

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

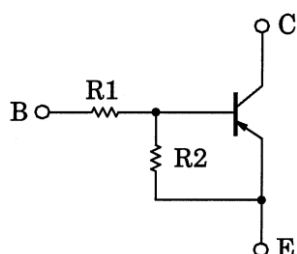
RN2307, RN2308, RN2309

Switching, Inverter Circuit, Interface Circuit and Driver Circuit

Unit: mm

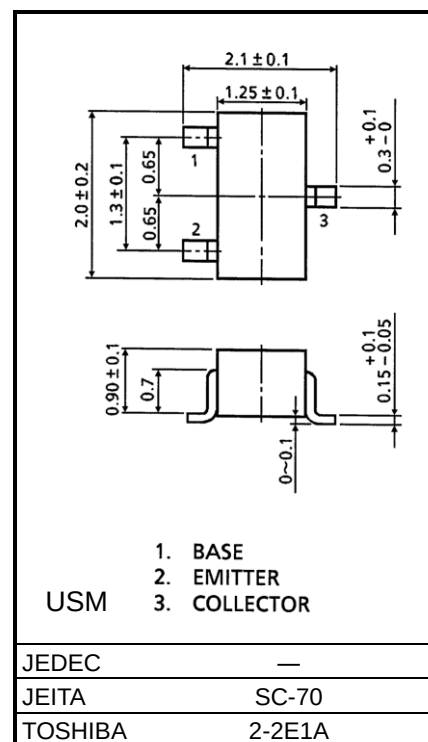
- With built-in bias resistors.
- Simplify circuit design
- Reduce a quantity of parts and manufacturing process and miniaturize equipment.
- Various resistance values are available to suit various circuit designs.
- Complementary to RN1307 to RN1309

Equivalent Circuit



Bias Resistor Values

Part No.	R1 (kΩ)	R2 (kΩ)
RN2307	10	47
RN2308	22	47
RN2309	47	22



Weight: 0.006g (typ.)

Absolute Maximum Ratings (Ta = 25°C)

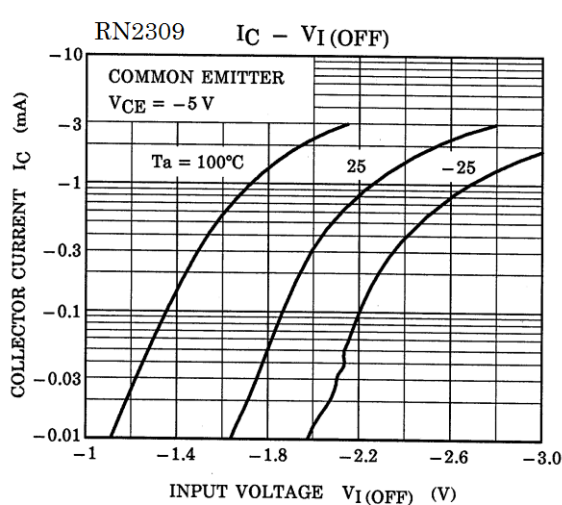
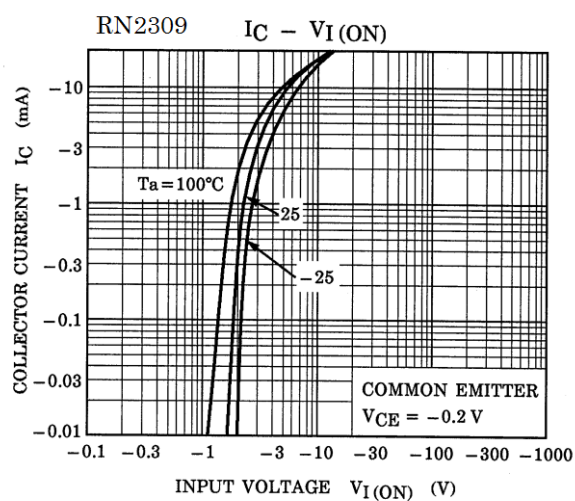
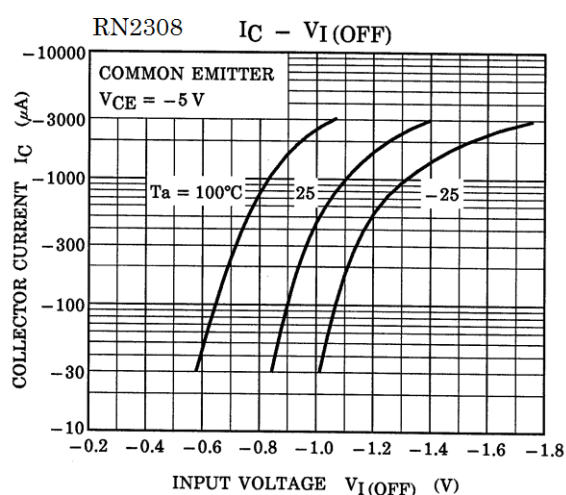
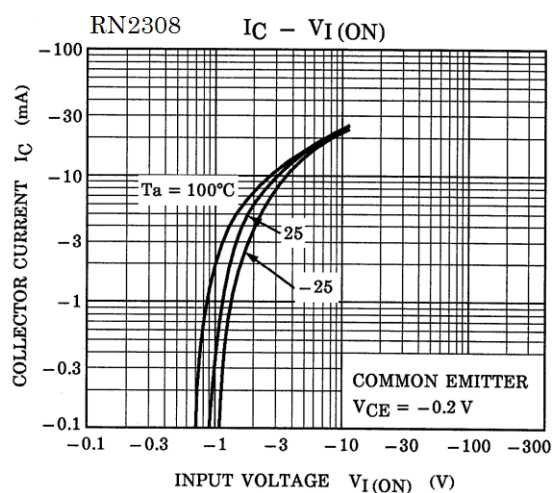
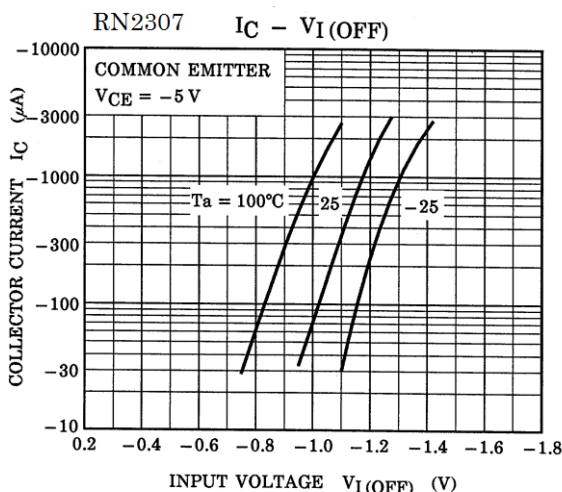
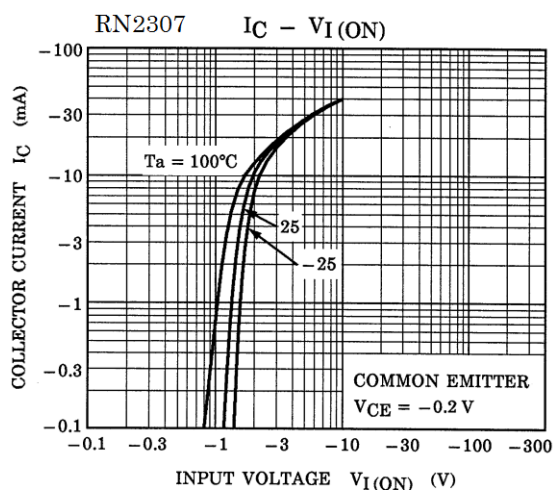
Characteristic	Symbol	Rating	Unit
Collector-base voltage	V _{CBO}	-50	V
Collector-emitter voltage	V _{CEO}	-50	V
Emitter-base voltage	V _{EBO}	-6	V
		-7	
		-15	
Collector current	I _C	-100	mA
Collector power dissipation	P _C	100	mW
Junction temperature	T _j	150	°C
Storage temperature range	T _{stg}	-55 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).

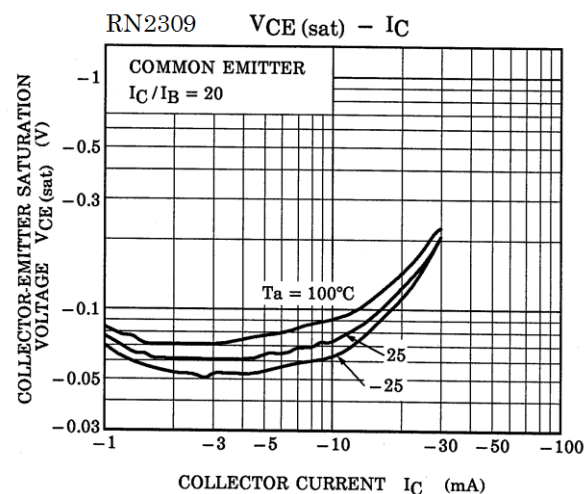
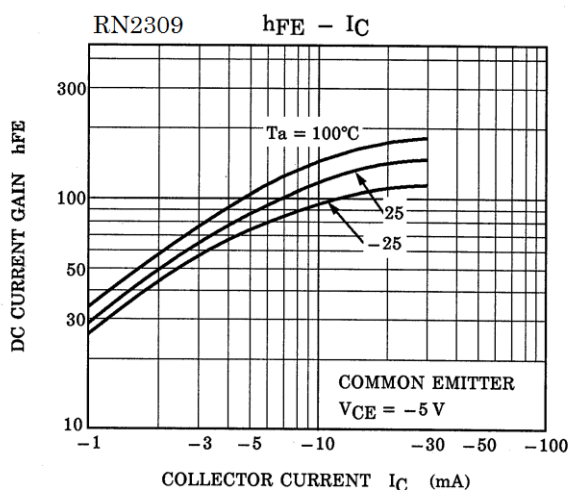
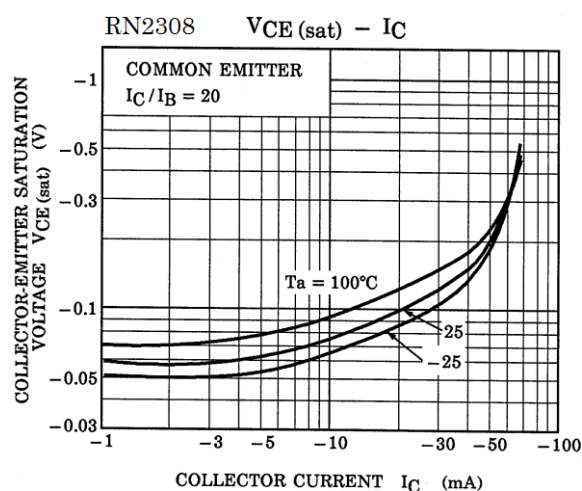
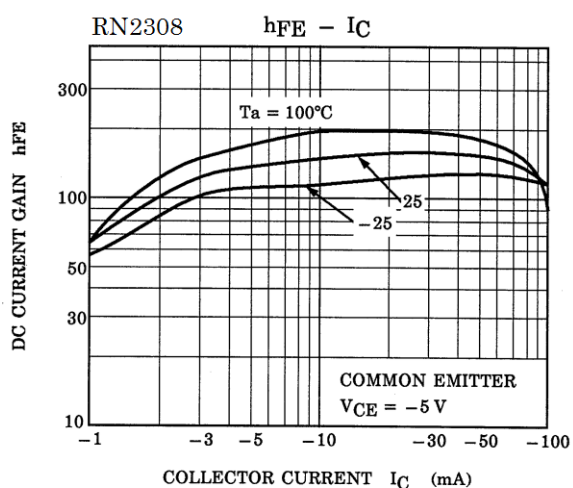
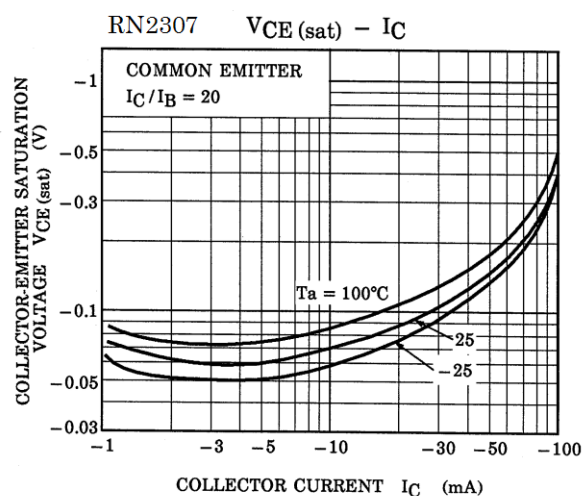
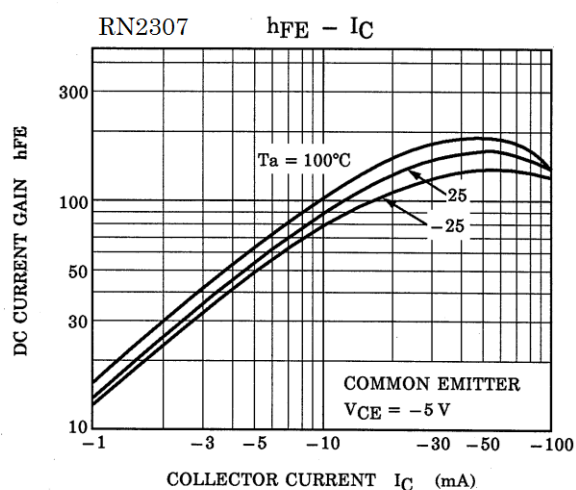
Start of commercial production
1988-04

Electrical Characteristics (Ta = 25°C)

Characteristic		Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current	RN2307 to RN2309	ICBO	V _{CB} = -50 V, I _E = 0 mA	—	—	-100	nA
		ICEO	V _{CE} = -50 V, I _B = 0 mA	—	—	-500	
Emitter cut-off current	RN2307	IEBO	V _{EB} = -6 V, I _C = 0 mA	-0.081	—	-0.15	mA
	RN2308		V _{EB} = -7 V, I _C = 0 mA	-0.078	—	-0.145	
	RN2309		V _{EB} = -15 V, I _C = 0 mA	-0.167	—	-0.311	
DC current gain	RN2307	h _{FE}	V _{CE} = -5 V, I _C = -10 mA	80	—	—	—
	RN2308			80	—	—	
	RN2309			70	—	—	
Collector-emitter saturation voltage	RN2307 to RN2309	V _{CE (sat)}	I _C = -5 mA, I _B = -0.25 mA	—	-0.1	-0.3	V
Input voltage (ON)	RN2307	V _{I (ON)}	V _{CE} = -0.2 V, I _C = -5 mA	-0.7	—	-1.8	V
	RN2308			-1.0	—	-2.6	
	RN2309			-2.2	—	-5.8	
Input voltage (OFF)	RN2307	V _{I (OFF)}	V _{CE} = -5 V, I _C = -0.1 mA	-0.5	—	-1.0	V
	RN2308			-0.6	—	-1.16	
	RN2309			-1.5	—	-2.6	
Transition frequency	RN2307 to RN2309	f _T	V _{CE} = -10 V, I _C = -5 mA	—	200	—	MHz
Collector output capacitance	RN2307 to RN2309	C _{ob}	V _{CB} = -10 V, I _E = 0 mA, f = 1 MHz	—	3	6	pF
Input resistor	RN2307	R ₁	—	7	10	13	kΩ
	RN2308			15.4	22	28.6	
	RN2309			32.9	47	61.1	
Resistor ratio	RN2307	R ₁ /R ₂	—	0.191	0.213	0.232	—
	RN2308			0.421	0.468	0.515	
	RN2309			1.92	2.14	2.35	

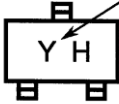
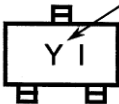
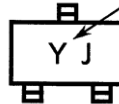


The above characteristics curves are presented for reference only and not guaranteed by production test, unless otherwise noted.



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Marking

Part No.	Marking
RN2107	 Part No.(abbreviation code)
RN2108	 Part No.(abbreviation code)
RN2109	 Part No.(abbreviation code)

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