

TOSHIBA Transistor Silicon NPN Epitaxial Type (PCT Process)

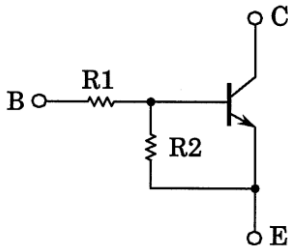
RN1507, RN1508, RN1509

Unit: mm

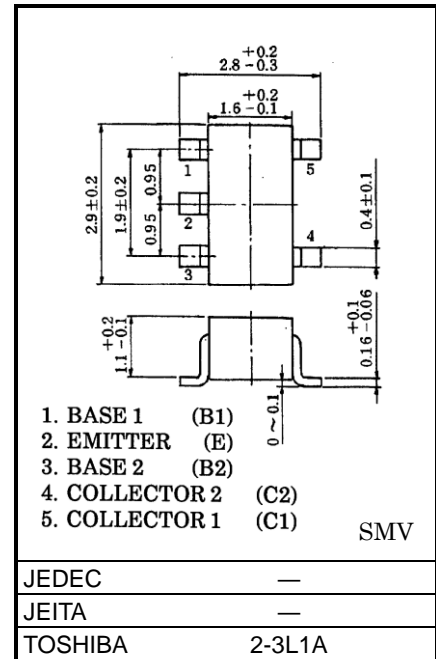
Switching, Inverter Circuit,
Interface Circuit and Driver Circuit

- Including two devices in SMV (super mini type with 5 leads)
- 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 RN2507 to RN2509

Equivalent Circuit and Bias Resistor Values



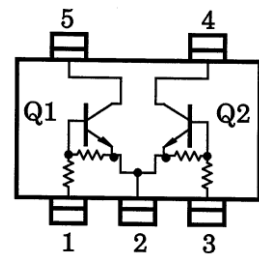
Part No.	R1 (kΩ)	R2 (kΩ)
RN1507	10	47
RN1508	22	47
RN1509	47	22



Internal Circuit (Top View)

Absolute Maximum Ratings (Ta = 25°C) (Q1, Q2 Common)

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 *	300	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).

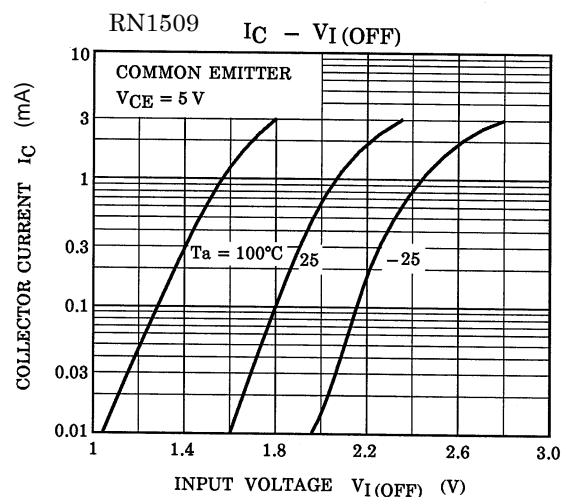
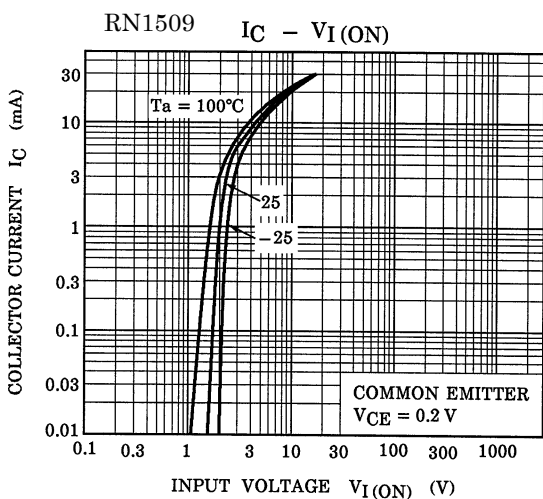
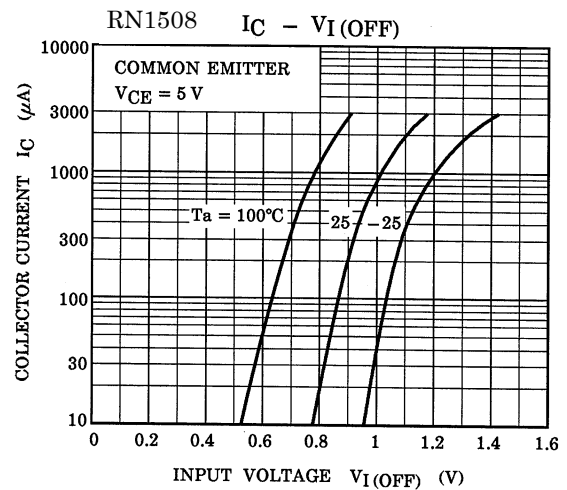
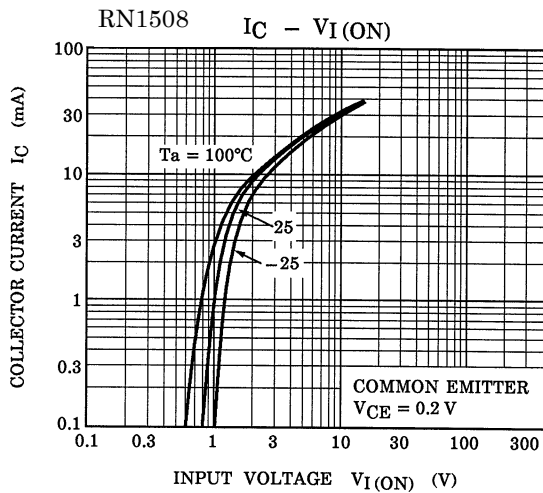
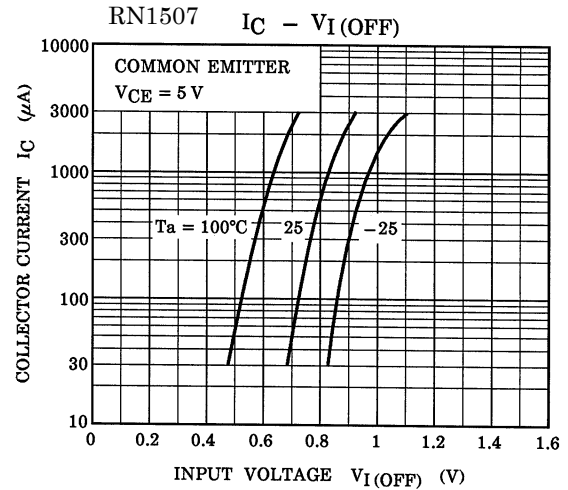
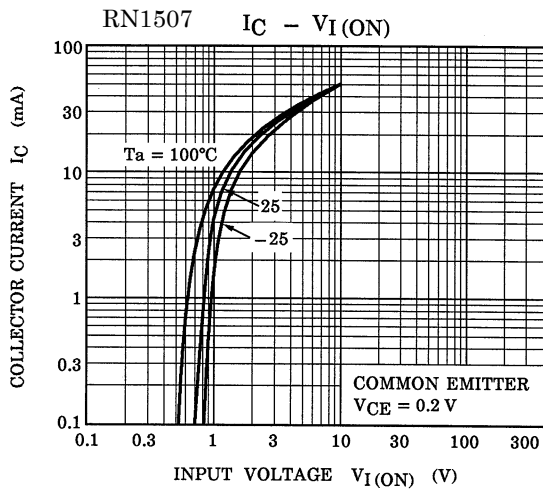
* : Total rating

Start of commercial production
1988-10

Electrical Characteristics (Ta = 25°C) (Q1, Q2 Common)

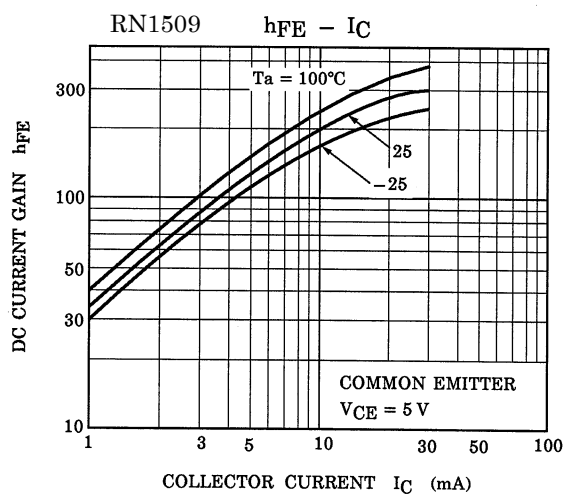
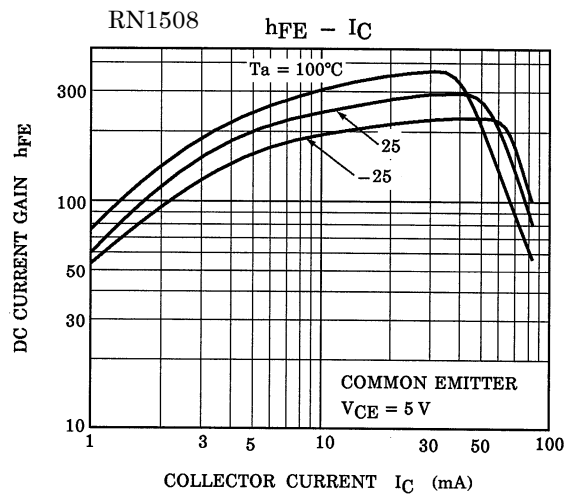
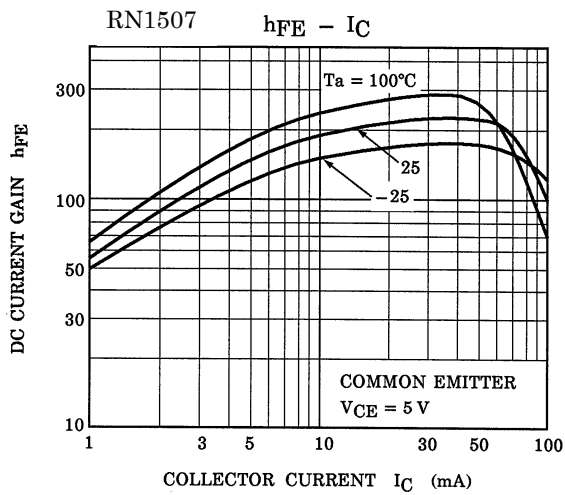
Characteristic		Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current	RN1507 to 1509	ICBO	V _{CB} = 50 V, I _E = 0 mA	—	—	100	nA
		ICEO	V _{CE} = 50 V, I _B = 0 mA	—	—	500	nA
Emitter cut-off current	RN1507	IEBO	V _{EB} = 6 V, I _C = 0 mA	0.081	—	0.15	mA
	RN1508			0.078	—	0.145	
	RN1509			0.167	—	0.311	
DC current gain	RN1507	h _{FE}	V _{CE} = 5 V, I _C = 10 mA	80	—	—	—
	RN1508			80	—	—	
	RN1509			70	—	—	
Collector-emitter saturation voltage	RN1507 to 1509	V _{CE (sat)}	I _C = 5 mA, I _B = 0.25 mA	—	0.1	0.3	V
Input voltage (ON)	RN1507	V _{I (ON)}	V _{CE} = 0.2 V, I _C = 5 mA	0.7	—	1.8	V
	RN1508			1.0	—	2.6	
	RN1509			2.2	—	5.8	
Input voltage (OFF)	RN1507	V _{I (OFF)}	V _{CE} = 5 V, I _C = 0.1 mA	0.5	—	1.0	V
	RN1508			0.6	—	1.16	
	RN1509			1.5	—	2.6	
Transition frequency	RN1507 to 1509	f _T	V _{CE} = 10 V, I _C = 5 mA	—	250	—	MHz
Collector Output capacitance	RN1507 to 1509	C _{ob}	V _{CB} = 10 V, I _E = 0 mA, f = 1 MHz	—	3	6	pF
Input resistance	RN1507	R ₁	—	7	10	13	kΩ
	RN1508			15.4	22	28.6	
	RN1509			32.9	47	61.1	
Resistance ratio	RN1507	R _{1/R2}	—	0.191	0.213	0.232	—
	RN1508			0.421	0.468	0.515	
	RN1509			1.92	2.14	2.35	

Characteristics Curves(Q1, Q2 Common)



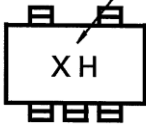
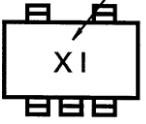
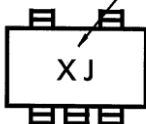
The above characteristics curves are presented for reference only and not guaranteed by production test, unless otherwise noted.

Characteristics Curves(Q1, Q2 Common)



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

Marking

Part No	Marking
RN1507	<p data-bbox="603 286 863 315">Part No.(abbreviation code)</p> 
RN1508	<p data-bbox="603 510 863 539">Part No.(abbreviation code)</p> 
RN1509	<p data-bbox="603 741 863 770">Part No.(abbreviation code)</p> 

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