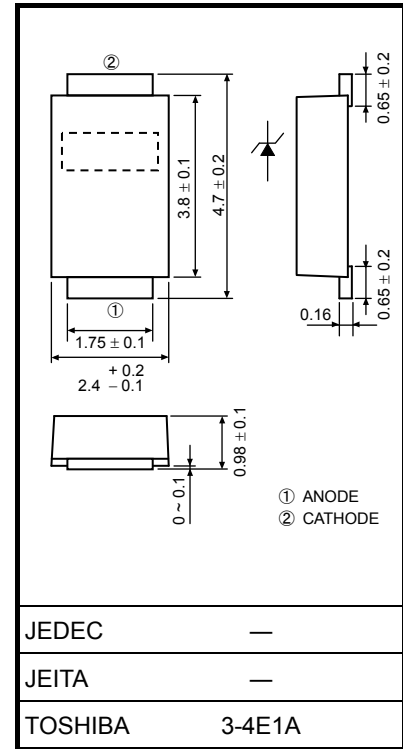
Note : Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature / current / voltage, 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:  $T_a = 40^\circ\text{C}$

Device mounted on a glass-epoxy board  
Board size: 50 mm × 50 mm  
Land pattern: 6 mm × 6 mm  
Board thickness: 1.6 mm

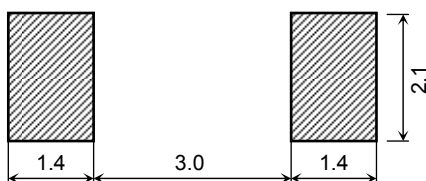
Unit: mm



Weight: 0.023 g (typ.)

## Land pattern dimensions for reference only

Unit: mm



## Electrical Characteristics (Ta = 25°C)

| Type    | Zener Voltage<br>V <sub>Z</sub> (V) |      |      |                                                    | Dynamic<br>Resistance<br>r <sub>d</sub> (Ω) |                                                    | Temperature<br>Coefficient<br>αT (mV/°C) |     | Forward Voltage<br>V <sub>F</sub> (V) |                                                   | Reverse Current<br>I <sub>R</sub> (μA) |                                                   |
|---------|-------------------------------------|------|------|----------------------------------------------------|---------------------------------------------|----------------------------------------------------|------------------------------------------|-----|---------------------------------------|---------------------------------------------------|----------------------------------------|---------------------------------------------------|
|         | Min                                 | Typ. | Max  | Measure-<br>ment<br>Current<br>I <sub>Z</sub> (mA) | Max                                         | Measure-<br>ment<br>Current<br>I <sub>Z</sub> (mA) | Typ.                                     | Max | Max                                   | Measure-<br>ment<br>Current<br>I <sub>F</sub> (A) | Max                                    | Measure-<br>ment<br>Voltage<br>V <sub>R</sub> (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                                               |

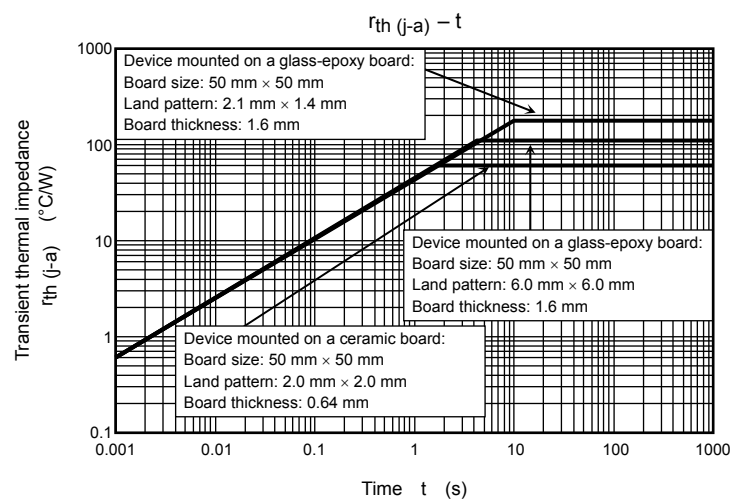
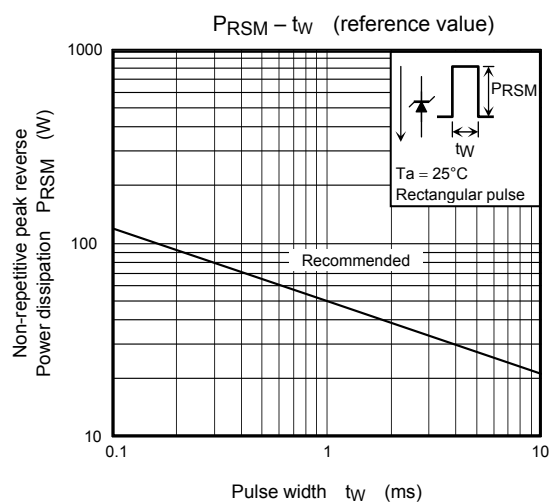
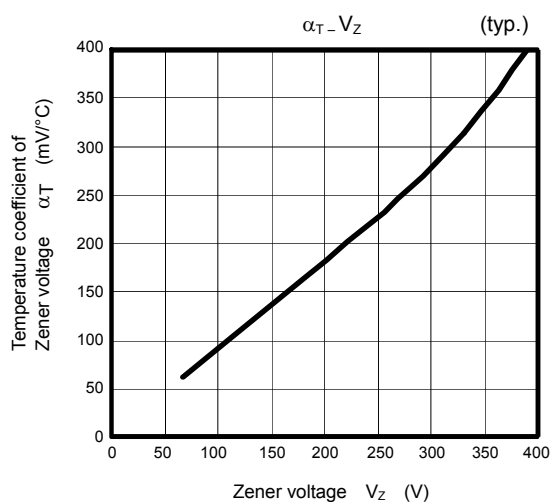
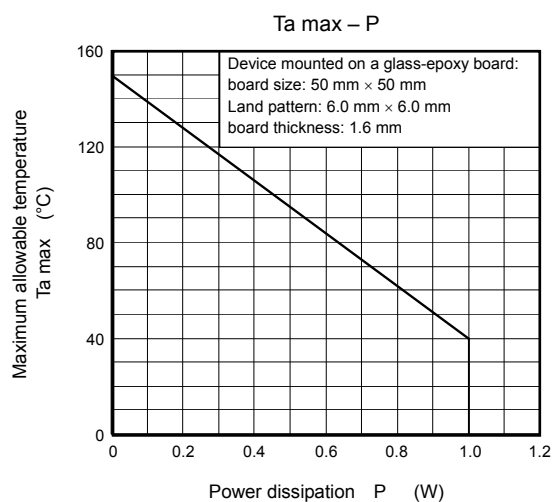
## Marking

| 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. |
| PRSM:            | We recommend that a device be used within the recommended area in the figure, PRSM·tw.                                                                         |
| T <sub>j</sub> : | Derate this rating when using a device in order to ensure high reliability.<br>We recommend that the device be used at T <sub>j</sub> 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.



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