

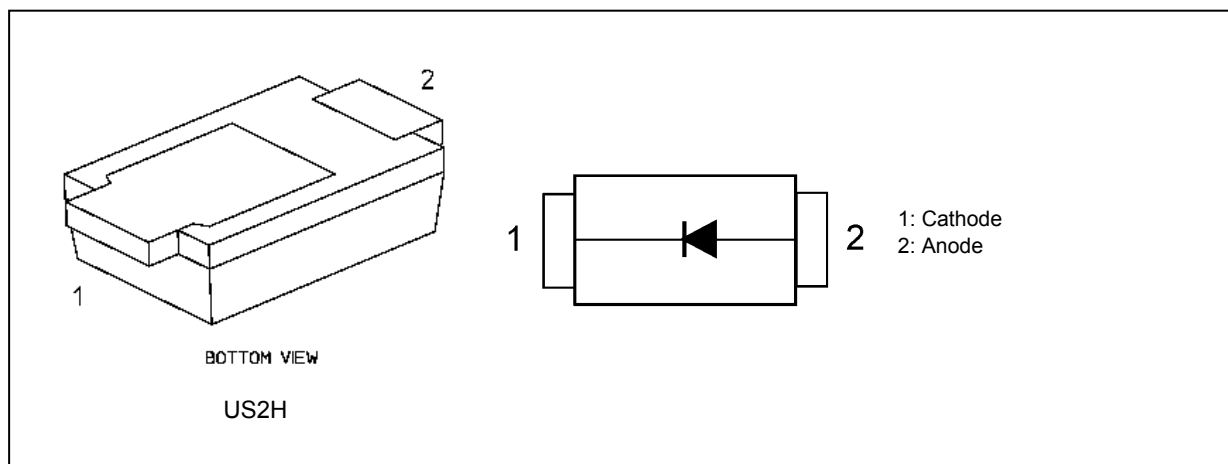
Schottky Barrier Diode Silicon Epitaxial

# CUHS20S40

## 1. Applications

- High-Speed Switching

## 2. Packaging and Internal Circuit



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

Characteristics	Symbol	Note	Rating	Unit
Reverse voltage	$V_R$		40	V
Average rectified current	$I_O$	(Note 1)	2	A
Non-repetitive peak forward surge current	$I_{FSM}$	(Note 2)	10	A
Junction temperature	$T_j$		150	$^\circ\text{C}$
Storage temperature	$T_{stg}$		-55 to 150	$^\circ\text{C}$

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 an FR4 board.

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

Note 2: Pulse width 10 ms

Start of commercial production

2019-04

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

Characteristics	Symbol	Note	Test Condition	Min	Typ.	Max	Unit
Forward voltage	$V_F$ (1)	(Note 1)	$I_F = 500\text{ mA}$	—	0.27	0.33	V
	$V_F$ (2)		$I_F = 1\text{ A}$	—	0.32	0.38	
	$V_F$ (3)		$I_F = 2\text{ A}$	—	0.40	0.47	
Reverse current	$I_R$ (1)	(Note 1)	$V_R = 10\text{ V}$	—	90	—	$\mu\text{A}$
	$I_R$ (2)		$V_R = 40\text{ V}$	—	140	300	
Total capacitance	$C_t$		$V_R = 0\text{ V}, f = 1\text{ MHz}$	—	290	—	pF

Note 1: Pulse measurement.

## 5. Marking

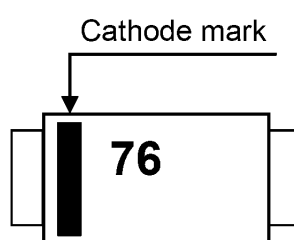


Fig. 5.1 Marking

Marking Code	Part Number
76	CUHS20S40

## 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)

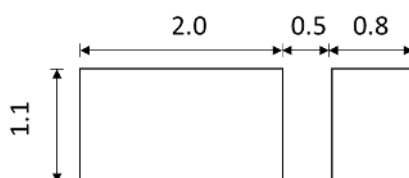
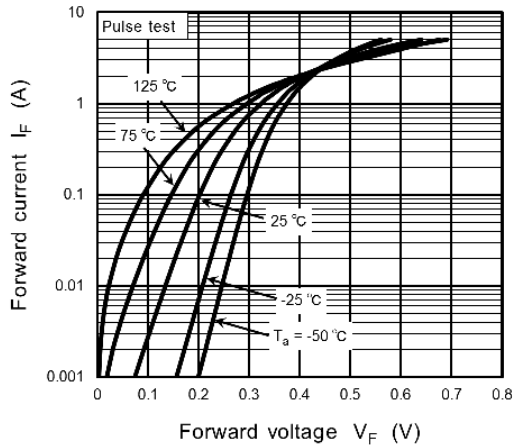
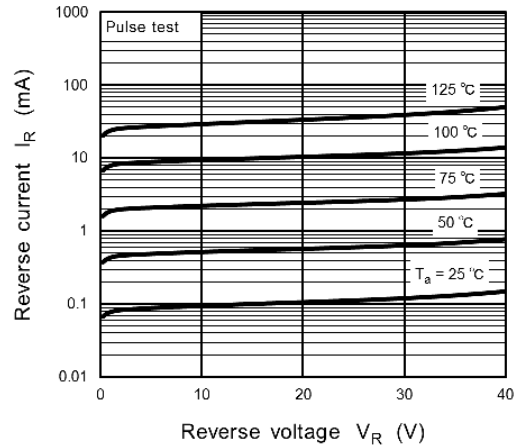


Fig. 7.1 Land Pattern Dimensions for Reference Only (Unit: mm)

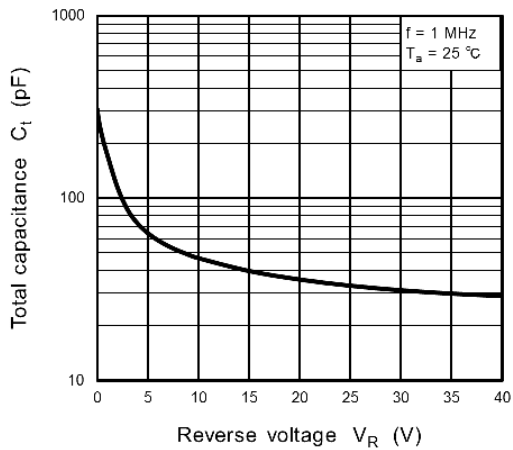
### 8. Characteristics Curves (Note)



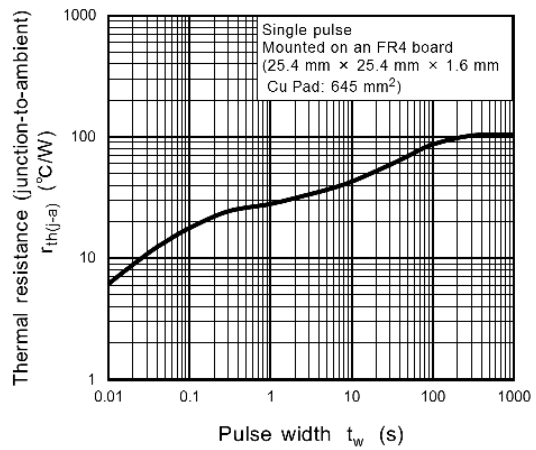
**Fig. 8.1  $I_F - V_F$**



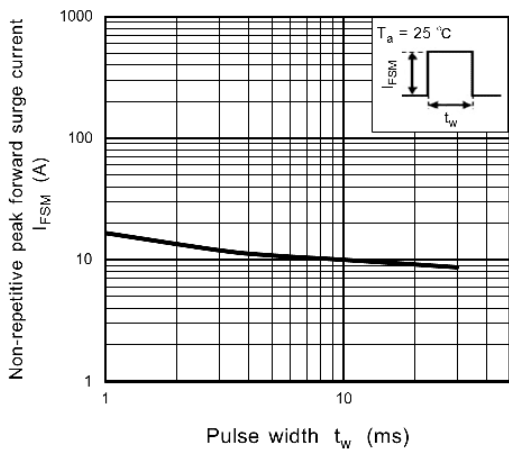
**Fig. 8.2  $I_R - V_R$**



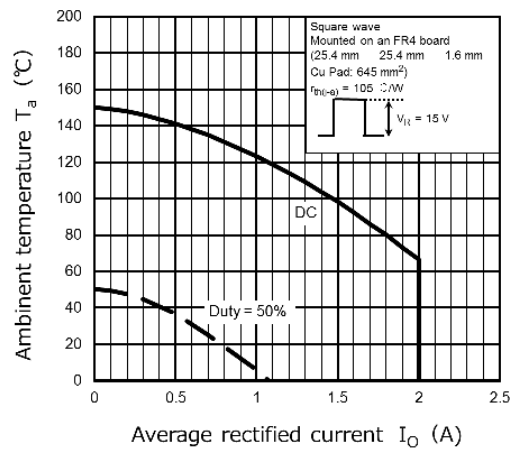
**Fig. 8.3  $C_t - V_R$**



**Fig. 8.4  $r_{th} - t_w$**



**Fig. 8.5  $I_{FSM} - t_w$**

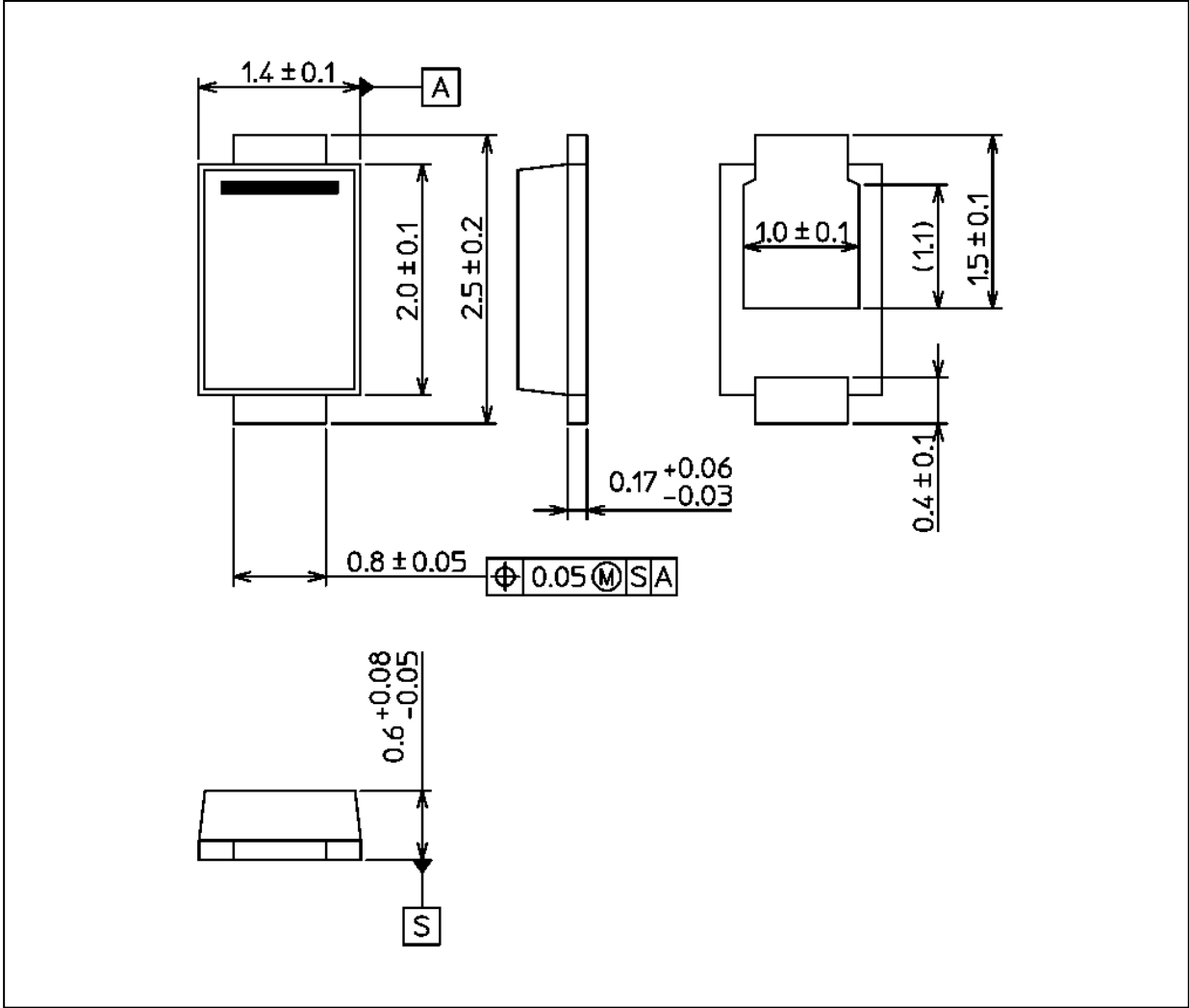


**Fig. 8.6  $T_a - I_O$**

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

Package Dimensions

Unit: mm



Weight: 5.4 mg (typ.)

Package Name(s)
Nickname: US2H

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