

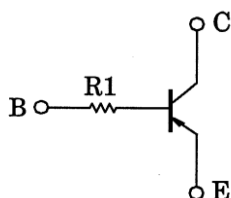
TOSHIBA Transistor Silicon PNP Epitaxial Type (PCT Process) (Bias Resistor built-in Transistor)

RN2312, RN2313

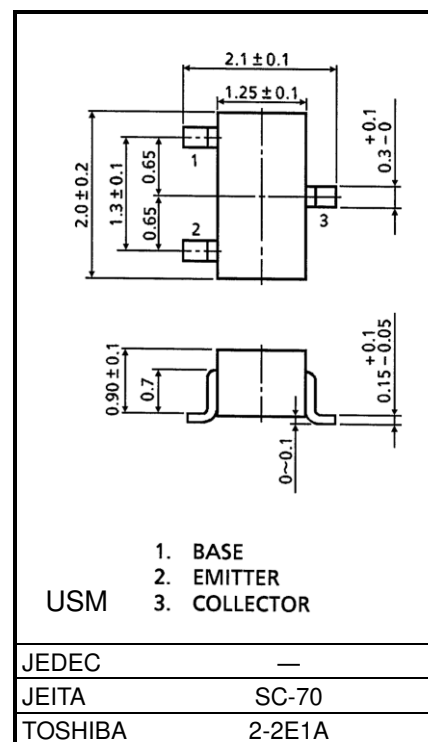
Switching, Inverter Circuit, Interface Circuit and Driver Circuit

- With built-in bias resistors.
- Simplify circuit design
- Reduce a quantity of parts and manufacturing process and miniaturize equipment.
- Various resistance values are available to suit various circuit designs.
- Complementary to RN1312 to RN1313

Equivalent Circuit



Unit: mm



Weight: 0.006g (typ.)

Absolute Maximum Ratings (Ta = 25°C)

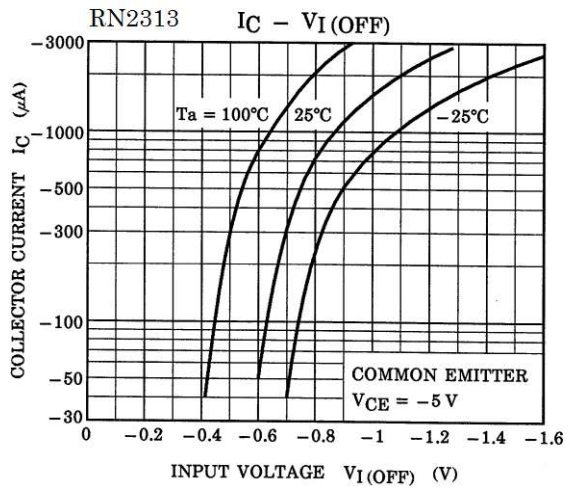
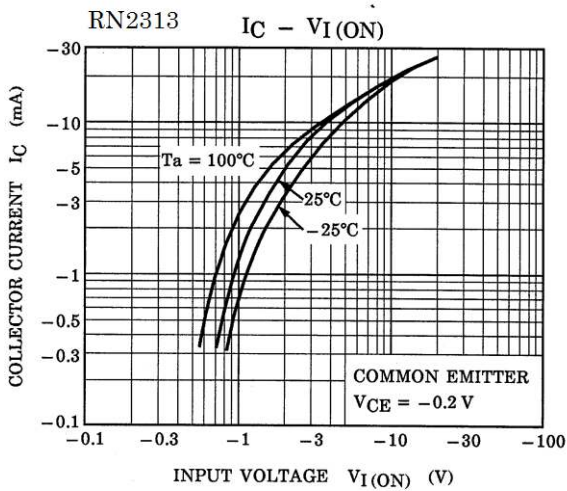
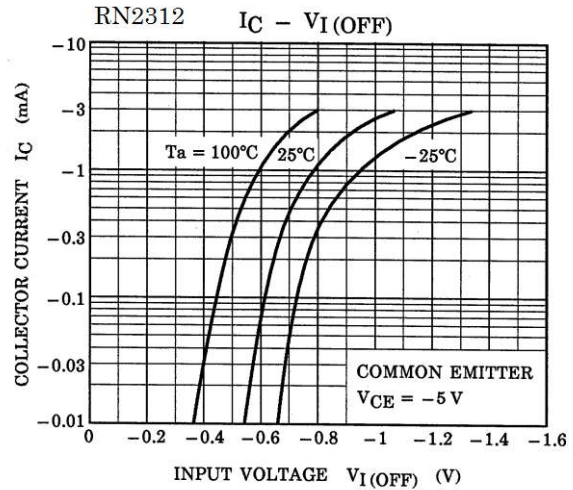
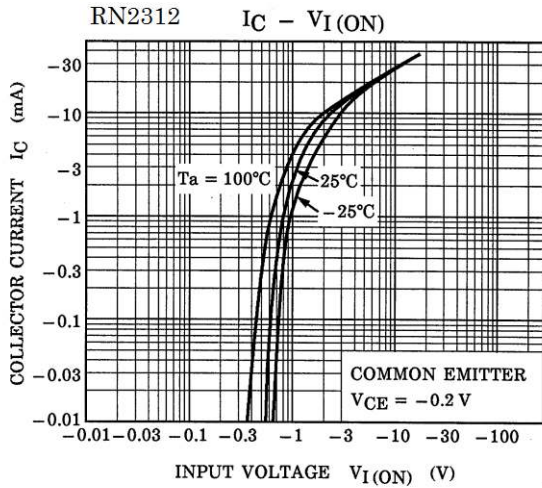
Characterisitic	Symbol	Rating	Unit
Collector-base voltage	V _{CB0}	-50	V
Collector-emitter voltage	V _{CEO}	-50	V
Emitter-base voltage	V _{EBO}	-5	V
Collector current	I _C	-100	mA
Collector power dissipation	P _C	100	mW
Junction temperature	T _j	150	°C
Storage temperature range	T _{stg}	-55 to 150	°C

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).

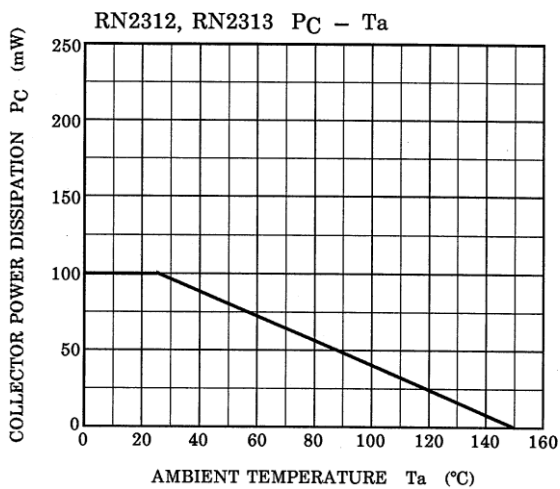
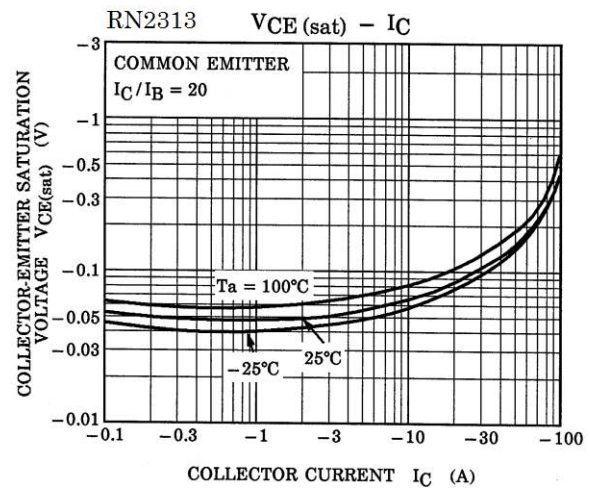
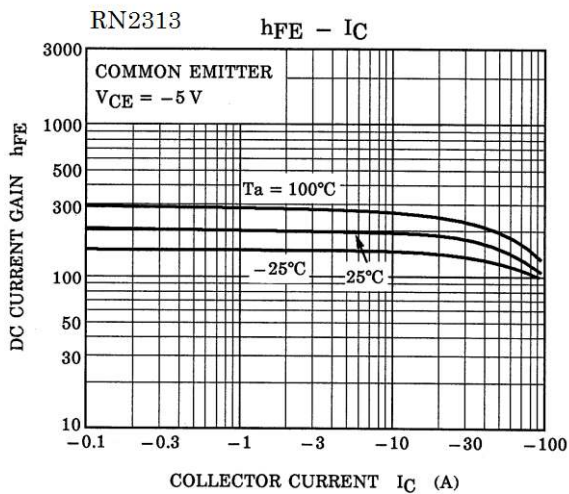
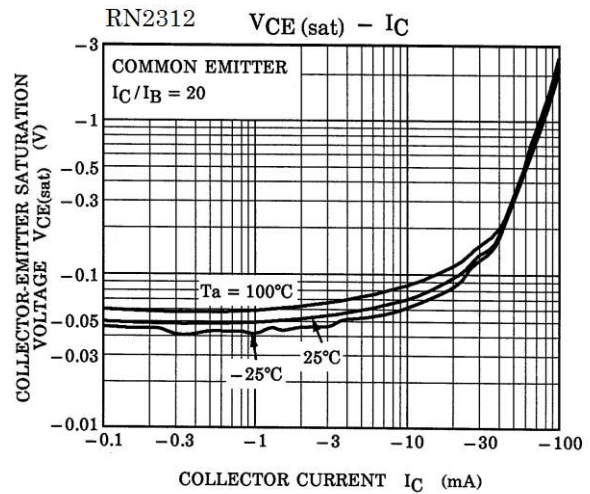
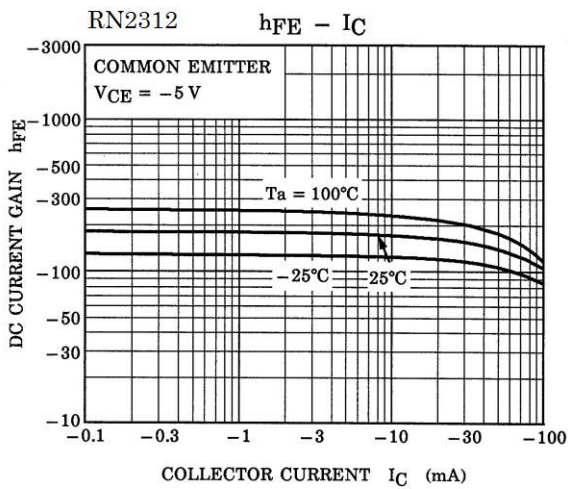
Start of commercial production
1998-02

Electrical Characteristics (Ta = 25°C)

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

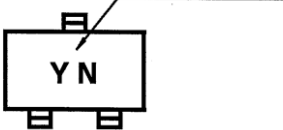
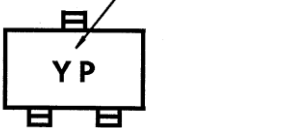


The above characteristics curves are presented for reference only and not guaranteed by production test, unless otherwise noted.



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Marking

Part No.	Marking
RN2312	<p data-bbox="566 365 831 392">Part No.(abbreviation code)</p> 
RN2313	<p data-bbox="566 571 831 598">Part No.(abbreviation code)</p> 

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