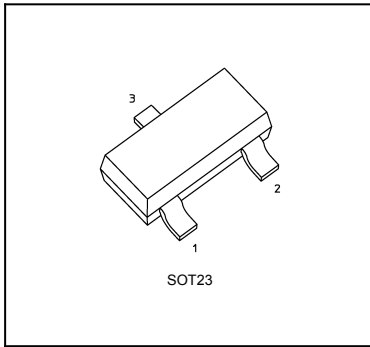


TBAT54, TBAT54A, TBAT54C, TBAT54S

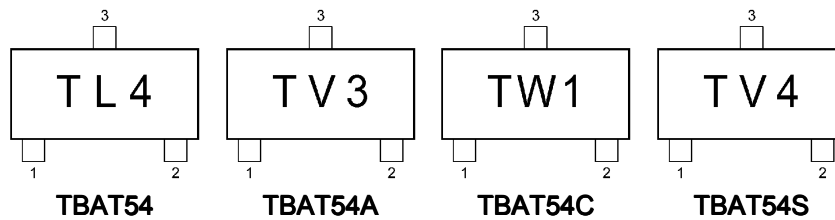
1. Applications

- Ultra-High-Speed Switching

2. Packaging

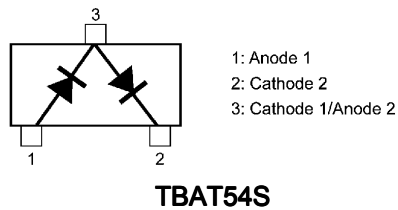
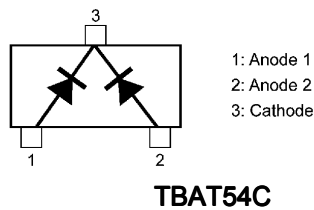
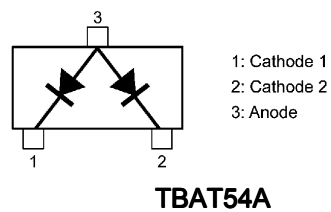
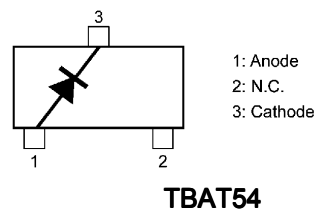


3. Marking



Part Number	Marking Code	Configuration
TBAT54	TL4	single
TBAT54A	TV3	common anode
TBAT54C	TW1	common cathode
TBAT54S	TV4	series

4. Internal Circuit



Start of commercial production

2016-04

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

Characteristics	Symbol	Note	Rating	Unit
Peak reverse voltage	V_{RM}		35	V
Reverse voltage	V_R		30	
Average rectified current	I_O	(Note 3)	200	mA
Peak forward current	I_{FM}	(Note 3)	300	
Non-repetitive peak forward surge current	I_{FSM}	(Note 1), (Note 3)	1	A
Power dissipation	P_D	(Note 2), (Note 3)	320	mW
Junction temperature	T_j		150	$^\circ\text{C}$
Storage temperature	T_{stg}		-55 to 150	

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 10 ms pulse.

Note 2: Mounted on an FR4 board (25.4 mm × 25.4 mm × 1.6 mm, Cu Pad: 0.42 mm² × 3)

Note 3: Unit rating. Total rating = unit rating × 1.5 (TBAT54A, TBAT54C), Total rating = unit rating × 0.7 (TBAT54S)

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

Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Forward voltage	V_F	$I_F = 0.1\text{ mA}$	—	0.16	—	V
		$I_F = 1\text{ mA}$	—	0.21	0.32	
		$I_F = 10\text{ mA}$	—	0.28	0.39	
		$I_F = 30\text{ mA}$	—	0.37	0.50	
		$I_F = 100\text{ mA}$	—	0.45	0.58	
Reverse current	I_R	$V_R = 25\text{ V}$	—	0.6	2	μA
Reverse recovery time	t_{rr}	$I_F = 10\text{ mA}$	—	1.5	—	ns

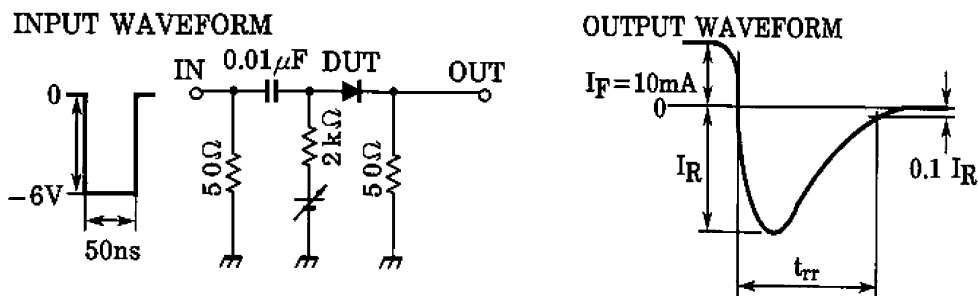


Fig. 6.1 Reverse recovery time (t_{rr}) test circuit

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. Characteristics Curves (Note)

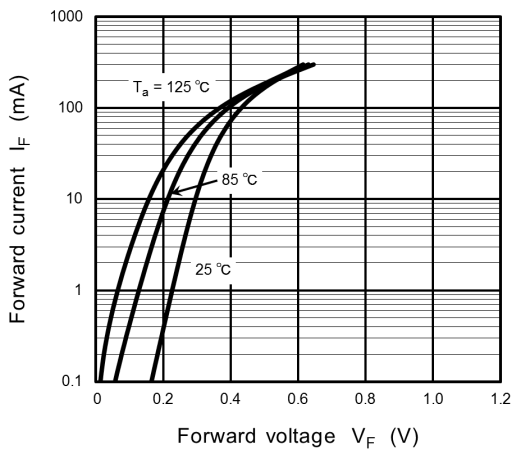


Fig. 8.1 $I_R - V_F$

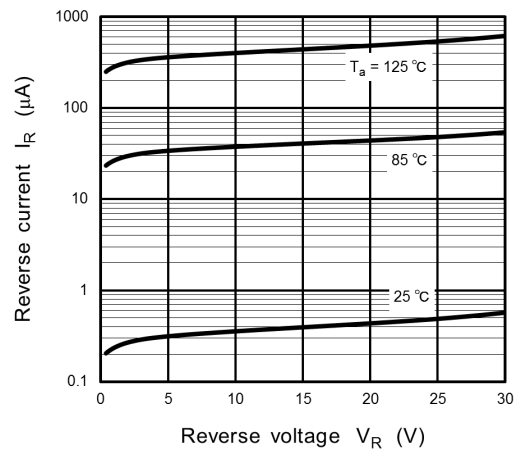


Fig. 8.2 $I_R - V_R$

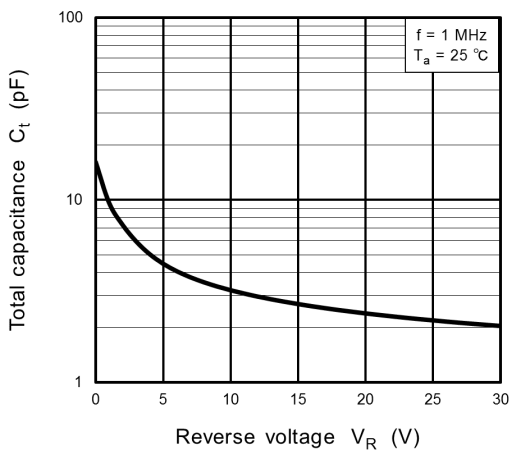
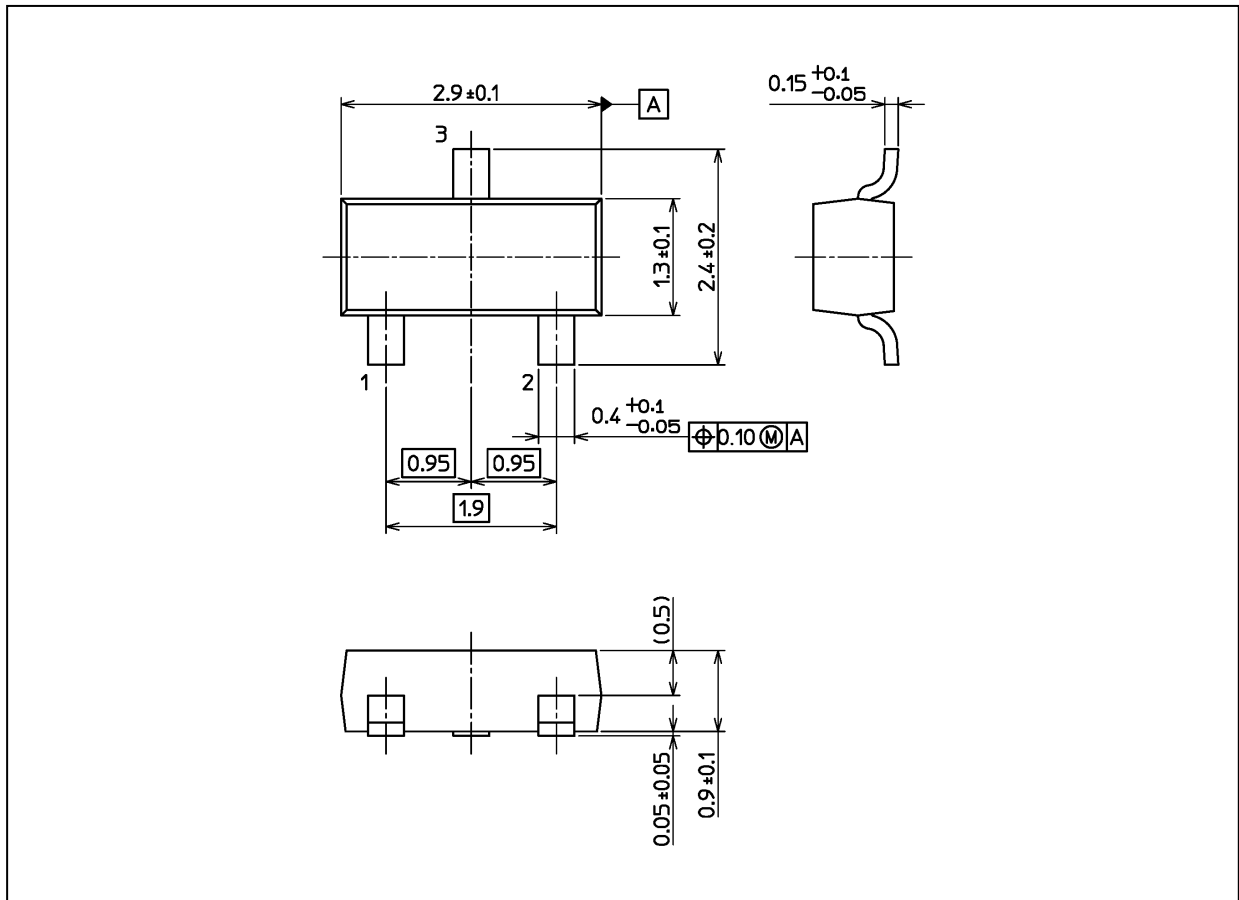


Fig. 8.3 $C_t - V_R$

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

Package Dimensions

Unit: mm



Weight: 0.0125 g (typ.)

Package Name(s)
TOSHIBA: 2-3AB1A
Nickname: SOT23

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