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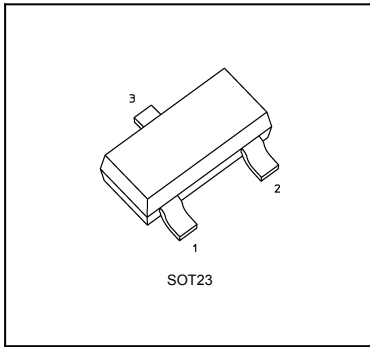


TBAT54, TBAT54A, TBAT54C, TBAT54S

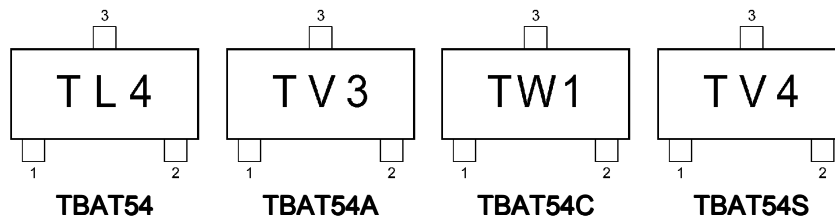
1. Applications

- Ultra-High-Speed Switching

2. Packaging

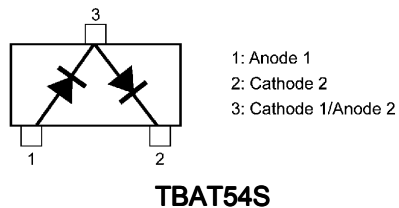
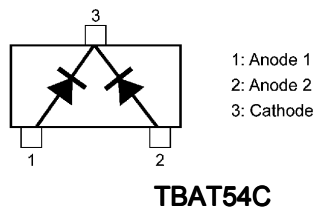
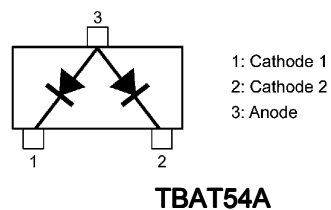
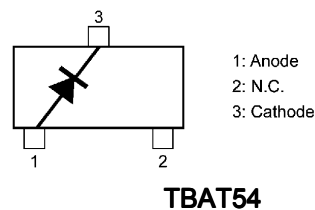


3. Marking



| 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 |

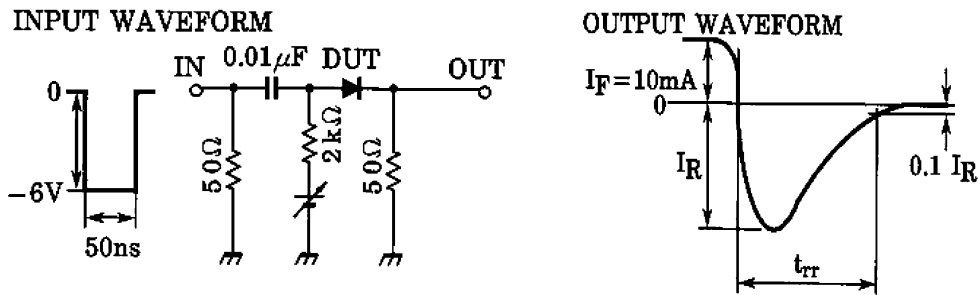


Fig. 6.1 Reverse recovery time (t_{rr}) test circuit

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)

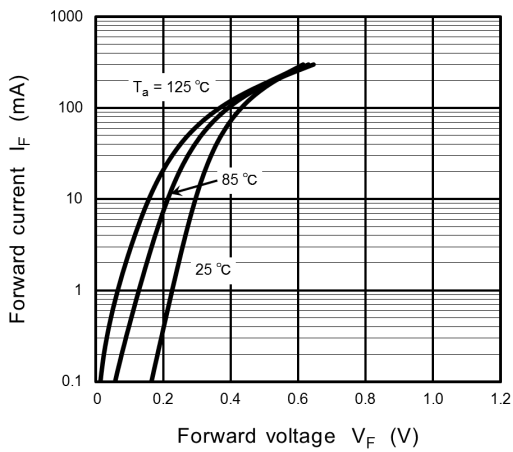


Fig. 8.1 $I_R - V_F$

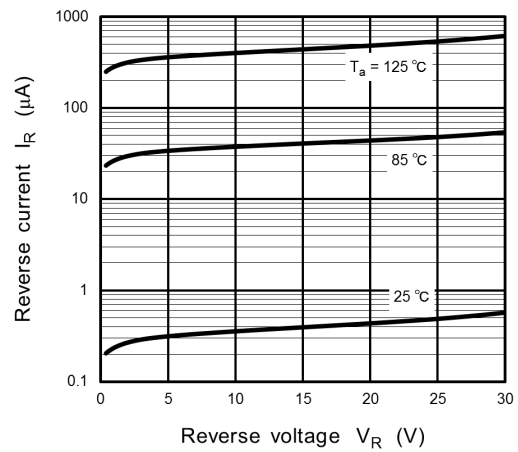


Fig. 8.2 $I_R - V_R$

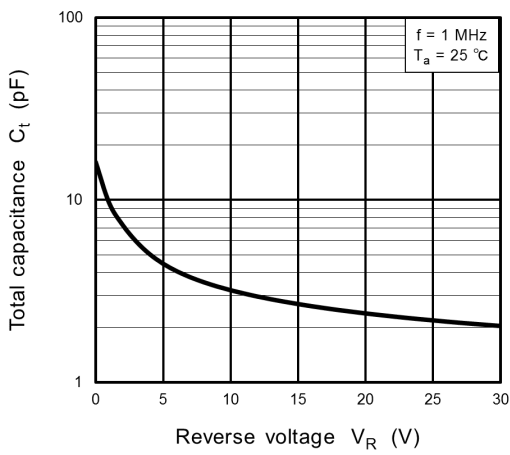
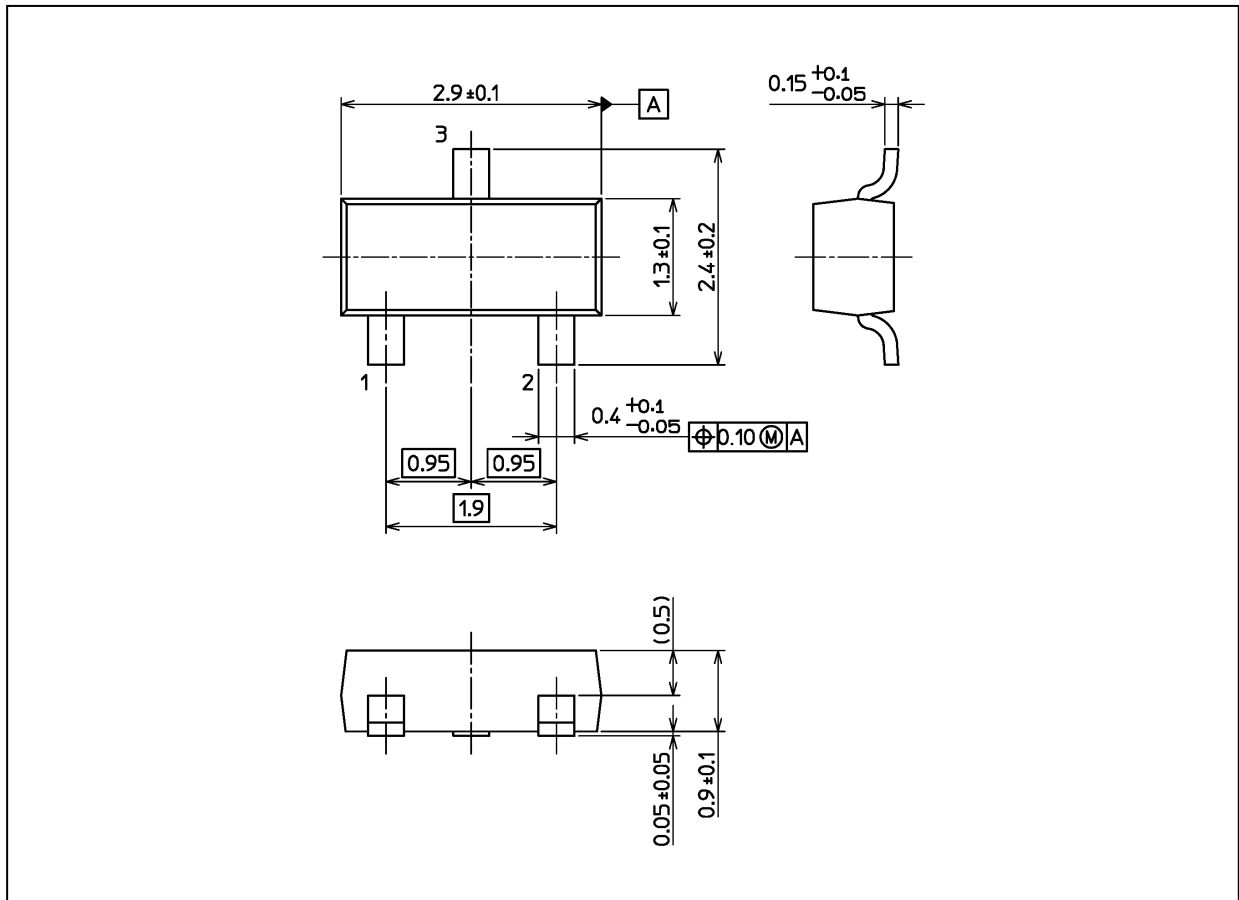


Fig. 8.3 $C_t - V_R$

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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