

Schottky Barrier Diode Silicon Epitaxial

# CUS521

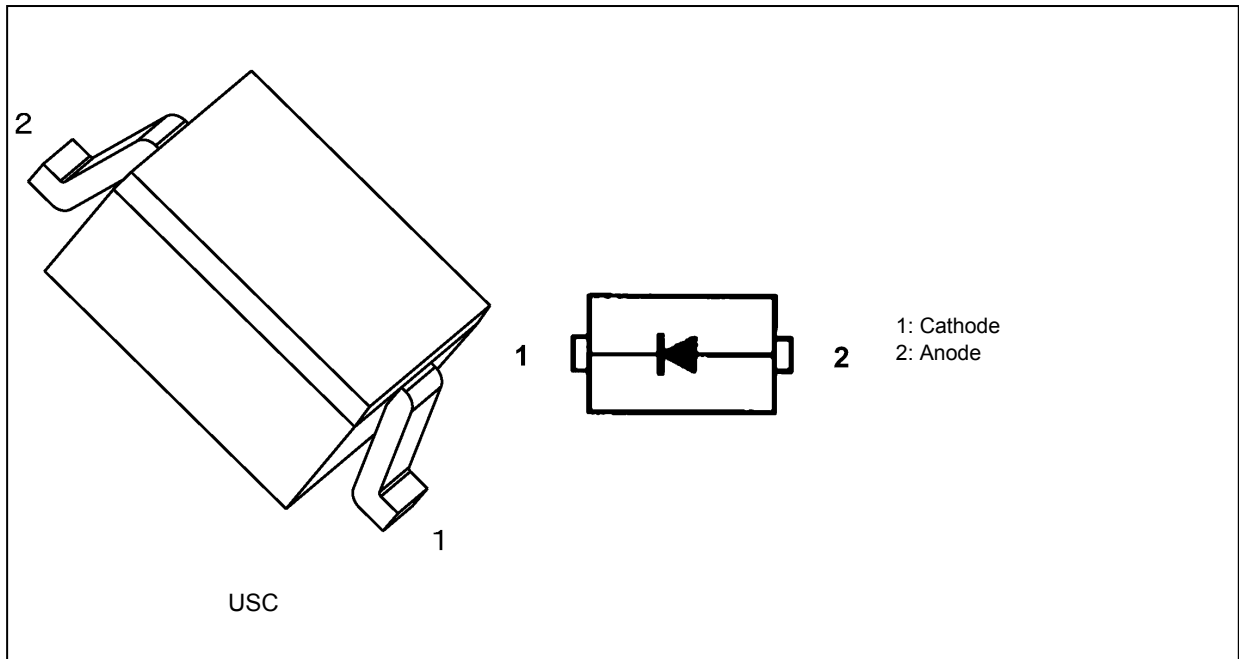
## 1. Applications

- High-Speed Switching

## 2. Features

- (1) Low forward voltage:  $V_{F(3)} = 0.5 \text{ V (max)}$
- (2) General-purpose USC package, equivalent to SOD-323 and SC-76 packages.

## 3. Packaging and Internal Circuit



Start of commercial production

2010-12

**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	°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 10 ms 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,  $T_a = 25^\circ\text{C}$ )**

Characteristics	Symbol	Note	Test Condition	Min	Typ.	Max	Unit
Forward voltage	$V_{F(1)}$	—	$I_F = 1 \text{ mA}$	—	0.20	—	V
	$V_{F(2)}$	—	$I_F = 5 \text{ mA}$	—	0.24	—	
	$V_{F(3)}$	—	$I_F = 200 \text{ mA}$	—	0.45	0.5	
Reverse current	$I_{R(1)}$	—	$V_R = 10 \text{ V}$	—	—	20	μA
	$I_{R(2)}$	—	$V_R = 30 \text{ V}$	—	—	30	
Total capacitance	$C_t$	—	$V_R = 0 \text{ V}, f = 1 \text{ MHz}$	—	26	—	pF

**6. Marking**

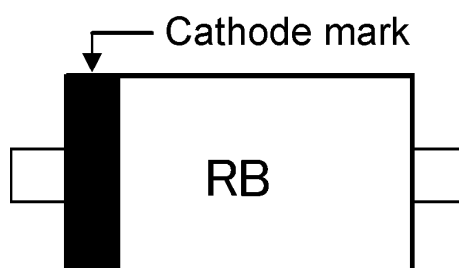
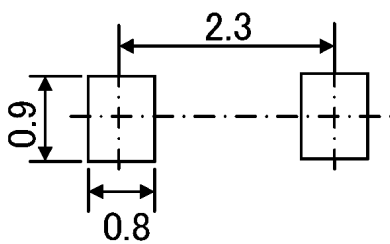


Fig. 6.1 Marking

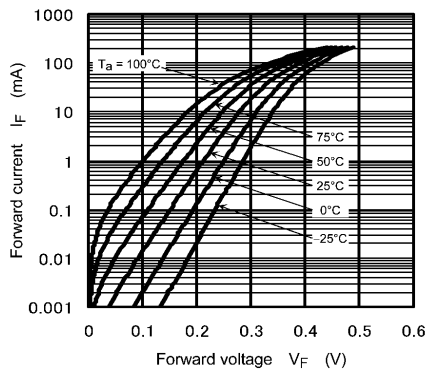
Marking Code	Part Number
RB	CUS521

**7. Usage Considerations**

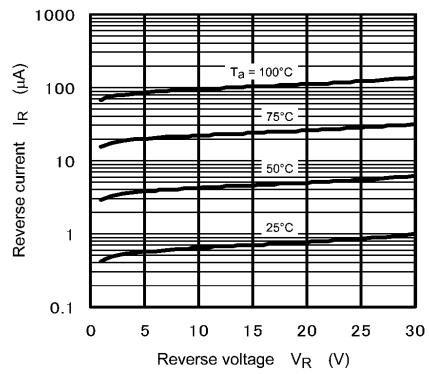
- Schottky barrier diodes (SBDs) have reverse leakage greater than other types of diodes. This makes SBDs more susceptible to thermal runaway under high-temperature and high-voltage conditions. Thus, both forward and reverse power losses of SBDs should be considered for thermal and safety design.

**8. Land Pattern Dimensions for Reference Only****Fig. 8.1 Land Pattern Dimensions for Reference Only (Unit: mm)**

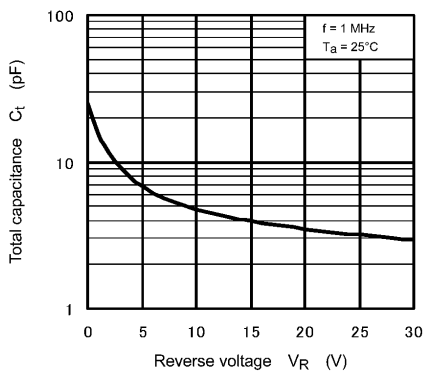
**9. Characteristics Curves (Note)**



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



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

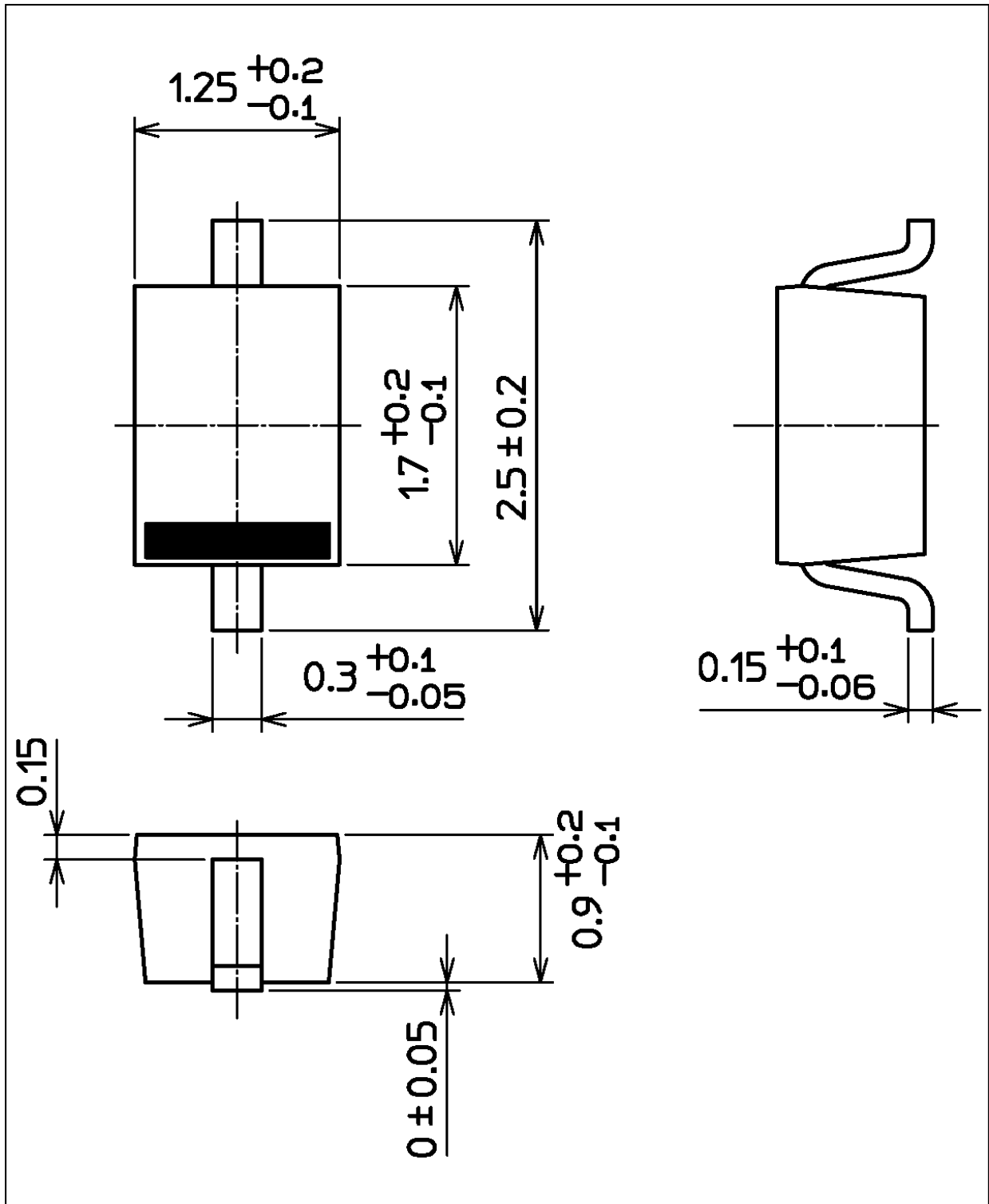


**Fig. 9.3  $C_t - V_R$**

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

Package Dimensions

Unit: mm



Weight: 4.5 mg (typ.)

Package Name(s)
Nickname: USC

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