Schottky Barrier Diode Silicon Epitaxial

1SS413CT

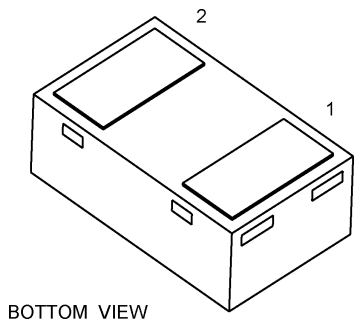
1. Applications

- High-Speed Switching

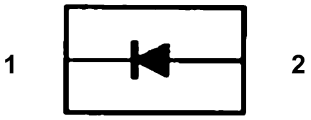
2. Features

(1) Low forward voltage : $V_{F(3)}$ = 0.50 V (typ.)
(2) Low reverse current : I_R = 0.5 μA (max)
(3) Small total capacitance : C_t = 3.9 pF (typ.)

3. Packaging and Internal Circuit



CST2



1: Cathode
2: Anode

4. Absolute Maximum Ratings (Note) (Unless otherwise specified, T_a = 25 °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	°C
Storage temperature	T_{stg}		-55 to 125	°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.

Start of commercial production
1999-02

5. Electrical Characteristics (Unless otherwise specified, T_a = 25 °C)

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

6. Marking

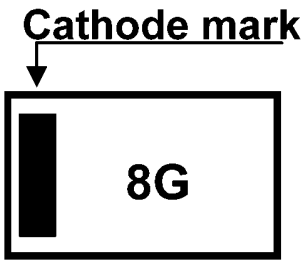
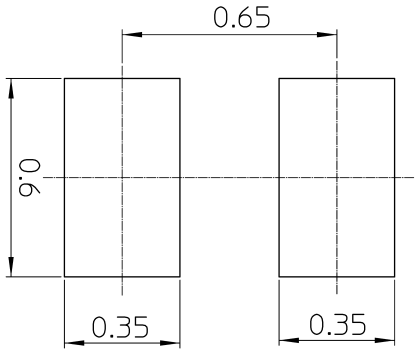


Fig. 6.1 Marking

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)



(Unit: mm)

9. Characteristics Curves (Note)

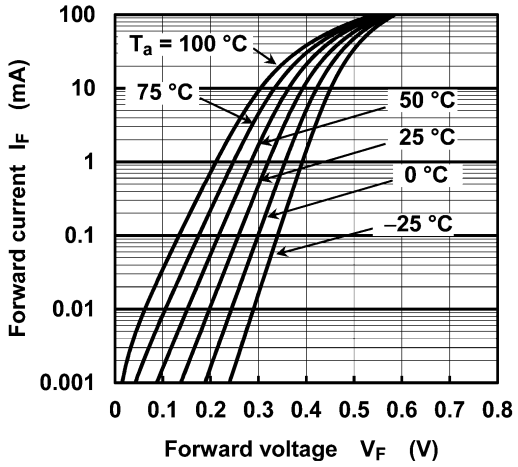


Fig. 9.1 I_F - V_F

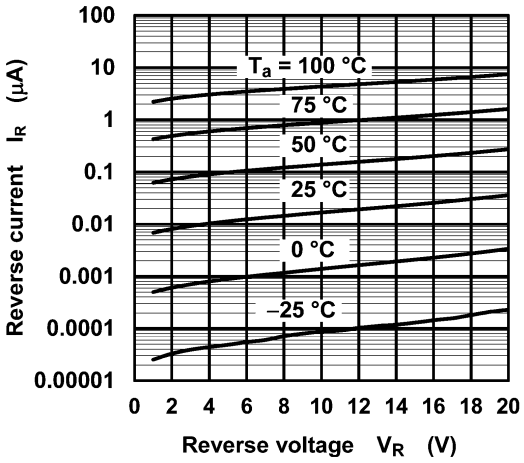


Fig. 9.2 I_R - V_R

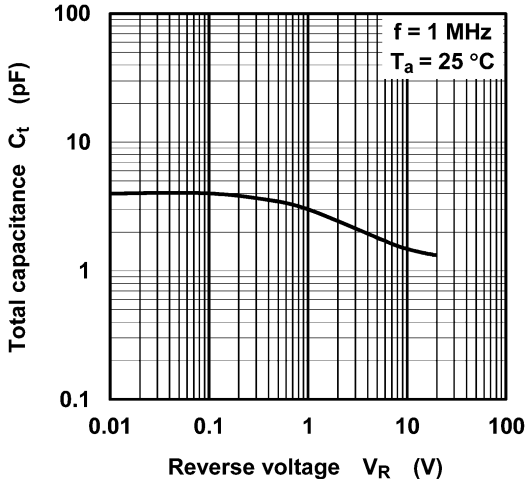


Fig. 9.3 C_t - V_R

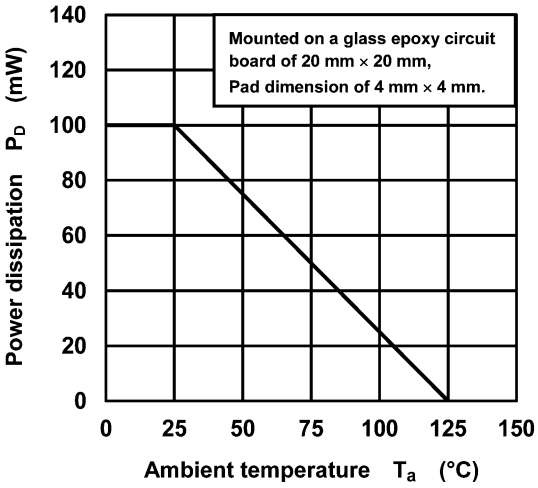
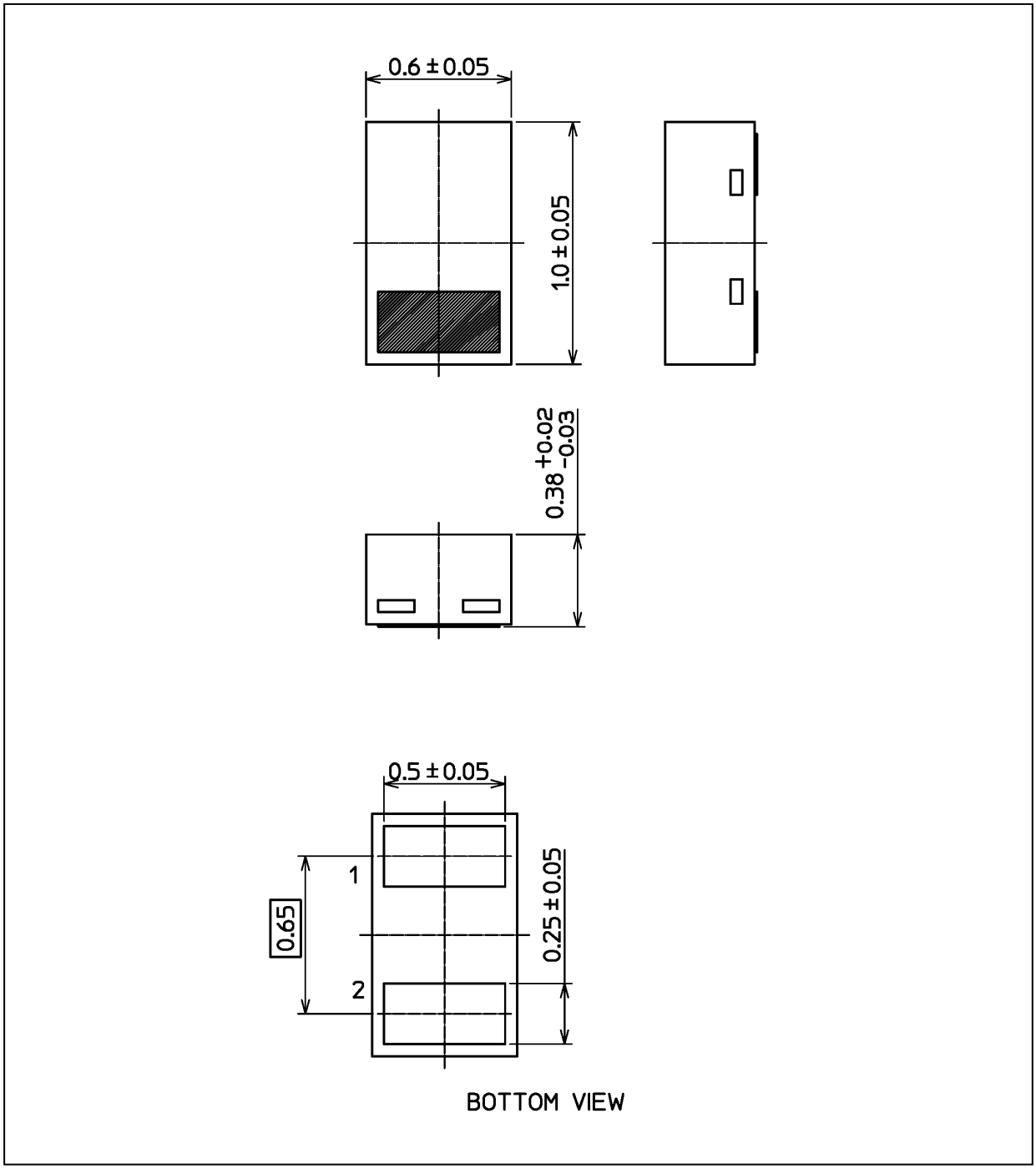


Fig. 9.4 P_D - T_a

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

Package Dimensions

Unit: mm



Weight: 0.7 mg (typ.)

Package Name(s)
TOSHIBA: 1-1P1S
Nickname: CST2

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