

TOSHIBA Transistor Silicon NPN Epitaxial Planar Type

# MT3S05T

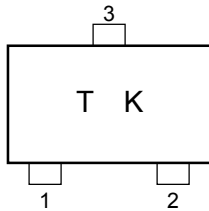
## VHF~UHF Band Low Noise Amplifier Applications

- Suitable for use in an OSC
- Low noise figure  
NF = 1.4dB
- Excellent collector current linearity  
 $|S_{21e}|^2 = 8.5\text{dB}$  (@1 V/5 mA/1 GHz)

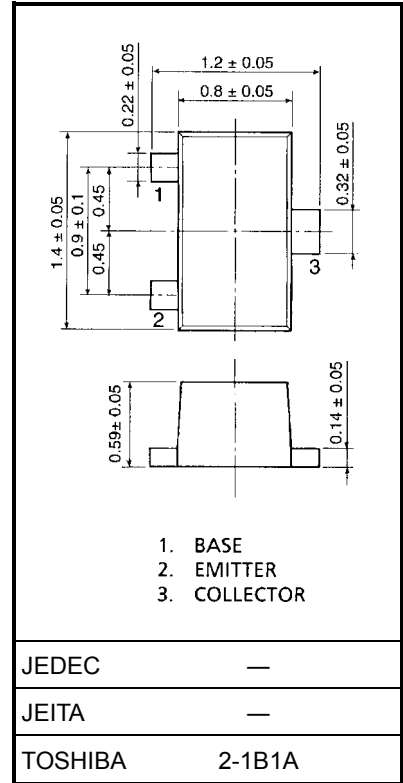
### Maximum Ratings (Ta = 25°C)

| Characteristics             | Symbol    | Rating  | Unit |
|-----------------------------|-----------|---------|------|
| Collector-base voltage      | $V_{CBO}$ | 10      | V    |
| Collector-emitter voltage   | $V_{CEO}$ | 5       | V    |
| Emitter-base voltage        | $V_{EBO}$ | 2       | V    |
| Collector current           | $I_C$     | 40      | mA   |
| Base current                | $I_B$     | 10      | mA   |
| Collector power dissipation | $P_C$     | 100     | mW   |
| Junction temperature        | $T_j$     | 125     | °C   |
| Storage temperature range   | $T_{stg}$ | -55~125 | °C   |

### Marking



Unit: mm



Weight: g (typ.)

## Microwave Characteristics (Ta = 25°C)

| Characteristics      | Symbol           | Test Condition  | Min | Typ. | Max | Unit |
|----------------------|------------------|---|-----|------|-----|------|
| Transition frequency | $f_T$            | $V_{CE} = 1\text{ V}, I_C = 5\text{ mA}$                    | 2   | 4.5  | —   | GHz  |
| Insertion gain       | $ S_{21e} ^2(1)$ | $V_{CE} = 1\text{ V}, I_C = 5\text{ mA}, f = 1\text{ GHz}$  | —   | 8.5  | —   | dB   |
|                      | $ S_{21e} ^2(2)$ | $V_{CE} = 3\text{ V}, I_C = 20\text{ mA}, f = 1\text{ GHz}$ | 8.5 | 11.5 | —   |      |
| Noise figure         | NF               | $V_{CE} = 1\text{ V}, I_C = 5\text{ mA}, f = 1\text{ GHz}$  | —   | 1.4  | 2.2 | dB   |

## Electrical Characteristics (Ta = 25°C)

| Characteristics              | 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              | $h_{FE}$  | $V_{CE} = 1\text{ V}, I_C = 5\text{ mA}$                   | 80  | —    | 140  | —             |
| Reverse transfer capacitance | $C_{re}$  | $V_{CB} = 1\text{ V}, I_E = 0, f = 1\text{ MHz}$<br>(Note) | —   | 0.9  | 1.25 | 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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