

# TOSHIBA Diode Silicon Epitaxial Planar Type

# 1SS306

## Ultra High Speed Switching Application

- Small package : SC-61
- Low forward voltage :  $V_F(2) = 0.90\text{ V (typ.)}$
- Fast reverse recovery time :  $t_{rr} = 30\text{ ns (typ.)}$
- Small total capacitance :  $C_T = 1.5\text{ pF (typ.)}$

### Absolute Maximum Ratings (Ta = 25°C)

| Characteristic                 | Symbol             | Rating     | Unit |
|--------------------------------|--------------------|------------|------|
| Maximum (peak) reverse voltage | $V_{RM}$           | 250        | V    |
| Reverse voltage                | $V_R$              | 200        | V    |
| Maximum (peak) forward current | $I_{FM}$           | 300 *      | mA   |
| Average forward current        | $I_O$              | 100 *      | mA   |
| Surge current (10ms)           | $I_{FSM}$          | 2 *        | A    |
| Power dissipation              | $P_D$ (Note 1, 3)  | 200        | mW   |
|                                | $P_D$ (Note 2)     | 150        |      |
| Junction temperature           | $T_j$ (Note 1)     | 150        | °C   |
|                                | $T_j$ (Note 2)     | 125        |      |
| Storage temperature            | $T_{stg}$ (Note 1) | -55 to 150 | °C   |
|                                | $T_{stg}$ (Note 2) | -55 to 125 |      |

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.

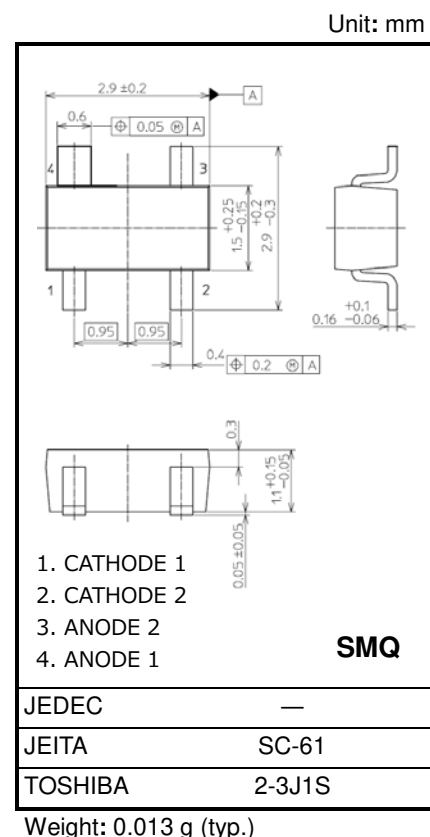
Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/"Derating Concept and Methods") and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

Note 1: For devices with the ordering part number ending in LF(T.

Note 2: For devices with the ordering part number in other than LF(T.

Note 3: Total rating, Mounted on a FR4 board. (25.4 mm × 25.4 mm × 1.6 mm, Cu pad: 1.215 mm<sup>2</sup> × 3 + 1.15 mm<sup>2</sup>)

\*: Unit rating. Total rating = Unit rating  $\times$  1.5.

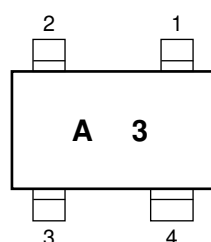


Start of commercial production  
1986-10

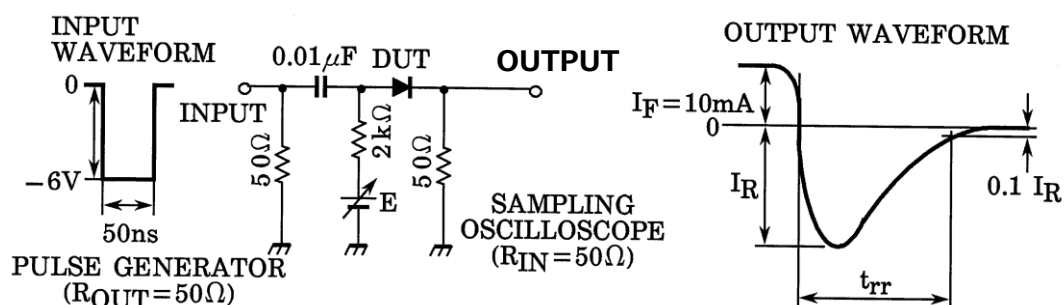
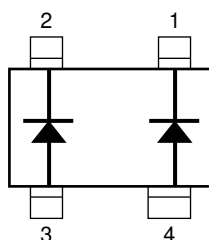
## Electrical Characteristics (Ta = 25°C)

| Characteristic        | Symbol             | Test Condition                  | Min | Typ. | Max | Unit |
|-----------------------|--------------------|---------------------------------|-----|------|-----|------|
| Forward voltage       | V <sub>F</sub> (1) | I <sub>F</sub> = 10 mA          | —   | 0.72 | 1.0 | V    |
|                       | V <sub>F</sub> (2) | I <sub>F</sub> = 100 mA         | —   | 0.9  | 1.2 |      |
| Reverse current       | I <sub>R</sub> (1) | V <sub>R</sub> = 50 V           | —   | —    | 0.1 | μA   |
|                       | I <sub>R</sub> (2) | V <sub>R</sub> = 200 V          | —   | —    | 1.0 |      |
| Total capacitance     | C <sub>T</sub>     | V <sub>R</sub> = 0 V, f = 1 MHz | —   | 1.5  | 3.0 | pF   |
| Reverse recovery time | t <sub>rr</sub>    | I <sub>F</sub> = 10 mA, Fig.1   | —   | 30   | 60  | ns   |

## Marking

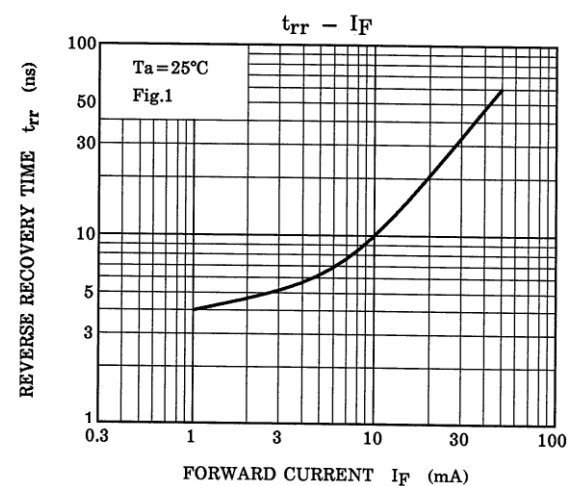
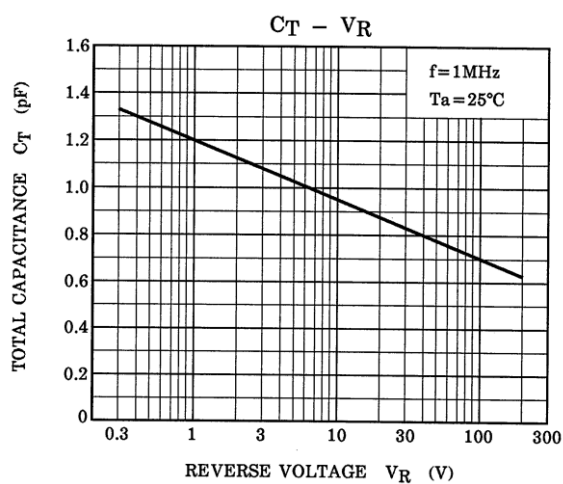
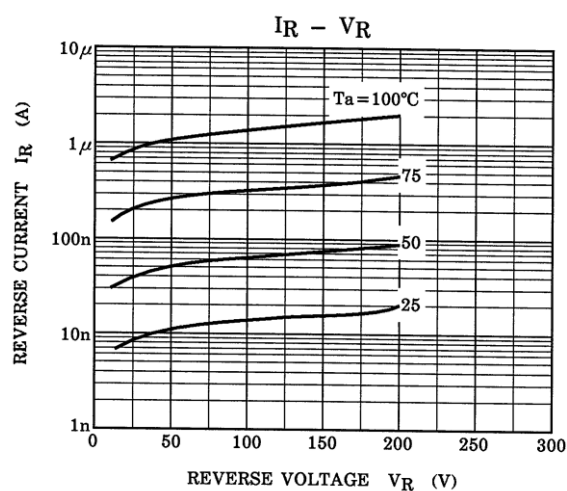
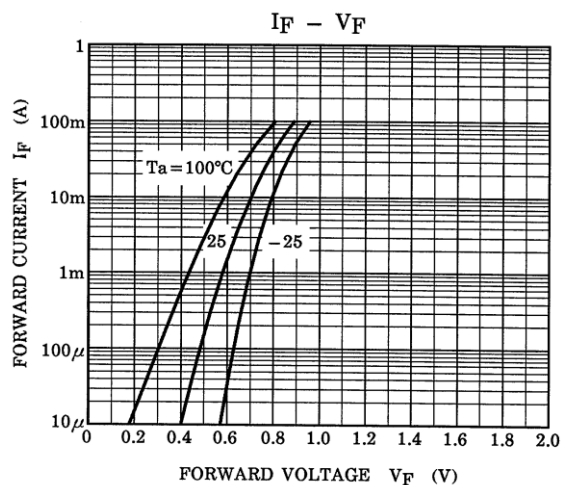


## Equivalent circuit (Top view)



**Fig.1 Reverse recovery time (t<sub>rr</sub>) test circuit**

## Electrical Characteristics ( $T_a = 25^\circ\text{C}$ )



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

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