

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

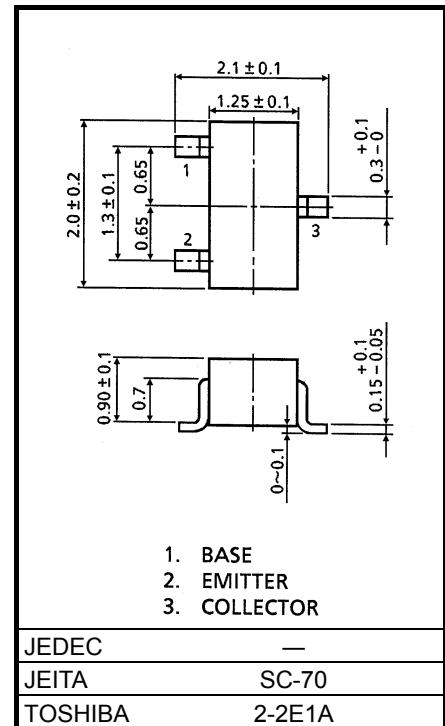
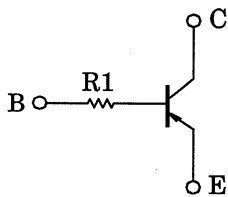
# RN2310, RN2311

Switching, Inverter Circuit, Interface Circuit and Driver Circuit Applications

Unit: mm

- With built-in bias resistors
- Simplify circuit design
- Reduce a quantity of parts and manufacturing process
- Complementary to RN1310, RN1311

## Equivalent Circuit



Weight: 0.006g (typ.)

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

Characteristic	Symbol	Rating	Unit
Collector-base voltage	V <sub>CB0</sub>	-50	V
Collector-emitter voltage	V <sub>CEO</sub>	-50	V
Emitter-base voltage	V <sub>EBO</sub>	-5	V
Collector current	I <sub>C</sub>	-100	mA
Collector power dissipation	P <sub>C</sub>	100	mW
Junction temperature	T <sub>j</sub>	150	°C
Storage temperature range	T <sub>stg</sub>	-55 to 150	°C

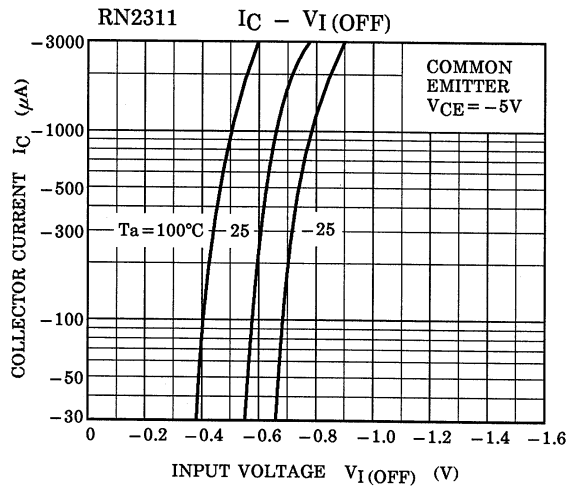
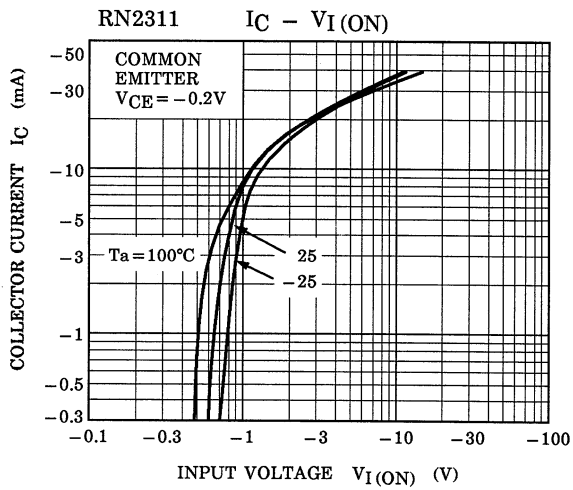
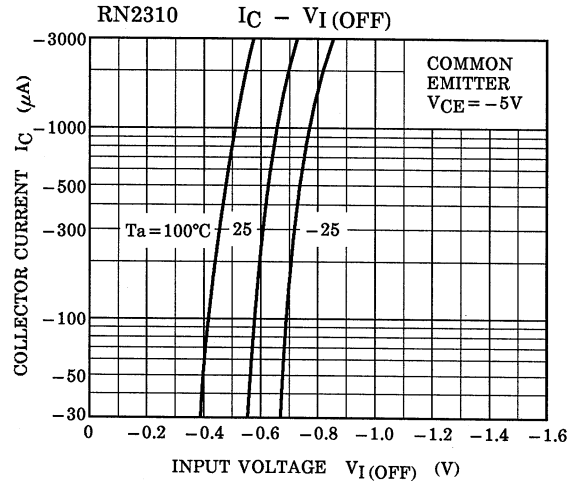
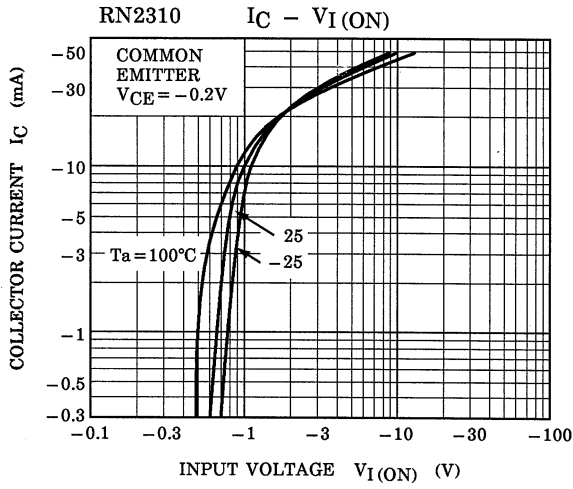
Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.)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

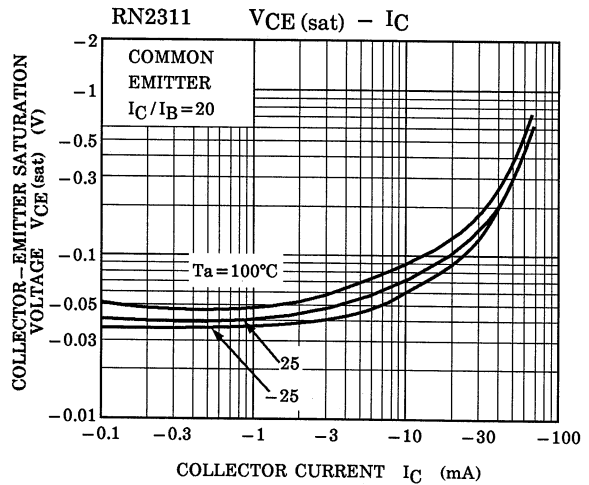
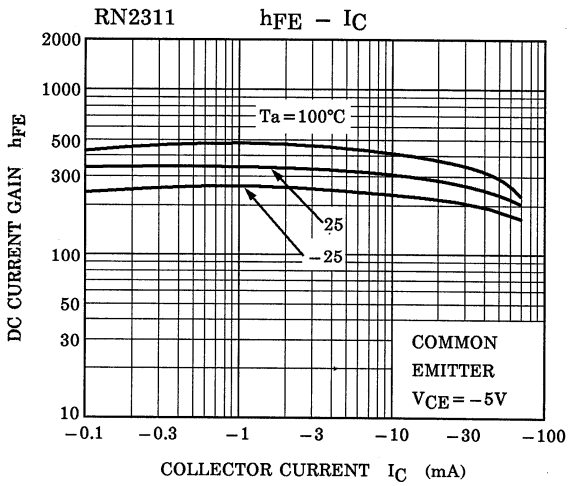
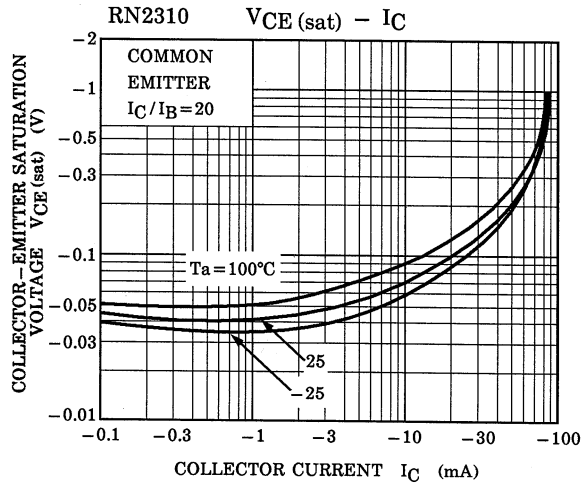
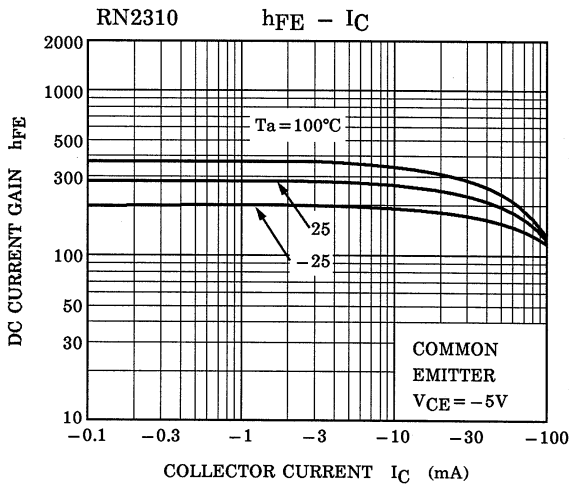
Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/"Derating Concept and Methods") and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

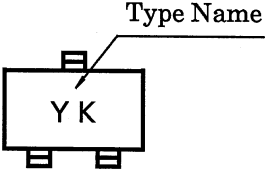
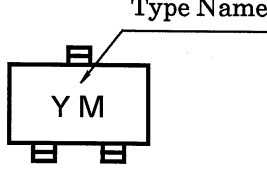
## Electrical Characteristics (Ta = 25°C)

Characteristic	Symbol	Test Circuit	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current	I <sub>CBO</sub>	—	V <sub>CB</sub> = -50V, I <sub>E</sub> = 0	—	—	-100	nA
Emitter cut-off current	I <sub>EBO</sub>	—	V <sub>EB</sub> = -5V, I <sub>C</sub> = 0	—	—	-100	nA
DC current gain	h <sub>FE</sub>	—	V <sub>CE</sub> = -5V, I <sub>C</sub> = -1mA	120	—	400	—
Collector-emitter saturation voltage	V <sub>CE(sat)</sub>	—	I <sub>C</sub> = -5mA, I <sub>B</sub> = -0.25mA	—	-0.1	-0.3	V
Transition Frequency	f <sub>T</sub>	—	V <sub>CE</sub> = -10V, I <sub>C</sub> = -5mA	—	200	—	MHz
Collector output capacitance	C <sub>ob</sub>	—	V <sub>CB</sub> = -10V, I <sub>E</sub> = 0, f = 1MHz	—	3	6	pF
Input resistor	RN2310	R1	—	3.29	4.7	6.11	kΩ
	RN2311			7	10	13	

Start of commercial production  
1987-07





Type Name	Marking
RN2310	 <p>The diagram shows a rectangular component with two pins at the bottom. The letters 'Y K' are printed inside the rectangle. A line points from the text 'Type Name' above to the 'Y' in the marking.</p>
RN2311	 <p>The diagram shows a rectangular component with two pins at the bottom. The letters 'Y M' are printed inside the rectangle. A line points from the text 'Type Name' above to the 'Y' in the marking.</p>

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