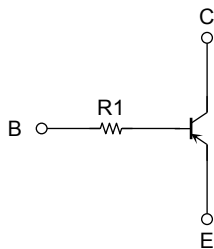


RN2970FE, RN2971FE

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



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

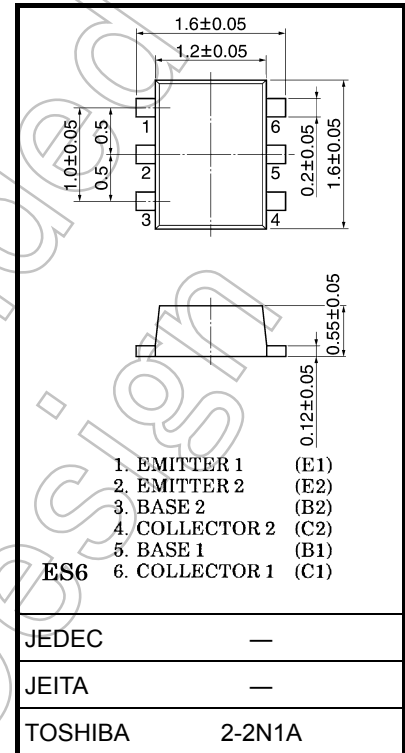
| Characteristics | Symbol | Rating | Unit |
|-----------------------------|-------------------------|------------|------|
| Collector-base voltage | V _{CB0} | -50 | V |
| Collector-emitter voltage | V _{CEO} | -50 | V |
| Emitter-base voltage | V _{EBO} | -5 | V |
| Collector current | I _C | -100 | mA |
| Collector power dissipation | P _C (Note 1) | 100 | mW |
| Junction temperature | T _J | 150 | °C |
| Storage temperature range | T _{stg} | -55 to 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).

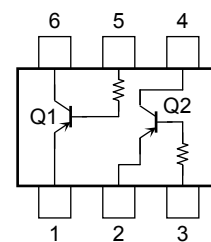
Note 1: Total rating

Unit: mm



Weight: 0.003 g (typ.)

Equivalent Circuit (top view)



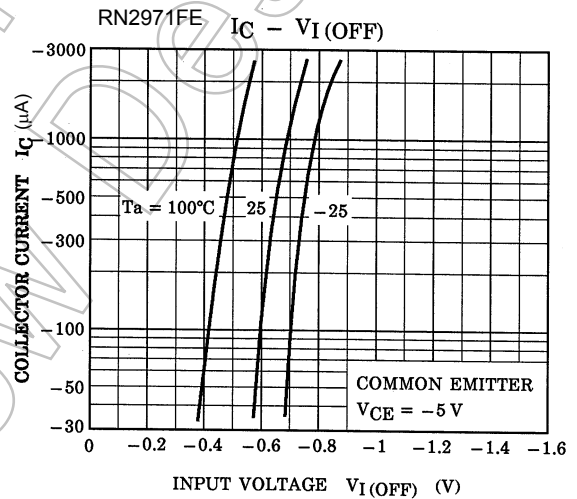
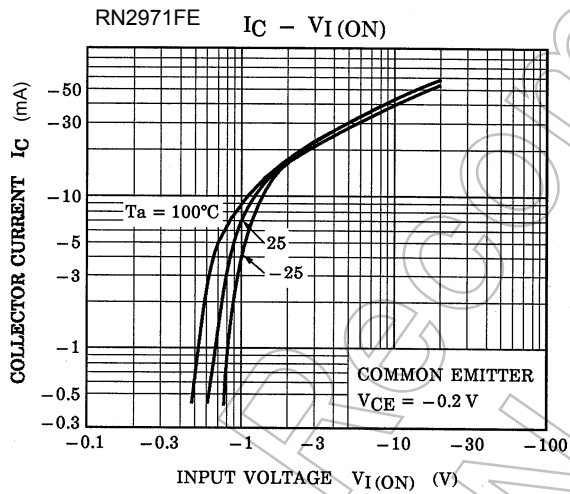
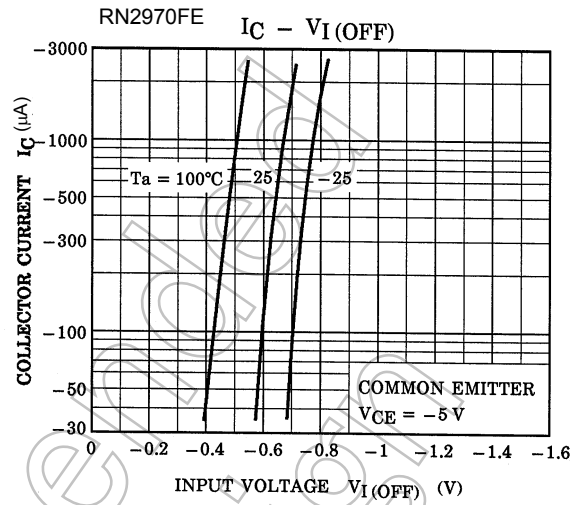
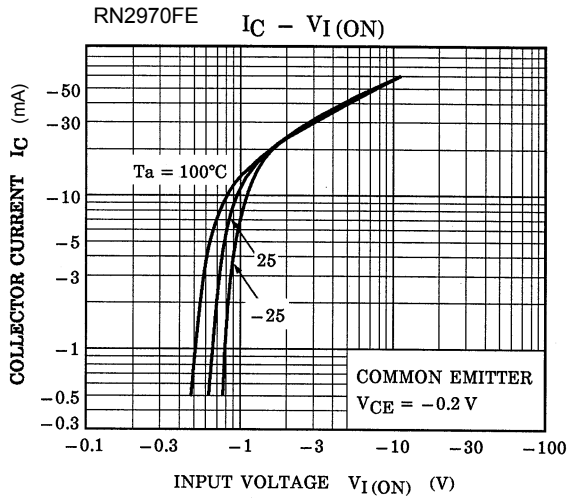
Start of commercial production
2000-05

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

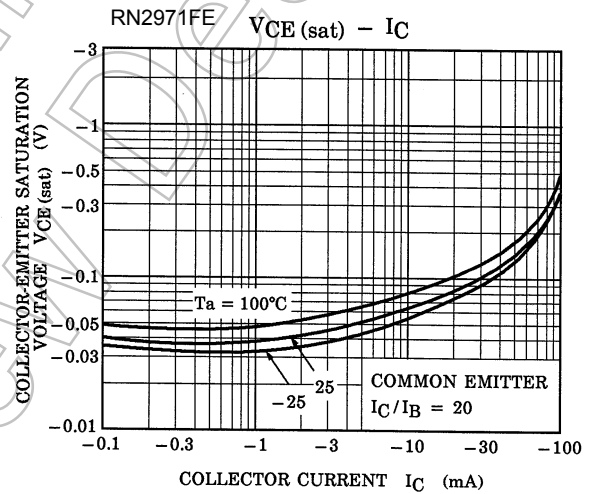
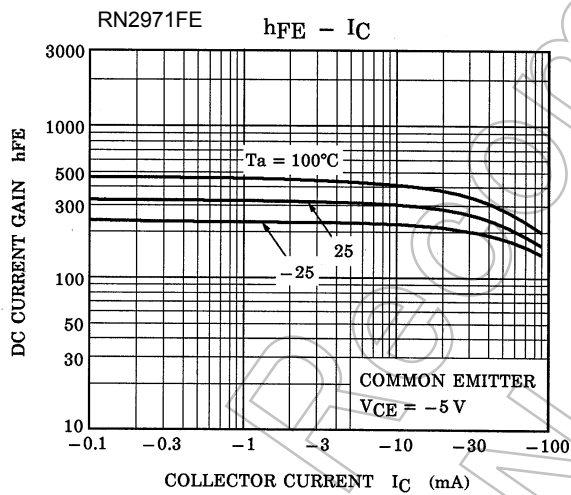
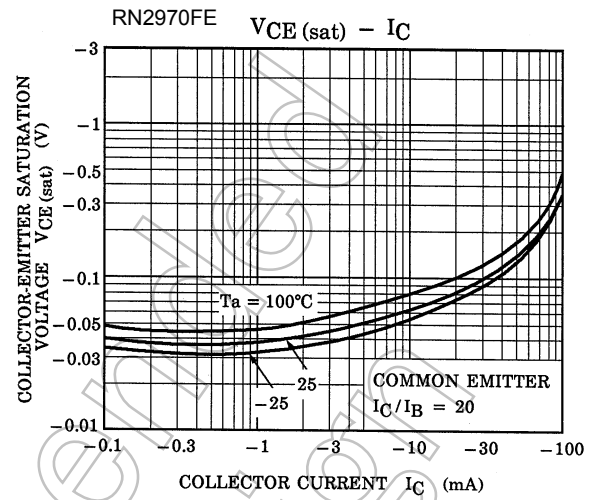
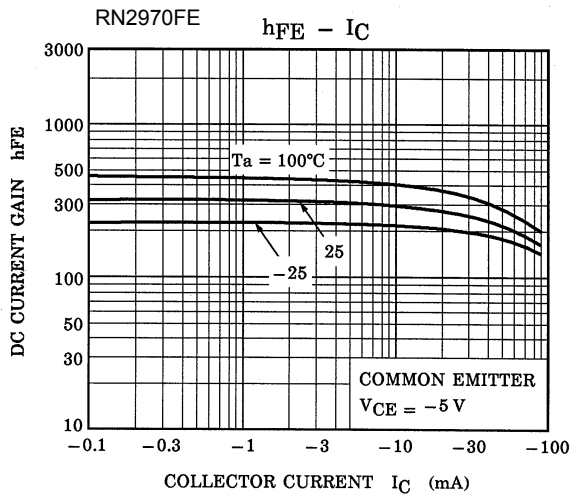
| Characteristics | | Symbol | Test Condition | Min | Typ. | Max | Unit |
|--------------------------------------|----------|---------------|--|------|------|------|------|
| Collector cut-off current | | I_{CBO} | $V_{CB} = -50\text{ V}, I_E = 0$ | — | — | -100 | nA |
| Emitter cut-off current | | I_{EBO} | $V_{EB} = -5\text{ V}, I_C = 0$ | — | — | -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 | |

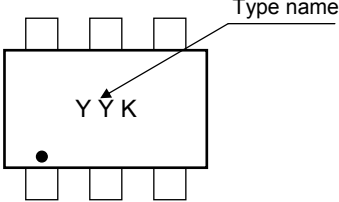
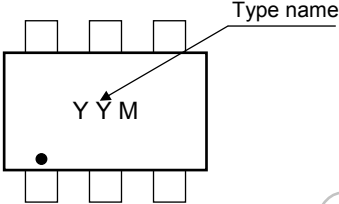
Not Recommended for New Design

Q1, Q2 Common



Q1, Q2 Common



| Type Name | Marking |
|-----------|--|
| RN2970FE |  <p>The diagram shows a rectangular component with six pins (three on each long side). A dot is located on the bottom-left corner. The marking 'Y Y K' is printed in the center. An arrow labeled 'Type name' points to the second 'Y'.</p> |
| RN2971FE |  <p>The diagram shows a rectangular component with six pins (three on each long side). A dot is located on the bottom-left corner. The marking 'Y Y M' is printed in the center. An arrow labeled 'Type name' points to the second 'Y'.</p> |

Not Recommended for New Design

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