

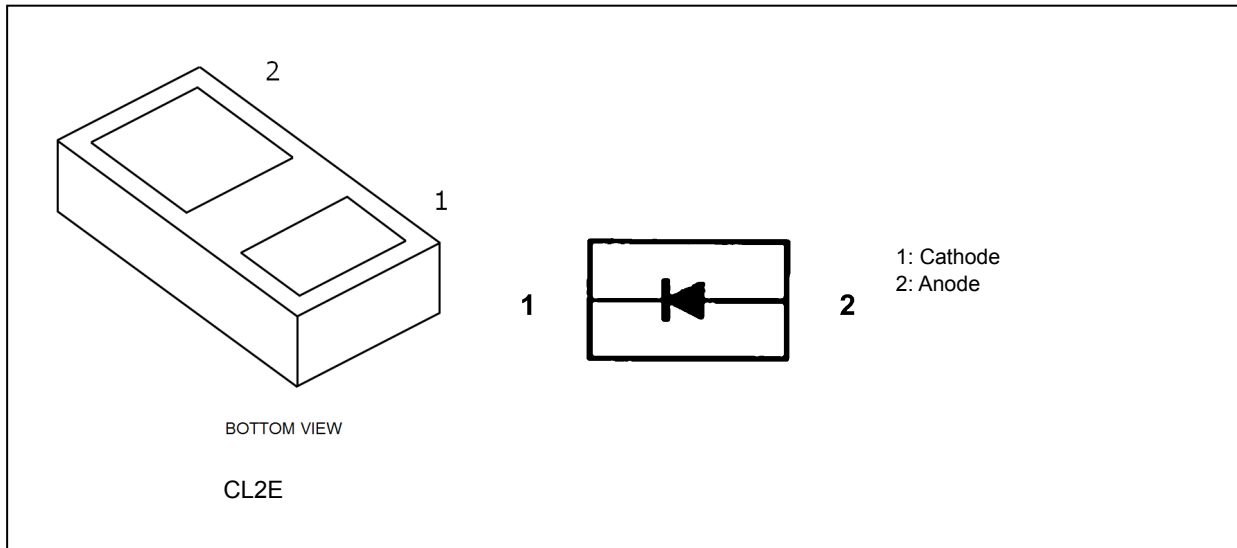
Schottky Barrier Diode Silicon Epitaxial

# CLS10F40

### 1. Applications

- Low-Voltage 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)	1.0	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

2018-10

### 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)	$I_F = 100\text{ mA}$	—	0.30	0.35	V
	$V_F$ (2)		$I_F = 500\text{ mA}$	—	0.41	0.45	
	$V_F$ (3)		$I_F = 1\text{ A}$	—	0.52	0.57	
Reverse current	$I_R$ (1)	(Note 1)	$V_R = 10\text{ V}$	—	5	—	$\mu\text{A}$
	$I_R$ (2)		$V_R = 40\text{ V}$	—	8	25	
Total capacitance	$C_t$		$V_R = 0\text{ V}$ , $f = 1\text{ MHz}$	—	130	—	pF

Note 1: Pulse measurement.

### 5. Marking

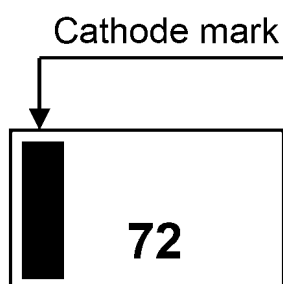


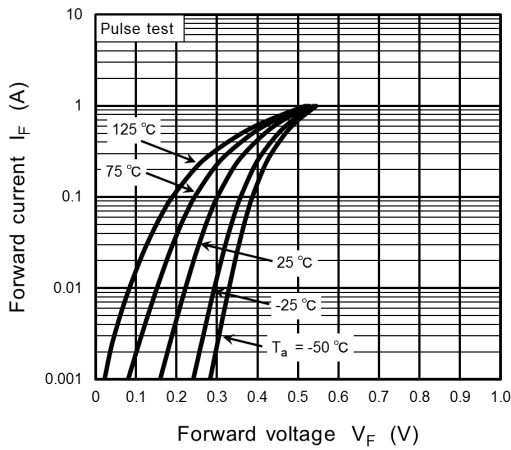
Fig. 5.1 Marking

Marking Code	Part Number
72	CLS10F40

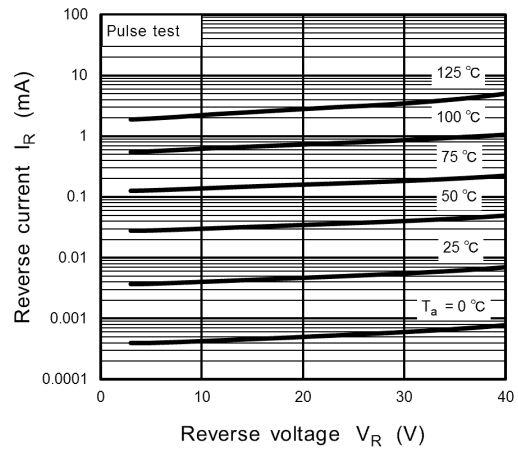
### 6. Usage Considerations

- 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.

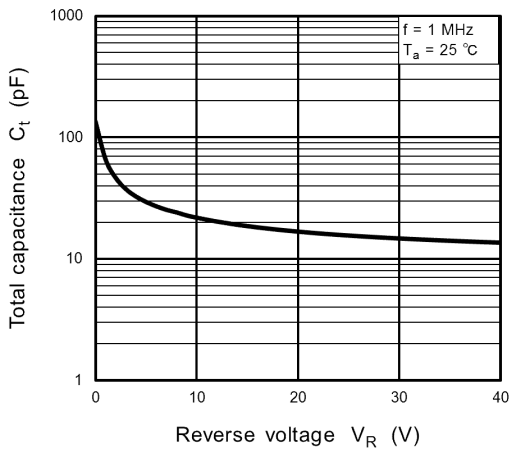
## 7. Characteristics Curves (Note)



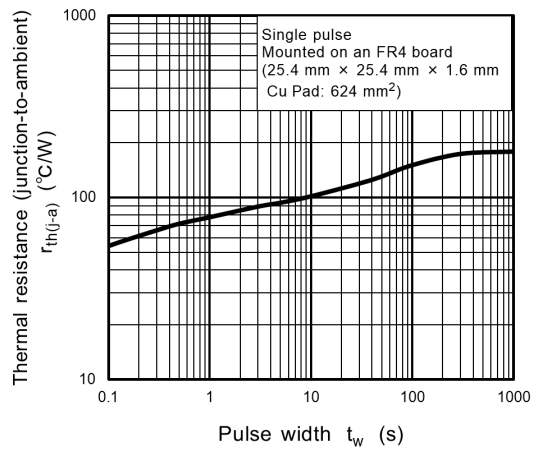
**Fig. 7.1  $I_F - V_F$**



**Fig. 7.2  $I_R - V_R$**



**Fig. 7.3  $C_t - V_R$**

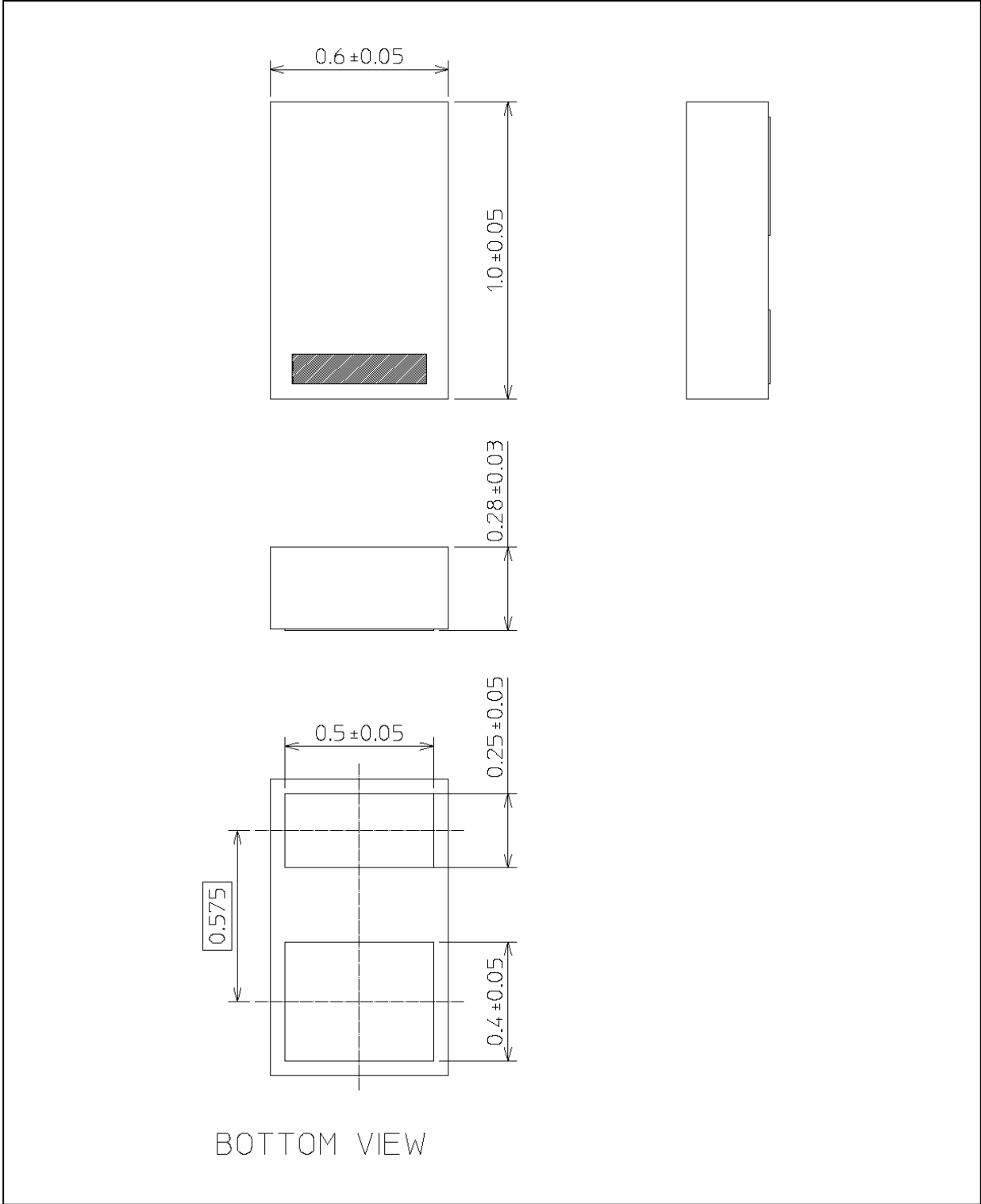


**Fig. 7.4  $r_{th} - t_w$**

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

Package Dimensions

Unit: mm



Weight: 0.39 mg (typ.)

Package Name(s)
Nickname: CL2E

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