

Schottky Barrier Diode Silicon Epitaxial

## CUS357

### 1. Applications

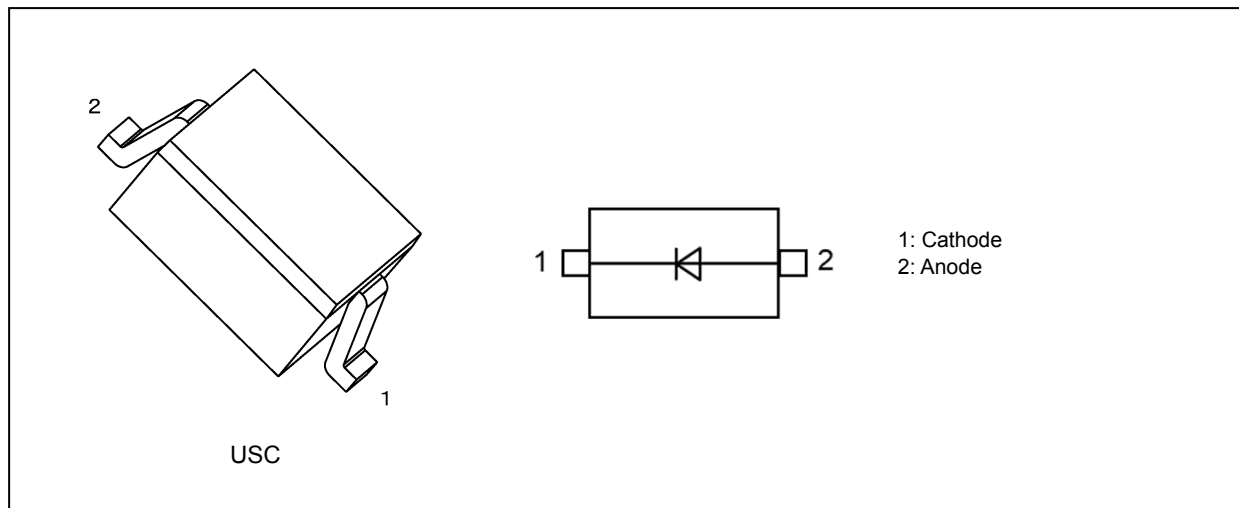
- High-Speed Switching

### 2. Features

- (1) AEC-Q101 qualified (Note 1)
- (2) Low forward voltage :  $V_{F(3)} = 0.54 \text{ V (typ.)}$
- (3) Low reverse current :  $I_{R(1)} = 1\mu\text{A (max)}$
- (4) General - purpose USC package , equivalent to SOD-323 and SC-76 packages

Note 1: For detail information, please contact our sales.

### 3. Packaging and Internal Circuit



Start of commercial production

2011-10

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

| Characteristics                           | Symbol    | Note     | Rating     | Unit               |
|-------------------------------------------|-----------|----------|------------|--------------------|
| Peak reverse voltage                      | $V_{RM}$  |          | 45         | V                  |
| Reverse voltage                           | $V_R$     |          | 40         |                    |
| Peak forward current                      | $I_{FM}$  |          | 300        | mA                 |
| Average rectified current                 | $I_O$     |          | 100        | mA                 |
| Power dissipation                         | $P_D$     | (Note 1) | 200        | 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: Pulse width 10 ms

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

| Characteristics   | Symbol     | Test Condition                       | Min | Typ. | Max  | Unit          |
|-------------------|------------|--------------------------------------|-----|------|------|---------------|
| Forward voltage   | $V_{F(1)}$ | $I_F = 1\text{ mA}$                  | —   | 0.21 | —    | V             |
| Forward voltage   | $V_{F(2)}$ | $I_F = 10\text{ mA}$                 | —   | 0.30 | —    | V             |
| Forward voltage   | $V_{F(3)}$ | $I_F = 100\text{ mA}$                | —   | 0.54 | 0.60 | V             |
| Reverse current   | $I_{R(1)}$ | $V_R = 10\text{ V}$                  | —   | —    | 1    | $\mu\text{A}$ |
| Reverse current   | $I_{R(2)}$ | $V_R = 40\text{ V}$                  | —   | —    | 5    | $\mu\text{A}$ |
| Total capacitance | $C_t$      | $V_R = 0\text{ V}, f = 1\text{ MHz}$ | —   | 11   | —    | pF            |

## 6. Marking

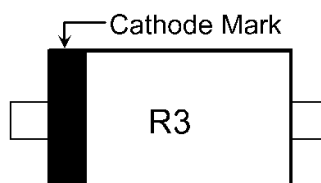


Fig. 6.1 Marking

| Marking Code | Part Number |
|--------------|-------------|
| R3           | CUS357      |

## 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)

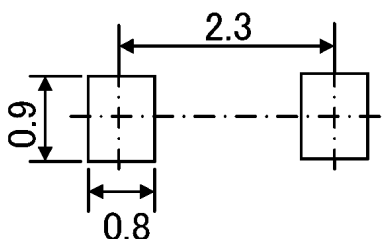


Fig. 8.1 Land Pattern Dimensions for Reference Only (Unit: mm)

9. Characteristics Curves (Note)

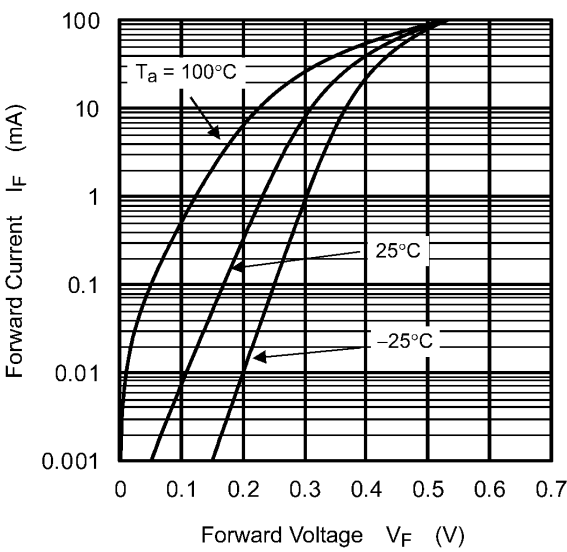


Fig. 9.1  $I_F - V_F$

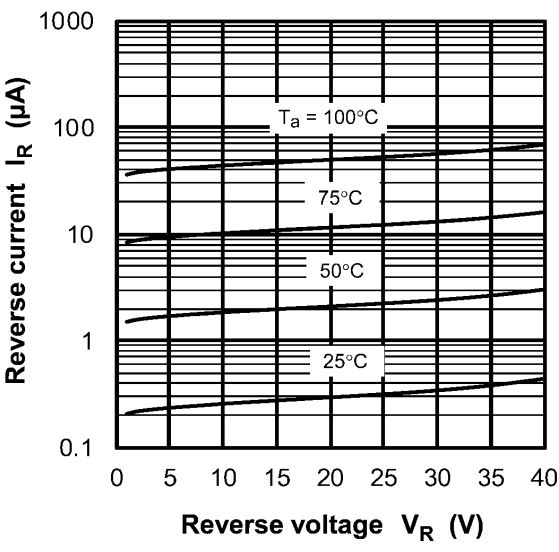


Fig. 9.2  $I_R - V_R$

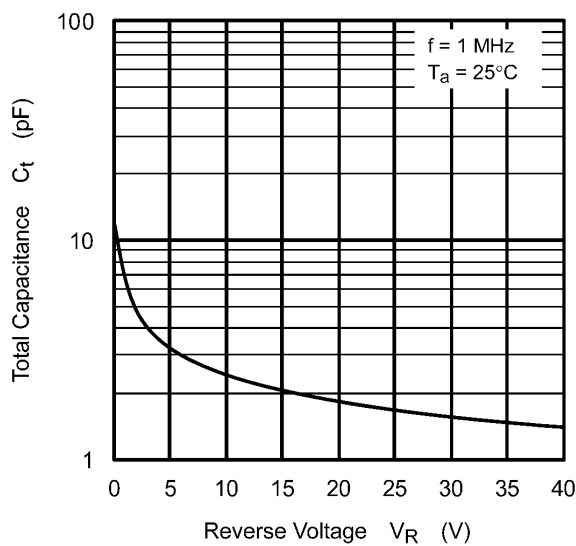
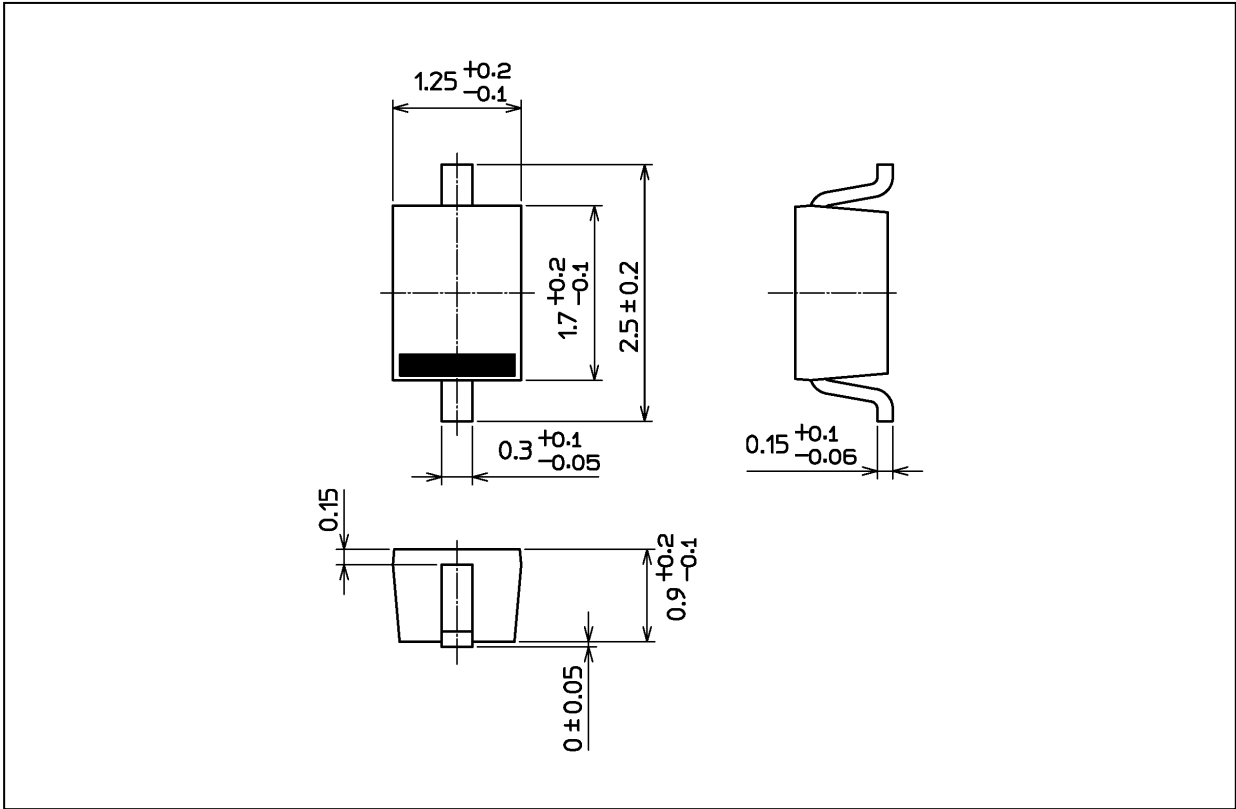


Fig. 9.3  $C_t - V_R$

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) |
|-----------------|
| TOSHIBA: 1-1E1S |
| Nickname: USC   |

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