

TOSHIBA TRANSISTOR SILICON NPN EPITAXIAL PLANAR TYPE

# MT4S06

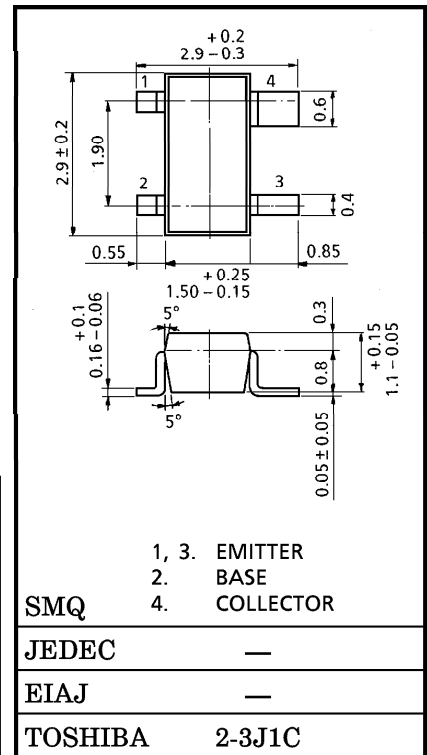
VHF~UHF BAND LOW NOISE AMPLIFIER APPLICATIONS

Unit in mm

- Low Noise Figure :  $NF = 1.6 \text{ dB}$   
( $V_{CE} = 3 \text{ V}, I_C = 3 \text{ mA}, f = 2 \text{ GHz}$ )
- High Gain :  $|S_{21e}|^2 = 11.5 \text{ dB}$   
( $V_{CE} = 3 \text{ V}, I_C = 7 \text{ mA}, f = 2 \text{ GHz}$ )

MAXIMUM RATINGS ( $T_a = 25^\circ\text{C}$ )

| CHARACTERISTIC              | SYMBOL    | RATING  | UNIT             |
|-----------------------------|-----------|---------|------------------|
| Collector-Base Voltage      | $V_{CBO}$ | 10      | V                |
| Collector-Emitter Voltage   | $V_{CEO}$ | 5       | V                |
| Emitter-Base Voltage        | $V_{EBO}$ | 1.5     | V                |
| Base Current                | $I_C$     | 15      | mA               |
| Collector Current           | $I_B$     | 7       | mA               |
| Collector Power Dissipation | $P_C$     | 60      | mW               |
| Junction Temperature        | $T_j$     | 125     | $^\circ\text{C}$ |
| Storage Temperature Range   | $T_{stg}$ | -55~125 | $^\circ\text{C}$ |



SMQ

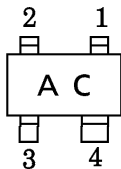
JEDEC

EIAJ

TOSHIBA 2-3J1C

Weight : 0.012 g

MARKING



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## MICROWAVE CHARACTERISTICS (Ta = 25°C)

| CHARACTERISTIC       | SYMBOL            | TEST CONDITION   | MIN. | TYP. | MAX. | UNIT |
|----------------------|-------------------|--|------|------|------|------|
| Transition Frequency | $f_T$             | $V_{CE} = 3 \text{ V}, I_C = 5 \text{ mA}$                         | 7    | 10   | —    | GHz  |
| Insertion Gain       | $ S_{21e} ^2 (1)$ | $V_{CE} = 1 \text{ V}, I_C = 5 \text{ mA},$<br>$f = 2 \text{ GHz}$ | —    | 10.5 | —    | dB   |
|                      | $ S_{21e} ^2 (2)$ | $V_{CE} = 3 \text{ V}, I_C = 7 \text{ mA},$<br>$f = 2 \text{ GHz}$ | 8.5  | 11.5 | —    |      |
| Noise Figure         | NF (1)            | $V_{CE} = 1 \text{ V}, I_C = 3 \text{ mA},$<br>$f = 2 \text{ GHz}$ | —    | 1.7  | 3    | dB   |
|                      | NF (2)            | $V_{CE} = 3 \text{ V}, I_C = 3 \text{ mA},$<br>$f = 2 \text{ GHz}$ | —    | 1.6  | 3    |      |

## ELECTRICAL CHARACTERISTICS (Ta = 25°C)

| CHARACTERISTIC               | SYMBOL    | TEST CONDITION   | MIN. | TYP. | MAX. | UNIT          |
|------------------------------|-----------|--|------|------|------|---------------|
| Collector Cut-off Current    | $I_{CBO}$ | $V_{CB} = 5 \text{ V}, I_E = 0$                              | —    | —    | 0.1  | $\mu\text{A}$ |
| Emitter Cut-off Current      | $I_{EBO}$ | $V_{EB} = 1 \text{ V}, I_C = 0$                              | —    | —    | 1    | $\mu\text{A}$ |
| DC Current Gain              | $h_{FE}$  | $V_{CE} = 1 \text{ V}, I_C = 5 \text{ mA}$                   | 70   | —    | 140  | —             |
| Reverse Transfer Capacitance | $C_{re}$  | $V_{CB} = 1 \text{ V}, I_E = 0, f = 1 \text{ MHz}$<br>(Note) | —    | 0.23 | 0.7  | pF            |

(Note) :  $C_{re}$  is measured by 3 terminal method with capacitance bridge.

## CAUTION

This device electrostatic sensitivity. Please handle with caution.

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