

1SS403E

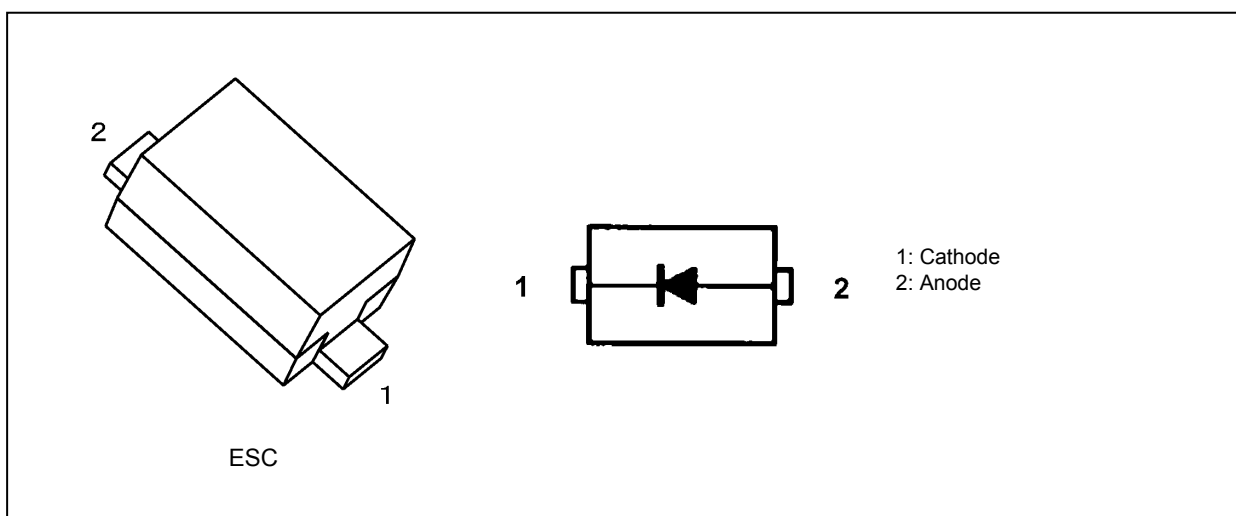
1. Applications

- Ultra-High-Speed Switching

2. Features

- (1) Small package
- (2) Low reverse current. : $I_{R(2)} = 1.0 \mu\text{A (max)}$
- (3) Small total capacitance: $C_t = 3.0 \text{ pF (max)}$

3. Packaging and Internal Circuit



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} | | 250 | V |
| Reverse voltage | V_R | | 200 | V |
| Peak forward current | I_{FM} | | 300 | mA |
| Average rectified current | I_O | | 100 | mA |
| Non-repetitive peak forward surge current | I_{FSM} | (Note 1) | 2 | A |
| Power dissipation | P_D | (Note 2) | 200 | mW |
| Junction temperature | T_j | | 150 | $^\circ\text{C}$ |
| Storage temperature | T_{stg} | | -55 to 150 | $^\circ\text{C}$ |

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: 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.

Start of commercial production

2017-11

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

| Characteristics | Symbol | Test Condition | Min | Typ. | Max | Unit |
|-----------------------|------------|---------------------------------------|-----|------|-----|---------------|
| Forward voltage | $V_{F(1)}$ | $I_F = 10\text{ mA}$ | — | 0.72 | 1.0 | V |
| | $V_{F(2)}$ | $I_F = 100\text{ mA}$ | — | 0.90 | 1.2 | |
| Reverse current | $I_{R(1)}$ | $V_R = 50\text{ V}$ | — | — | 0.1 | μA |
| | $I_{R(2)}$ | $V_R = 200\text{ V}$ | — | — | 1.0 | |
| Total capacitance | C_t | $V_R = 0\text{ V}, f = 1\text{ MHz}$ | — | — | 3.0 | pF |
| Reverse recovery time | t_{rr} | $I_F = 10\text{ mA}$ See Fig. 5.1. | — | — | 60 | ns |

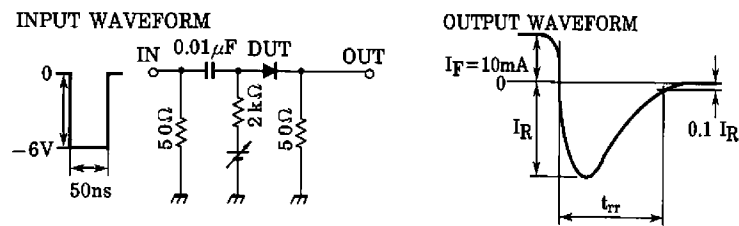
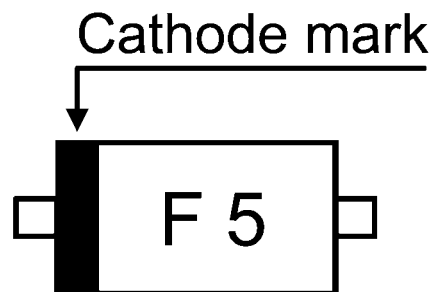


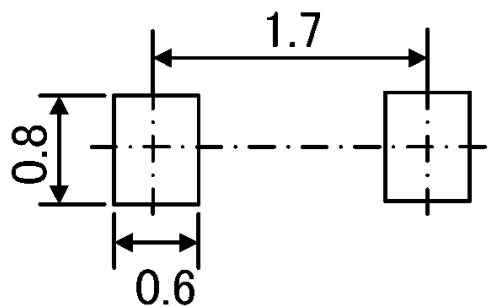
Fig. 5.1 Reverse recovery time (t_{rr}) Test circuit

Note: This device is sensitive to electrostatic discharge (ESD). Extreme ESD conditions should be using proper antistatic precautions for the worktable, operator, solder iron and so on.

6. Marking



7. Land Pattern Dimensions (for reference only)



(Unit: mm)

8. Characteristics Curves (Note)

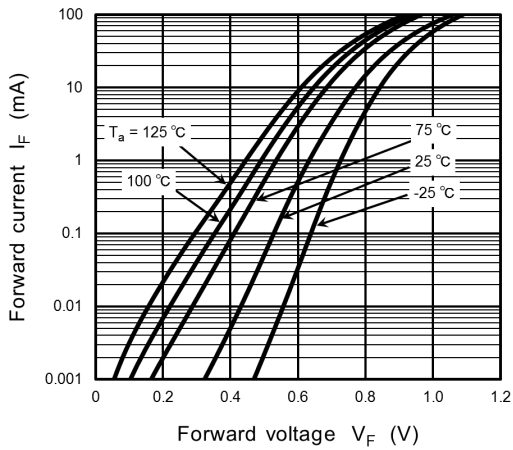


Fig. 8.1 $I_F - V_F$

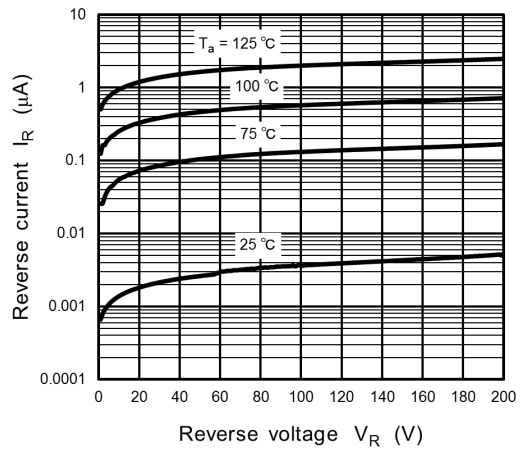


Fig. 8.2 $I_R - V_R$

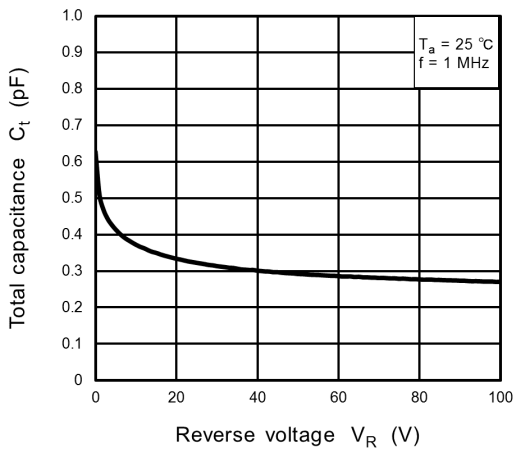


Fig. 8.3 $C_t - V_R$

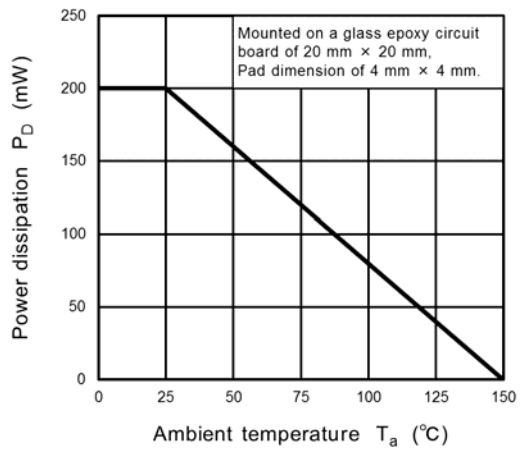
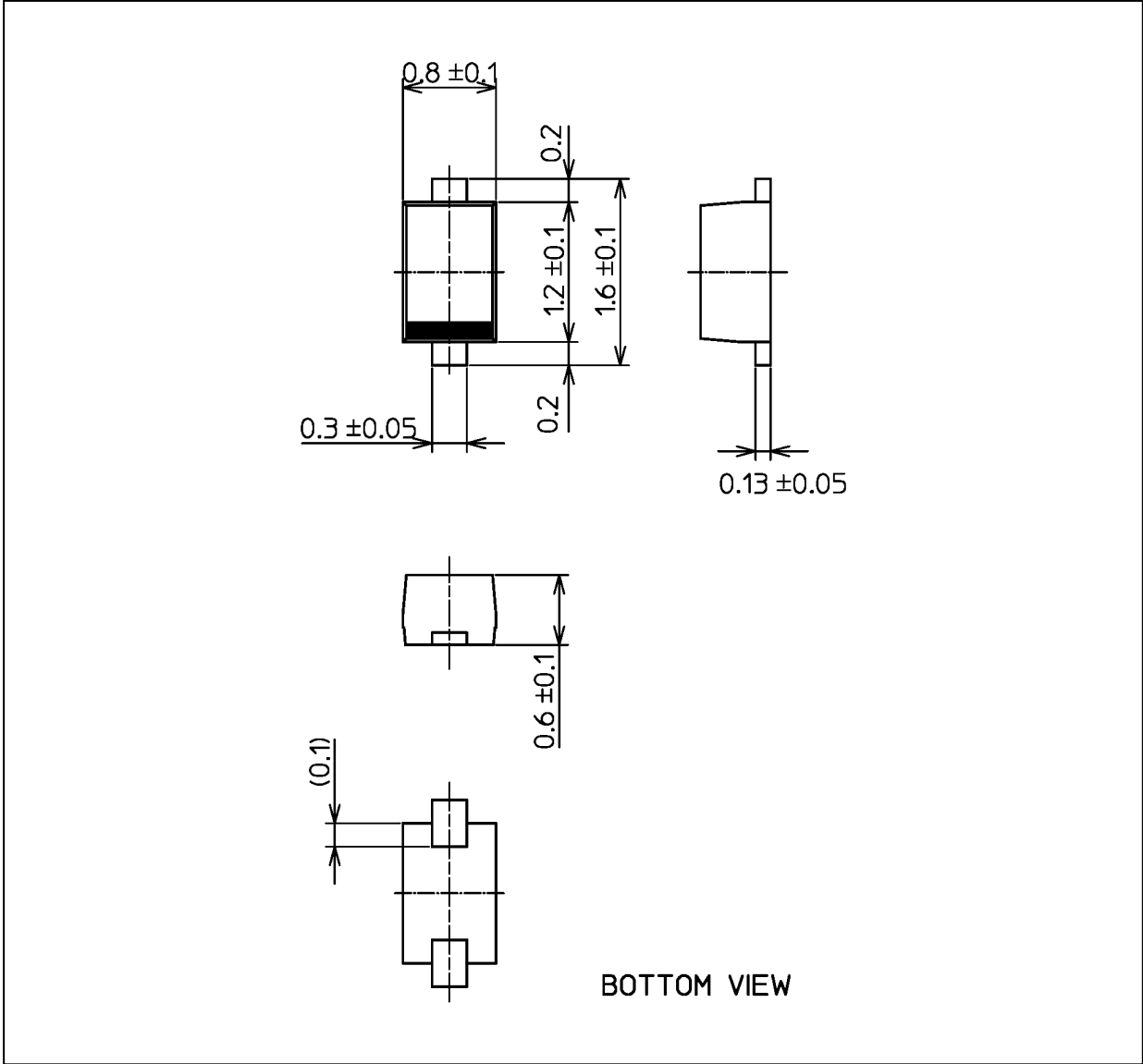


Fig. 8.4 $P_D - T_a$

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

Package Dimensions

Unit: mm



Weight: 1.4 mg (typ.)

| Package Name(s) |
|-----------------|
| TOSHIBA: 1-1G1S |
| Nickname: ESC |

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