

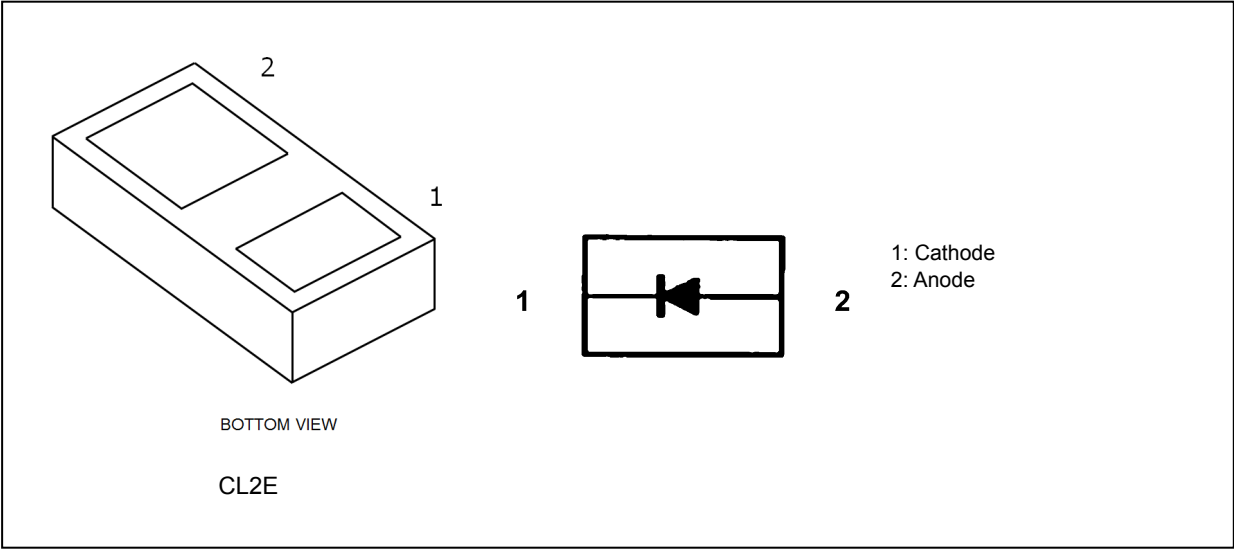
Schottky Barrier Diode Silicon Epitaxial

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 mm²)

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	—	μA
	$I_R (2)$		$V_R = 40\text{ V}$	—	8	25	
Total capacitance	C_t		$V_R = 0\text{ V}, f = 1\text{ MHz}$	—	130	—	pF

Note 1: Pulse measurement.

5. Marking

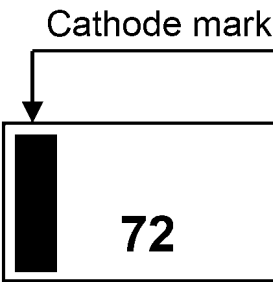


Fig. 5.1 Marking

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)

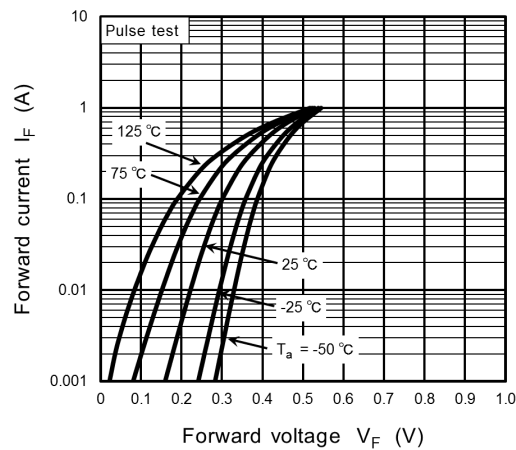


Fig. 7.1 $I_F - V_F$

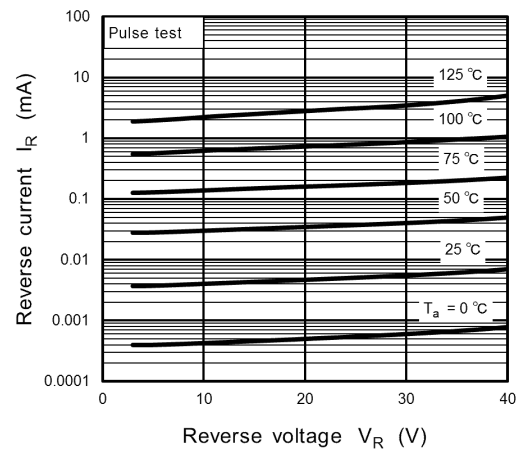


Fig. 7.2 $I_R - V_R$

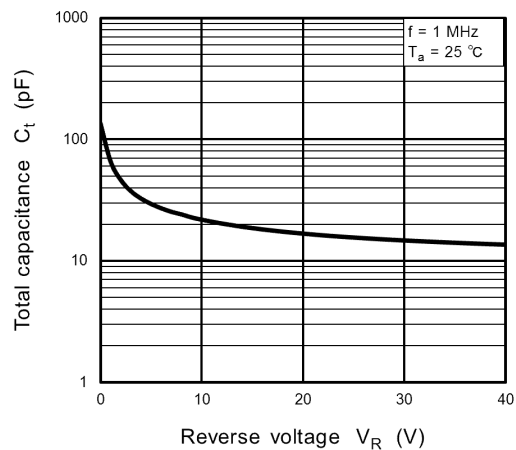


Fig. 7.3 $C_t - V_R$

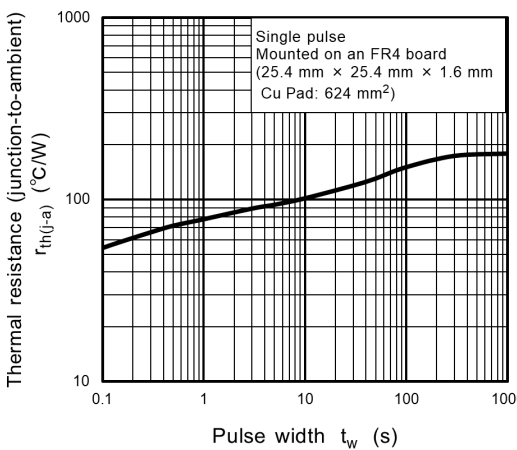
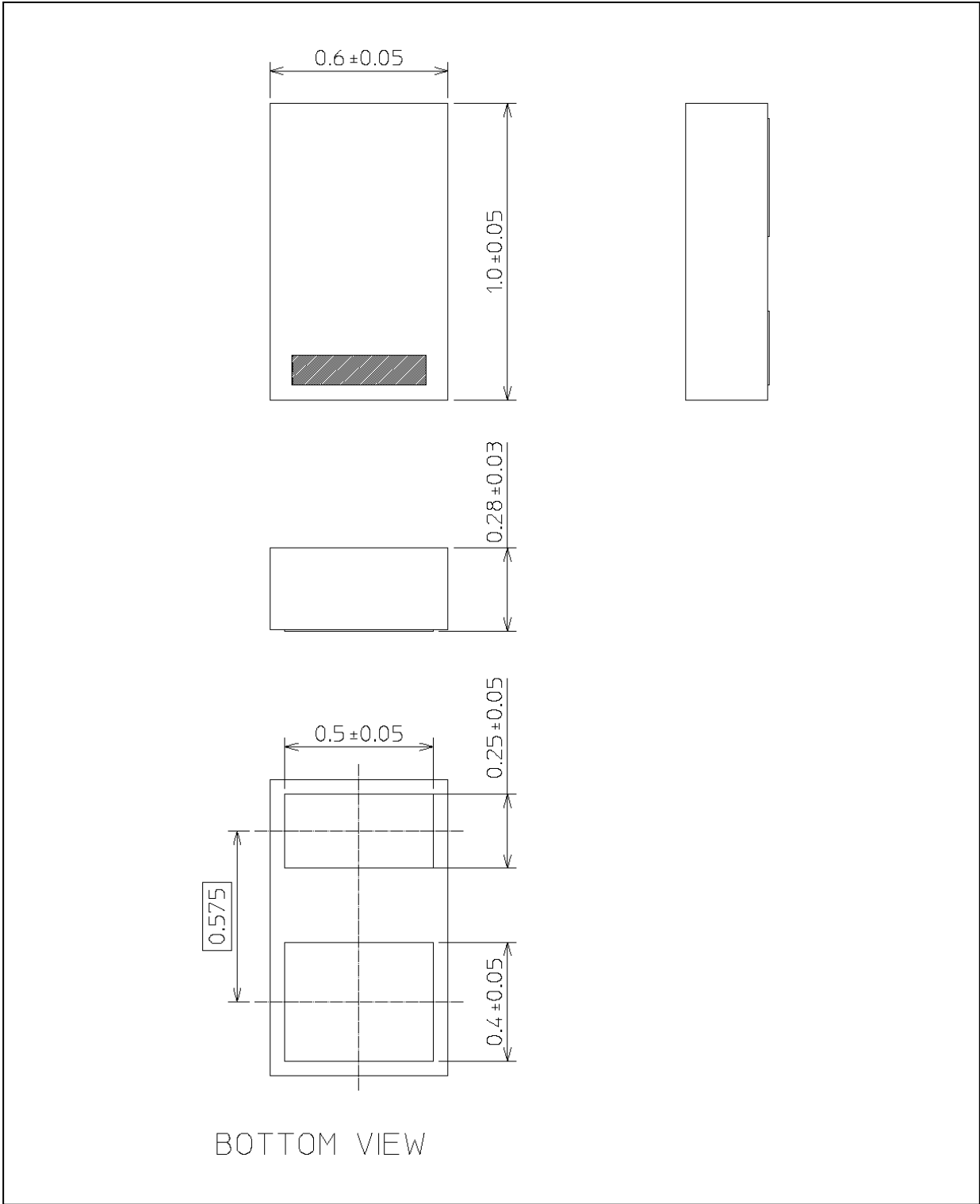


Fig. 7.4 $r_{th} - t_w$

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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