TOSHIBA Transistor Silicon NPN Epitaxial Type (PCT process)

TTC4116FU

Audio Frequency General Purpose Amplifier Applications

- High voltage and high current: $V_{CEO} = 50 \text{ V}$, $I_C = 150 \text{ mA} \text{ (max)}$
- Excellent hFE linearity: hFE (IC = 0.1 mA)/hFE (IC = 2 mA) = 0.95 (typ.)
- High hFE: hFE = 120 to 400
- Low noise: NF = 1dB (typ.), 10dB (max)
- Small package

Absolute Maximum Ratings (Ta = 25°C)

| Characteristics | Symbol | Rating | Unit |
|-----------------------------|------------------|------------|------|
| Collector-base voltage | V _{CBO} | 60 | V |
| Collector-emitter voltage | V _{CEO} | 50 | V |
| Emitter-base voltage | V _{EBO} | 5 | V |
| Collector current | ΙC | 150 | mA |
| Base current | Ι _Β | 30 | mA |
| Collector power dissipation | PC | 100 | mW |
| Junction temperature | Tj | 150 | °C |
| Storage temperature range | T _{stg} | –55 to 150 | °C |

2.1±0.1 1.25 ± 0.1 0.3-0.1 0.65 2.0±0.2 1.3±0.1 .65 90 ± 06 0~0.1 BASE 1. EMITTER 2. USM COLLECTOR 3. JEDEC ____ JEITA SC-70 TOSHIBA 2-2E1A

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.

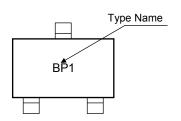
Weight: 6.0 mg (typ.)

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).

Electrical Characteristics (Ta = 25°C)

| Characteristics | Symbol | Test Condition | Min | Тур. | Max | Unit |
|--------------------------------------|-----------------------|--|-----|------|------|------|
| Collector cut-off current | I _{CBO} | $V_{CB} = 60 \text{ V}, \text{ I}_{E} = 0$ | — | _ | 0.1 | μA |
| Emitter cut-off current | I _{EBO} | $V_{EB} = 5 V, I_{C} = 0$ | | _ | 0.1 | μA |
| DC current gain | h _{FE} | $V_{CE} = 6 V, I_C = 2 mA$ | 120 | _ | 400 | _ |
| Collector-emitter saturation voltage | V _{CE (sat)} | $I_{C} = 100 \text{ mA}, I_{B} = 10 \text{ mA}$ | | 0.1 | 0.25 | V |
| Transition frequency | f _T | $V_{CE} = 10 \text{ V}, \text{ I}_{C} = 1 \text{ mA}$ | 80 | _ | | MHz |
| Collector output capacitance | Cob | $V_{CB} = 10 \text{ V}, \text{ I}_{E} = 0, \text{ f} = 1 \text{ MHz}$ | | 2.0 | 3.5 | pF |
| Noise figure | NF | V_{CE} = 6 V, I _C = 0.1 mA, f = 1 kHz, R _g = 10 kΩ, | _ | 1.0 | 10 | dB |

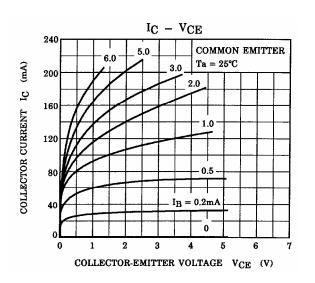
Marking

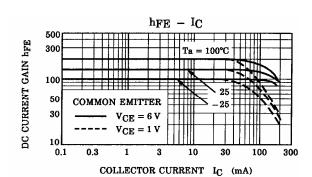


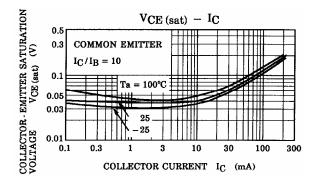
Start of commercial production 2009-09

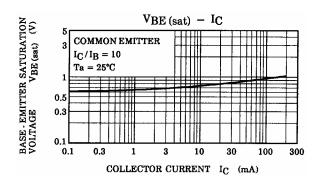


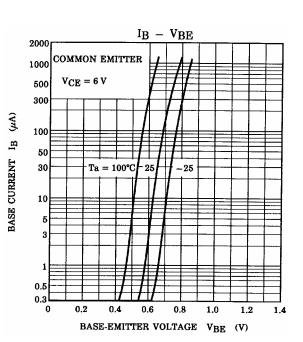
TOSHIBA

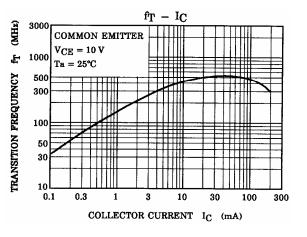












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