

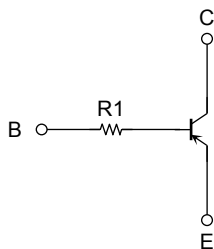
TOSHIBA Transistor Silicon PNP Epitaxial Type (PCT process) (Bias Resistor built-in Transistor)

## RN2110CT,RN2111CT

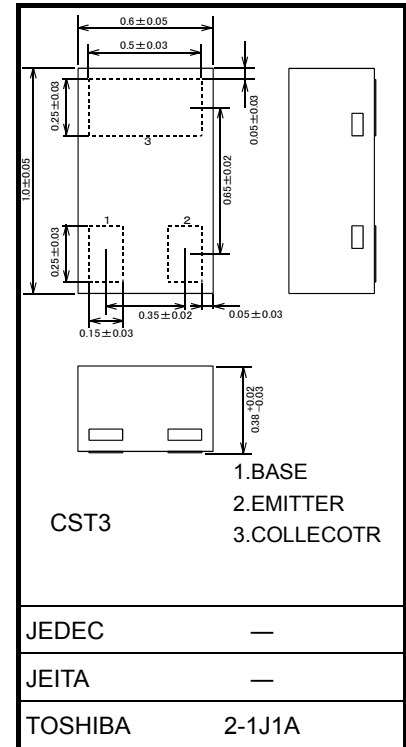
Switching Applications  
 Inverter Circuit Applications  
 Interface Circuit Applications  
 Driver Circuit Applications

- Incorporating a bias resistor into a transistor reduces parts count.  
 Reducing the parts count enable the manufacture of ever more compact equipment and save assembly cost.
- Complementary to RN1110CT, RN1111CT

### Equivalent Circuit



Unit: mm



Weight: 0.75 mg (typ.)

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

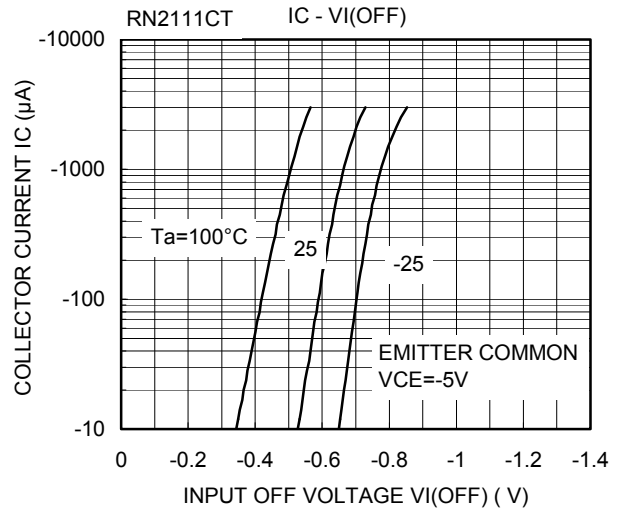
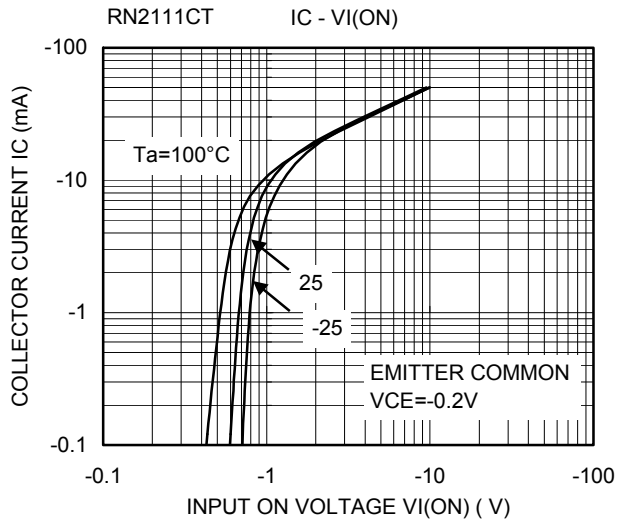
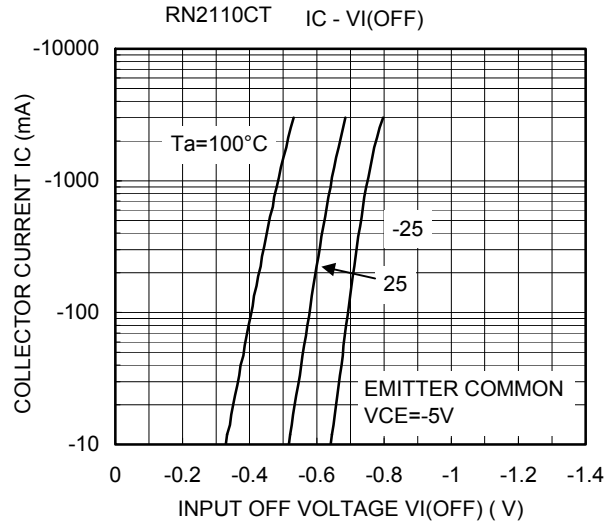
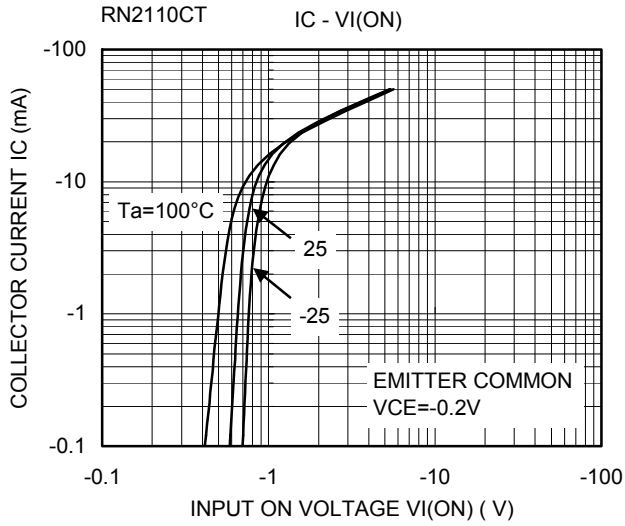
| Characteristics             | Symbol    | Rating     | Unit |
|-----------------------------|-----------|------------|------|
| Collector-base voltage      | $V_{CBO}$ | -20        | V    |
| Collector-emitter voltage   | $V_{CEO}$ | -20        | V    |
| Emitter-base voltage        | $V_{EBO}$ | -5         | V    |
| Collector current           | $I_C$     | -50        | mA   |
| Collector power dissipation | $P_C$     | 50         | mW   |
| Junction temperature        | $T_j$     | 150        | °C   |
| Storage temperature range   | $T_{stg}$ | -55 to 150 | °C   |

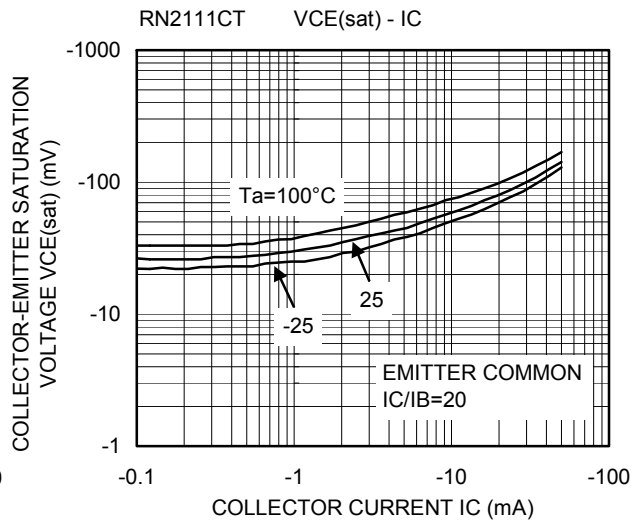
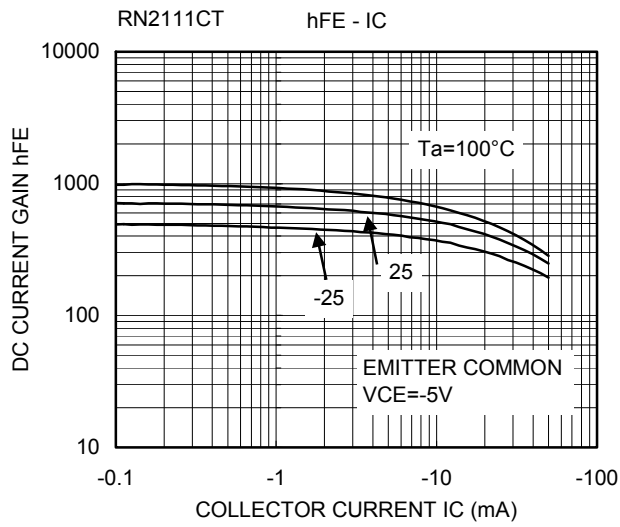
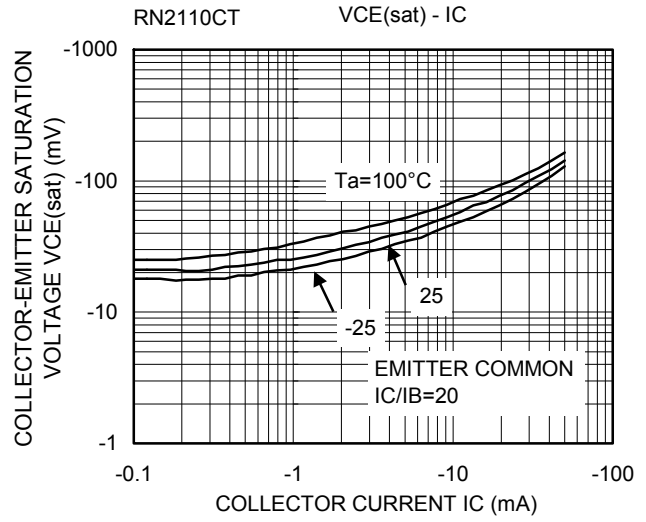
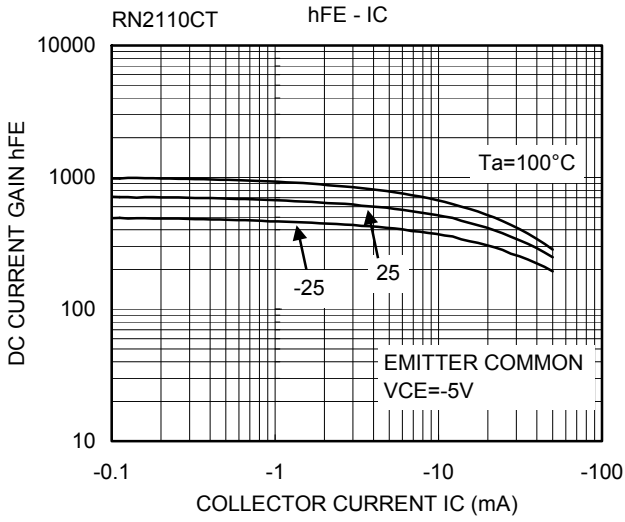
Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e.operatingtemperature/current/voltage, etc.) are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

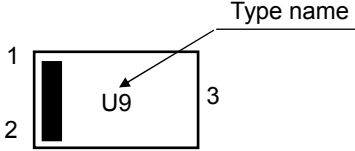
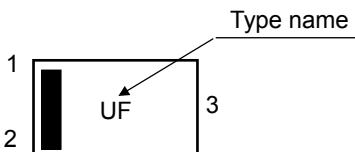
Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/"Derating Concept and Methods") and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

## Electrical Characteristics (Ta = 25°C)

| Characteristics                      |          | Symbol        | Test Condition                                     | Min  | Typ. | Max   | Unit |
|--------------------------------------|----------|---------------|--|------|------|-------|------|
| Collector cut-off current            |          | $I_{CBO}$     | $V_{CB} = -20\text{ V}, I_E = 0$                   | —    | —    | -100  | nA   |
| Emitter cut-off current              |          | $I_{EBO}$     | $V_{EB} = -5\text{ V}, I_C = 0$                    | —    | —    | -100  | nA   |
| DC current gain                      |          | $h_{FE}$      | $V_{CE} = -5\text{ V}, I_C = -1\text{ mA}$         | 300  | —    | —     |      |
| Collector-emitter saturation voltage |          | $V_{CE(sat)}$ | $I_C = -5\text{ mA}, I_B = -0.25\text{ mA}$        | —    |      | -0.15 | V    |
| Collector output capacitance         |          | $C_{ob}$      | $V_{CB} = -10\text{ V}, I_E = 0, f = 1\text{ MHz}$ | —    | 1.2  | —     | pF   |
| Input resistor                       | RN2110CT | R1            | —  | 3.76 | 4.7  | 5.64  | kΩ   |
|                                      | RN2111CT |               |  | 8    | 10   | 12    |      |





| Type Name | Marking  |
|-----------|--|
| RN2110CT  |  <p>The diagram shows a rectangular marking area with a vertical bar on the left side. The bar is divided into three sections labeled 1, 2, and 3 from top to bottom. Section 1 is the top part, section 2 is the middle part, and section 3 is the bottom part. The text 'U9' is printed in the center of the bar. An arrow labeled 'Type name' points to the 'U9' text.</p> |
| RN2111CT  |  <p>The diagram shows a rectangular marking area with a vertical bar on the left side. The bar is divided into three sections labeled 1, 2, and 3 from top to bottom. Section 1 is the top part, section 2 is the middle part, and section 3 is the bottom part. The text 'UF' is printed in the center of the bar. An arrow labeled 'Type name' points to the 'UF' text.</p> |

## Handling Precaution

When handling individual devices (which are not yet mounted on a circuit board), be sure that the environment is protected against electrostatic electricity. Operators should wear anti-static clothing, and containers and other objects that come into direct contact with devices should be made of anti-static materials.

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