

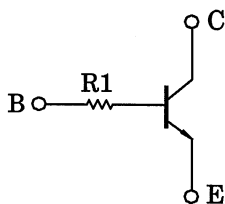
# RN1410, RN1411

Switching, Inverter Circuit, Interface Circuit  
And Driver Circuit Applications

Unit: mm

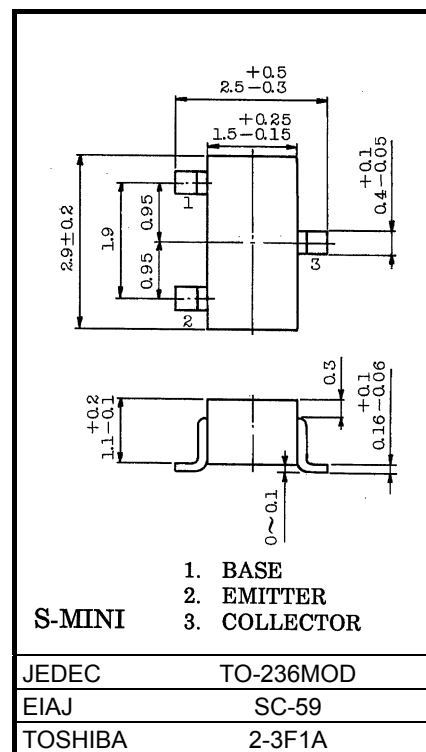
- With built-in bias resistors
- Simplified circuit design
- Reduce a quantity of parts and manufacturing process
- Complementary to RN2410, RN2411

## Equivalent Circuit



## Absolute Maximum Ratings (Ta = 25°C)

| Characteristic              | 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 | $P_C$     | 200     | mW   |
| Junction temperature        | $T_j$     | 150     | °C   |
| Storage temperature range   | $T_{stg}$ | -55~125 | °C   |

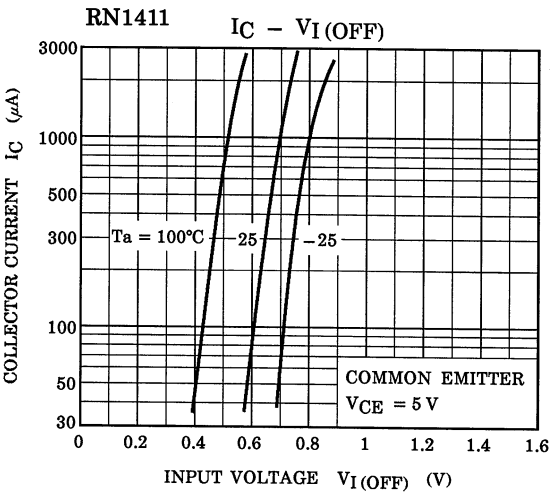
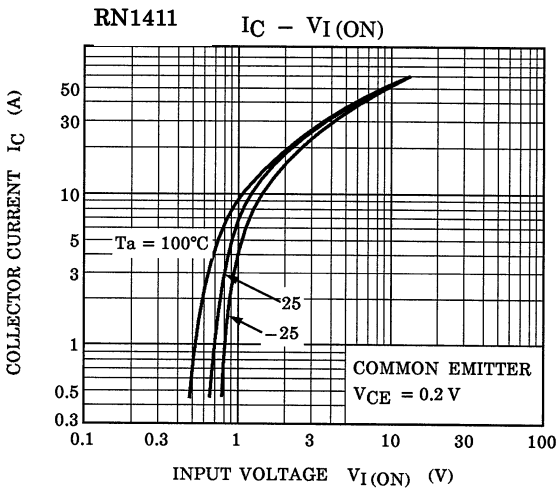
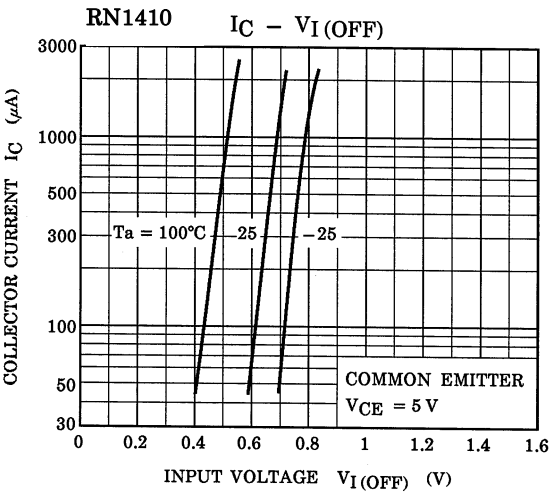
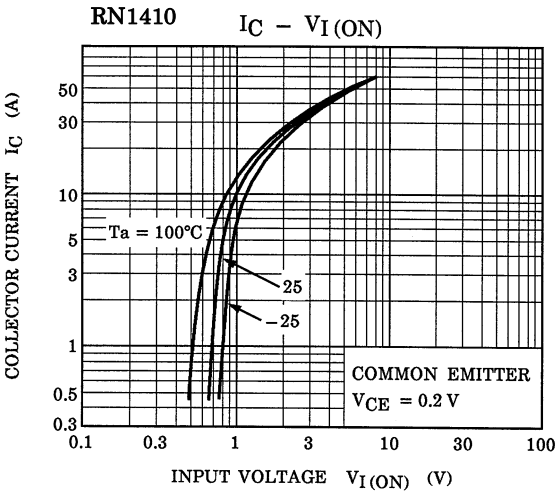


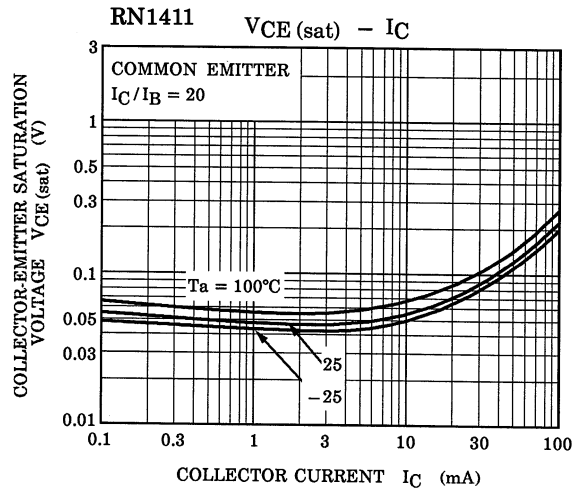
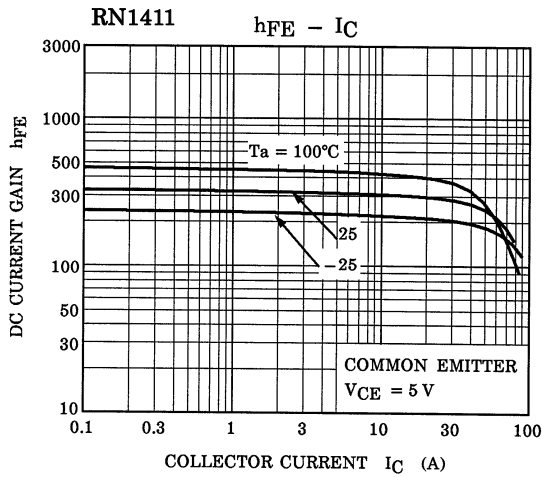
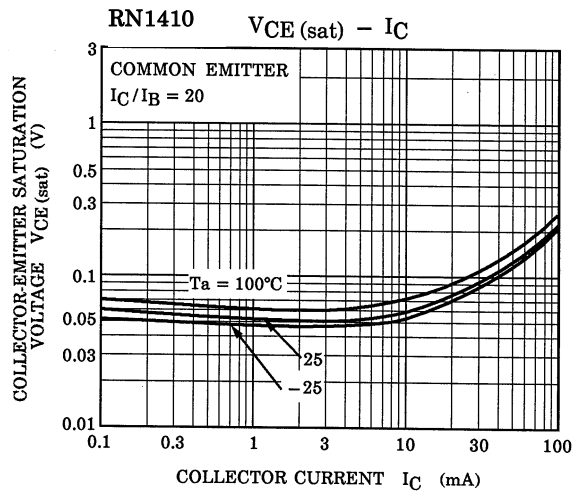
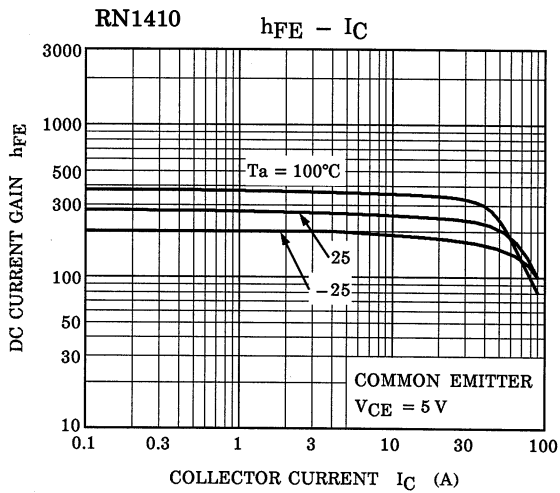
Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) are within the absolute maximum ratings.

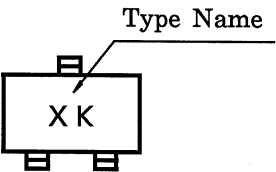
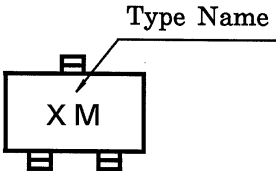
Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/"Derating Concept and Methods") and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

## Electrical Characteristics (Ta = 25°C)

| Characteristic                       | Symbol        | Test Circuit | 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  | —    | 700  |      |
| 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                 | $f_T$         | —            | $V_{CE} = 10 \text{ V}, I_C = 5 \text{ mA}$         | —    | 250  | —    | MHz  |
| Collector output capacitance         | $C_{ob}$      | —            | $V_{CB} = 10 \text{ V}, I_E = 0, f = 1 \text{ MHz}$ | —    | 3    | 6    | pF   |
| Input resistor                       | RN1410        | R1           | —                                                   | 3.29 | 4.7  | 6.11 | kΩ   |
|                                      | RN1411        |              |                                                     | 7    | 10   | 13   |      |





| Type Name | Marking                                                                                                                                                                                                                                                                                                            |
|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| RN1410    |  <p>The diagram shows a rectangular component with three pins: one on the top edge and two on the bottom edge. The text 'X K' is printed inside the rectangle. A leader line points from the text 'Type Name' to the top pin.</p> |
| RN1411    |  <p>The diagram shows a rectangular component with three pins: one on the top edge and two on the bottom edge. The text 'X M' is printed inside the rectangle. A leader line points from the text 'Type Name' to the top pin.</p> |

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20070701-EN GENERAL

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