

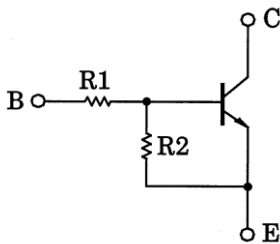
TOSHIBA Transistor Silicon NPN Epitaxial Type (PCT Process)

RN1607, RN1608, RN1609

Switching, Inverter Circuit,
Interface Circuit and Driver Circuit

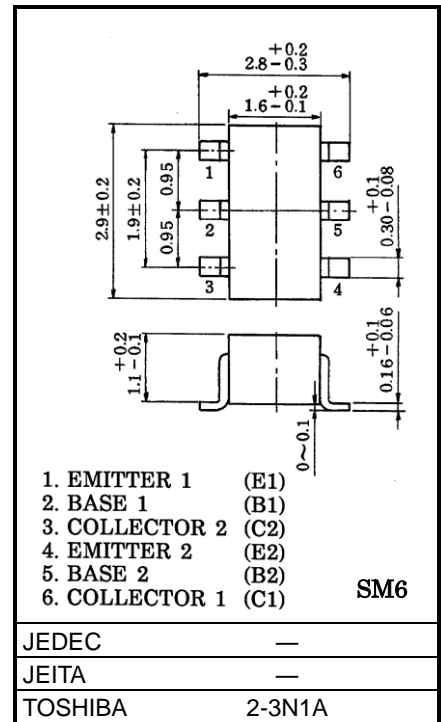
- Including two devices in SM6 (super-mini-type with six (6) leads)
- With built-in bias resistors.
- Simplified circuit design
- Reduce a quantity of parts and manufacturing process and miniaturize equipment.
- Various resistance values are available to suit various circuit designs.
- Complementary to RN2607 to RN2609

Equivalent Circuit and Bias Resistor Values



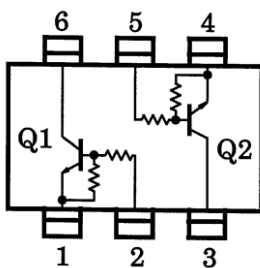
Part No..	R1 (kΩ)	R2 (kΩ)
RN1607	10	47
RN1608	22	47
RN1609	47	22

Unit: mm



Weight: 0.015 g (typ.)

Equivalent Circuit (Top View)



Start of commercial production
1988-11

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

Characteristic		Symbol	Rating	Unit
Collector-base voltage		V _{CB0}	50	V
Collector-emitter voltage		V _{CE0}	50	V
Emitter-base voltage	RN1607	V _{EB0}	6	V
	RN1608		7	
	RN1609		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.

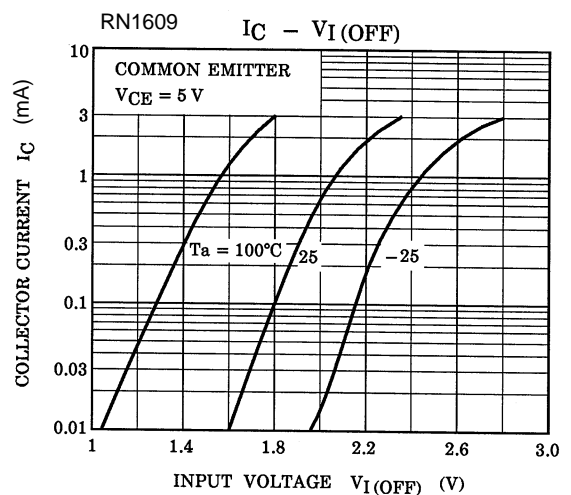
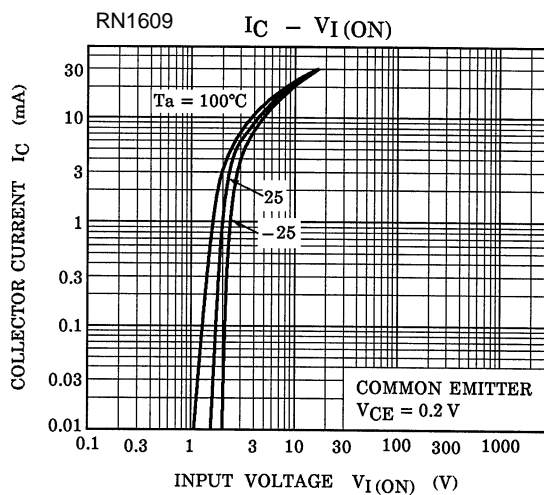
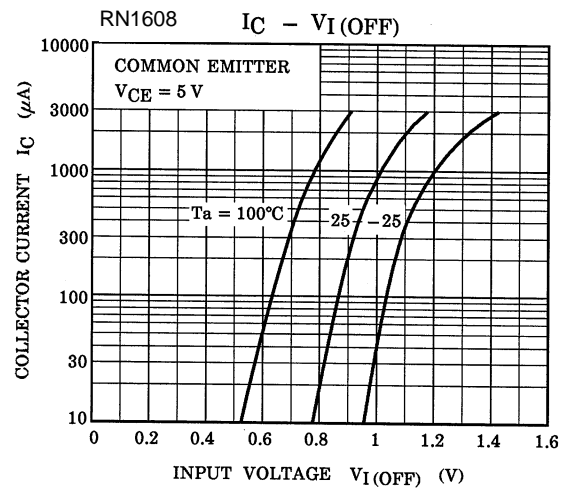
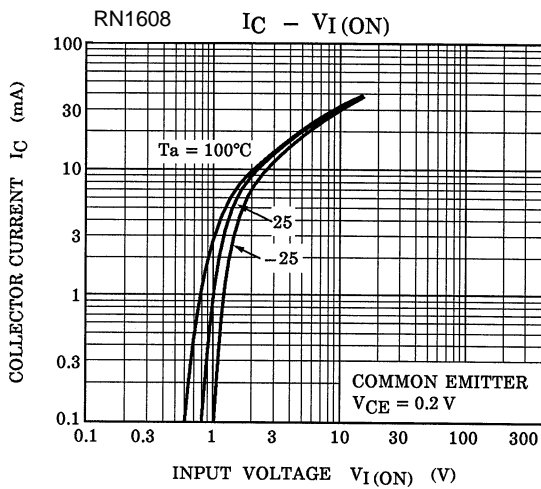
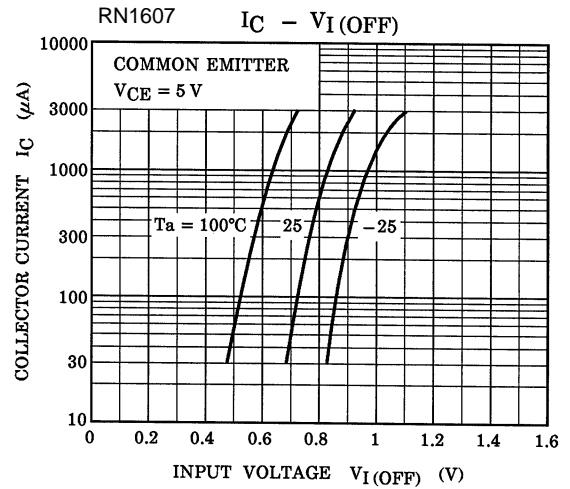
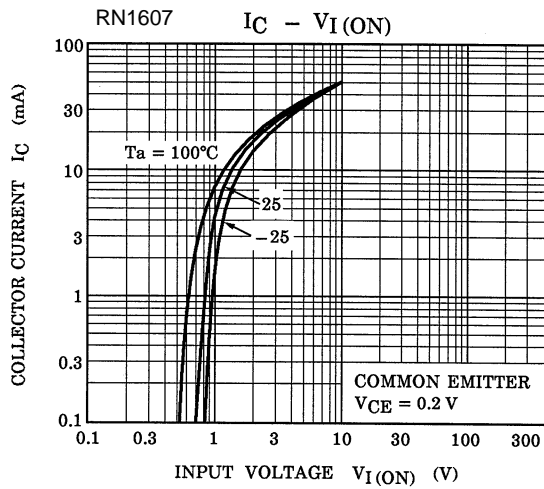
Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/"Derating Concept and Methods") and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

* Total rating

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

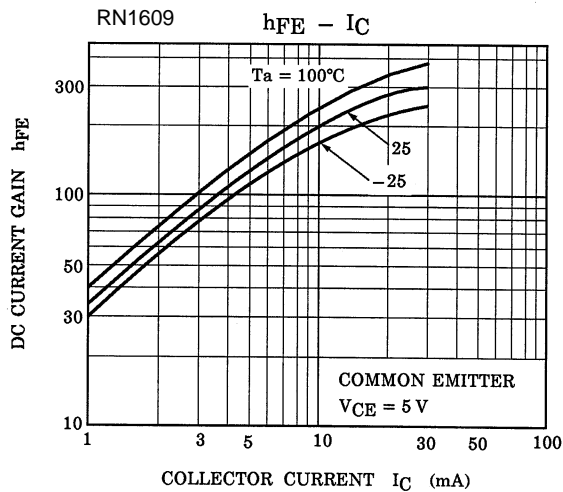
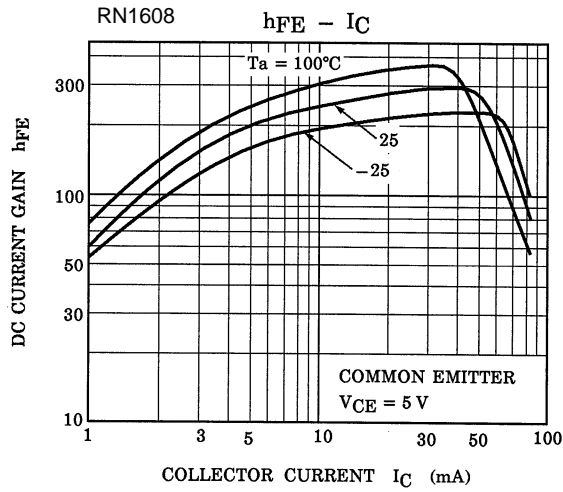
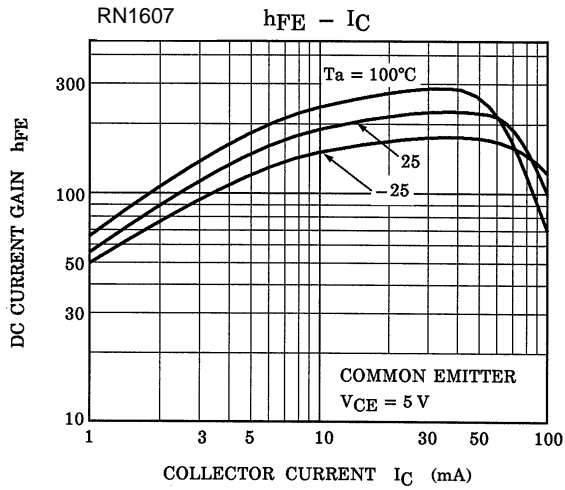
Characteristic		Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current	RN1607 to 1609	ICBO	V _{CB} = 50 V, I _E = 0 mA	—	—	100	nA
		ICEO	V _{CE} = 50 V, I _B = 0 mA	—	—	500	nA
Emitter cut-off current	RN1607	IEBO	V _{EB} = 6 V, I _C = 0 mA	0.081	—	0.15	mA
	RN1608			0.078	—	0.145	
	RN1609			0.167	—	0.311	
DC current gain	RN1607	h _{FE}	V _{CE} = 5 V, I _C = 10 mA	80	—	—	—
	RN1608			80	—	—	
	RN1609			70	—	—	
Collector-emitter saturation voltage	RN1607 to 1609	V _{CE (sat)}	I _C = 5 mA, I _B = 0.25 mA	—	0.1	0.3	V
Input voltage (ON)	RN1607	V _{I (ON)}	V _{CE} = 0.2 V, I _C = 5 mA	0.7	—	1.8	V
	RN1608			1.0	—	2.6	
	RN1609			2.2	—	5.8	
Input voltage (OFF)	RN1607	V _{I (OFF)}	V _{CE} = 5 V, I _C = 0.1 mA	0.5	—	1.0	V
	RN1608			0.6	—	1.16	
	RN1609			1.5	—	2.6	
Translation frequency	RN1607 to 1609	f _T	V _{CE} = 10 V, I _C = 5 mA	—	250	—	MHz
Collector output capacitance	RN1607 to 1609	C _{ob}	V _{CB} = 10 V, I _E = 0 mA, f = 1 MHz	—	3	6	pF
Input resistance	RN1607	R ₁	—	7	10	13	kΩ
	RN1608			15.4	22	28.6	
	RN1609			32.9	47	61.1	
Resistance ratio	RN1607	R _{1/R2}	—	0.191	0.213	0.232	—
	RN1608			0.421	0.468	0.515	
	RN1609			1.92	2.14	2.35	

Characteristics Curves(Q1, Q2 Common)



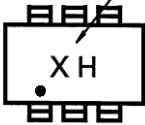
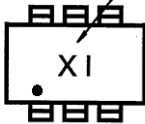
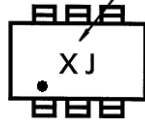
The above characteristics curves are presented for reference only and not guaranteed by production test, unless otherwise noted.

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
RN1607	<p data-bbox="598 340 863 367">Part No.(abbreviation code)</p> 
RN1608	<p data-bbox="598 595 863 622">Part No.(abbreviation code)</p> 
RN1609	<p data-bbox="598 835 863 862">Part No.(abbreviation code)</p> 

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