

TOSHIBA Transistor Silicon-Germanium NPN Epitaxial Planer Type

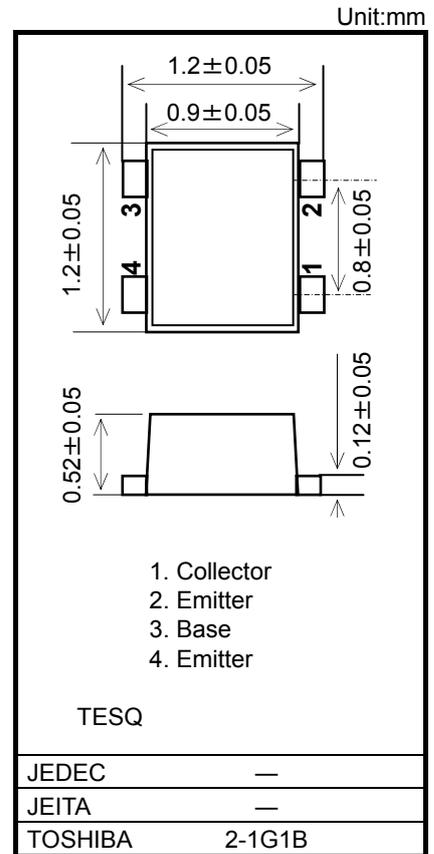
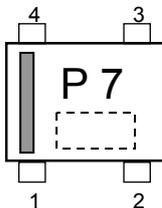
MT4S101T

UHF Low Noise Amplifier Application

FEATURES

- Low Noise Figure :NF=0.8dB (@f=2GHz)
- High Gain:|S21e|²=17.0dB (@f=2GHz)

Marking



Weight: 0.0015 g

Absolute Maximum Ratings (Ta = 25°C)

| Characteristics | Symbol | Rating | Unit |
|-----------------------------|------------------|---------|------|
| Collector-Base voltage | V _{CBO} | 6 | V |
| Collector-Emitter voltage | V _{CEO} | 3 | V |
| Emitter-Base voltage | V _{EBO} | 1.2 | V |
| Collector-Current | I _C | 10 | mA |
| Base-Current | I _B | 5 | mA |
| Collector Power dissipation | P _C | 30 | mW |
| Junction temperature | T _j | 150 | °C |
| Storage temperature Range | T _{stg} | -55~150 | °C |

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).

Microwave Characteristics (Ta = 25°C)

| Characteristics | Symbol | Test Condition | Min | Typ. | Max | Unit |
|----------------------|---------------|------------------------------|------|------|------|------|
| Transition Frequency | f_T | $V_{CE}=2V, I_C=7mA, f=2GHz$ | 18 | 23 | — | GHz |
| Insertion Gain | $ S_{21e} ^2$ | $V_{CE}=2V, I_C=7mA, f=2GHz$ | 14.5 | 17.0 | — | dB |
| Noise Figure | NF | $V_{CE}=2V, I_C=5mA, f=2GHz$ | — | 0.8 | 1.05 | dB |

Electrical Characteristics (Ta = 25°C)

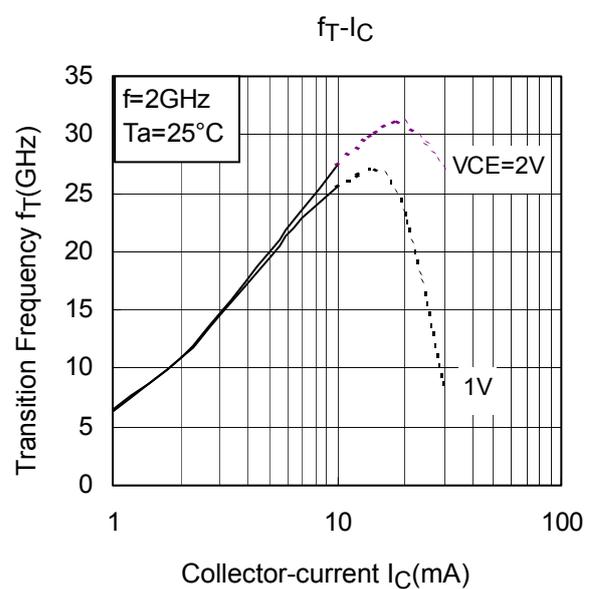
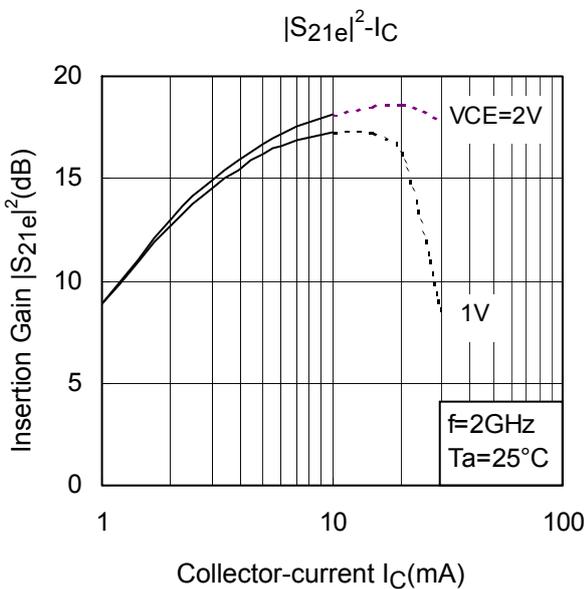
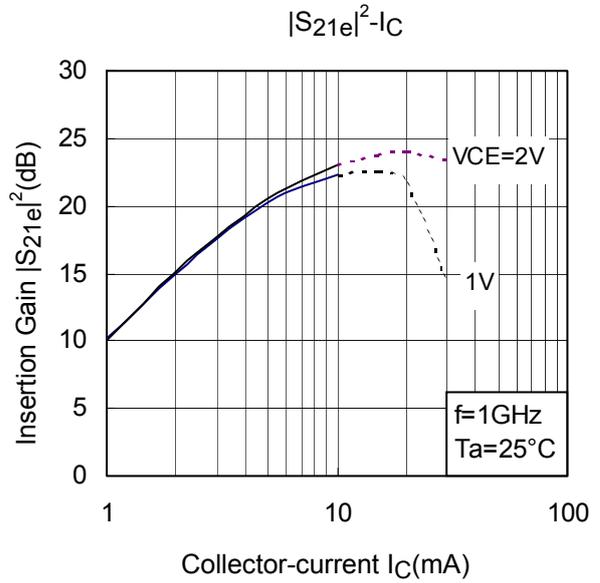
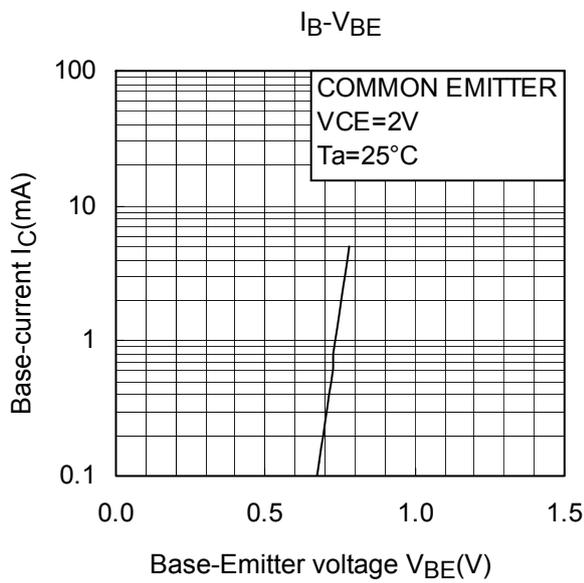
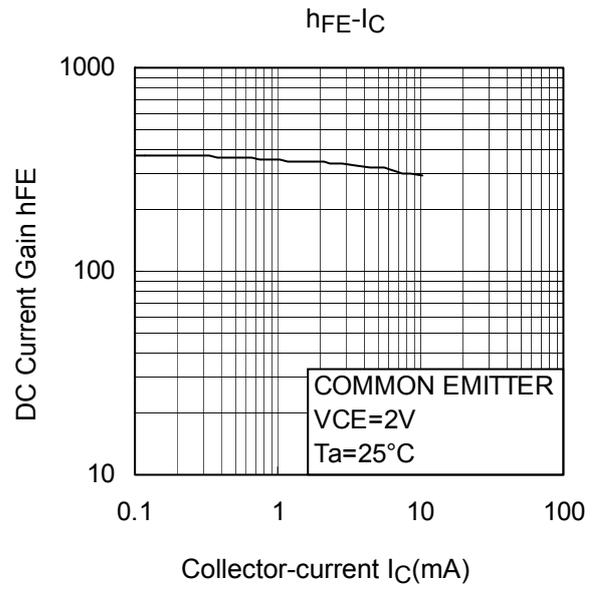
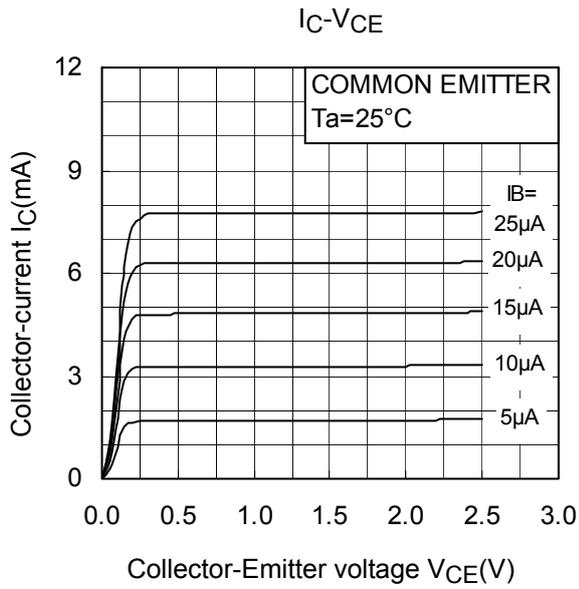
| Characteristics | Symbol | Test Condition | Min | Typ. | Max | Unit |
|------------------------------|-----------|-------------------------------------|-----|------|-----|---------|
| Collector Cut-off Current | I_{CBO} | $V_{CB}=6V, I_E=0$ | — | — | 1 | μA |
| Emitter Cut-off Current | I_{EBO} | $V_{EB}=1V, I_C=0$ | — | — | 1 | μA |
| DC Current Gain | h_{FE} | $V_{CE}=2V, I_C=7mA$ | 200 | — | 400 | - |
| Output Capacitance | C_{ob} | $V_{CB}=2V, I_E=0, f=1MHz$ | — | 0.34 | 0.6 | pF |
| Reverse Transfer Capacitance | C_{re} | $V_{CB}=2V, I_E=0, f=1MHz$ (Note 1) | — | 0.10 | 0.2 | pF |

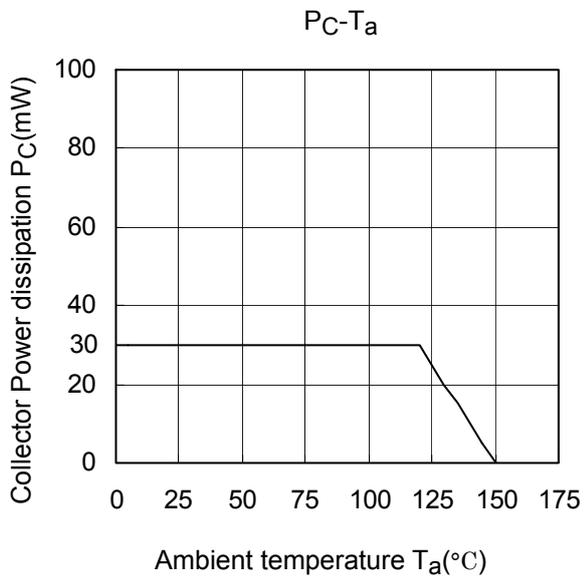
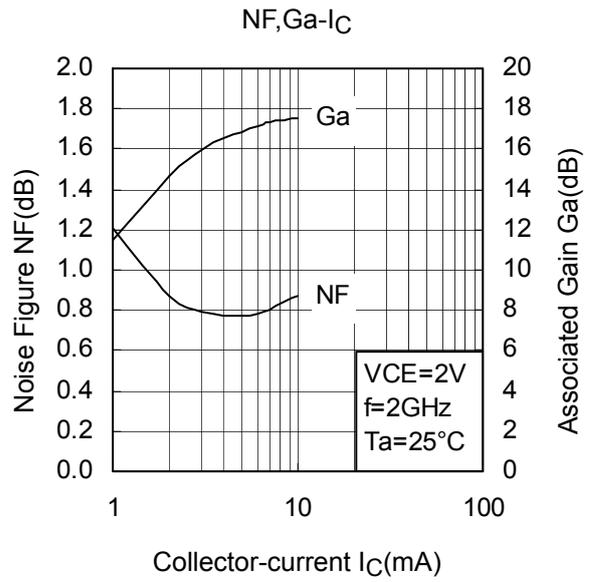
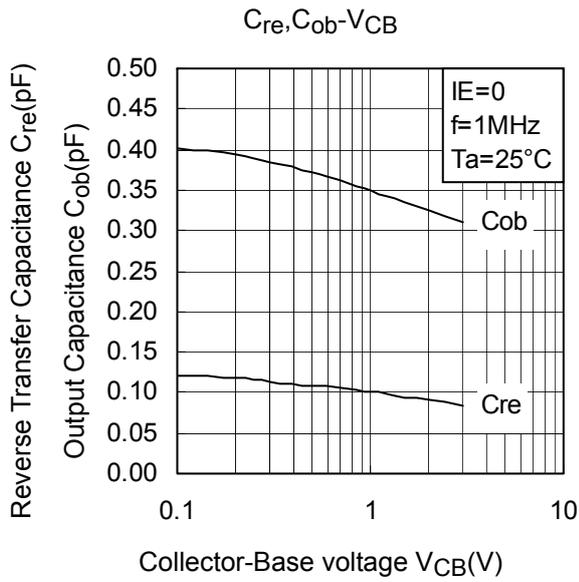
Note 1: C_{re} is measured by 3 terminal method with capacitance bridge.

Caution:

This device is sensitive to electrostatic discharge due to applied the high frequency transistor process of $f_T=60GHz$ class is used for this product.

Please make enough tool and equipment earthed when you handle.





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20070701-EN GENERAL

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