

TOSHIBA TRANSISTOR SILOCON NPN EPITAXIAL TYPE (PCT PROCESS)

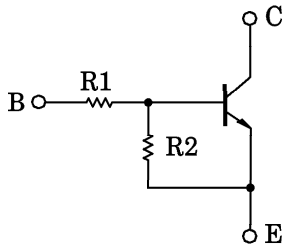
RN1407, RN1408, RN1409

SWITCHING, INVERTER CIRCUIT, INTERFACE CIRCUIT AND DRIVER
CIRCUIT APPLICATIONS

Unit in mm

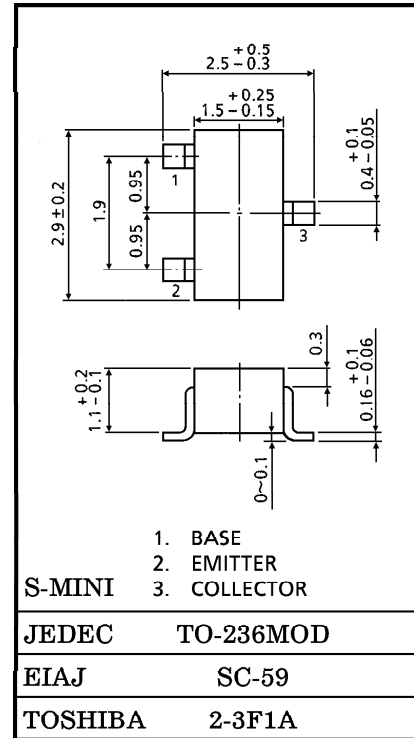
- With Built-in Bias Resistors
- Simplify Circuit Design
- Reduce a Quantity of Parts and Manufacturing Process
- Complementary to RN2407~2409

EQUIVALENT CIRCUIT



BIAS RESISTOR VALUES

| TYPE No. | R1 (kΩ) | R2 (kΩ) |
|----------|---------|---------|
| RN1407 | 10 | 47 |
| RN1408 | 22 | 47 |
| RN1409 | 47 | 22 |



Weight : 0.012g

MAXIMUM RATINGS (Ta = 25°C)

| CHARACTERISTIC | | SYMBOL | RATING | UNIT |
|-----------------------------|-------------|------------------|---------|------|
| Collector-Base Voltage | RN1407~1409 | V _{CB0} | 50 | V |
| Collector-Emitter Voltage | RN1407~1409 | V _{CEO} | 50 | V |
| Emitter-Base Voltage | RN1407 | V _{EBO} | 6 | V |
| | RN1408 | | 7 | |
| | RN1409 | | 15 | |
| Collector Current | RN1407~1409 | I _C | 100 | mA |
| Collector Power Dissipation | RN1407~1409 | P _C | 200 | mW |
| Junction Temperature | RN1407~1409 | T _j | 150 | °C |
| Storage Temperature Range | RN1407~1409 | T _{stg} | -55~150 | °C |

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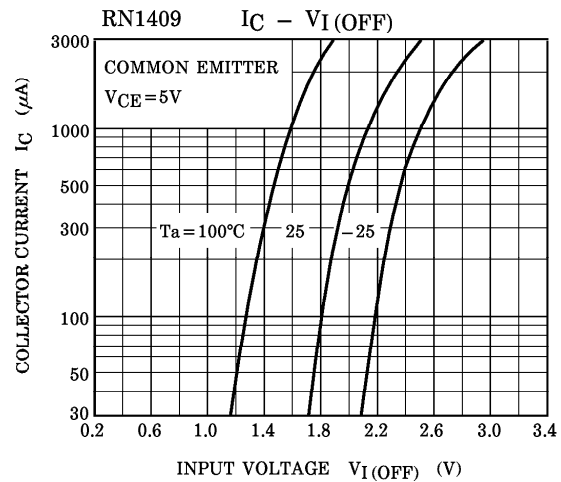
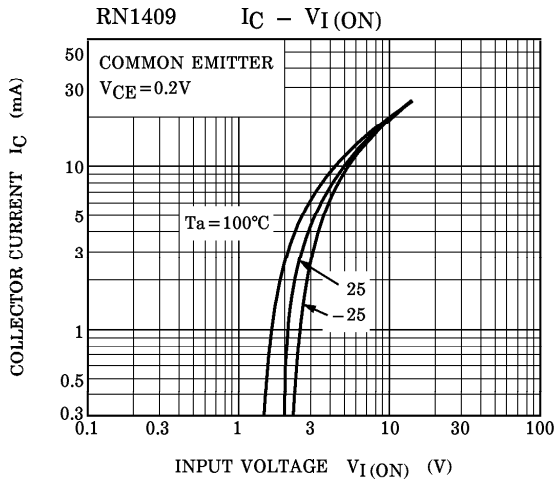
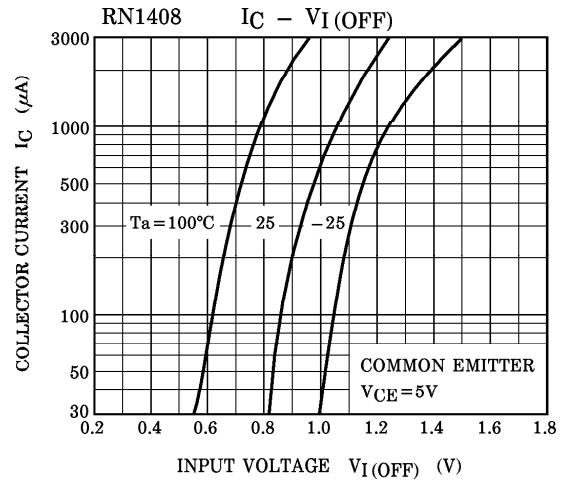
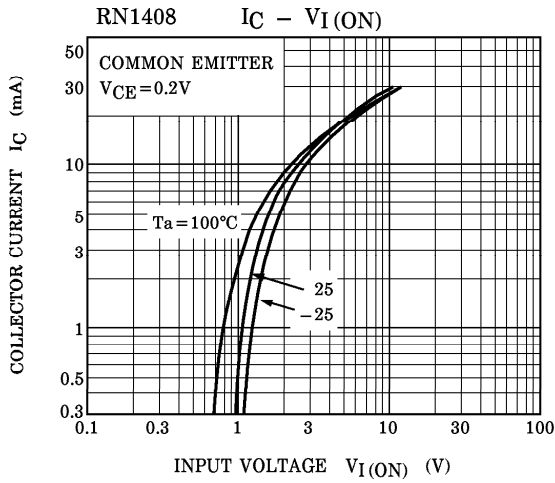
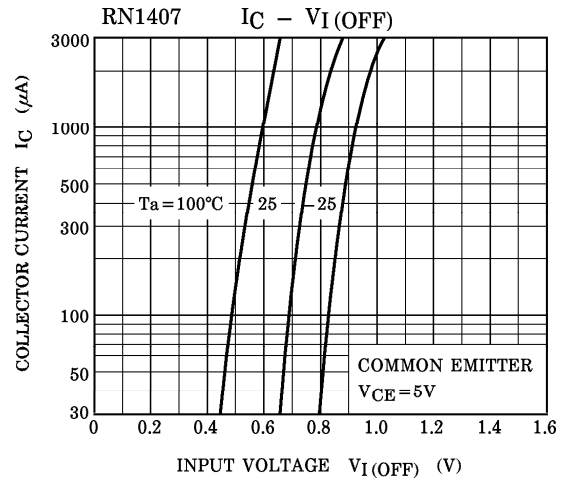
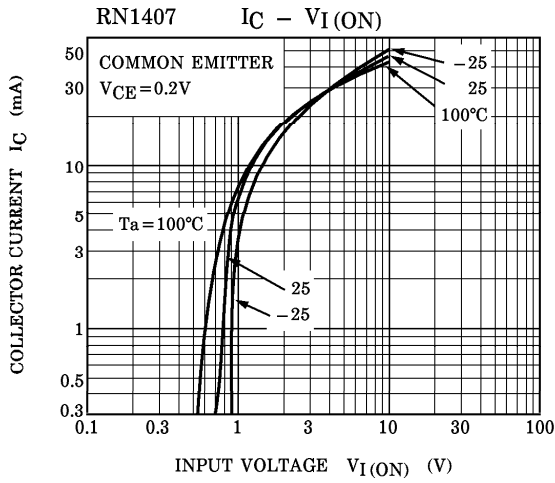
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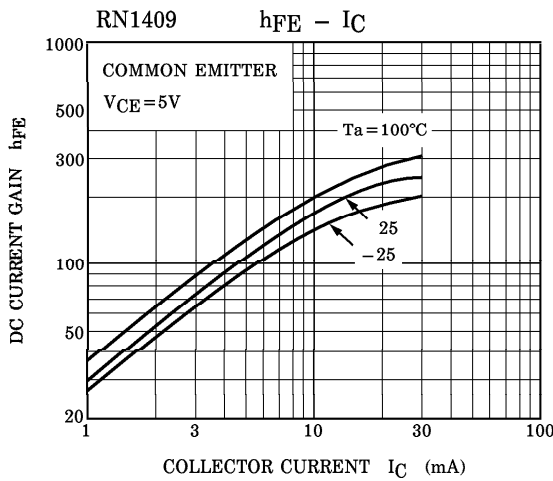
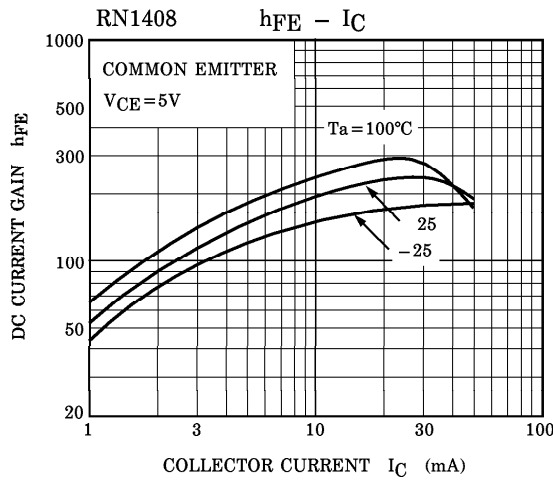
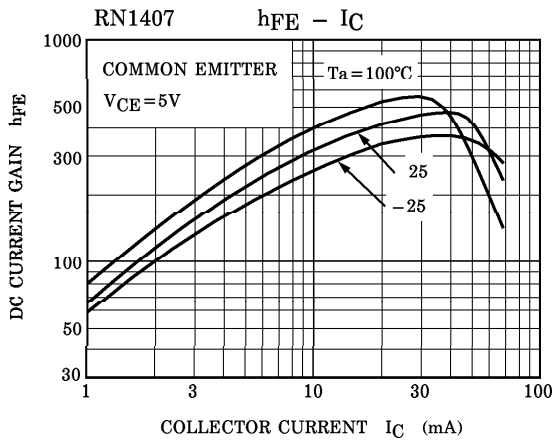
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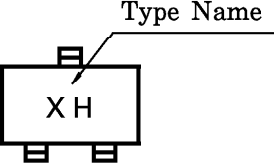
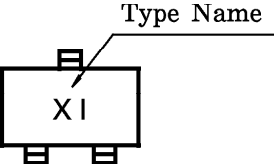
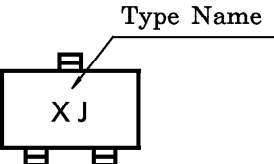
● The information contained herein is subject to change without notice.

ELECTRICAL CHARACTERISTICS (Ta = 25°C)

| CHARACTERISTIC | | SYMBOL | TEST CONDITION | MIN. | TYP. | MAX. | UNIT |
|--------------------------------------|-------------|---------------|-----------------------------|-------|-------|-------|------|
| Collector Cut-off Current | RN1407~1409 | I_{CBO} | $V_{CB}=50V, I_E=0$ | — | — | 100 | nA |
| | | I_{CEO} | $V_{CE}=50V, I_B=0$ | — | — | 500 | |
| Emitter Cut-off Current | RN1407 | I_{EBO} | $V_{EB}=6V, I_C=0$ | 0.081 | — | 0.15 | mA |
| | RN1408 | | $V_{EB}=7V, I_C=0$ | 0.078 | — | 0.145 | |
| | RN1409 | | $V_{EB}=15V, I_C=0$ | 0.167 | — | 0.311 | |
| DC Current Gain | RN1407 | h_{FE} | $V_{CE}=5V, I_C=10mA$ | 80 | — | — | — |
| | RN1408 | | | 80 | — | — | |
| | RN1409 | | | 70 | — | — | |
| Collector-Emitter Saturation Voltage | RN1407~1409 | $V_{CE(sat)}$ | $I_C=5mA, I_B=0.25mA$ | — | 0.1 | 0.3 | V |
| Input Voltage (ON) | RN1407 | $V_{I(ON)}$ | $V_{CE}=0.2V, I_C=5mA$ | 0.7 | — | 1.8 | V |
| | RN1408 | | | 1.0 | — | 2.6 | |
| | RN1409 | | | 2.2 | — | 5.8 | |
| Input Voltage (OFF) | RN1407 | $V_{I(OFF)}$ | $V_{CE}=5V, I_C=0.1mA$ | 0.5 | — | 1.0 | V |
| | RN1408 | | | 0.6 | — | 1.16 | |
| | RN1409 | | | 1.5 | — | 2.6 | |
| Transition Frequency | RN1407~1409 | f_T | $V_{CE}=10V, I_C=5mA$ | — | 250 | — | MHz |
| Collector Output Capacitance | RN1407~1409 | C_{ob} | $V_{CB}=10V, I_E=0, f=1MHz$ | — | 3 | 6 | pF |
| Input Resistor | RN1407 | R1 | — | 7 | 10 | 13 | kΩ |
| | RN1408 | | | 15.4 | 22 | 28.6 | |
| | RN1409 | | | 32.9 | 47 | 61.1 | |
| Resistor Ratio | RN1407 | R1 / R2 | — | 0.191 | 0.213 | 0.232 | — |
| | RN1408 | | | 0.421 | 0.468 | 0.515 | |
| | RN1409 | | | 1.92 | 2.14 | 2.35 | |





| TYPE No. | MARKING |
|----------|---|
| RN1407 |  |
| RN1408 |  |
| RN1409 |  |