

Schottky Barrier Diode Silicon Epitaxial

CUS520

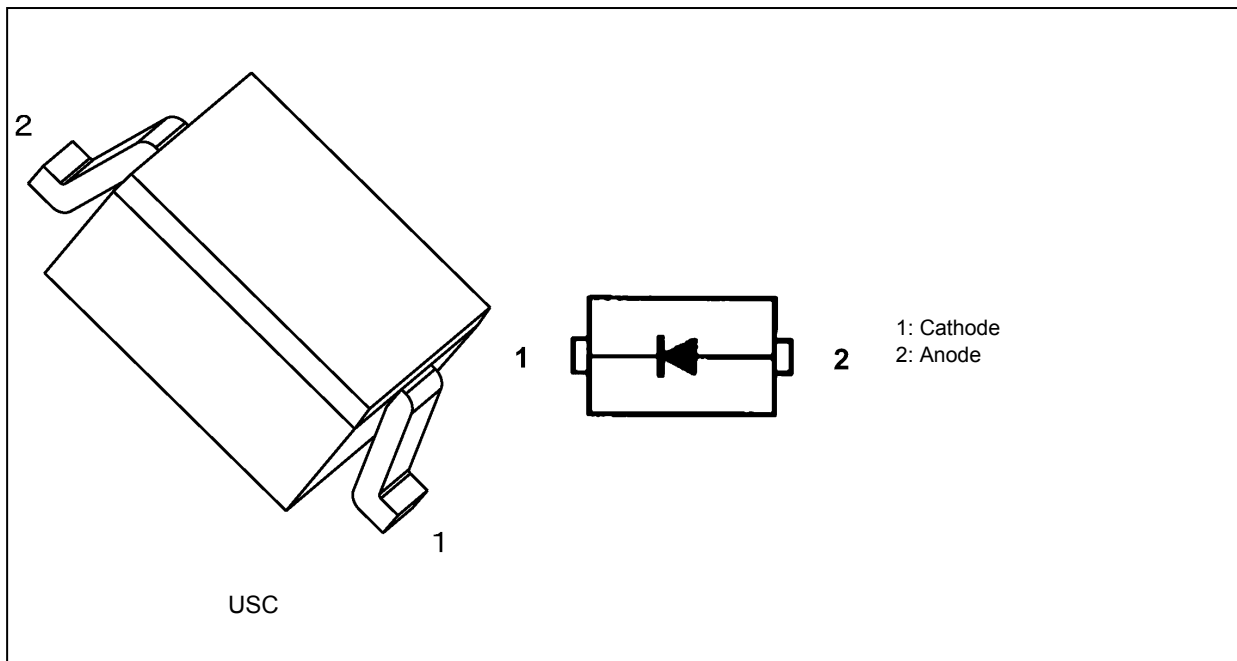
1. Applications

- High-Speed Switching

2. Features

- (1) Low reverse current: $I_{R(2)} = 5 \mu\text{A}$ (max)
- (2) General-purpose USC package, equivalent to SOD-323 and SC-76 packages.

3. Packaging and Internal Circuit



Start of commercial production

2010-12

2014-04-14

Rev.5.0

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

| Characteristics | Symbol | Note | Rating | Unit |
|---|-----------|----------|------------|------------------|
| Reverse voltage | V_R | — | 30 | V |
| Peak forward current | I_{FM} | — | 300 | mA |
| Average rectified current | I_O | — | 200 | |
| Non-repetitive peak forward surge current | I_{FSM} | (Note 1) | 1 | A |
| Power dissipation | P_D | (Note 2) | 150 | mW |
| Junction temperature | T_j | — | 125 | $^\circ\text{C}$ |
| Storage temperature | T_{stg} | — | -55 to 125 | |
| Operating temperature | T_{opr} | — | -40 to 100 | |

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: Measured with a 10 ms pulse.

Note 2: Mounted on a glass epoxy circuit board of 20 mm × 20 mm, Pad dimension of 4 mm × 4 mm.

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

| Characteristics | Symbol | Note | Test Condition | Min | Typ. | Max | Unit |
|-------------------|------------|------|--|-----|------|-----|---------------|
| Forward voltage | $V_{F(1)}$ | — | $I_F = 1 \text{ mA}$ | — | 0.21 | — | V |
| | $V_{F(2)}$ | — | $I_F = 10 \text{ mA}$ | — | 0.28 | — | |
| | $V_{F(3)}$ | — | $I_F = 200 \text{ mA}$ | — | 0.52 | 0.6 | |
| Reverse current | $I_{R(1)}$ | — | $V_R = 10 \text{ V}$ | — | — | 1 | μA |
| | $I_{R(2)}$ | — | $V_R = 30 \text{ V}$ | — | — | 5 | |
| Total capacitance | C_t | — | $V_R = 0 \text{ V}, f = 1 \text{ MHz}$ | — | 17 | — | pF |

6. Marking

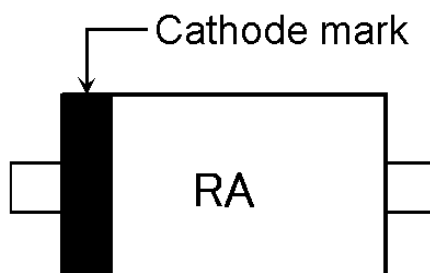
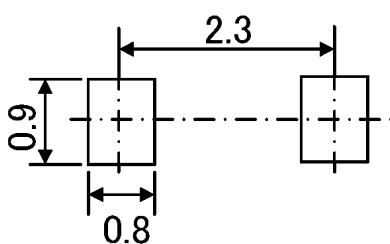


Fig. 6.1 Marking

| Marking Code | Part Number |
|--------------|-------------|
| RA | CUS520 |

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**Fig. 8.1 Land Pattern Dimensions for Reference Only (Unit: mm)**

9. Characteristics Curves (Note)

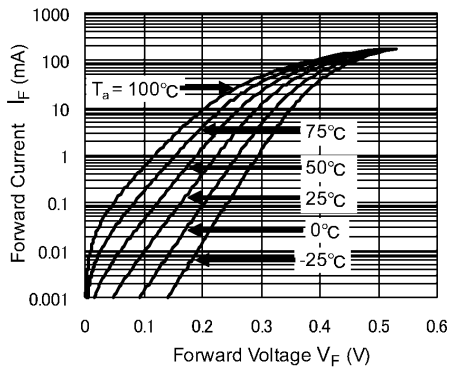


Fig. 9.1 $I_F - V_F$

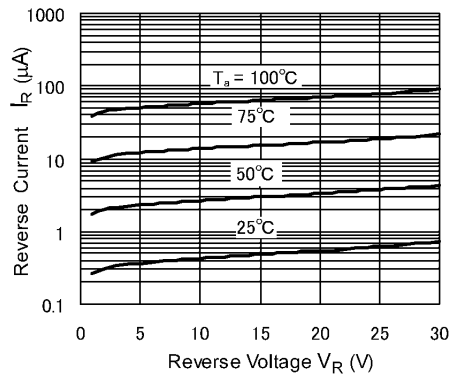


Fig. 9.2 $I_R - V_R$

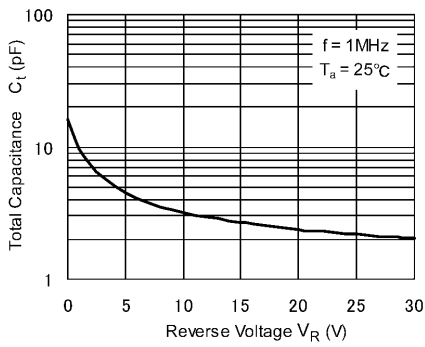
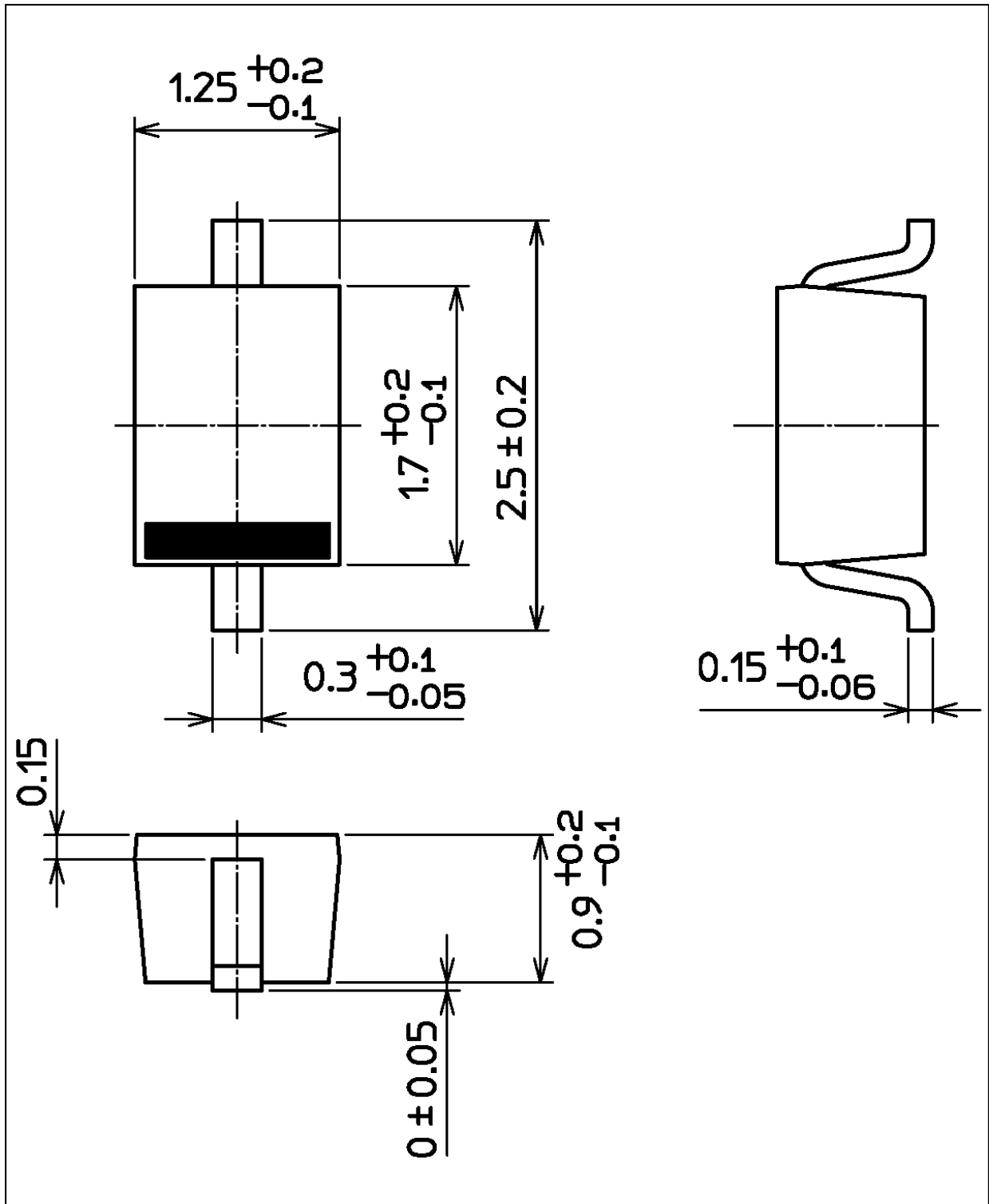


Fig. 9.3 $C_t - V_R$

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

Package Dimensions

Unit: mm



Weight: 4.5 mg (typ.)

| |
|-----------------|
| Package Name(s) |
| Nickname: USC |

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