

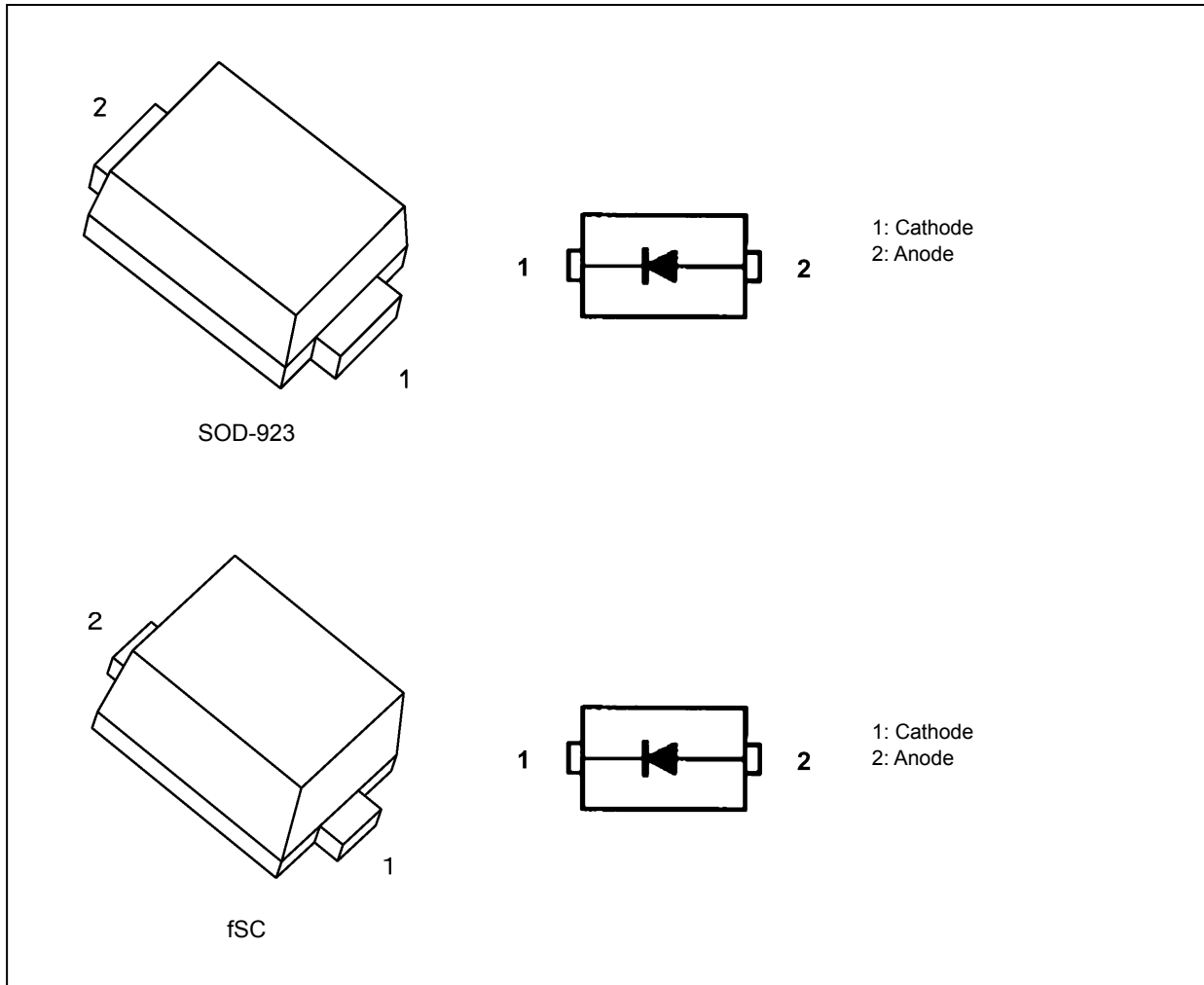
Schottky Barrier Diode Silicon Epitaxial

1SS413

1. Applications

- High-Speed Switching

2. Packaging and Internal Circuit



Start of commercial production
2002-11

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}		25	V
Reverse voltage	V_R		20	
Peak forward current	I_{FM}		100	mA
Average rectified current	I_O		50	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	$^\circ\text{C}$

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

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

Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Forward voltage	$V_{F(1)}$	$I_F = 1\text{ mA}$	—	0.33	—	V
Forward voltage	$V_{F(2)}$	$I_F = 5\text{ mA}$	—	0.38	—	V
Forward voltage	$V_{F(3)}$	$I_F = 50\text{ mA}$	—	0.50	0.55	V
Reverse current	I_R	$V_R = 20\text{ V}$	—	—	0.5	μA
Total capacitance	C_t	$V_R = 0\text{ V}, f = 1\text{ MHz}$	—	3.9	—	pF

5. Marking

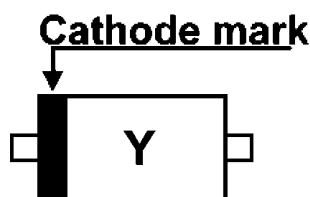


Fig. 5.1 Marking

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)

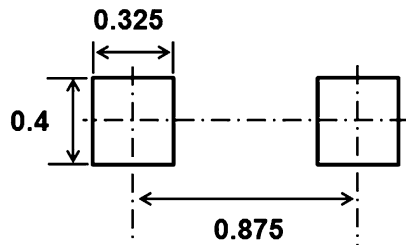


Fig. 7.1 SOD-923 (Unit: mm)

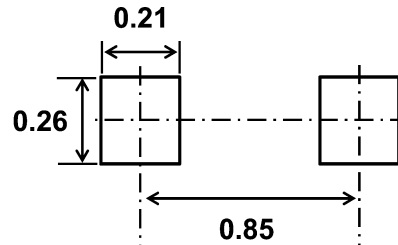


Fig. 7.2 fSC (Unit: mm)

8. Characteristics Curves (Note)

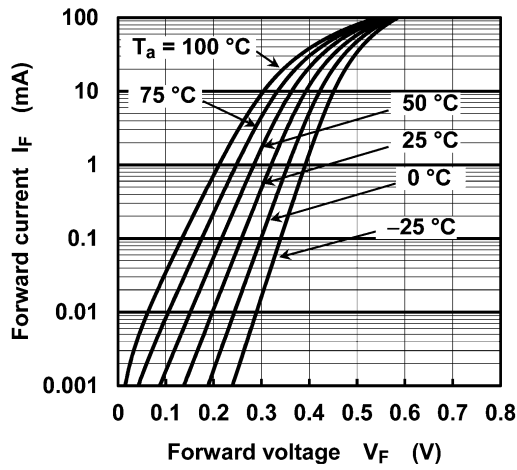


Fig. 8.1 $I_F - V_F$

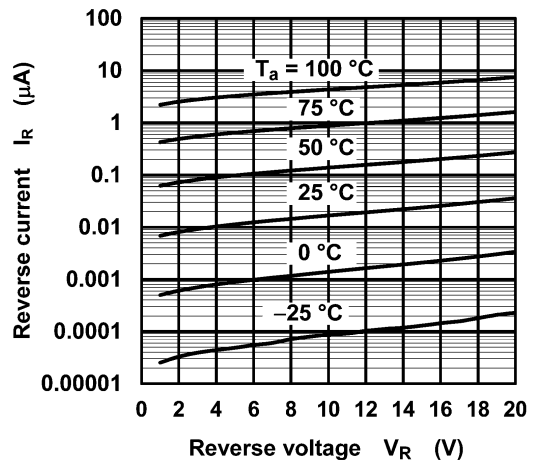


Fig. 8.2 $I_R - V_R$

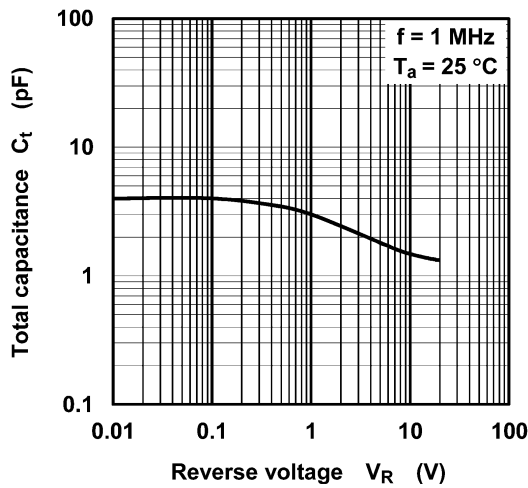


Fig. 8.3 $C_t - V_R$

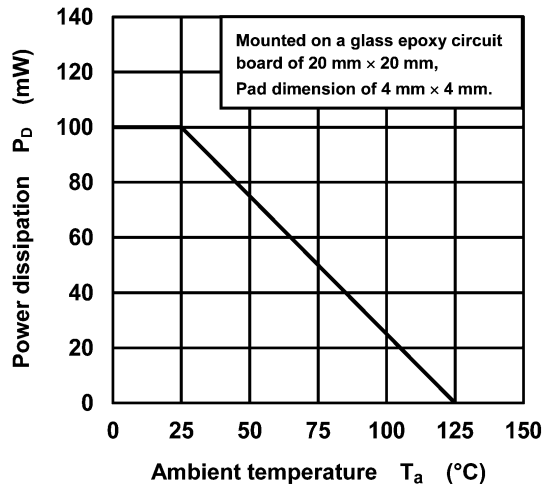
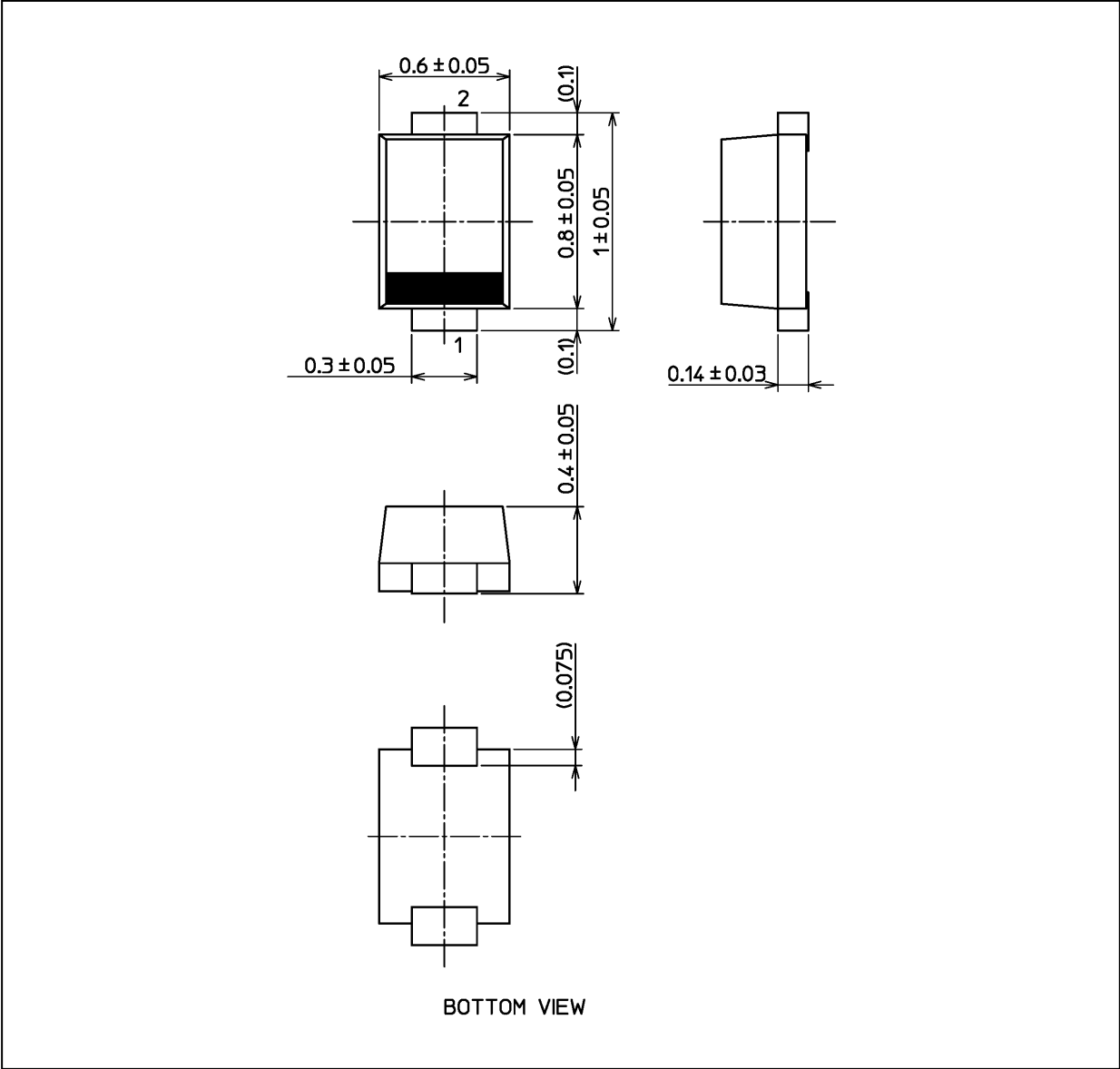


Fig. 8.4 $P_D - T_a$

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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