

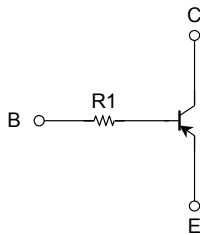
TOSHIBA Transistor Silicon PNP Epitaxial Type (PCT Process) (Bias Resistor Built-in Transistor)

RN2970FE, RN2971FE

Switching, Inverter Circuit, Interface Circuit and Driver Circuit Applications

- Two devices are incorporated into an Extreme-Super-Mini (6-pin) package.
- Incorporating a bias resistor into a transistor reduces parts count. Reducing the parts count enables the manufacture of ever more compact equipment and lowers assembly cost.
- Complementary to RN1970FE, RN1971FE

Equivalent Circuit and Bias Resistor Values

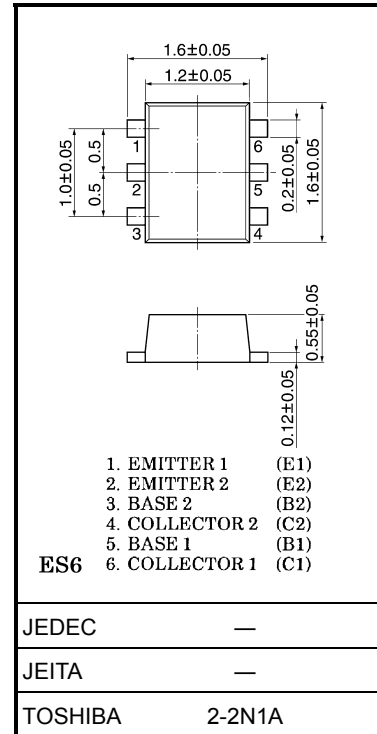


Maximum Ratings (Ta = 25°C) (Q1, Q2 common)

| Characteristics | Symbol | Rating | Unit |
|-----------------------------|--------------|---------|------|
| Collector-base voltage | V_{CBO} | -50 | V |
| Collector-emitter voltage | V_{CEO} | -50 | V |
| Emitter-base voltage | V_{EBO} | -5 | V |
| Collector current | I_C | -100 | mA |
| Collector power dissipation | P_C (Note) | 100 | mW |
| Junction temperature | T_j | 150 | °C |
| Storage temperature range | T_{stg} | -55~150 | °C |

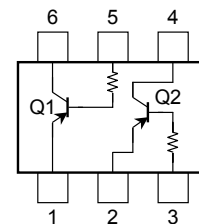
Note: Total rating

Unit: mm



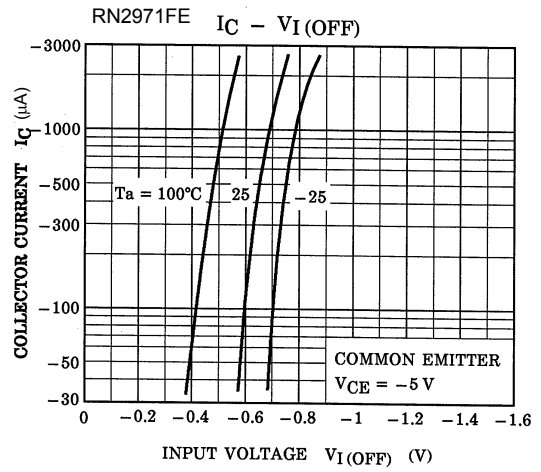
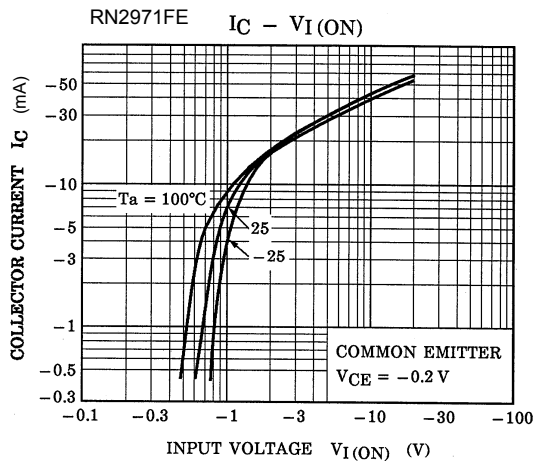
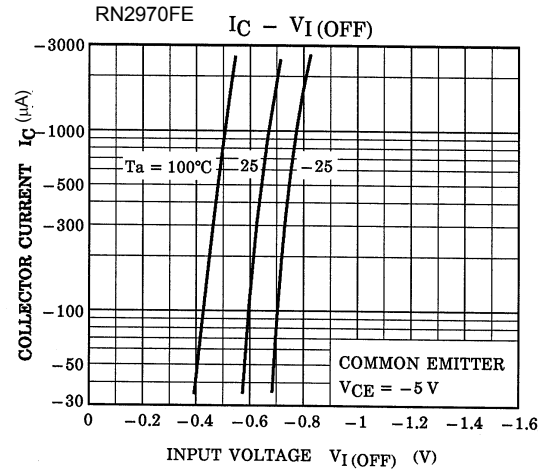
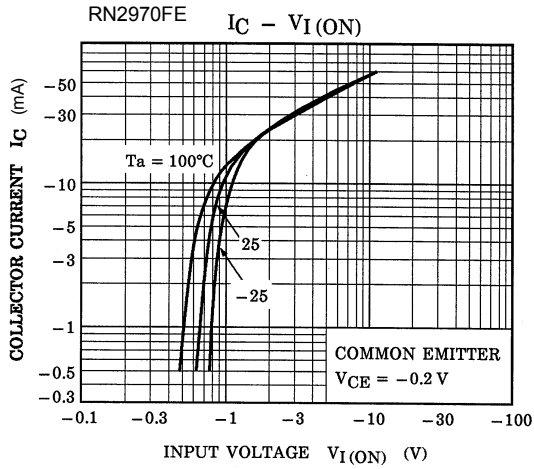
Weight: 0.003 g (typ.)

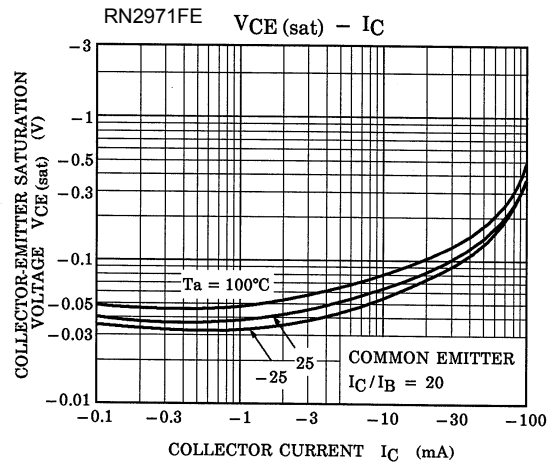
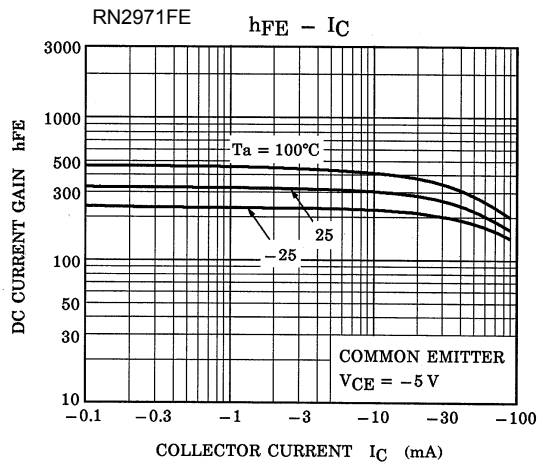
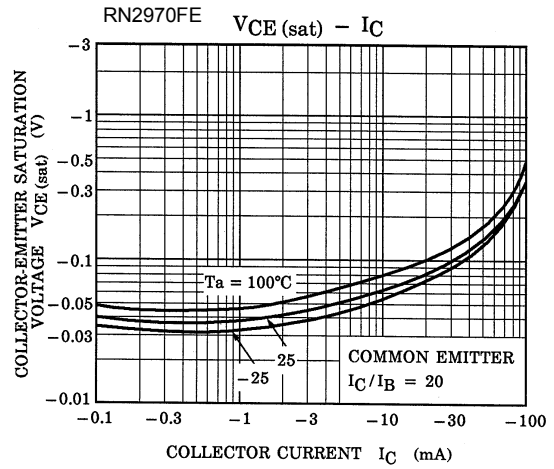
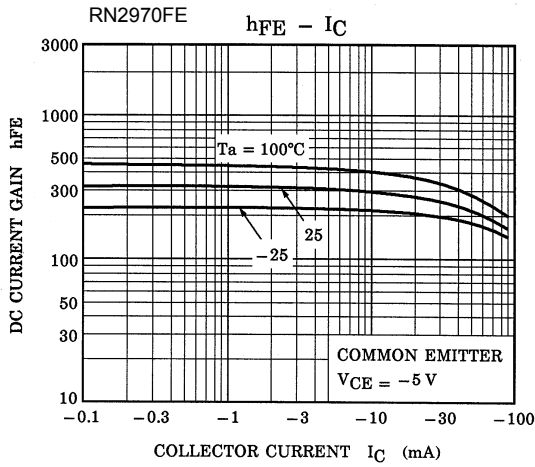
Equivalent Circuit (top view)

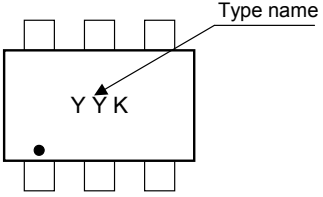
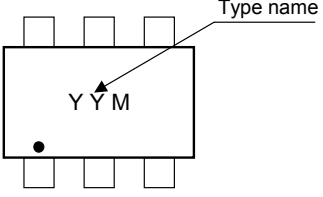


Electrical Characteristics (Ta = 25°C) (Q1, Q2 common)

| Characteristics | | Symbol | Test Condition | Min | Typ. | Max | Unit |
|--------------------------------------|----------|---------------|--|------|------|------|------|
| Collector cut-off current | | I_{CBO} | $V_{CB} = -50\text{ V}, I_E = 0$ | — | — | -100 | nA |
| Emitter cut-off current | | I_{EBO} | $V_{EB} = -5\text{ V}, I_C = 0$ | — | — | -100 | nA |
| DC current gain | | h_{FE} | $V_{CE} = -5\text{ V}, I_C = -1\text{ mA}$ | 120 | — | 400 | |
| Collector-emitter saturation voltage | | $V_{CE(sat)}$ | $I_C = -5\text{ mA}, I_B = -0.25\text{ mA}$ | — | -0.1 | -0.3 | V |
| Transition frequency | | f_T | $V_{CE} = -10\text{ V}, I_C = -5\text{ mA}$ | — | 200 | — | MHz |
| Collector output capacitance | | C_{ob} | $V_{CB} = -10\text{ V}, I_E = 0, f = 1\text{ MHz}$ | — | 3 | 6 | pF |
| Input resistor | RN2970FE | R1 | — | 3.29 | 4.7 | 6.11 | kΩ |
| | RN2971FE | | | 7 | 10 | 13 | |





| Type Name | Marking |
|-----------|--|
| RN2970FE |  <p>The diagram shows a rectangular component with six pins (three on top, three on bottom). A small black dot is located in the bottom-left corner. The marking 'Y Y K' is printed in the center, with a small upward-pointing arrow above the second 'Y'. A line labeled 'Type name' points to the 'Y Y K' marking.</p> |
| RN2971FE |  <p>The diagram shows a rectangular component with six pins (three on top, three on bottom). A small black dot is located in the bottom-left corner. The marking 'Y Y M' is printed in the center, with a small upward-pointing arrow above the second 'Y'. A line labeled 'Type name' points to the 'Y Y M' marking.</p> |

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