

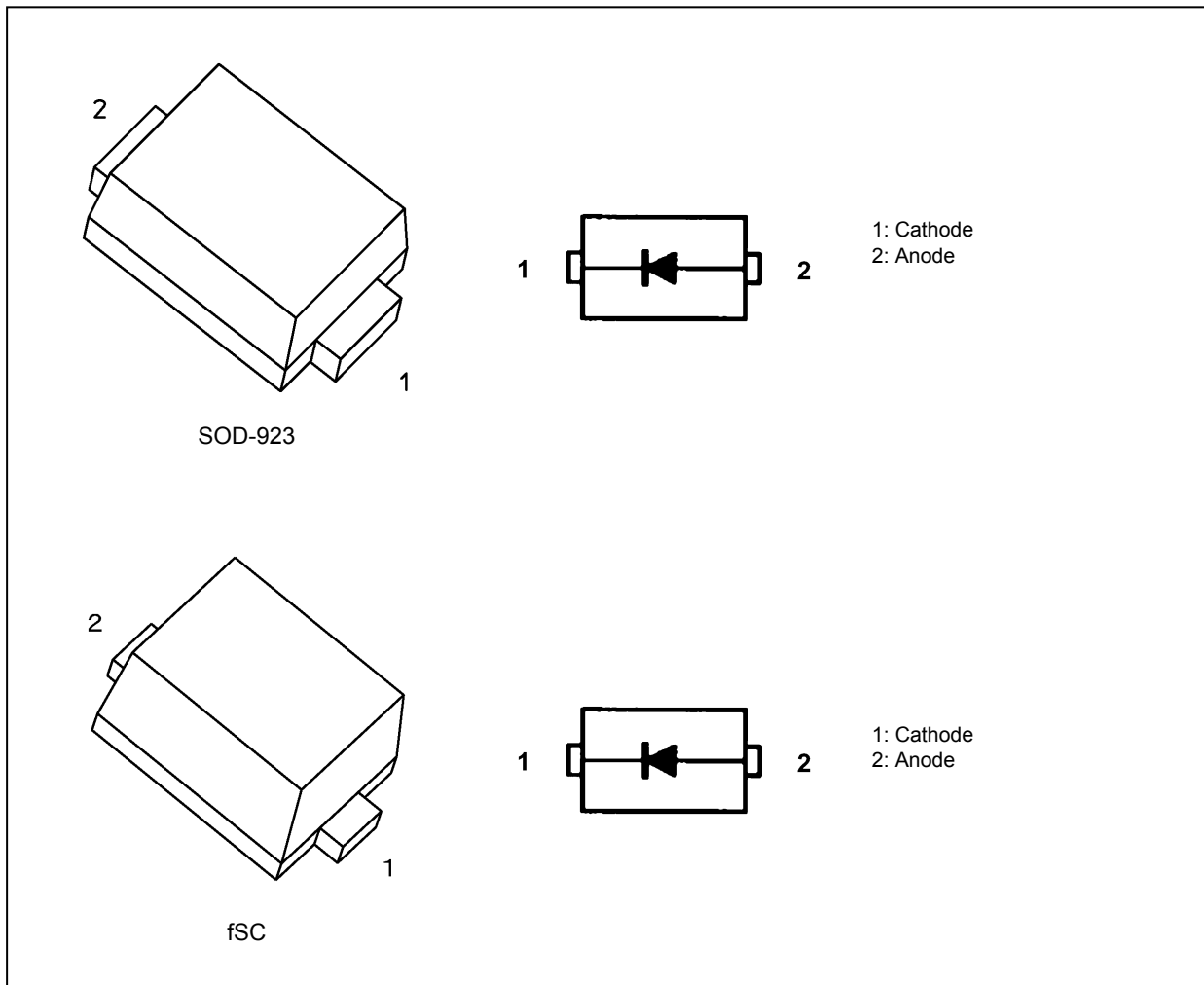
Schottky Barrier Diode Silicon Epitaxial

1SS416

1. Applications

- High-Speed Switching

2. Packaging and Internal Circuit



Start of commercial production

2003-06

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

| Characteristics | Symbol | Note | Rating | Unit |
|---|-----------|----------|------------|------------------|
| Peak reverse voltage | V_{RM} | | 35 | V |
| Reverse voltage | V_R | | 30 | |
| Peak forward current | I_{FM} | | 200 | mA |
| Average rectified current | I_O | | 100 | mA |
| Power dissipation | P_D | (Note 1) | 100 | 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 | $^\circ\text{C}$ |
| Operating temperature | T_{opr} | | -40 to 100 | $^\circ\text{C}$ |

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: Measured with a 10 ms pulse.

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

| Characteristics | Symbol | Test Condition | Min | Typ. | Max | Unit |
|-------------------|------------|--------------------------------------|-----|------|------|---------------|
| Forward voltage | $V_{F(1)}$ | $I_F = 1\text{ mA}$ | — | 0.18 | — | V |
| Forward voltage | $V_{F(2)}$ | $I_F = 5\text{ mA}$ | — | 0.23 | — | V |
| Forward voltage | $V_{F(3)}$ | $I_F = 100\text{ mA}$ | — | 0.38 | 0.50 | V |
| Reverse current | $I_{R(1)}$ | $V_R = 10\text{ V}$ | — | — | 20 | μA |
| Reverse current | $I_{R(2)}$ | $V_R = 30\text{ V}$ | — | — | 50 | μA |
| Total capacitance | C_t | $V_R = 0\text{ V}, f = 1\text{ MHz}$ | — | 15 | — | pF |

5. Marking

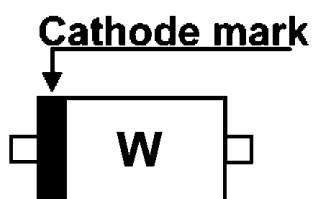


Fig. 5.1 Marking

6. 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.

7. Land Pattern Dimensions (for reference only)

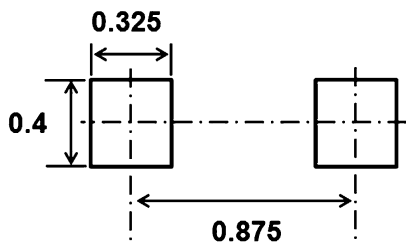


Fig. 7.1 SOD-923 (Unit: mm)

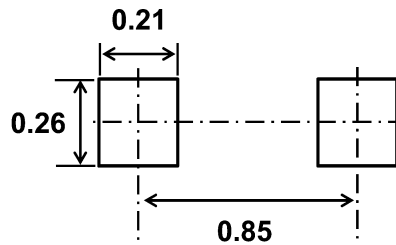


Fig. 7.2 fSC (Unit: mm)

8. Characteristics Curves (Note)

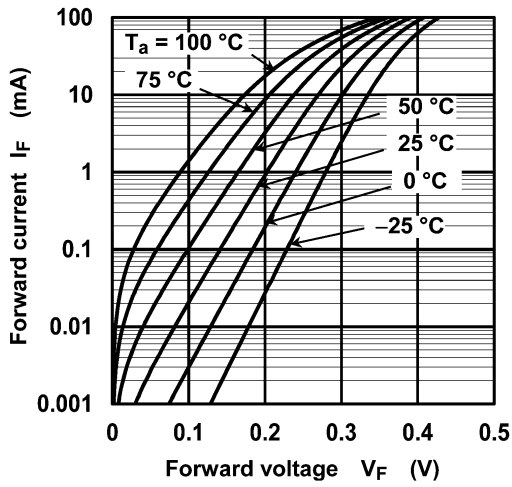


Fig. 8.1 $I_F - V_F$

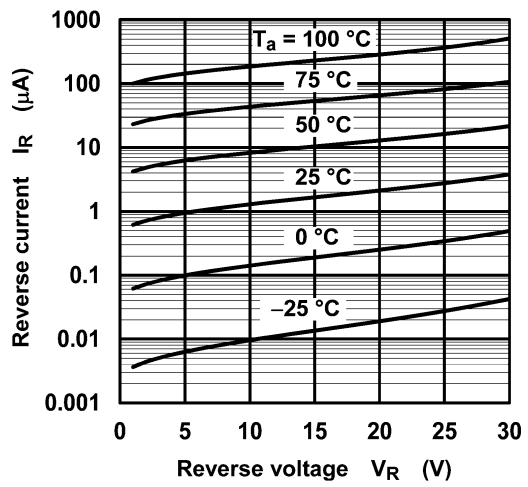


Fig. 8.2 $I_R - V_R$

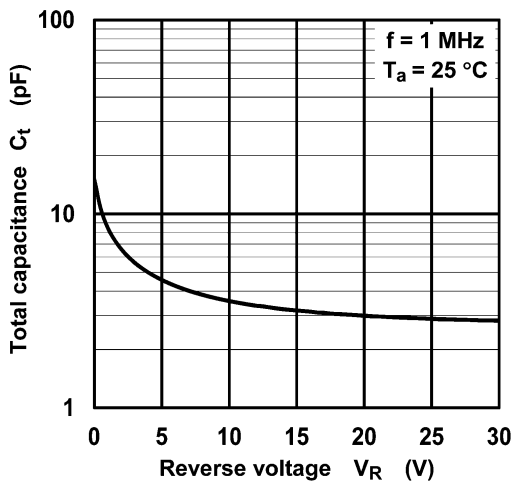


Fig. 8.3 $C_t - V_R$

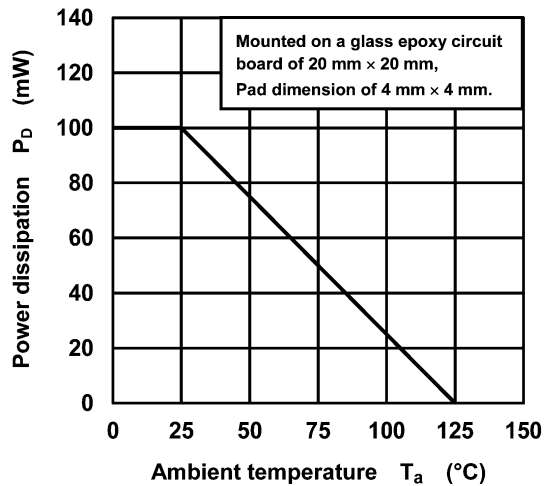
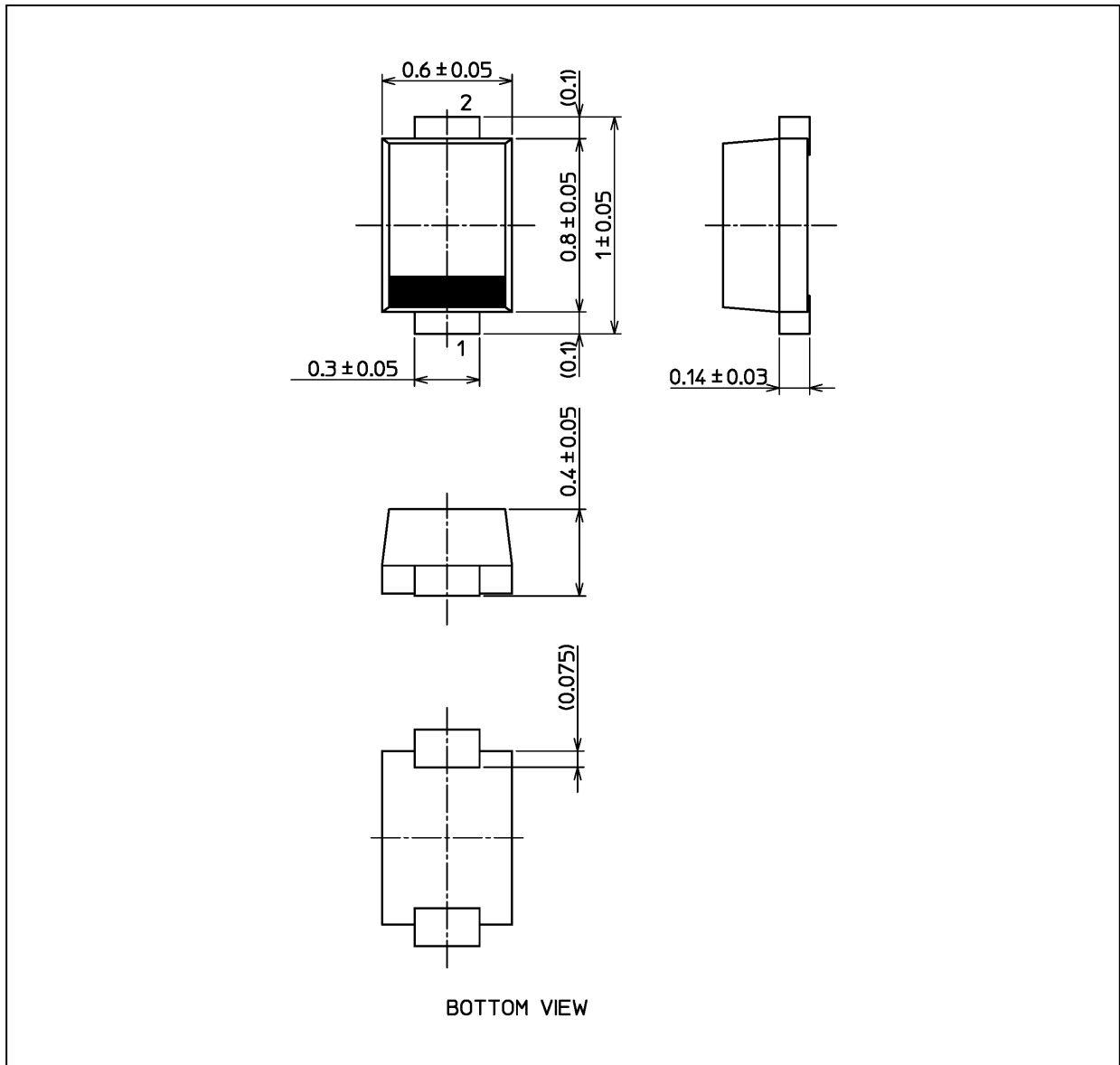


Fig. 8.4 $P_D - T_a$

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

Package Dimensions

Unit: mm



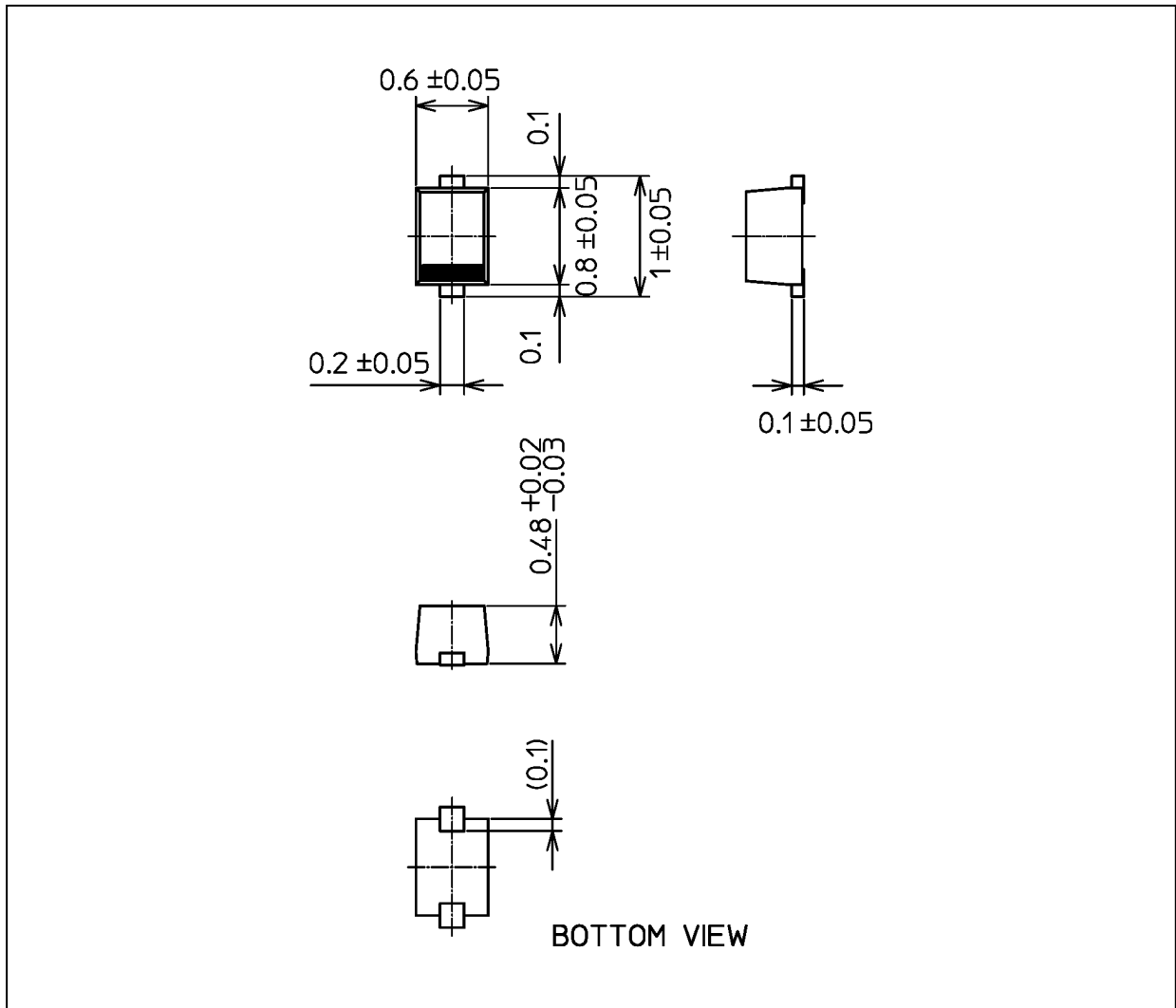
The shapes and dimensions of the package vary, depending on the manufacturing plant. For details, contact the Toshiba sales representative.

Weight: 0.55 mg (typ.)

| |
|-------------------|
| Package Name(s) |
| TOSHIBA: 1-1AH1A |
| Nickname: SOD-923 |

Package Dimensions

Unit: mm



The shapes and dimensions of the package vary, depending on the manufacturing plant. For details, contact the Toshiba sales representative.

Weight: 0.6 mg (typ.)

| Package Name(s) |
|-----------------|
| TOSHIBA: 1-1L1S |
| Nickname: fSC |

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Телефон: 8 (812) 309-75-97 (многоканальный)

Факс: 8 (812) 320-03-32

Электронная почта: ocean@oceanchips.ru

Web: <http://oceanchips.ru/>

Адрес: 198099, г. Санкт-Петербург, ул. Калинина, д. 2, корп. 4, лит. А