

Schottky Barrier Diode Silicon Epitaxial

# CUS551V30

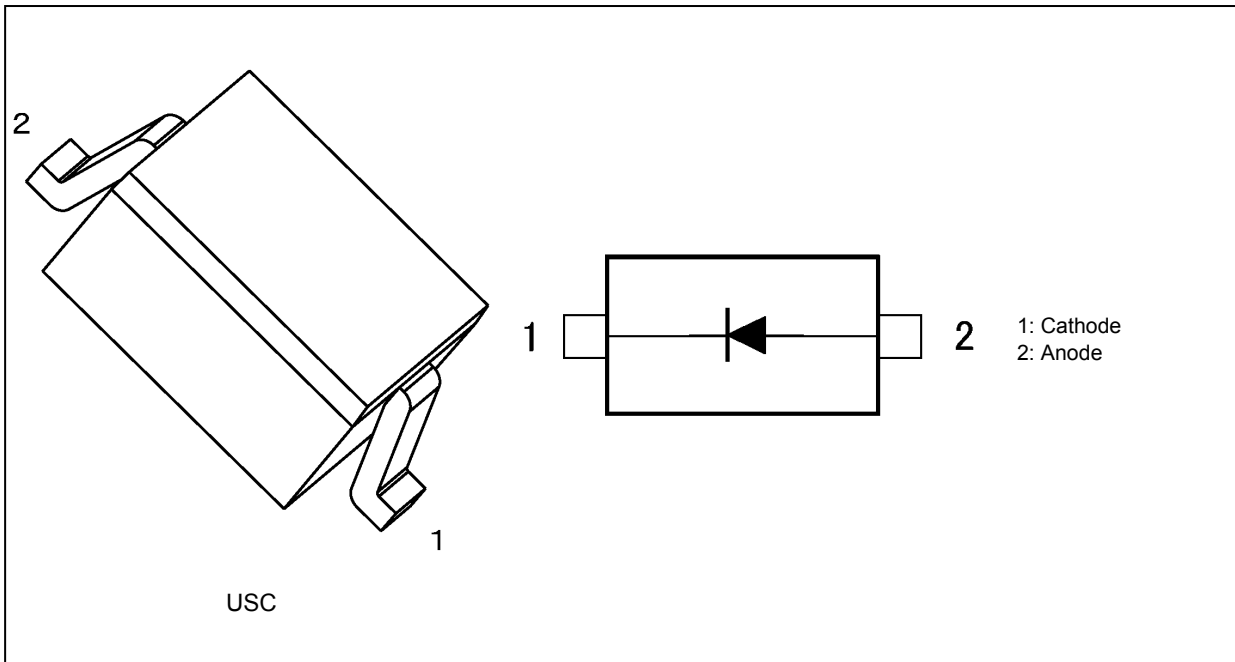
## 1. Applications

- High-Speed Switching

## 2. Features

- (1) Low forward voltage:  $V_{F(3)} = 0.38 \text{ V (typ.)}$
- (2) General-purpose USC package, equivalent to SOD-323 and SC-76 packages.

## 3. Packaging and Internal Circuit



## 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    |
| Average rectified current                 | $I_O$     | (Note 1) | 500        | mA   |
| Non-repetitive peak forward surge current | $I_{FSM}$ | (Note 2) | 5          | A    |
| Junction temperature                      | $T_j$     | —        | 125        | °C   |
| Storage temperature                       | $T_{stg}$ | —        | -55 to 125 |      |

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 dimensions of 4 mm × 4 mm

Note 2: Measured with a 10 ms pulse.

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

| Characteristics | Symbol     | Note | Test Condition         | Min | Typ. | Max  | Unit          |
|-----------------|------------|------|------------------------|-----|------|------|---------------|
| Forward voltage | $V_{F(1)}$ | —    | $I_F = 10 \text{ mA}$  | —   | 0.23 | —    | V             |
|                 | $V_{F(2)}$ |      | $I_F = 100 \text{ mA}$ | —   | 0.31 | 0.36 |               |
|                 | $V_{F(3)}$ |      | $I_F = 500 \text{ mA}$ | —   | 0.38 | 0.47 |               |
| Reverse current | $I_{R(1)}$ |      | $V_R = 20 \text{ V}$   | —   | —    | 100  | $\mu\text{A}$ |

**6. Marking**

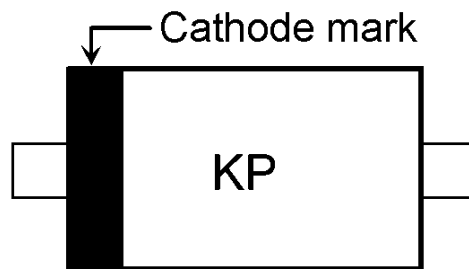


Fig. 6.1 Marking

| Marking Code | Part Number |
|--------------|-------------|
| KP           | CUS551V30   |

**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**

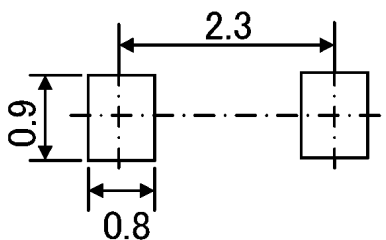
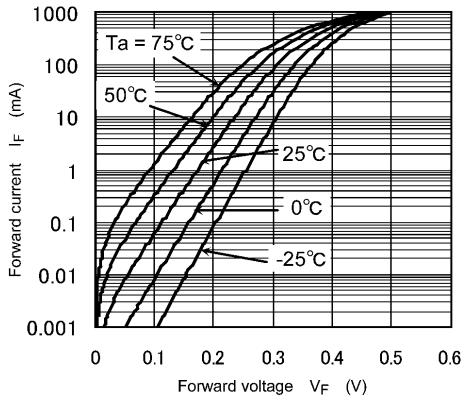
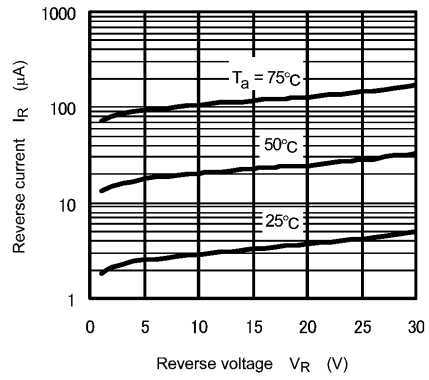


Fig. 8.1 Land Pattern Dimensions for Reference Only (Unit: mm)

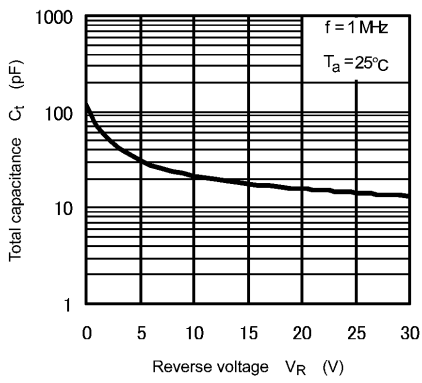
**9. Characteristics Curves (Note)**



**Fig. 9.1  $I_F - V_F$**



**Fig. 9.2  $I_R - V_R$**

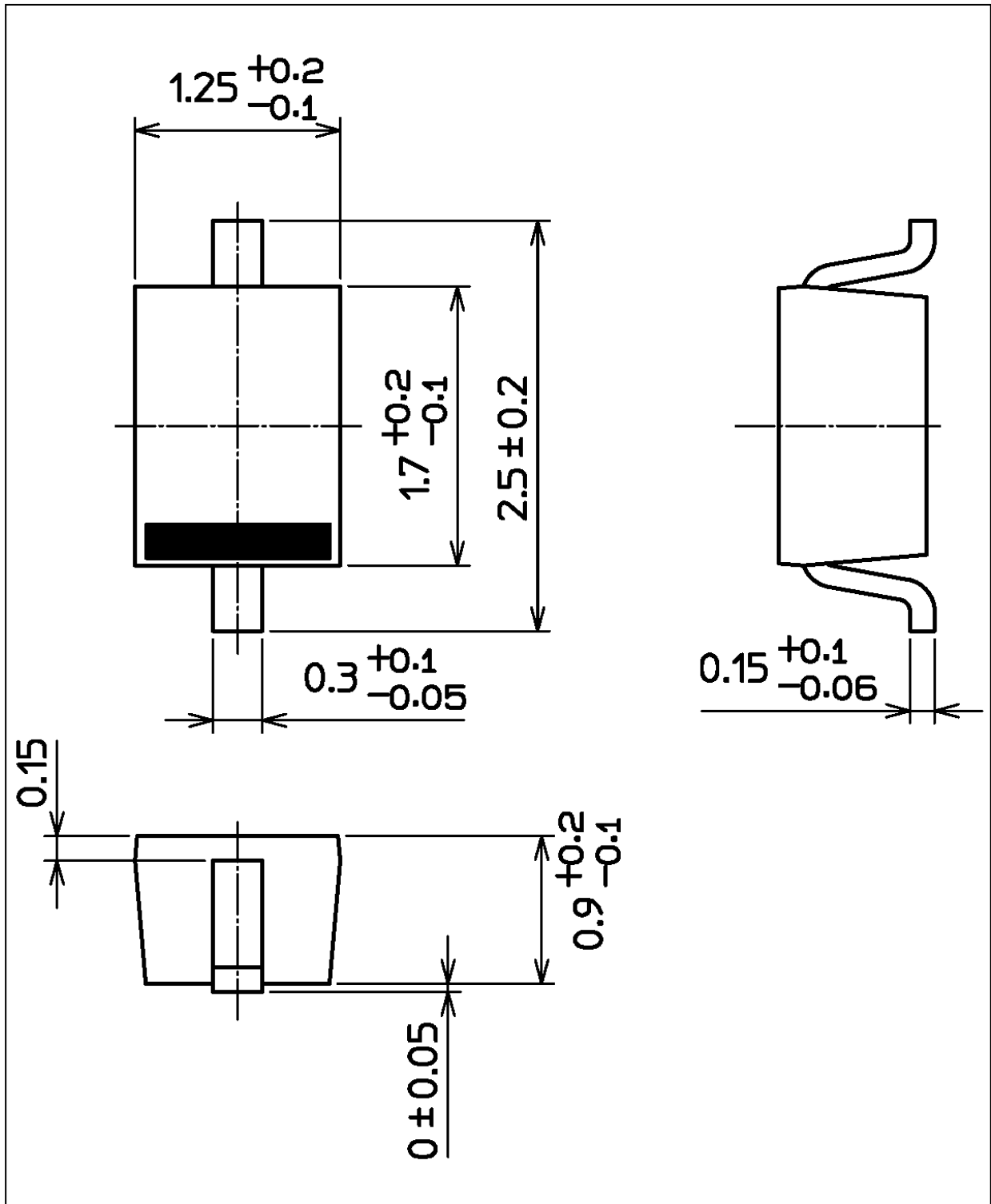


**Fig. 9.3  $C_t - V_R$**

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

Package Dimensions

Unit: mm



Weight: 4.5 mg (typ.)

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

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