

Schottky Barrier Diode Silicon Epitaxial

# CES520

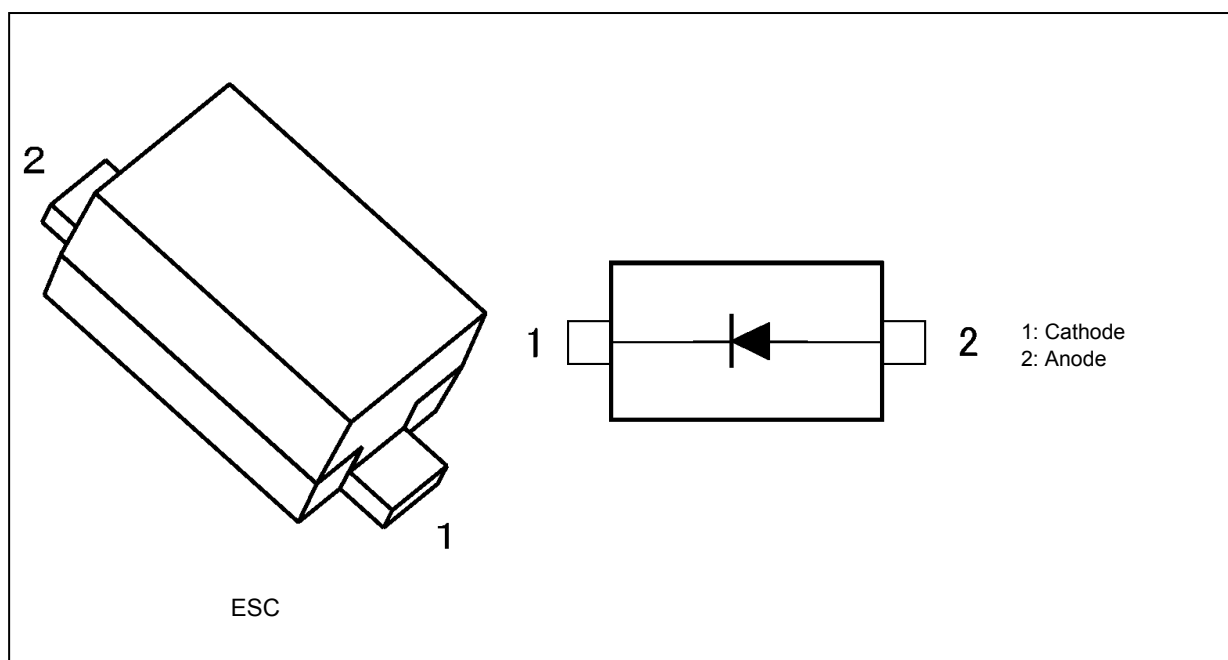
## 1. Applications

- High-Speed Switching

## 2. Features

- (1) Low reverse current:  $I_{R(2)} = 5 \mu\text{A}$  (max)
- (2) Small and compact ESC package, equivalent to SOD-523 and SC-79 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                |
| 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 10ms 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, Ta = 25°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   | $\mu\text{A}$ |
|                   | $I_{R(2)}$ | —    | $V_R = 30 \text{ V}$                   | —   | —    | 5   |               |
| Total capacitance | $C_t$      | —    | $V_R = 0 \text{ V}, f = 1 \text{ MHz}$ | —   | 17   | —   | pF            |

## 6. Marking

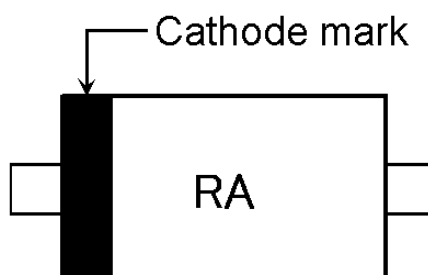


Fig. 6.1 Marking

| Marking Code | Part Number |
|--------------|-------------|
| RA           | CES520      |

## 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

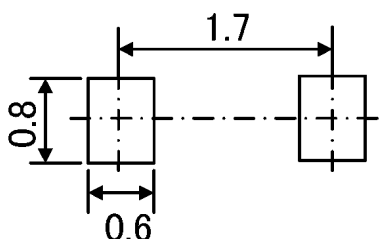
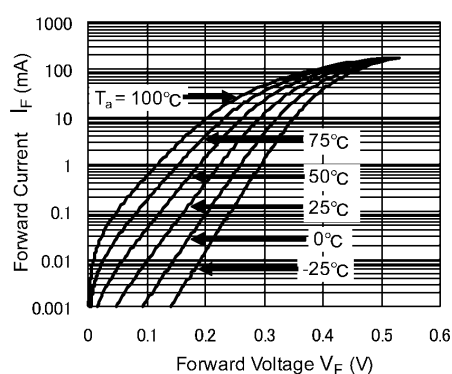
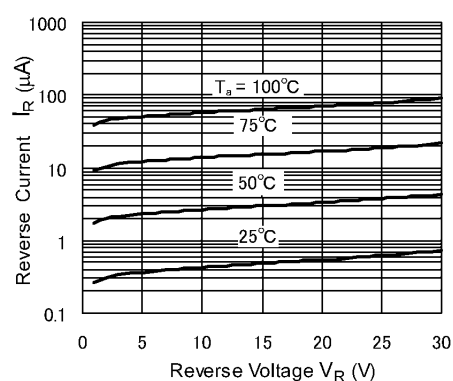


Fig. 8.1 Land pattern dimensions for reference only (Unit: mm)

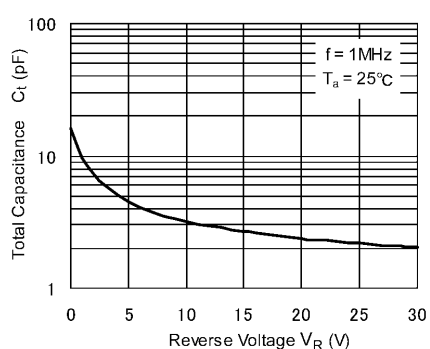
# 9. Characteristics Curves (Note)



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



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

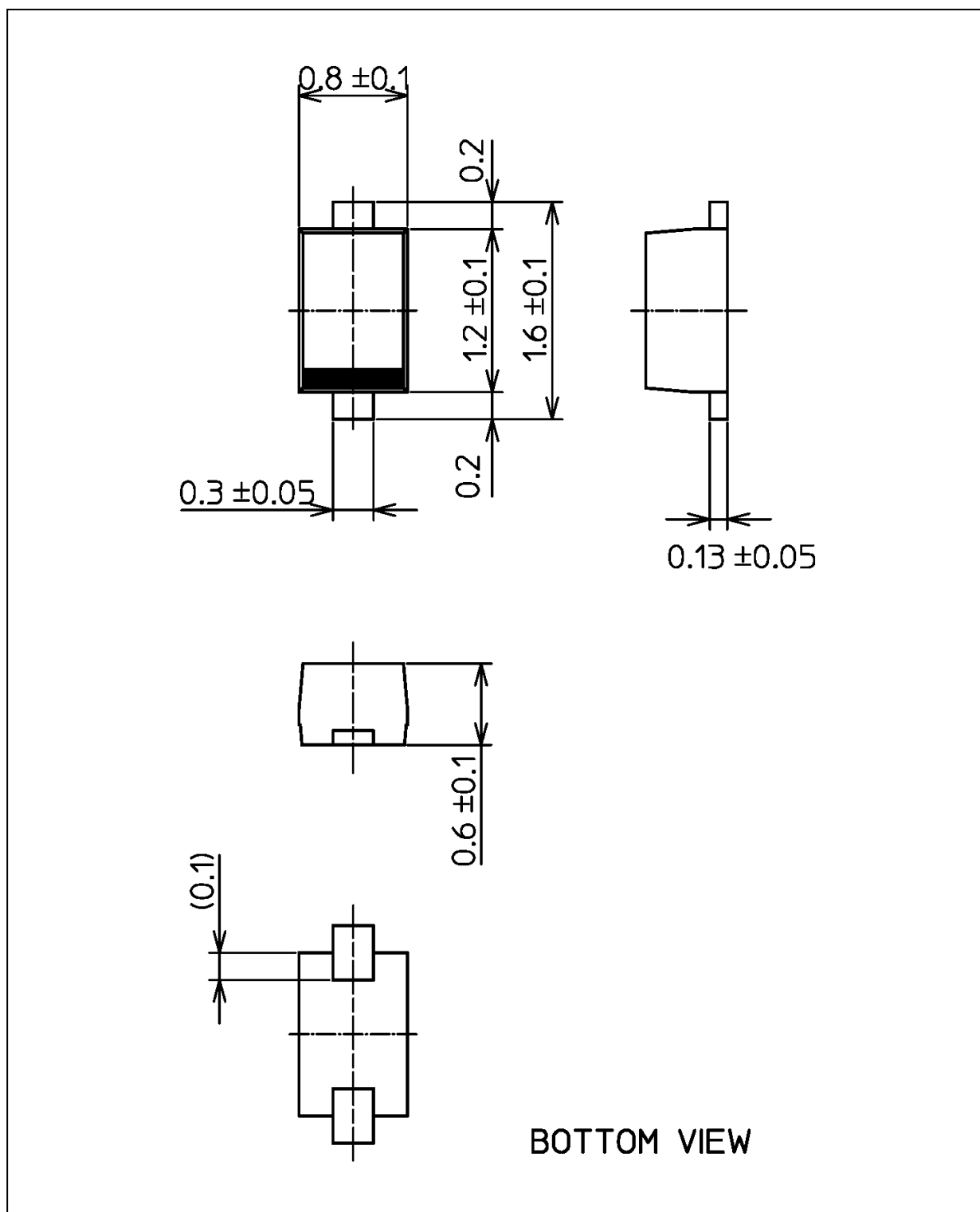


**Fig. 9.3  $C_t - V_R$**

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

## Package Dimensions

Unit: mm



Weight: 1.4 mg (typ.)

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

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