

Schottky Barrier Diode Silicon Epitaxial

## CES520

### 1. Applications

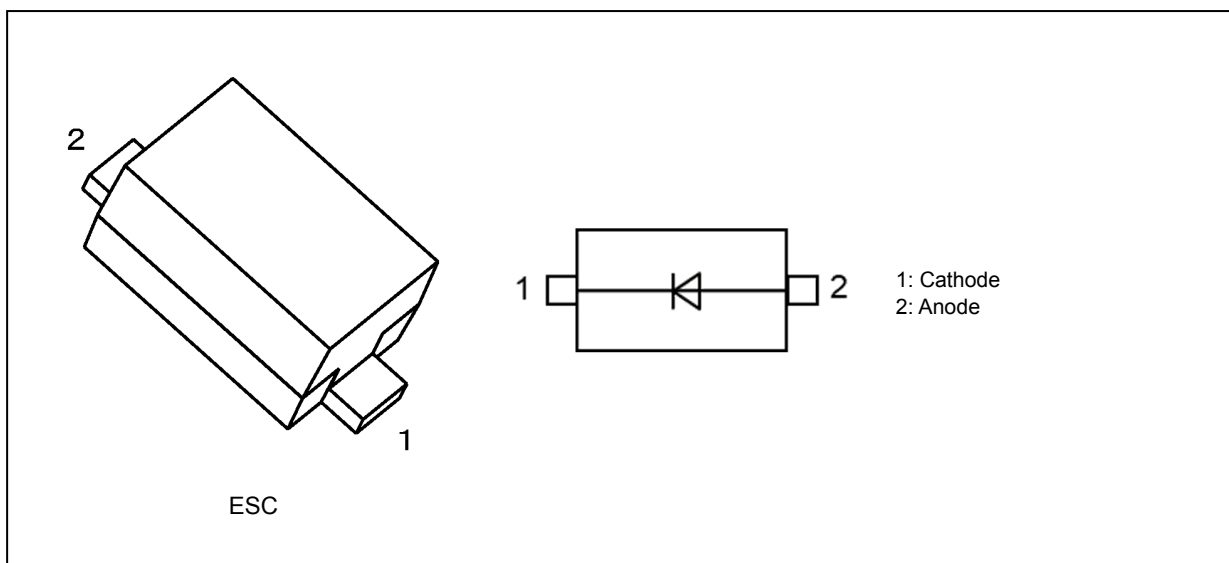
- High-Speed Switching

### 2. Features

- (1) AEC-Q101 qualified (Note 1)
- (2) Low reverse current:  $I_{R(2)} = 5 \mu\text{A}$  (max)
- (3) Small and compact ESC package, equivalent to SOD-523 and SC-79 packages.

Note 1: For detail information, please contact our sales.

### 3. Packaging and Internal Circuit



Start of commercial production  
2010-10

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

Characteristics	Symbol	Note	Rating	Unit
Reverse voltage	$V_R$	—	30	V
Peak forward current	$I_{FM}$	—	300	mA
Average rectified current	$I_O$	—	200	
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	
Operating temperature	$T_{opr}$	—	-40 to 100	

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, Ta = 25°C)

Characteristics	Symbol	Note	Test Condition	Min	Typ.	Max	Unit
Forward voltage	$V_{F(1)}$	—	$I_F = 1 \text{ mA}$	—	0.21	—	V
	$V_{F(2)}$	—	$I_F = 10 \text{ mA}$	—	0.28	—	
	$V_{F(3)}$	—	$I_F = 200 \text{ mA}$	—	0.52	0.6	
Reverse current	$I_{R(1)}$	—	$V_R = 10 \text{ V}$	—	—	1	μA
	$I_{R(2)}$	—	$V_R = 30 \text{ V}$	—	—	5	
Total capacitance	$C_t$	—	$V_R = 0 \text{ V}, f = 1 \text{ MHz}$	—	17	—	pF

## 6. Marking

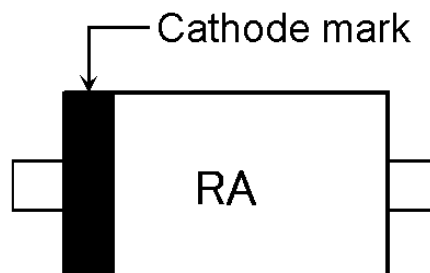


Fig. 6.1 Marking

Marking Code	Part Number
RA	CES520

## 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

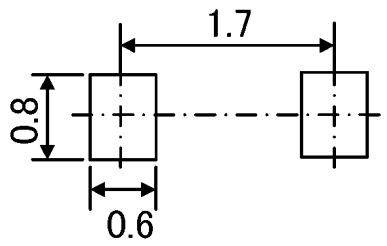
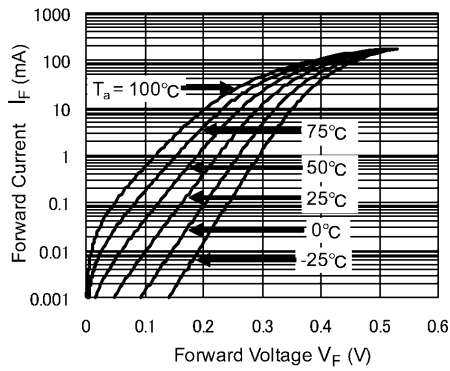
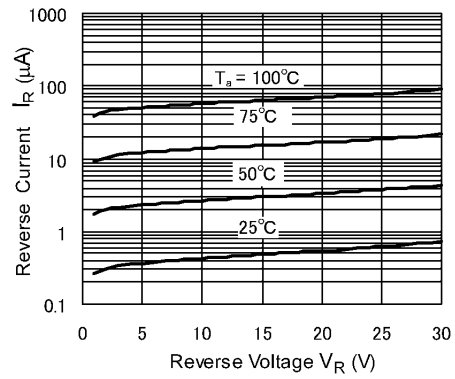


Fig. 8.1 Land pattern dimensions for reference only (Unit: mm)

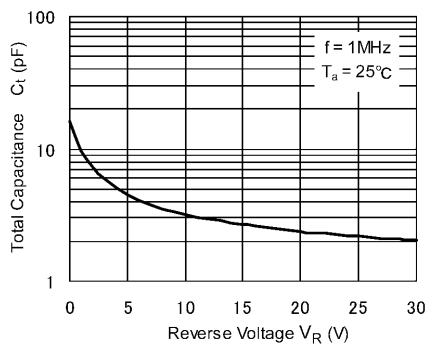
## 9. Characteristics Curves (Note)



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



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

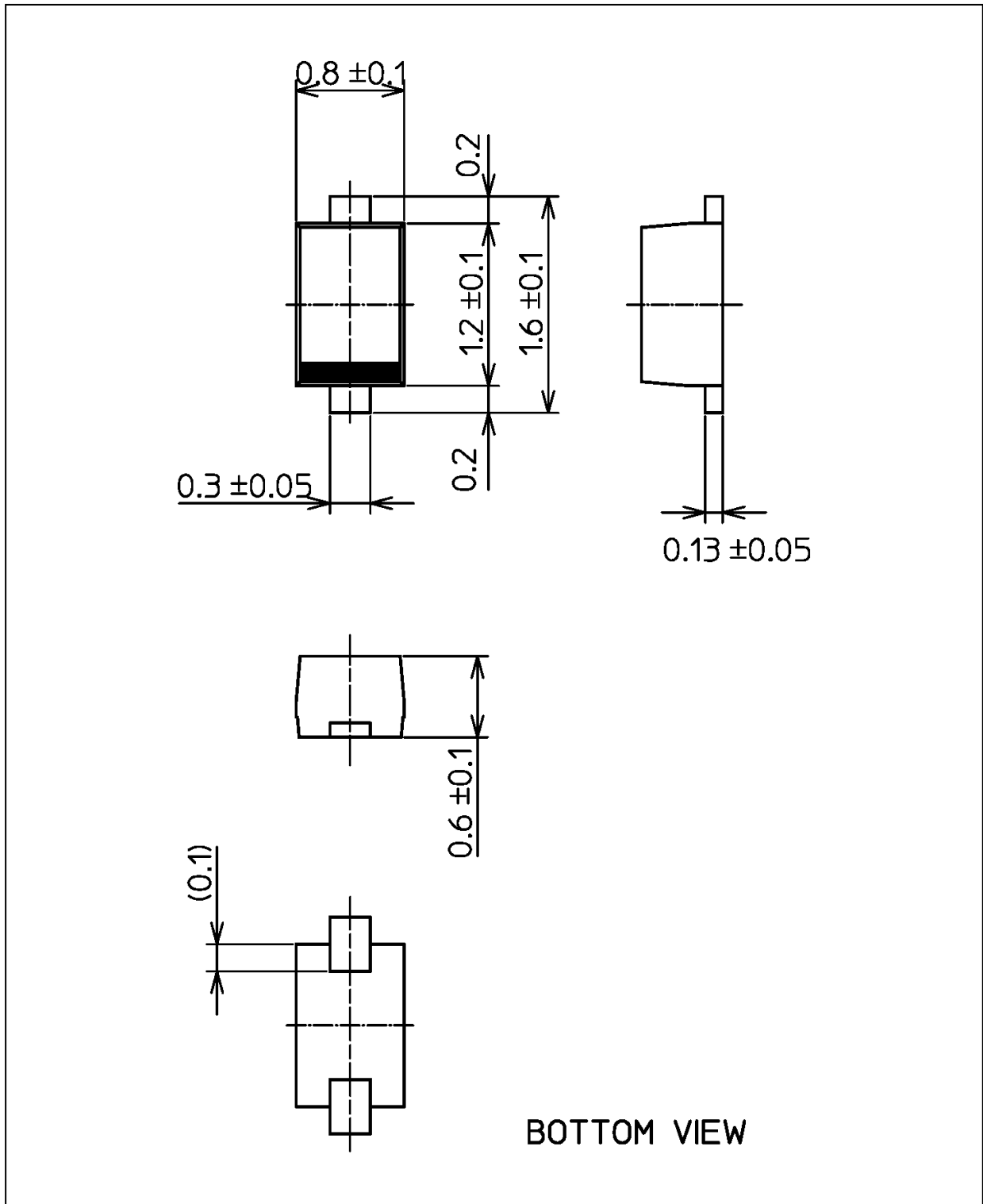


**Fig. 9.3  $C_t - V_R$**

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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