

1SS413CT

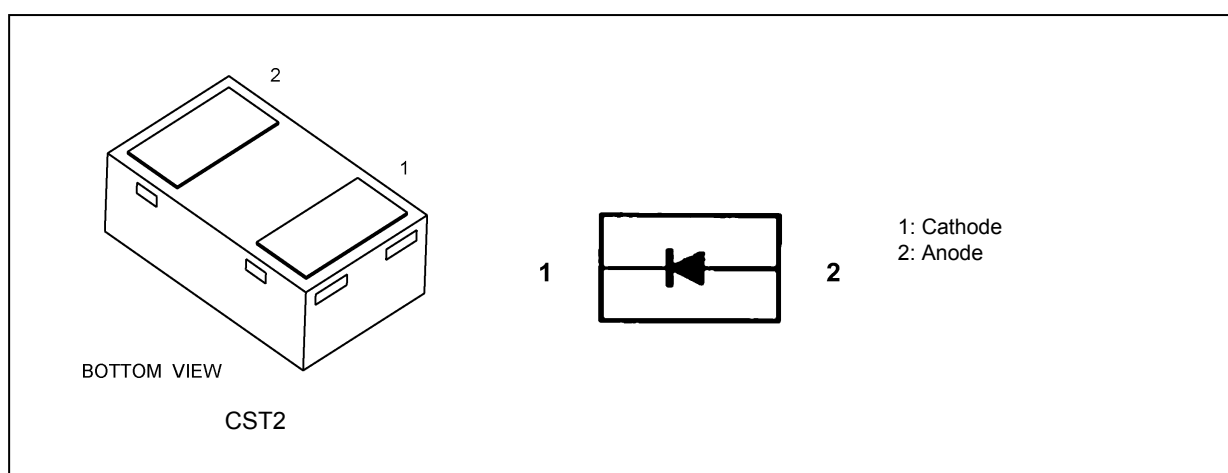
1. Applications

- High-Speed Switching

2. Features

- (1) Low forward voltage : $V_{F(3)} = 0.50 \text{ V (typ.)}$
- (2) Low reverse current : $I_R = 0.5 \mu\text{A (max)}$
- (3) Small total capacitance : $C_t = 3.9 \text{ pF (typ.)}$

3. Packaging and Internal Circuit



4. Absolute Maximum Ratings (Note) (Unless otherwise specified, $T_a = 25^\circ\text{C}$)

| Characteristics | Symbol | Note | Rating | Unit |
|---|-----------|----------|------------|------------------|
| Peak reverse voltage | V_{RM} | | 25 | V |
| Reverse voltage | V_R | | 20 | |
| Peak forward current | I_{FM} | | 100 | mA |
| Average rectified current | I_O | | 50 | mA |
| Power dissipation | P_D | (Note 1) | 100 | mW |
| Non-repetitive peak forward surge current | I_{FSM} | (Note 2) | 1 | A |
| Junction temperature | T_J | | 125 | $^\circ\text{C}$ |
| Storage temperature | T_{stg} | | -55 to 125 | $^\circ\text{C}$ |

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: Mounted on a glass epoxy circuit board of 20 mm × 20 mm, Pad dimension of 4 mm × 4 mm.

Note 2: Measured with a 10 ms pulse.

Start of commercial production

1999-02

5. Electrical Characteristics (Unless otherwise specified, $T_a = 25\text{ }^{\circ}\text{C}$)

| Characteristics | Symbol | Test Condition | Min | Typ. | Max | Unit |
|-------------------|------------|--------------------------------------|-----|------|------|---------------|
| Forward voltage | $V_{F(1)}$ | $I_F = 1\text{ mA}$ | — | 0.33 | — | V |
| Forward voltage | $V_{F(2)}$ | $I_F = 5\text{ mA}$ | — | 0.38 | — | V |
| Forward voltage | $V_{F(3)}$ | $I_F = 50\text{ mA}$ | — | 0.50 | 0.55 | V |
| Reverse current | I_R | $V_R = 20\text{ V}$ | — | — | 0.5 | μA |
| Total capacitance | C_t | $V_R = 0\text{ V}, f = 1\text{ MHz}$ | — | 3.9 | — | pF |

6. Marking

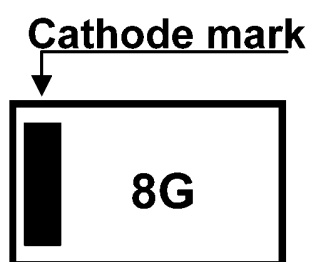
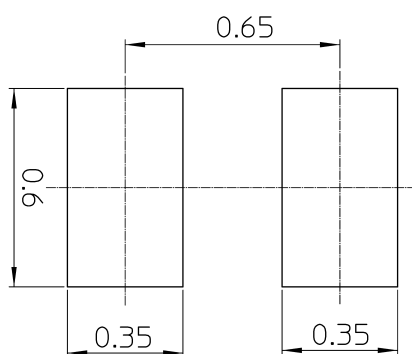


Fig. 6.1 Marking

7. Usage Considerations

- Schottky barrier diodes (SBDs) have reverse leakage greater than other types of diodes. This makes SBDs more susceptible to thermal runaway under high-temperature and high-voltage conditions. Thus, both forward and reverse power losses of SBDs should be considered for thermal and safety design.

8. Land Pattern Dimensions (for reference only)



(Unit: mm)

9. Characteristics Curves (Note)

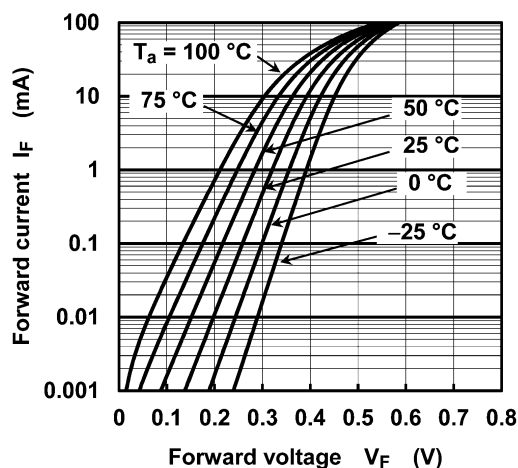


Fig. 9.1 $I_F - V_F$

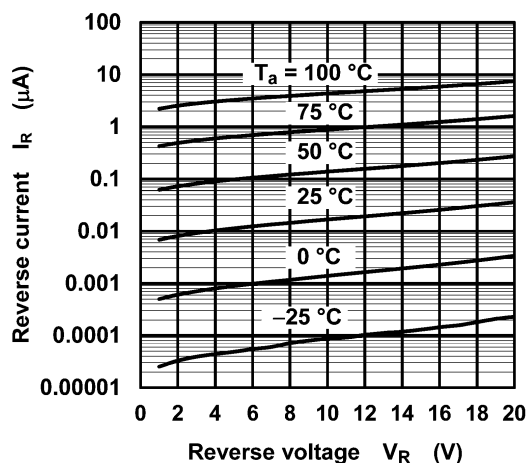


Fig. 9.2 $I_R - V_R$

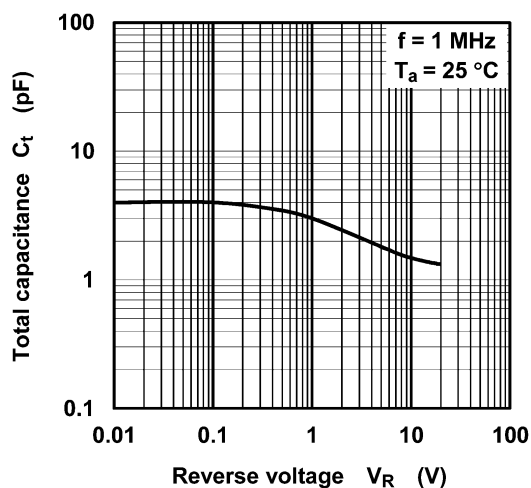


Fig. 9.3 $C_t - V_R$

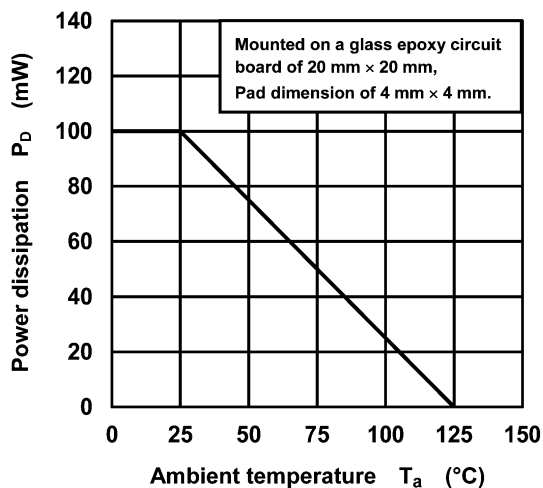
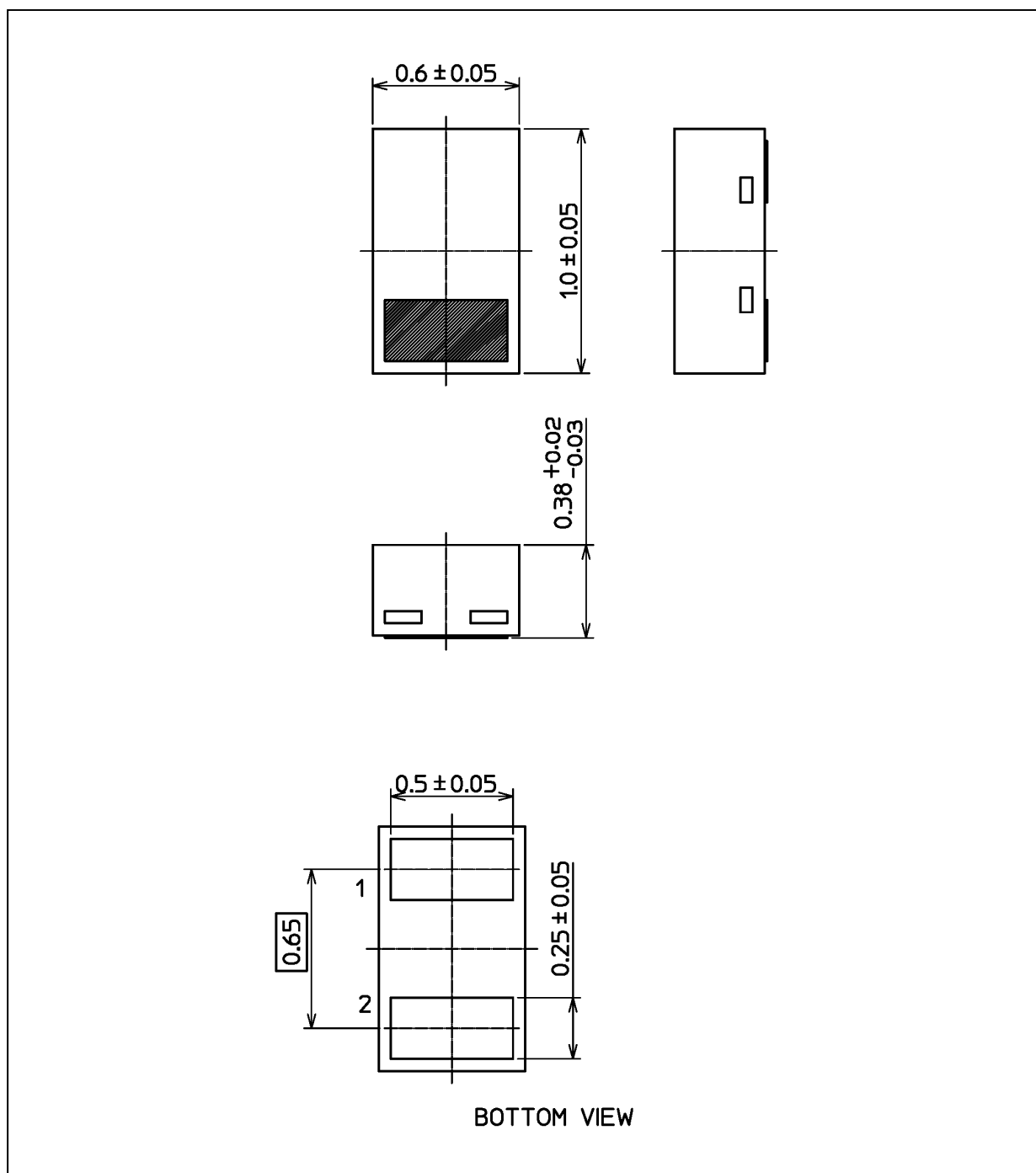


Fig. 9.4 $P_D - T_a$

Note: The above characteristics curves are presented for reference only and not guaranteed by production test, unless otherwise noted.

Package Dimensions

Unit: mm



Weight: 0.7 mg (typ.)

| Package Name(s) |
|-----------------|
| TOSHIBA: 1-1P1S |
| Nickname: CST2 |

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