

Switching Diodes Silicon Epitaxial Planar

# 1SS302A

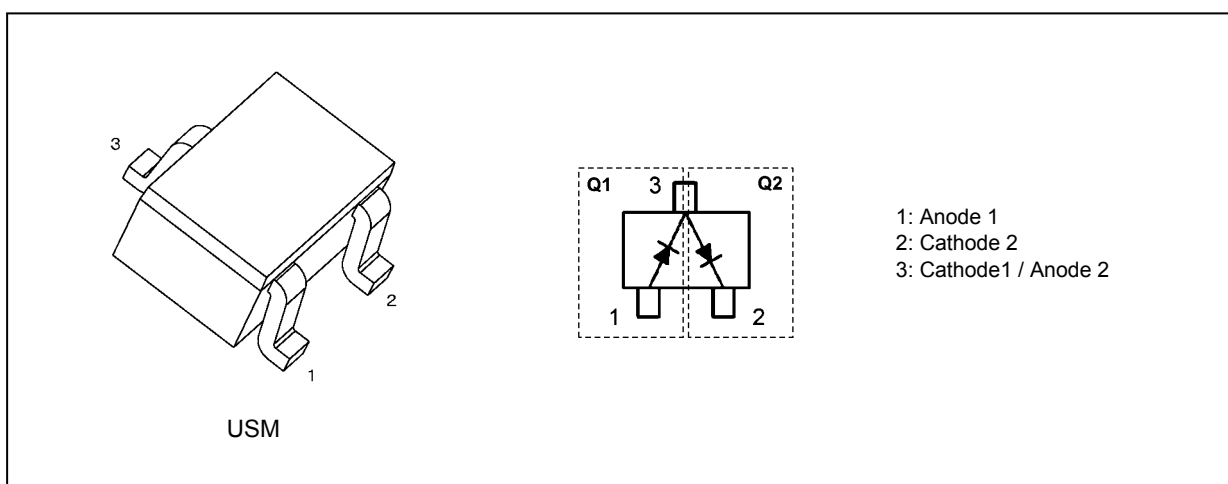
## 1. Applications

- Ultra-High-Speed Switching

## 2. Features

- (1) Fast reverse recovery time :  $t_{rr} = 1.6 \text{ ns}$  (typ.)
- (2) AEC-Q101 qualified

## 3. Packaging and Internal Circuit



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

Characteristics	Symbol	Note	Rating	Unit
Peak reverse voltage	$V_{RM}$		85	V
Reverse voltage	$V_R$		80	
Peak forward current	$I_{FM}$	(Note 1)	300	mA
Average rectified current	$I_O$	(Note 1)	100	
Power dissipation	$P_D$	(Note 2)	100	mW
Non-repetitive peak forward surge current	$I_{FSM}$	(Note 1), (Note 3)	2	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: Unit rating. Total rating = Unit rating  $\times$  70%

Note 2: Mounted on a glass epoxy circuit board of 20 mm  $\times$  20 mm, Pad dimension of 4 mm  $\times$  4 mm.

Note 3: Measured with a 10 ms pulse.

Start of commercial production

2014-12

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

Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Forward voltage	$V_{F(1)}$	$I_F = 1\text{ mA}$	—	0.60	—	V
	$V_{F(2)}$	$I_F = 10\text{ mA}$	—	0.72	—	
	$V_{F(3)}$	$I_F = 100\text{ mA}$	—	0.90	1.20	
Reverse current	$I_{R(1)}$	$V_R = 30\text{ V}$	—	—	0.1	$\mu\text{A}$
	$I_{R(2)}$	$V_R = 80\text{ V}$	—	—	0.5	
Total capacitance	$C_t$	$V_R = 0\text{ V}, f = 1\text{ MHz}$	—	0.9	3.0	pF
Reverse recovery time	$t_{rr}$	$I_F = 10\text{ mA}$ See Fig. 5.1.	—	1.6	4.0	ns

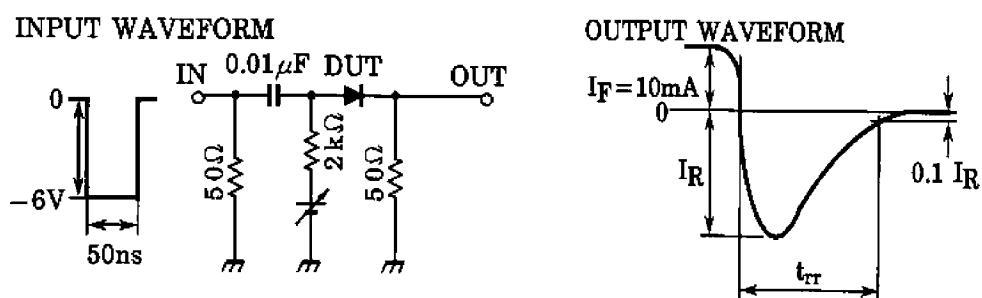


Fig. 5.1 Reverse recovery time ( $t_{rr}$ ) Test circuit

## 6. Marking

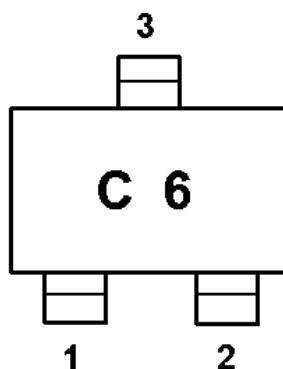


Fig. 6.1 Marking

## 7. Land Pattern Dimensions (for reference only)

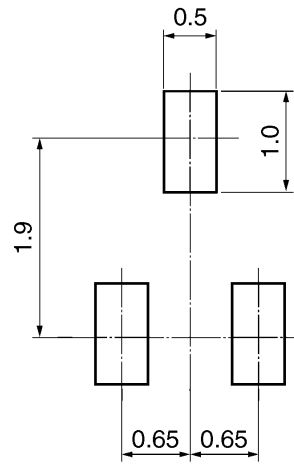


Fig. 7.1 USM (Unit: mm)

## 8. Characteristics Curves (Note)

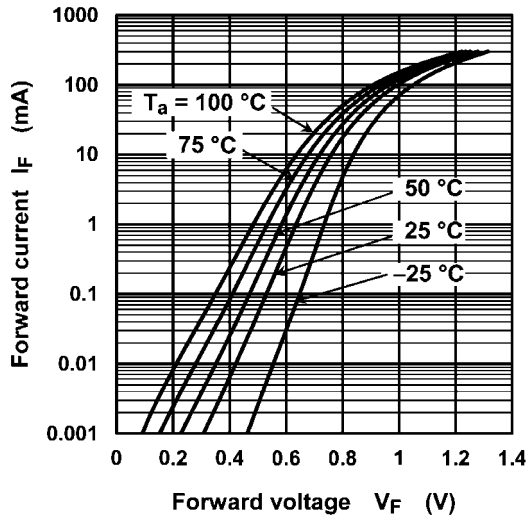


Fig. 8.1  $I_F - V_F$

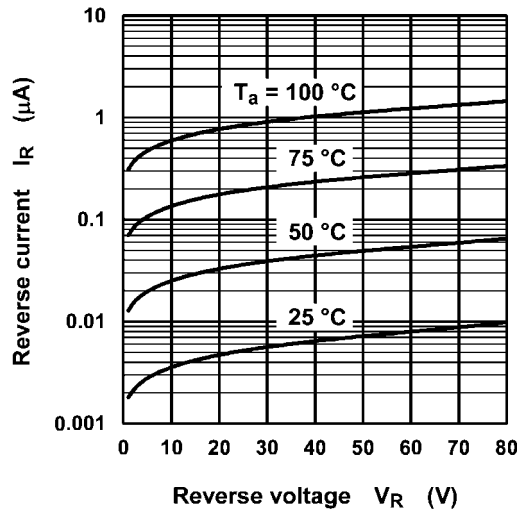


Fig. 8.2  $I_R - V_R$

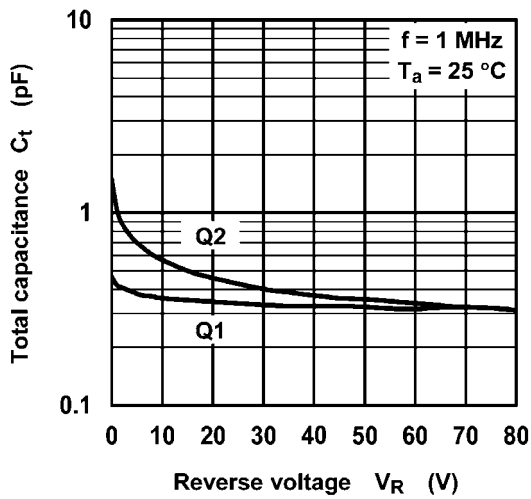


Fig. 8.3  $C_t - V_R$

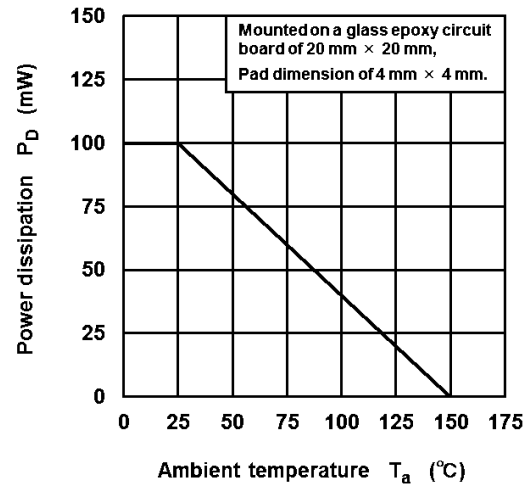
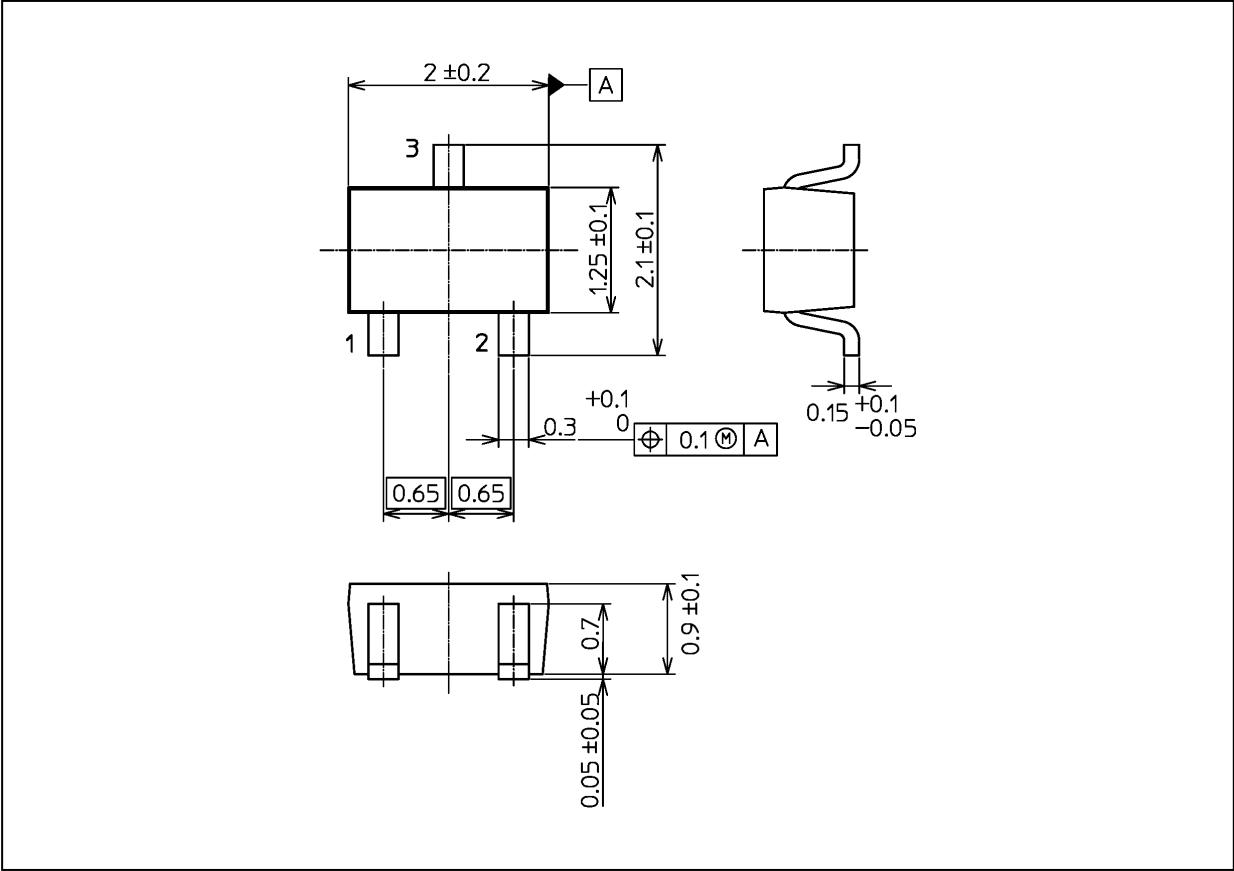


Fig. 8.4  $P_D - T_a$

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

Package Dimensions

Unit: mm



Weight: 6.0 mg (typ.)

Package Name(s)
TOSHIBA: 2-2E1S
Nickname: USM

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