

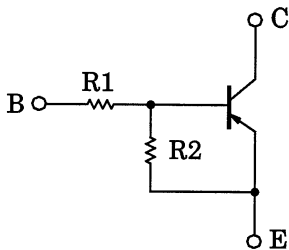
TOSHIBA Transistor    Silicon PNP Epitaxial Type (PCT Process)

# RN2907,RN2908,RN2909

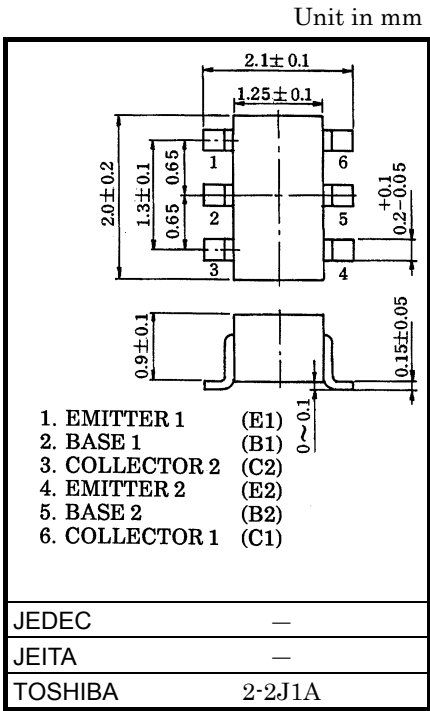
Switching, Inverter Circuit, Interface Circuit  
And Driver Circuit Applications

- Including two devices in US6 (ultra super mini type with 6 leads)
- With built-in bias resistors
- Simplify circuit design
- Reduce a quantity of parts and manufacturing process
- Complementary to RN1907~1909

## Equivalent Circuit and    Bias Resistor Values

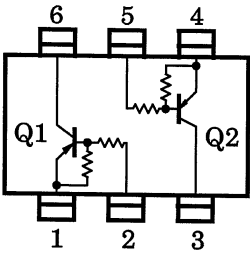


| Type No. | R1 (kΩ) | R2 (kΩ) |
|----------|---------|---------|
| RN2907   | 10      | 47      |
| RN2908   | 22      | 47      |
| RN2909   | 47      | 22      |



Weight: 6.8 mg(typ.)

## Equivalent Circuit (Top View)



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

| Characteristic              |             | Symbol    | Rating  | Unit |
|-----------------------------|-------------|-----------|---------|------|
| Collector-base voltage      | RN2907~2909 | $V_{CBO}$ | -50     | V    |
| Collector-emitter voltage   |             | $V_{CEO}$ | -50     | V    |
| Emitter-base voltage        | RN2907      | $V_{EBO}$ | -6      | V    |
|                             | RN2908      |           | -7      |      |
|                             | RN2909      |           | -15     |      |
| Collector current           | RN2907~2909 | $I_C$     | -100    | mA   |
| Collector power dissipation |             | $P_C^*$   | 200     | mW   |
| Junction temperature        |             | $T_j$     | 150     | °C   |
| Storage temperature range   |             | $T_{stg}$ | -55~150 | °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.

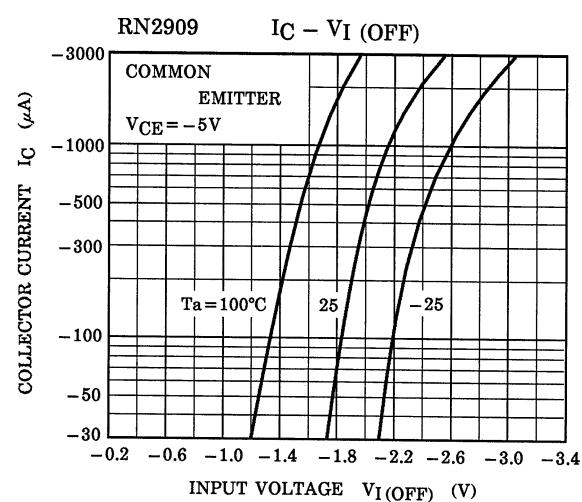
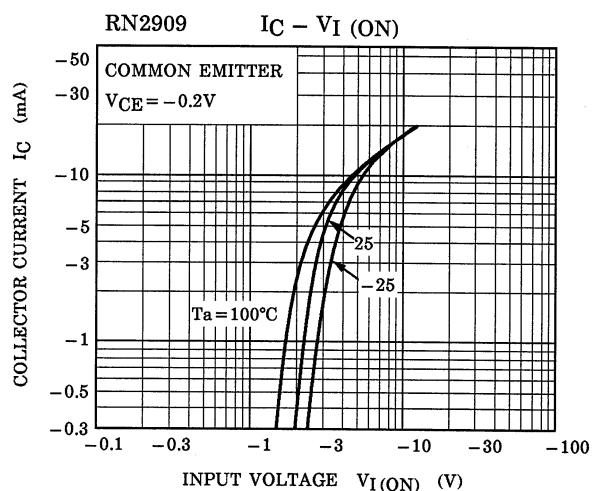
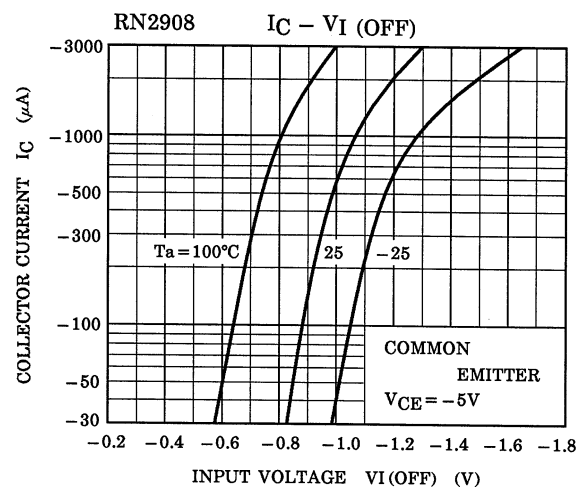
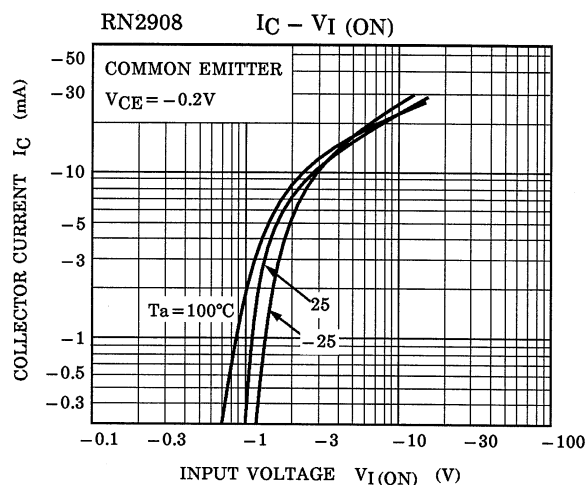
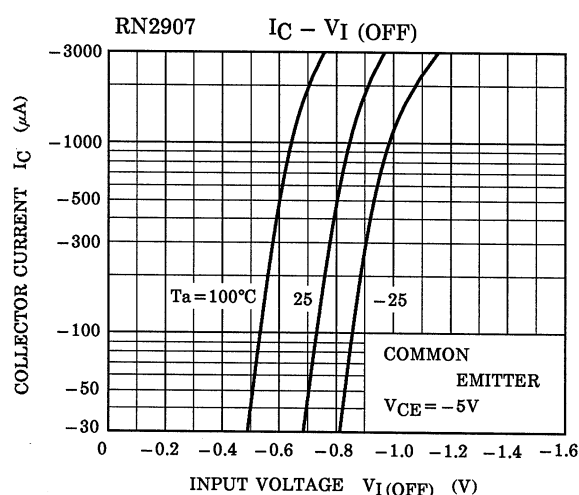
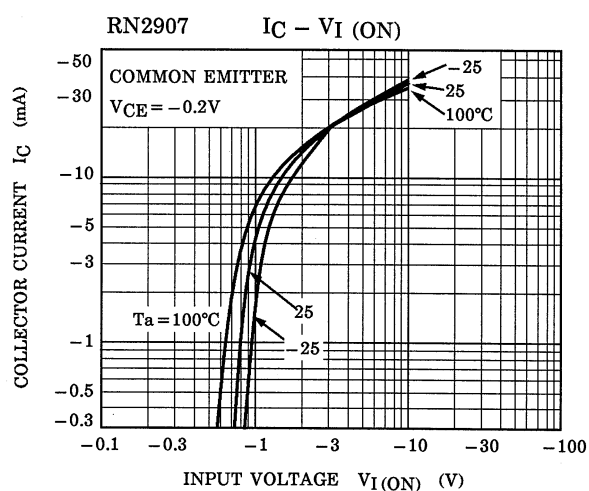
Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/"Derating Concept and Methods") and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

\* : Total rating

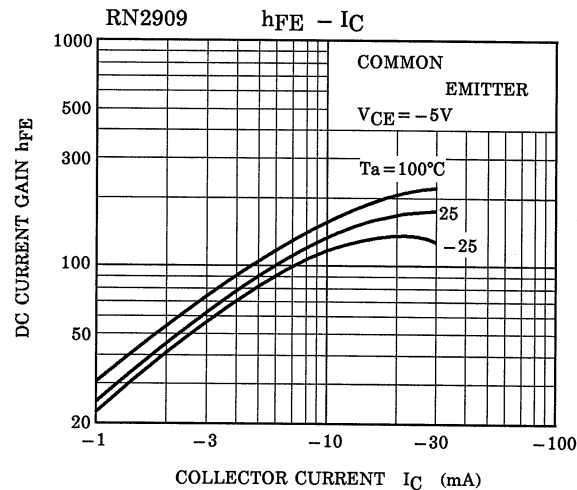
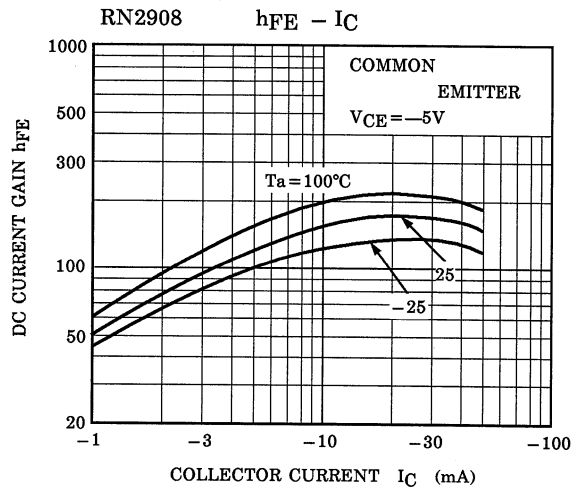
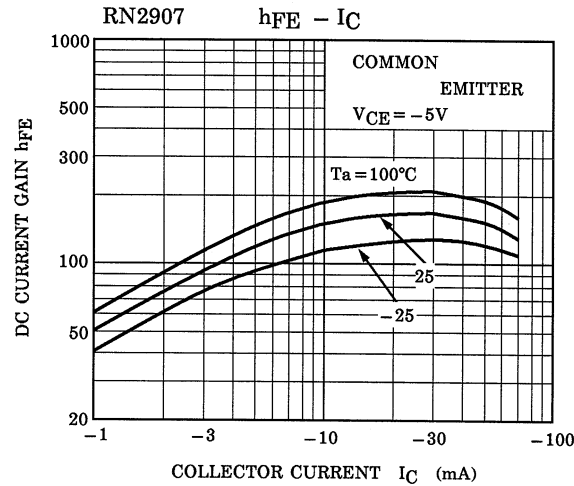
## Electrical Characteristics (Ta = 25°C) (Q1, Q2 Common)

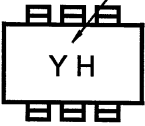
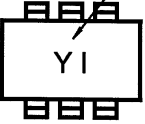
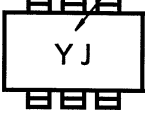
| Characteristic                       |             | Symbol        | Test Circuit | Test Condition                     | Min    | Typ.  | Max    | Unit |
|--------------------------------------|-------------|---------------|--------------|------------------------------------|--------|-------|--------|------|
| Collector cut-off current            | RN2907~2909 | $I_{CBO}$     | —            | $V_{CB} = -50V, I_E = 0$           | —      | —     | -100   | nA   |
|                                      |             | $I_{CEO}$     | —            | $V_{CE} = -50V, I_B = 0$           | —      | —     | -500   | nA   |
| Emitter cut-off current              | RN2907      | $I_{EBO}$     | —            | $V_{EB} = -6V, I_C = 0$            | -0.081 | —     | -0.15  | mA   |
|                                      | RN2908      |               | —            | $V_{EB} = -7V, I_C = 0$            | -0.078 | —     | -0.145 |      |
|                                      | RN2909      |               | —            | $V_{EB} = -15V, I_C = 0$           | -0.167 | —     | -0.311 |      |
| DC current gain                      | RN2907      | $h_{FE}$      | —            | $V_{CE} = -5V, I_C = -10mA$        | 80     | —     | —      | —    |
|                                      | RN2908      |               | —            |                                    | 80     | —     | —      |      |
|                                      | RN2909      |               | —            |                                    | 70     | —     | —      |      |
| Collector-emitter saturation voltage | RN2907~2909 | $V_{CE(sat)}$ | —            | $I_C = -5mA, I_B = -0.25mA$        | —      | -0.1  | -0.3   | V    |
| Input voltage (ON)                   | RN2907      | $V_I(ON)$     | —            | $V_{CE} = -0.2V, I_C = -5mA$       | -0.7   | —     | -1.8   | V    |
|                                      | RN2908      |               | —            |                                    | -1.0   | —     | -2.6   |      |
|                                      | RN2909      |               | —            |                                    | -2.2   | —     | -5.8   |      |
| Input voltage (OFF)                  | RN2907      | $V_I(OFF)$    | —            | $V_{CE} = -5V, I_C = -0.1mA$       | -0.5   | —     | -1.0   | V    |
|                                      | RN2908      |               | —            |                                    | -0.6   | —     | -1.16  |      |
|                                      | RN2909      |               | —            |                                    | -1.5   | —     | -2.6   |      |
| Translation frequency                | RN2907~2909 | $f_T$         | —            | $V_{CE} = -10V, I_C = -5mA$        | —      | 200   | —      | MHz  |
| Collector output capacitance         | RN2907~2909 | $C_{ob}$      | —            | $V_{CB} = -10V, I_E = 0, f = 1MHz$ | —      | 3     | 6      | pF   |
| Input resistor                       | RN2907      | R1            | —            | —                                  | 7      | 10    | 13     | kΩ   |
|                                      | RN2908      |               | —            |                                    | 15.4   | 22    | 28.6   |      |
|                                      | RN2909      |               | —            |                                    | 32.9   | 47    | 61.1   |      |
| Resistor ratio                       | RN2907      | R1/R2         | —            | —                                  | 0.191  | 0.213 | 0.232  | —    |
|                                      | RN2908      |               | —            |                                    | 0.421  | 0.468 | 0.515  |      |
|                                      | RN2909      |               | —            |                                    | 1.92   | 2.14  | 2.35   |      |

(Q1, Q2 Common)



(Q1, Q2 Common)



| Type Name | Marking                                                                                                          |
|-----------|------------------------------------------------------------------------------------------------------------------|
| RN2907    | <div><div>Type Name</div></div> |
| RN2908    | <div><div>Type Name</div></div> |
| RN2909    | <div><div>Type Name</div></div> |

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