

Schottky Barrier Diode Silicon Epitaxial

# CUS05S40

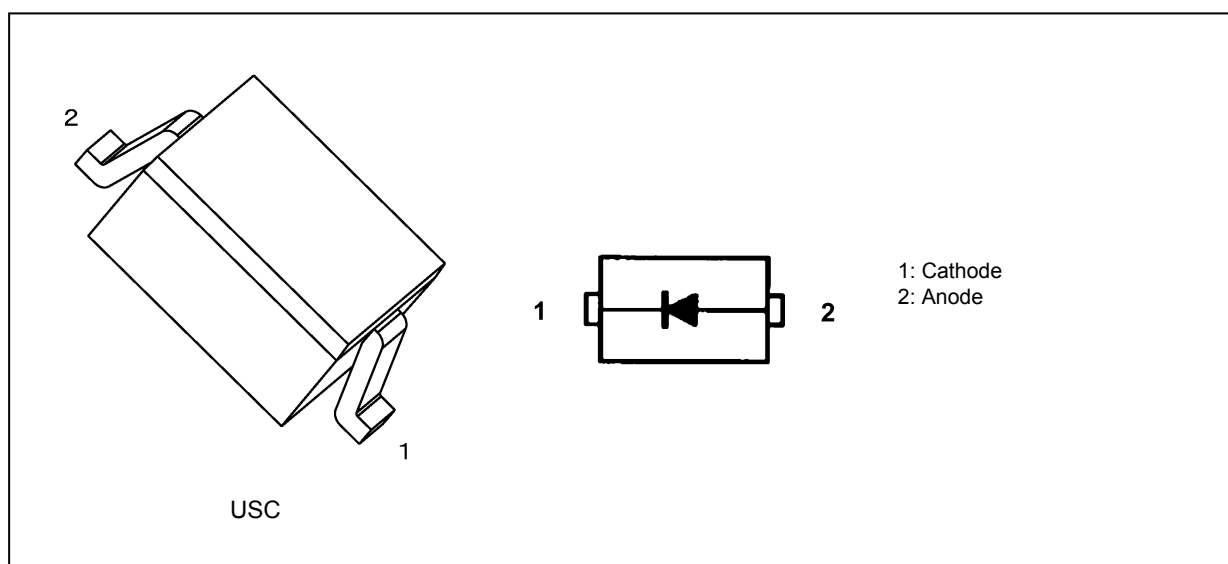
## 1. Applications

- High-Speed Switching

## 2. Features

- (1) Small package
- (2) Low forward voltage:  $V_F(2) = 0.56 \text{ V (typ.) (@ } I_F = 500\text{mA)}$

## 3. Packaging and Internal Circuit



Start of commercial production

2013-11

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

Characteristics	Symbol	Note	Rating	Unit
Peak reverse voltage	$V_{RM}$		40	V
Average rectified current	$I_O$	(Note 1)	500	mA
Non-repetitive peak forward surge current	$I_{FSM}$	(Note 2)	5	A
Junction temperature	$T_j$		125	$^\circ\text{C}$
Storage temperature	$T_{stg}$		-55 to 125	

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 an FR4 board.

(25.4 mm × 25.4 mm × 1.6 mm, Cu Pad: 645 mm<sup>2</sup>)

Note 2: Measured with a 10 ms pulse.

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

Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Forward voltage	$V_F(1)$	$I_F = 100\text{ mA}$ (Pulse test)	—	0.31	0.35	V
	$V_F(2)$	$I_F = 500\text{ mA}$ (Pulse test)	—	0.56	0.60	
Reverse current	$I_R(1)$	$V_R = 10\text{ V}$ (Pulse test)	—	—	30	$\mu\text{A}$
	$I_R(2)$	$V_R = 40\text{ V}$ (Pulse test)	—	—	50	
Total capacitance	$C_t$	$V_R = 0\text{ V}$ , $f = 1\text{ MHz}$	—	42	—	pF

**6. Marking**

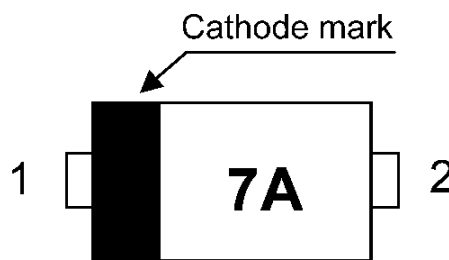


Fig. 6.1 Marking

Marking Code	Part Number
7A	CUS05S40

## 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)

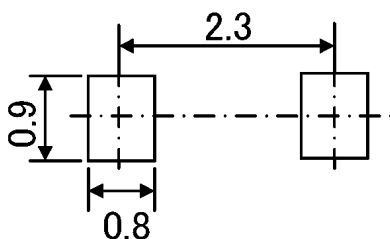
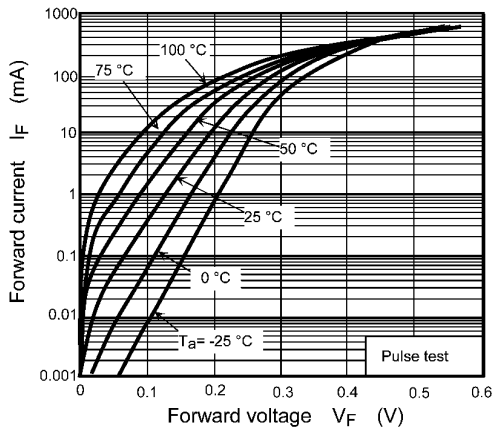
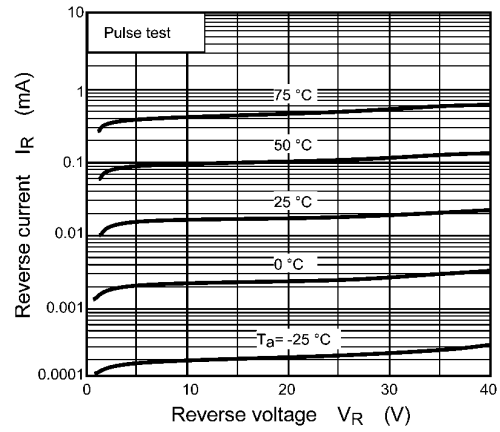


Fig. 8.1 Land Pattern Dimensions for Reference Only (Unit: mm)

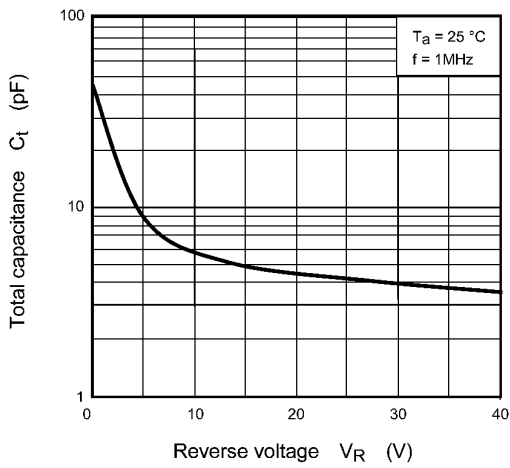
**9. Characteristics Curves (Note)**



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



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

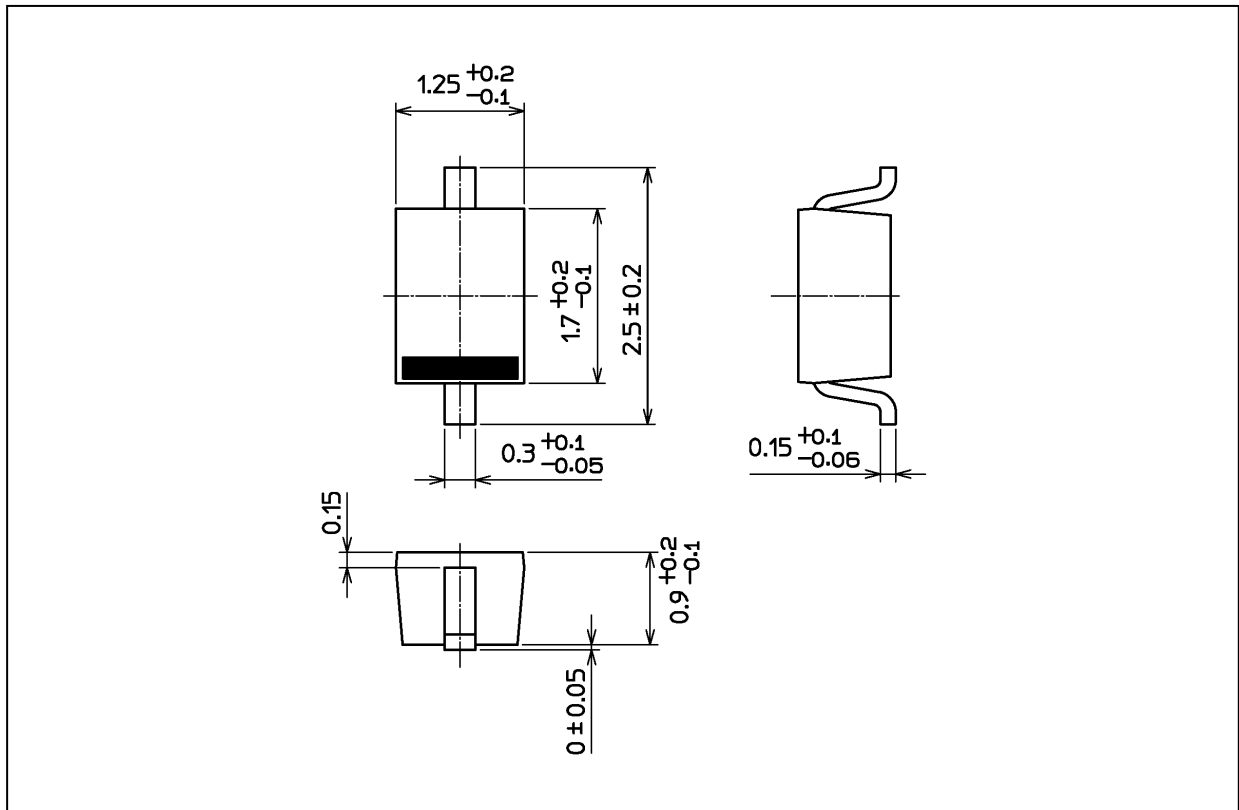


**Fig. 9.3  $C_t - V_R$**

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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