

TOSHIBA Zener Diode Silicon Junction

CMZB100 to CMZB390

- Communication, Control and Measurement Equipment
- Constant Voltage Regulation

- Power dissipation: $P = 1 \text{ W}$
- Zener voltage: $V_Z = 100 \text{ to } 390 \text{ V}$
- 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 (Note 1) | W |
| Junction temperature | T_j | 150 | $^\circ\text{C}$ |
| Storage temperature range | T_{stg} | -55 to 150 | $^\circ\text{C}$ |

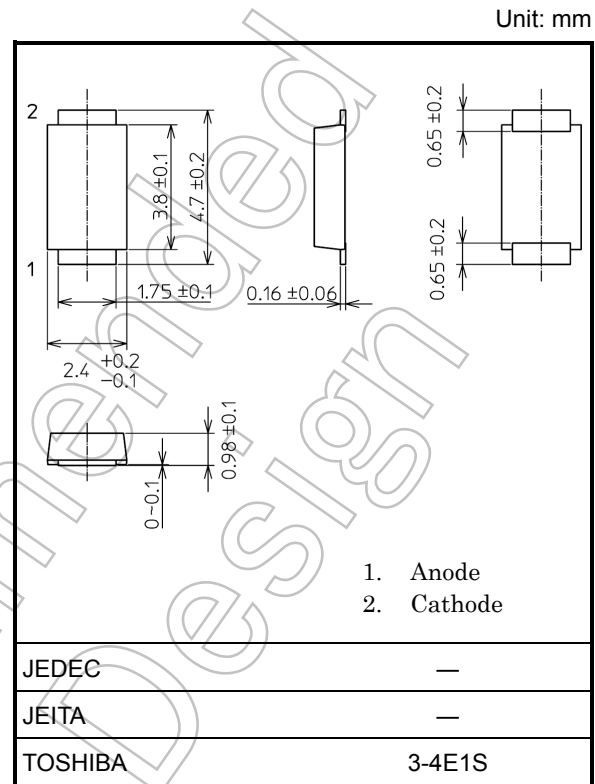
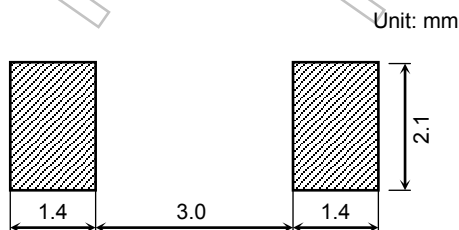
Note : Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature / current / voltage, 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

Land Pattern Dimensions (for reference only)



Weight: 0.023 g (typ.)

Start of commercial production
2010-09

Electrical Characteristics (Ta = 25°C)

| Type | Zener Voltage Vz (V) | | | Dynamic Resistance rd (Ω) | | Temperature Coefficient | | Forward Voltage VF (V) | | Reverse Current IR (μA) | | |
|---------|----------------------|------|-----|-----------------------------|-------|-----------------------------|------------|------------------------|-----|----------------------------|-----|----------------------------|
| | Min | Typ. | Max | Measurement Current IZ (mA) | Max | Measurement Current IZ (mA) | αT (mV/°C) | | Max | Measurement Current IF (A) | Max | Measurement Voltage VR (V) |
| | | | | | | | Typ. | Max | | | | |
| 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. |
|-------------------|----------|-------------------|----------|
| B1A | CMZB100 | B2E | CMZB240 |
| B1B | CMZB110 | B2H | CMZB270 |
| B1F | CMZB150 | B3A | CMZB300 |
| B1J | CMZB180 | B3D | CMZB330 |
| B2A | CMZB200 | B3K | CMZB390 |
| B2C | CMZB220 | | |

Handling Precaution

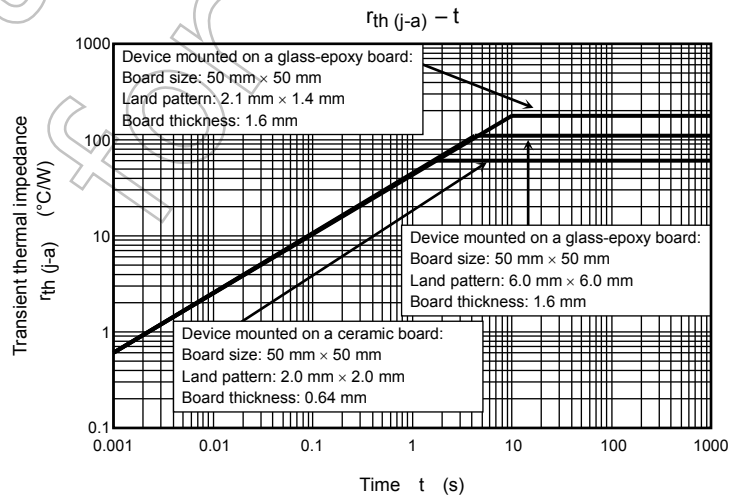
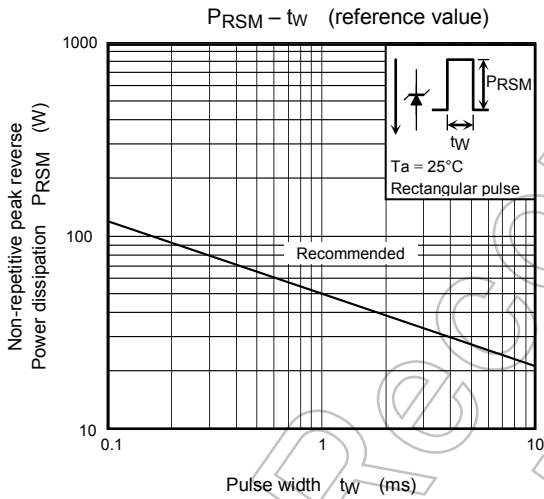
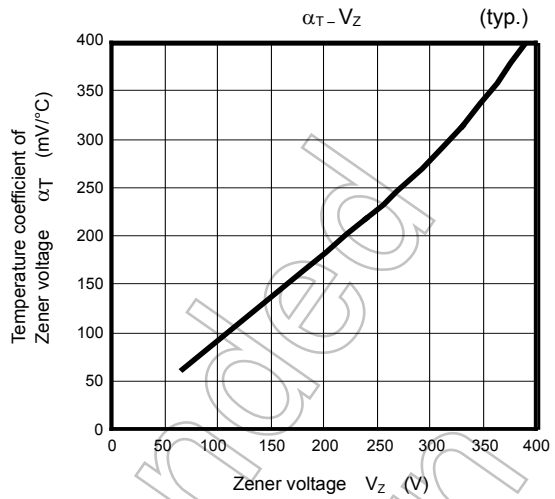
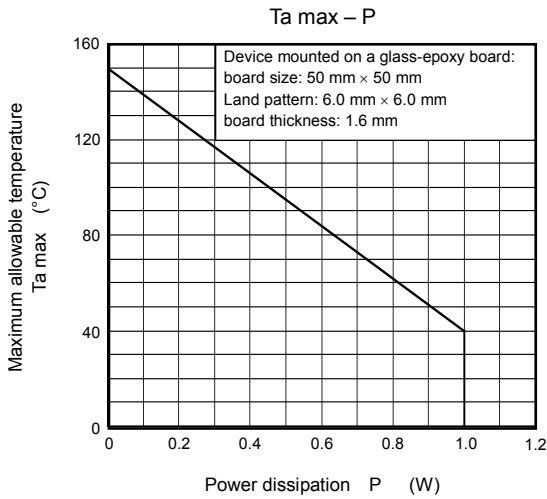
- The absolute maximum ratings of a semiconductor device are a set of ratings that must not be exceeded, even for a moment. Do not exceed any of these ratings. The following are the general derating methods that we recommend when you design a circuit with a device.

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.

Tj: Derate this rating when using a device in order to ensure high reliability. We recommend that the device be used at Tj 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 land pattern to match the appropriate thermal resistance value.
- Please refer to the Rectifiers databook for further information.



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