

Switching Diodes Silicon Epitaxial Planar

1SS302A

1. Applications

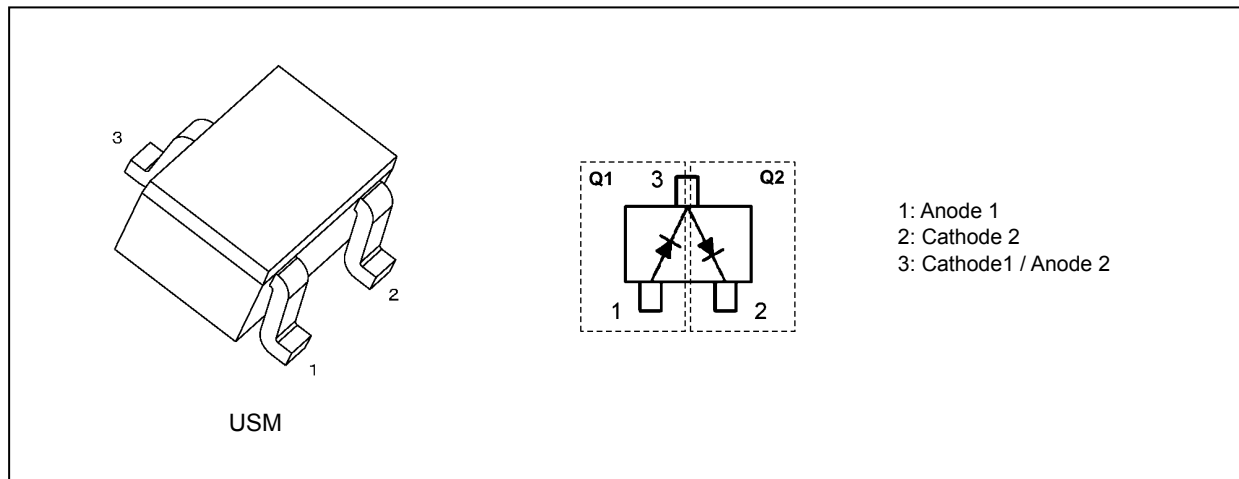
- Ultra-High-Speed Switching

2. Features

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

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

3. Packaging and Internal Circuit



Start of commercial production
2014-12

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: Pulse width 10 ms

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	μA
	$I_{R(2)}$	$V_R = 80\text{ V}$	—	—	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

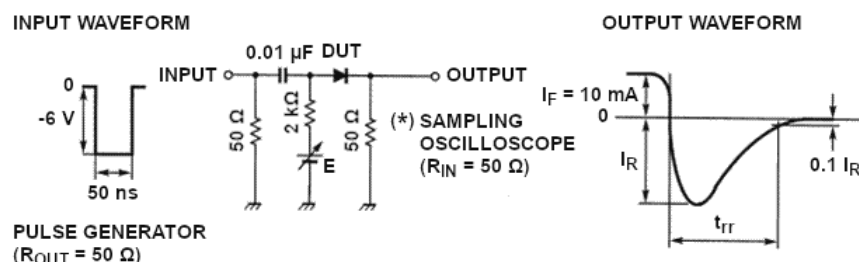


Fig. 5.1 Reverse recovery time (t_{rr}) Test circuit

6. Marking

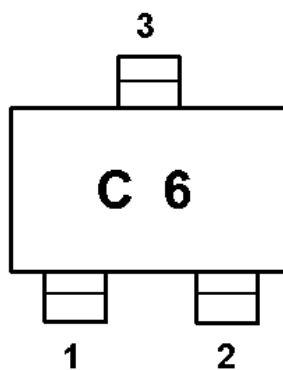


Fig. 6.1 Marking

7. Land Pattern Dimensions (for reference only)

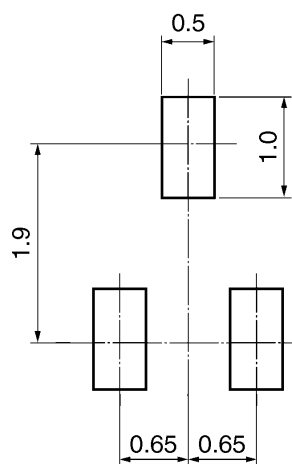


Fig. 7.1 USM (Unit: mm)

8. Characteristics Curves (Note)

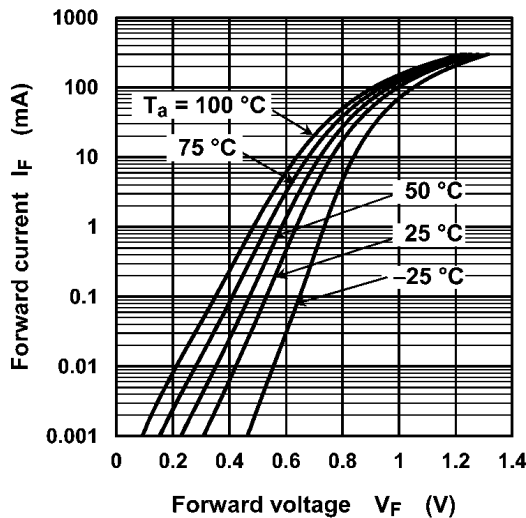


Fig. 8.1 $I_F - V_F$

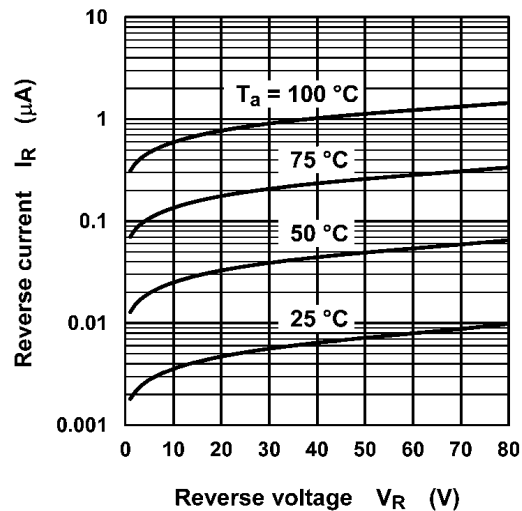


Fig. 8.2 $I_R - V_R$

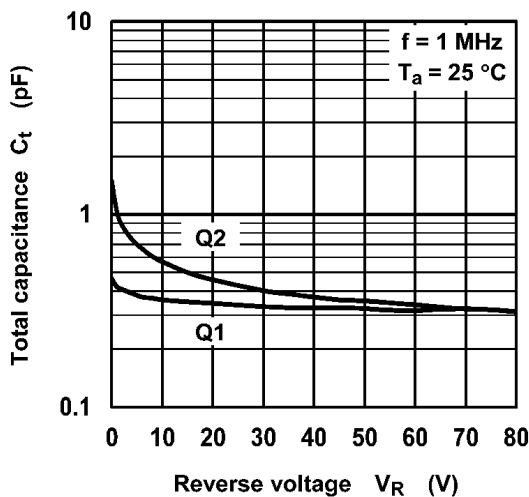


Fig. 8.3 $C_t - V_R$

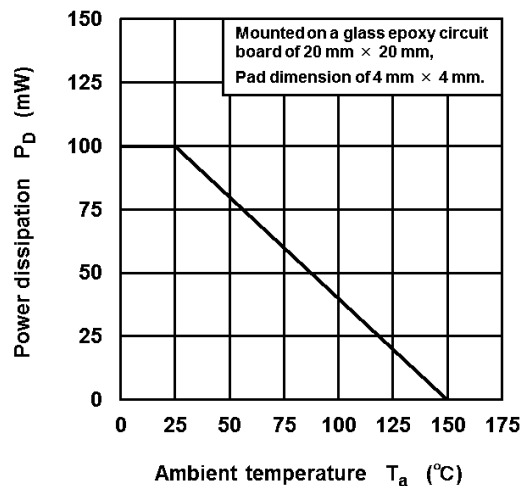
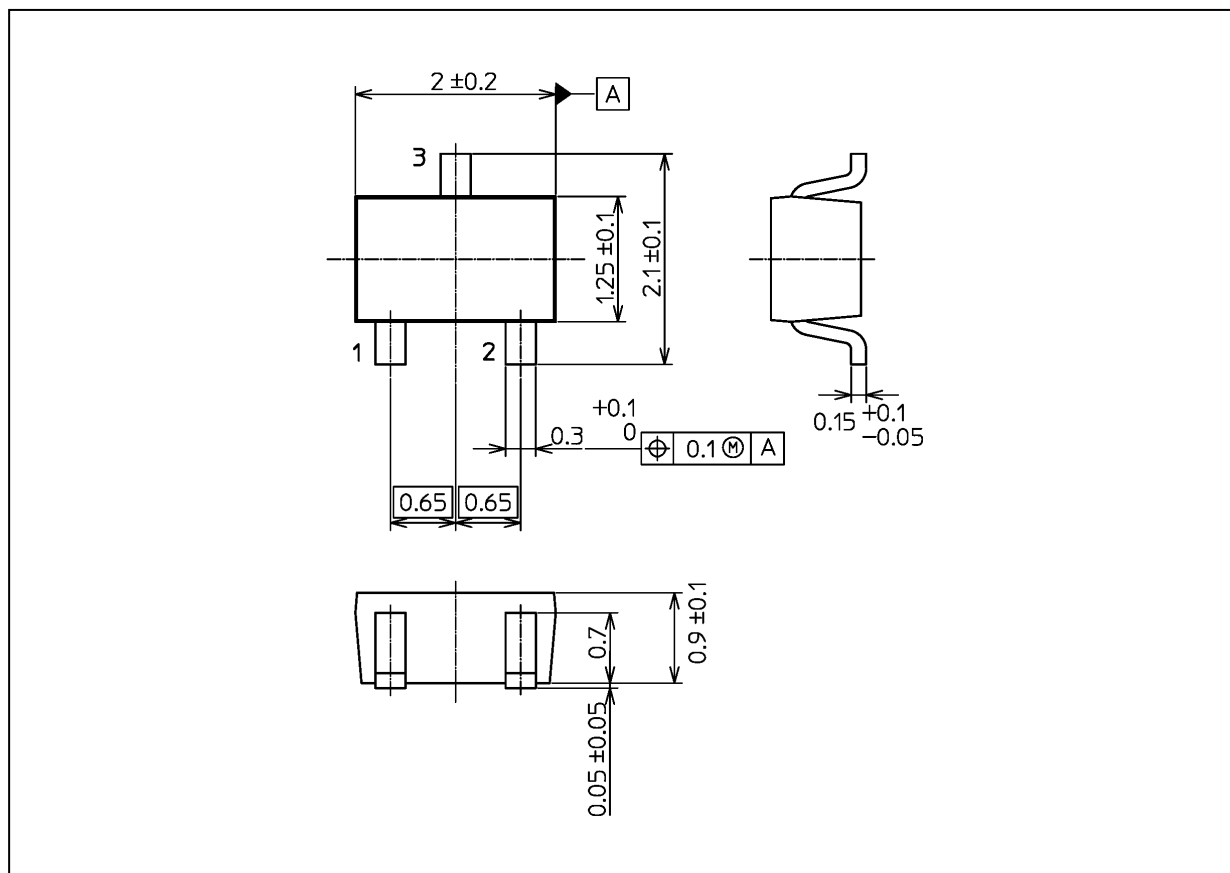


Fig. 8.4 $P_D - T_a$

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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