TOSHIBA Transistor Silicon NPN Epitaxial Planar Type (PCT process)

2SC2714

High Frequency Amplifier Applications FM, RF, MIX,IF Amplifier Applications

- Small reverse transfer capacitance: $C_{re} = 0.7 pF$ (typ.)
- Low noise figure: NF = 2.5dB (typ.) (f = 100 MHz)

Maximum Ratings (Ta = 25°C)

| Characteristics | Symbol | Rating | Unit |
|-----------------------------|------------------|---------|------|
| Collector-base voltage | V _{CBO} | 40 | V |
| Collector-emitter voltage | V _{CEO} | 30 | V |
| Emitter-base voltage | V _{EBO} | 4 | V |
| Collector current | Ic | 20 | mA |
| Base current | Ι _Β | 4 | mA |
| Collector power dissipation | P _C | 100 | mW |
| Junction temperature | Tj | 125 | °C |
| Storage temperature range | T _{stg} | -55~125 | °C |

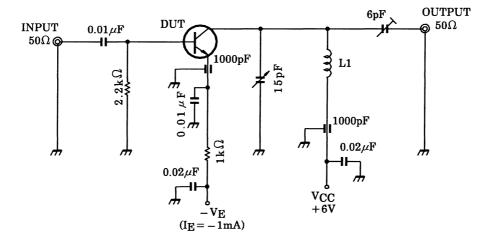
Weight: 0.012 g (typ.)

Electrical Characteristics (Ta = 25°C)

| Characteristics | Symbol | Test Condition | Min | Тур. | Max | Unit |
|------------------------------|---------------------------|---|-----|------|-----|------|
| Collector cut-off current | I _{CBO} | $V_{CB} = 18 \text{ V}, I_{E} = 0$ | _ | _ | 0.5 | μА |
| Emitter cut-off current | I _{EBO} | V _{EB} = 4 V, I _C = 0 | _ | _ | 0.5 | μА |
| DC current gain | h _{FE} (Note) | V _{CE} = 6 V, I _C = 1 mA | 40 | _ | 200 | |
| Reverse transfer capacitance | C _{re} | V _{CB} = 6 V, f = 1 MHz | _ | 0.70 | _ | pF |
| Transition frequency | f _T | V _{CE} = 6 V, I _C = 1 mA | _ | 550 | _ | MHz |
| Collector-base time constant | C _c .rbb' | $V_{CE} = 6 \text{ V}, I_{E} = -1 \text{ mA}, f = 30 \text{ MHz}$ | _ | _ | 30 | ps |
| Noise figure | NF | V _{CE} = 6 V, I _E = -1 mA, f = 100 MHz, | _ | 2.5 | 5.0 | dB |
| Power gain | G _{pe} | Figure 1 | 17 | 23 | _ | dB |

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Note: h_{FE} classification R: 40~80, O: 70~140, Y: 100~200



L1: 0.8 mmφ silver plated copper wire, 4 T, 10ID, 8 length

Figure 1 NF, Gpe Test Circuit

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y Parameter (typ.)

(1) Common emitter ($V_{CE} = 6 \text{ V}, I_{E} = -1 \text{ mA}, f = 100 \text{ MHz}$)

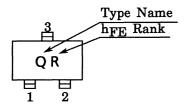
| (1) Common emitter (VCE = 6 V, $TE = -1$ mA, $T = 100$ M112) | | | | |
|--|--------------------|------|------|--|
| Characteristics | Symbol | Тур. | Unit | |
| Input conductance | 9ie | 2.9 | mS | |
| Input capacitance | C _{ie} | 10.2 | pF | |
| Reverse transfer admittance | y _{re} | 0.33 | mS | |
| Phase angle of reverse transfer admittance | $\theta_{\sf re}$ | -90 | 0 | |
| Forward transfer admittance | lу _{fe} l | 40 | mS | |
| Phase angle of forward transfer admittance | $\theta_{\sf fe}$ | -20 | ٥ | |
| Output conductance | 9oe | 45 | μS | |
| Output capacitance | C _{oe} | 1.1 | pF | |

(2) Common base (VCE = 6 V, IE = -1 mA, f = 100 MHz)

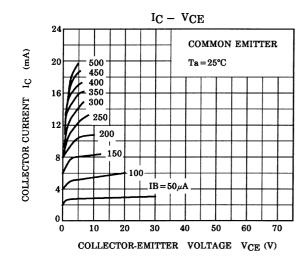
| (2) Common State (1 CH | , | | , |
|--|-------------------|------|------|
| Characteristics | Symbol | Тур. | Unit |
| Input conductance | 9ib | 34 | mS |
| Input capacitance | C _{ib} | -10 | pF |
| Reverse transfer admittance | y _{rb} | 0.27 | mS |
| Phase angle of reverse transfer admittance | $\theta_{\sf rb}$ | -105 | 0 |
| Forward transfer admittance | y _{fb} | 34 | mS |
| Phase angle of forward transfer admittance | θ_{fb} | 165 | 0 |
| Output conductance | 9ob | 45 | μS |
| Output capacitance | C _{ob} | 1.1 | pF |

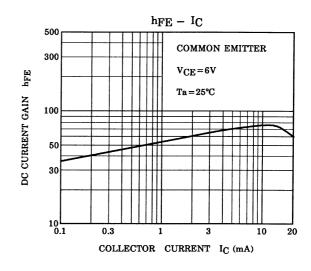
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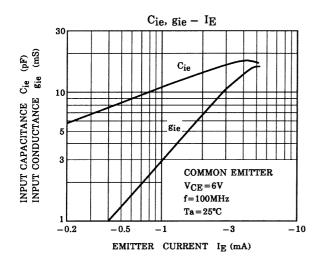
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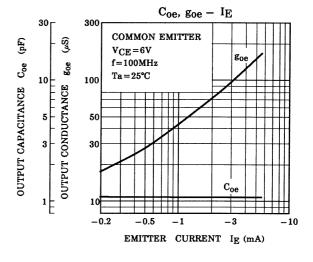


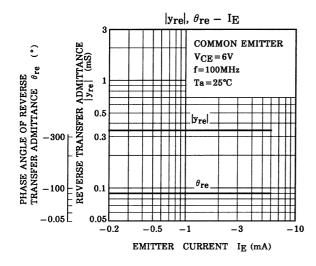
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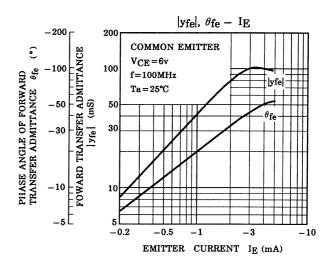


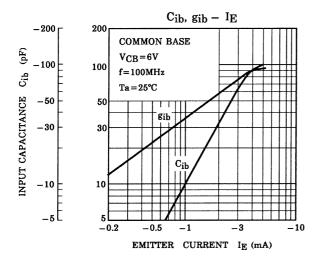


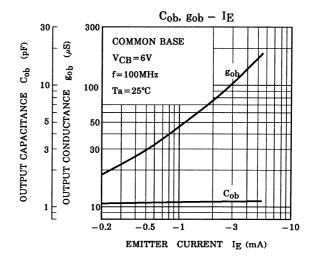


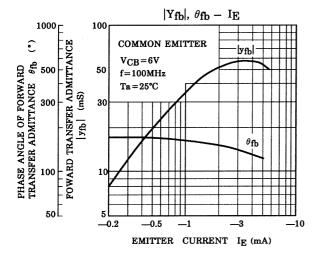


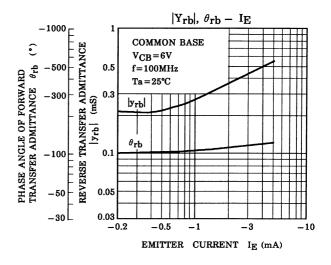


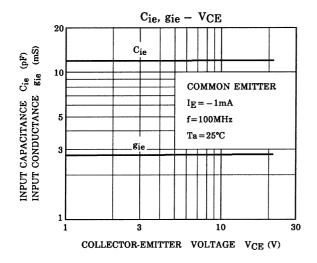


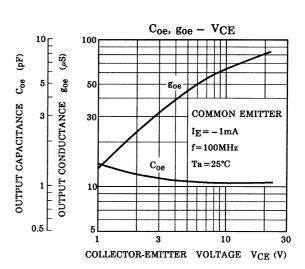




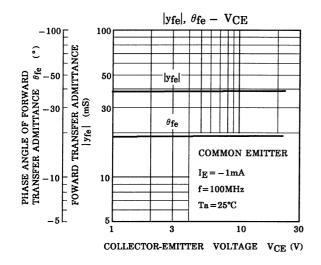


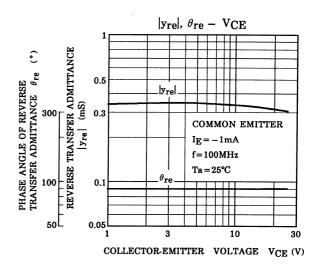


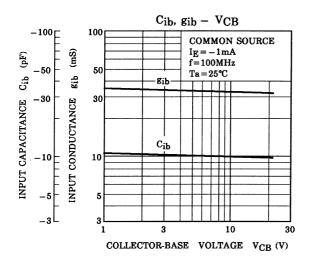


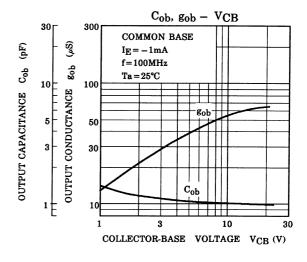


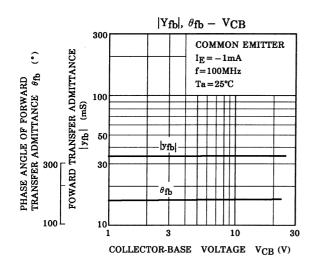
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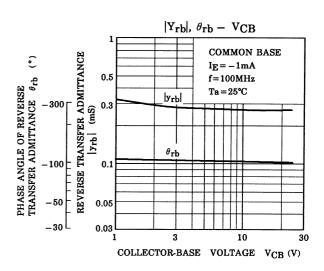




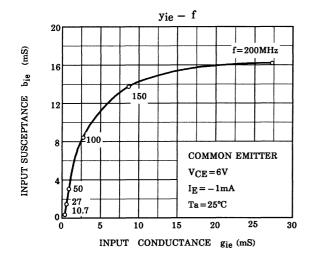


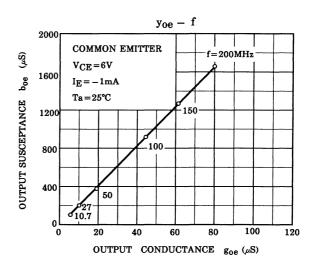


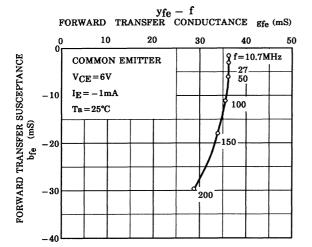


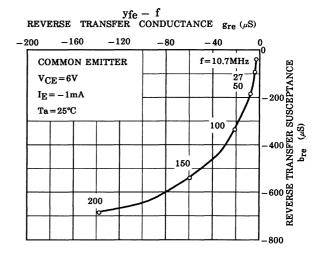


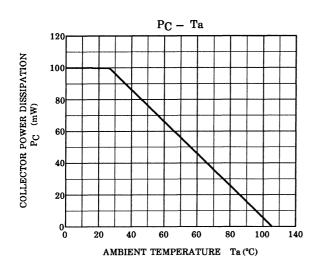
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