

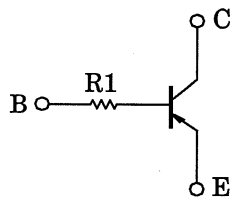
TOSHIBA Transistor Silicon PNP Epitaxial Type (PCT Process) (Bias Resistor built-in Transistor)

RN2312, RN2313

Switching, Inverter Circuit, Interface Circuit and Driver Circuit Applications

- With built-in bias resistors
- Simplify circuit design
- Reduce a quantity of parts and manufacturing process
- Complementary to RN1312, RN1313

Equivalent Circuit



Absolute Maximum Ratings (Ta = 25°C)

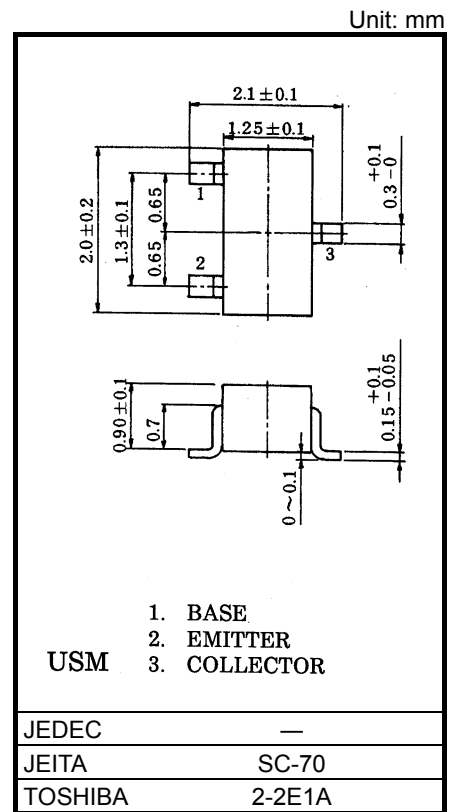
Characteristic	Symbol	Rating	Unit
Collector-base voltage	V _{CB0}	-50	V
Collector-emitter voltage	V _{CEO}	-50	V
Emitter-base voltage	V _{EB0}	-5	V
Collector current	I _C	-100	mA
Collector power dissipation	P _C	100	mW
Junction temperature	T _j	150	°C
Storage temperature range	T _{stg}	-55 to 150	°C

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. 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)

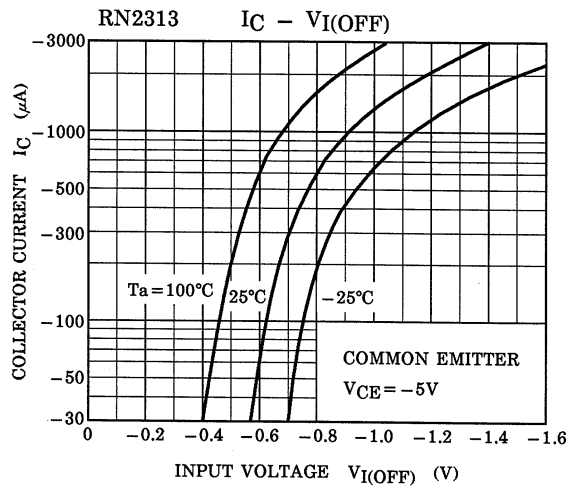
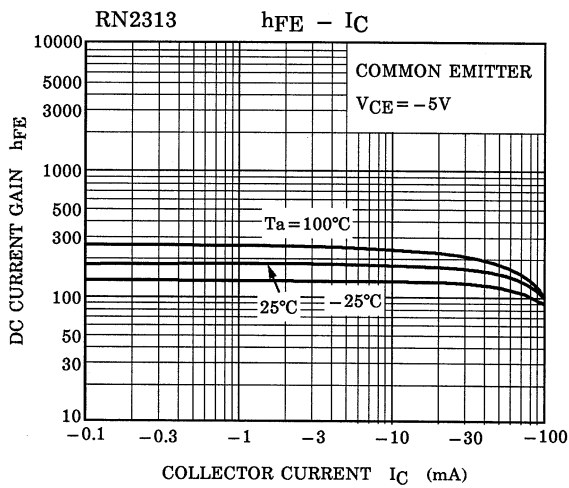
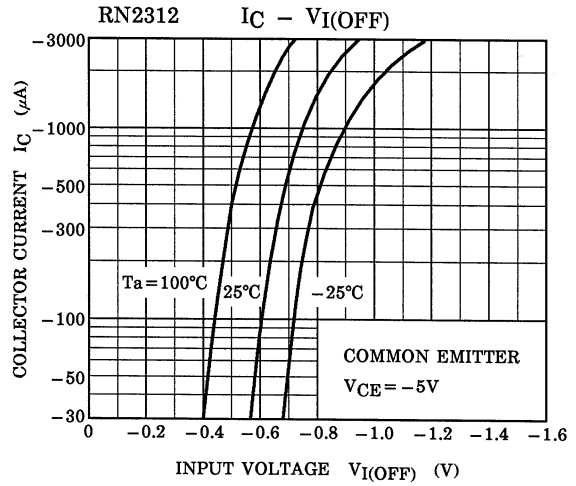
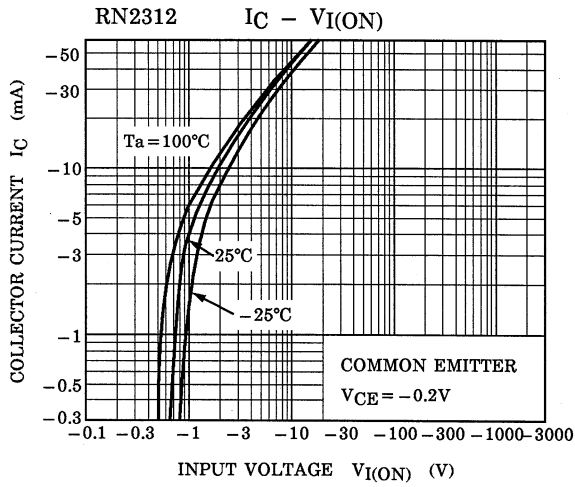
Characteristic	Symbol	Test Circuit	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current	I _{CBO}	—	V _{CB} = -50V, I _E = 0	—	—	-100	nA
Emitter cut-off current	I _{EBO}	—	V _{EB} = -5V, I _C = 0	—	—	-100	nA
DC current gain	h _{FE}	—	V _{CE} = -5V, I _C = -1mA	120	—	400	—
Collector-emitter saturation voltage	V _{CE(sat)}	—	I _C = -5mA, I _B = -0.25mA	—	-0.1	-0.3	V
Transition Frequency	f _T	—	V _{CE} = -10V, I _C = -5mA	—	200	—	MHz
Collector output capacitance	C _{ob}	—	V _{CB} = -10V, I _E = 0, f = 1MHz	—	3	6	pF
Input resistor	RN2312	R1	—	15.4	22	28.6	kΩ
	RN2313			32.9	47	61.1	

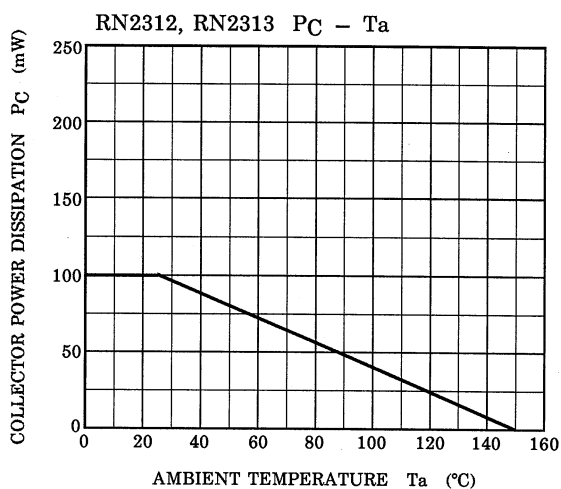
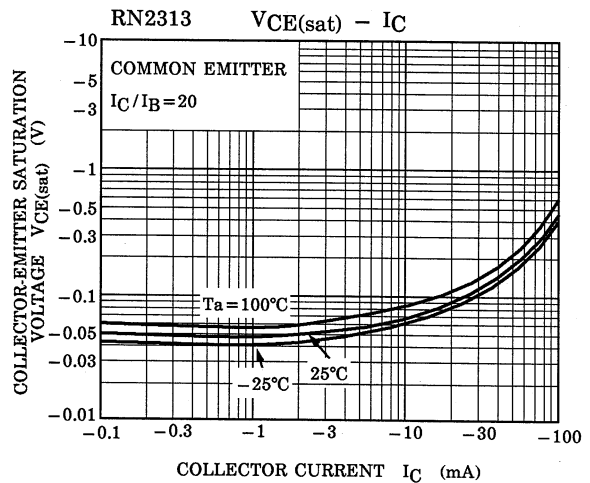
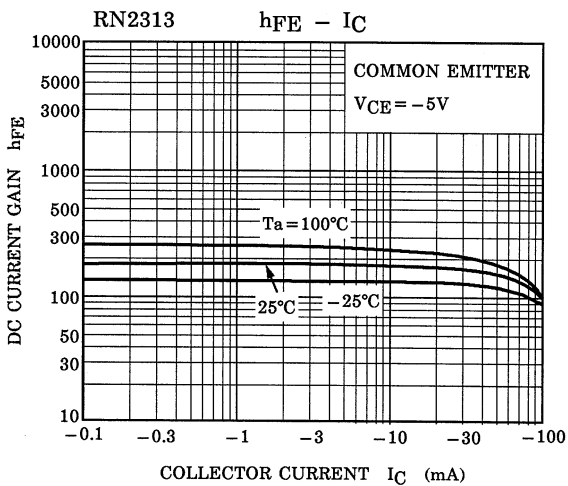
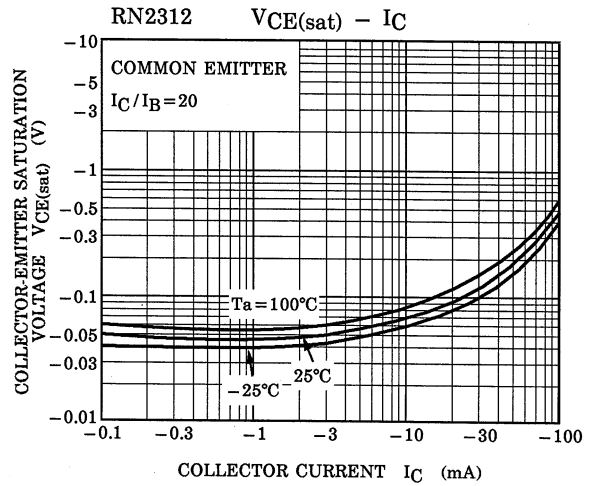
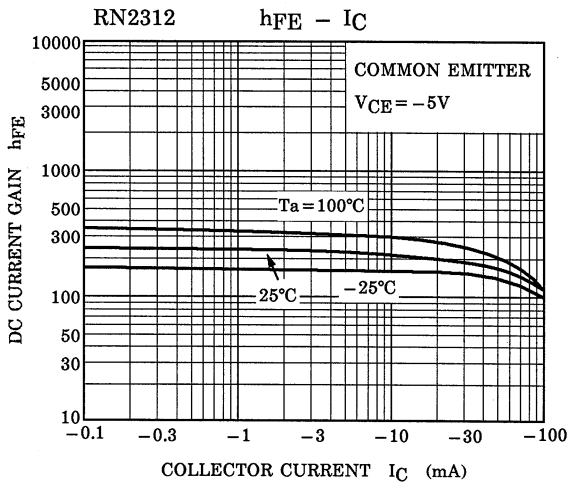


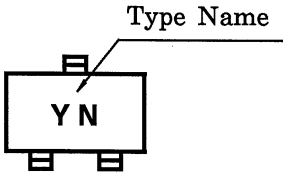
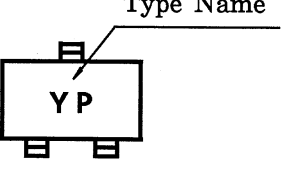
JEDEC	—
JEITA	SC-70
TOSHIBA	2-2E1A

Weight: 0.006 g (typ.)

Start of commercial production
1998-02





Type Name	Marking
RN2312	 <p>The diagram shows a rectangular component with two pins at the bottom. The letters 'Y N' are printed inside the rectangle. A line points from the text 'Type Name' to the 'N' in 'Y N'.</p>
RN2313	 <p>The diagram shows a rectangular component with two pins at the bottom. The letters 'Y P' are printed inside the rectangle. A line points from the text 'Type Name' to the 'P' in 'Y P'.</p>

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Офис по работе с юридическими лицами:

105318, г.Москва, ул.Щербаковская д.3, офис 1107, 1118, ДЦ «Щербаковский»

Телефон: +7 495 668-12-70 (многоканальный)

Факс: +7 495 668-12-70 (доб.304)

E-mail: info@moschip.ru

Skype отдела продаж:

moschip.ru

moschip.ru_4

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moschip.ru_9