Schottky Barrier Diode Silicon Epitaxial

CES388

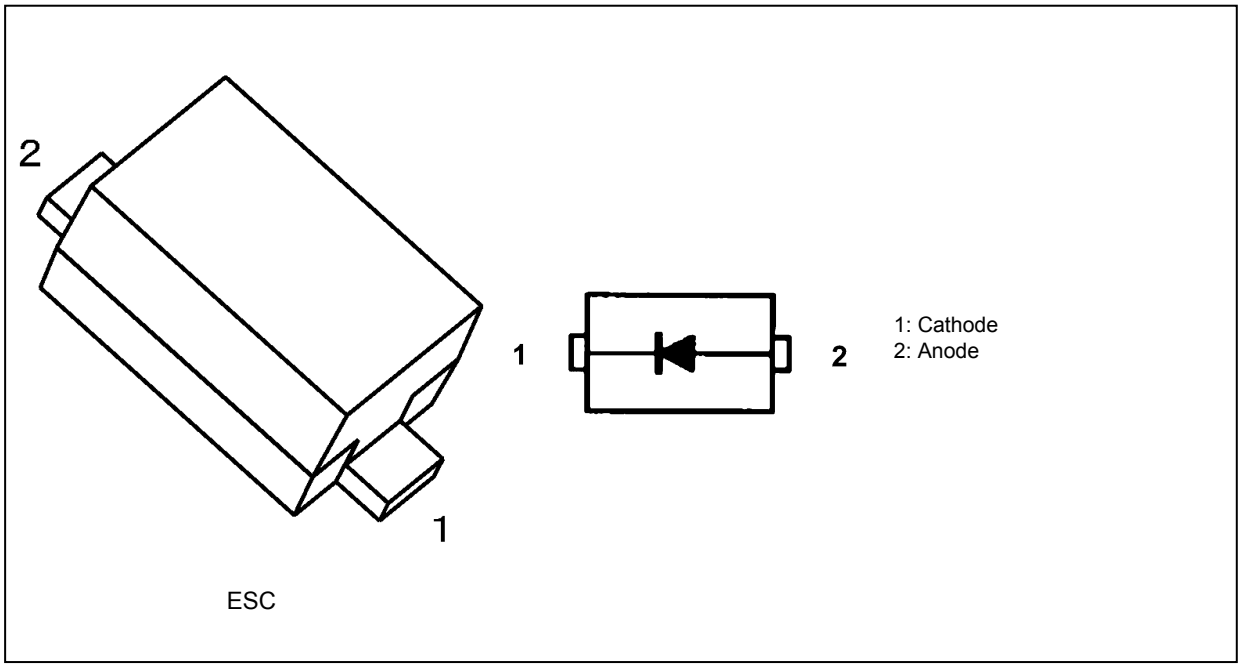
1. Applications

- High-Speed Switching

2. Features

(1) Low forward voltage : $V_{F(3)}$ = 0.54 V (typ).
(2) Low reverse current : $I_{R(1)}$ = 1 μA (max).
(3) Small and compact ESC package, equivalent to SOD-523 and SC-79 packages.

3. Packaging and Internal Circuit



Start of commercial production
2011-10

2014-04-07
Rev.2.0

4. Absolute Maximum Ratings (Note) (Unless otherwise specified, T_a = 25°C)

Characteristics	Symbol	Note	Rating	Unit
Peak reverse voltage	V_{RM}		45	V
Reverse voltage	V_R		40	
Peak forward current	I_{FM}		300	mA
Average rectified current	I_O	—	100	
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	

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 10ms 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°C)

Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Forward voltage	$V_{F(1)}$	I_F = 1 mA	—	0.21	—	V
	$V_{F(2)}$	I_F = 10 mA	—	0.30	—	
	$V_{F(3)}$	I_F = 100 mA	—	0.54	0.60	
Reverse current	$I_{R(1)}$	V_R = 10 V	—	—	1	μA
	$I_{R(2)}$	V_R = 40 V	—	—	5	
Total capacitance	C_t	V_R = 0 V, f = 1 MHz	—	11	25	pF

6. Marking

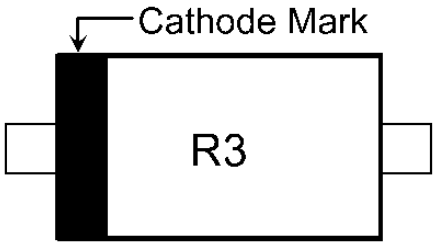


Fig. 6.1 Marking

Marking Code	Part Number
R3	CES388

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

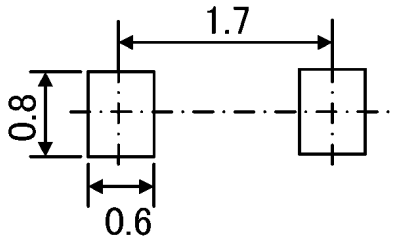


Fig. 8.1 Land pattern dimensions for reference only (Unit: mm)

9. Characteristics Curves (Note)

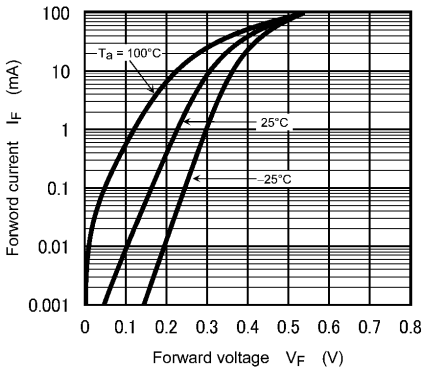


Fig. 9.1 I_F - V_F

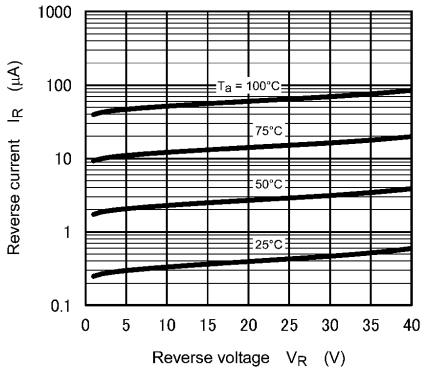


Fig. 9.2 I_R - V_R

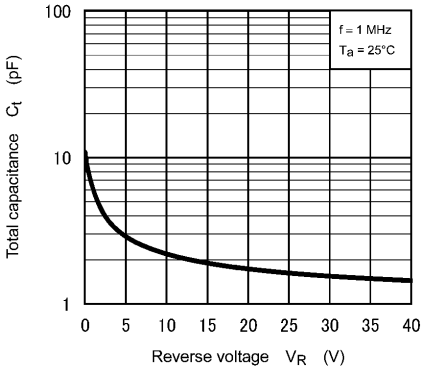
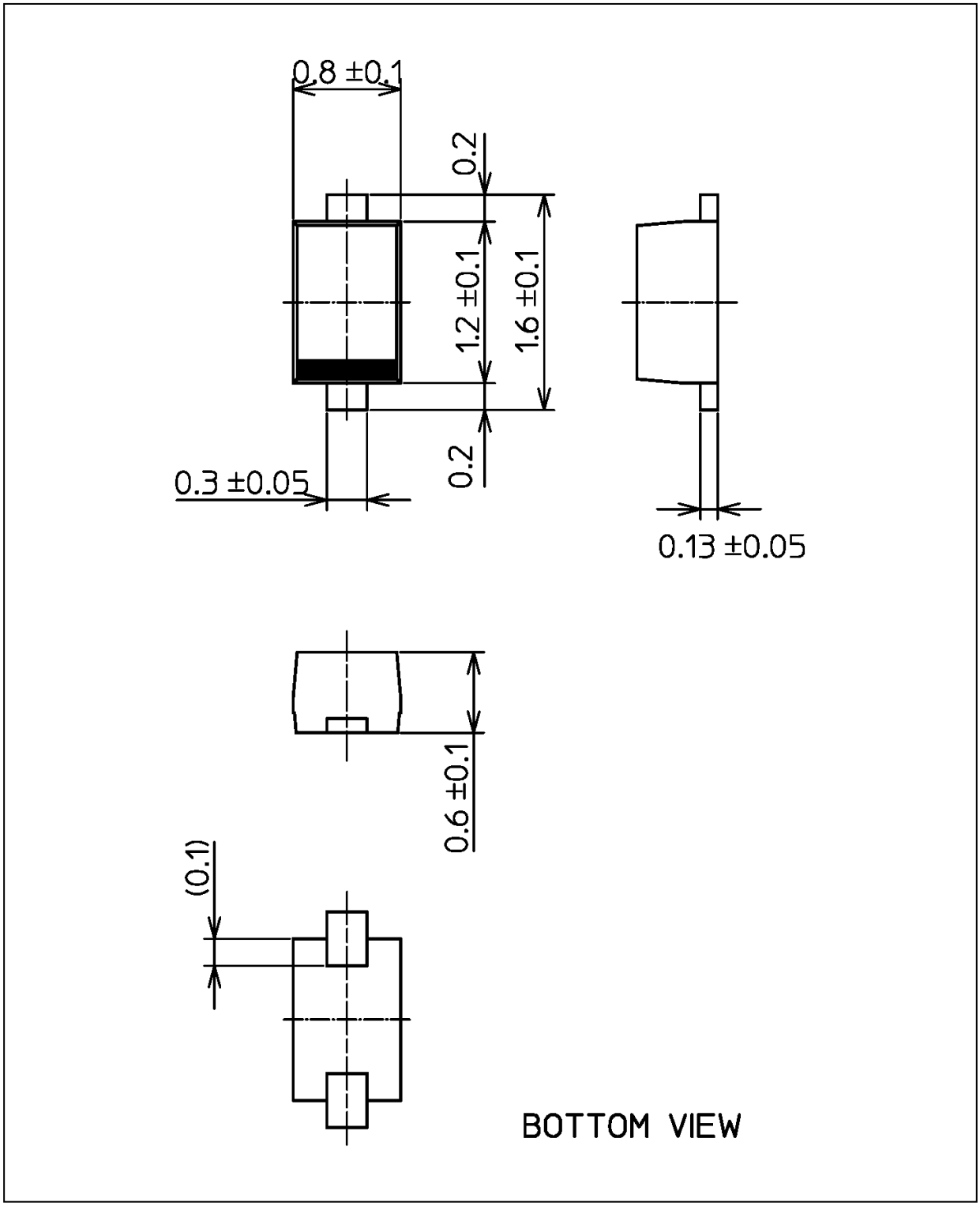


Fig. 9.3 C_t - V_R

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

Package Dimensions

Unit: mm



Weight: 1.4 mg (typ.)

Package Name(s)
Nickname: ESC

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