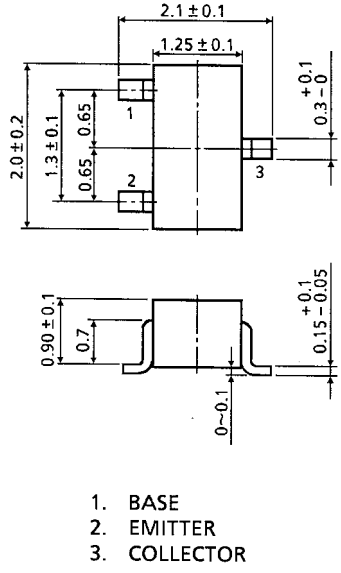
TOSHIBA Transistor Silicon NPN Epitaxial Type (PCT Process)

RN1307,RN1308,RN1309

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 RN2307~RN2309

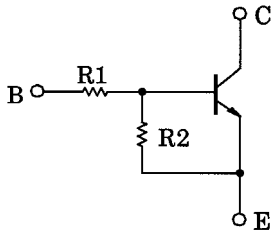
Unit: mm



JEDEC	—
EIAJ	SC-70
TOSHIBA	2-2E1A

Weight: 0.006g

Equivalent Circuit and Bias Resistor Values



Type No.	R1 (kΩ)	R2 (kΩ)
RN2207	10	47
RN2208	22	47
RN2209	47	22

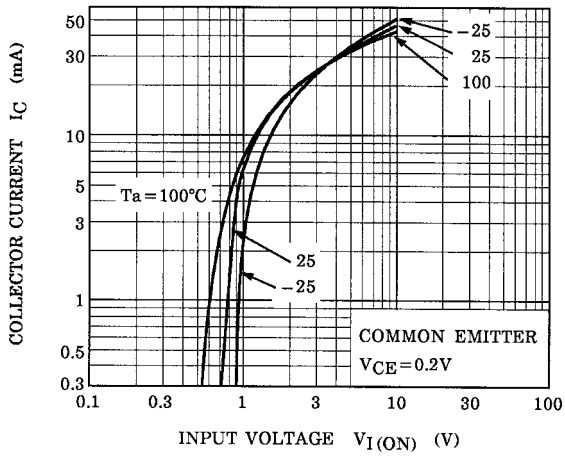
Maximum Ratings (Ta = 25°C)

Characteristic		Symbol	Rating	Unit
Collector-base voltage		V_{CBO}	50	V
Collector-emitter voltage		V_{CEO}	50	V
Emitter-base voltage	RN1307	V_{EBO}	6	V
	RN1308		7	
	RN1309		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}	−55~150	°C

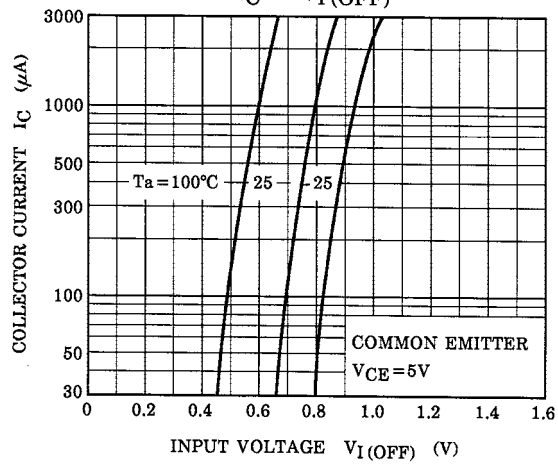
Electrical Characteristics (Ta = 25°C)

Characteristic		Symbol	Test Circuit	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current		I_{CBO}	—	V_{CB} = 50V, I_E = 0	—	—	100	nA
		I_{CEO}	—	V_{CE} = 50V, I_B = 0	—	—	500	
Emitter cut-off current	RN1307	I_{EBO}	—	V_{EB} = 6V, I_C = 0	0.081	—	0.15	mA
	RN1308		—	V_{EB} = 7V, I_C = 0	0.078	—	0.145	
	RN1309		—	V_{EB} = 15V, I_C = 0	0.167	—	0.311	
DC current gain	RN1307	h_{FE}	—	V_{CE} = 5V, I_C = 10mA	80	—	—	—
	RN1308		—		80	—	—	
	RN1309		—		70	—	—	
Collector-emitter saturation voltage		$V_{CE\ (sat)}$	—	I_C = 5mA, I_B = 0.25mA	—	0.1	0.3	V
Input voltage (ON)	RN1307	$V_{I\ (ON)}$	—	V_{CE} = 0.2V, I_C = 5mA	0.7	—	1.8	V
	RN1308		—		1.0	—	2.6	
	RN1309		—		2.2	—	5.8	
Input voltage (OFF)	RN1307	$V_{I\ (OFF)}$	—	V_{CE} = 5V, I_C = 0.1mA	0.5	—	1.0	V
	RN1308		—		0.6	—	1.16	
	RN1309		—		1.5	—	2.6	
Translation frequency		f_T	—	V_{CE} = 10V, I_C = 5mA	—	250	—	MHz
Collector output capacitance		C_{ob}	—	V_{CB} = 10V, I_E = 0, f = 1MHz	—	3	6	pF
Input resistor	RN1307	R1	—	—	7	10	13	kΩ
	RN1308		—		15.4	22	28.6	
	RN1309		—		32.9	47	61.1	
Resistor ratio	RN1307	R1/R2	—	—	0.191	0.213	0.232	—
	RN1308		—		0.421	0.468	0.515	
	RN1309		—		1.92	2.14	2.35	

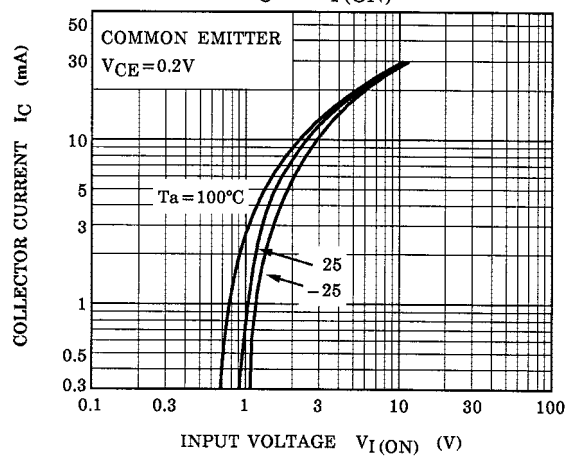
RN1307 $I_C - V_{I(ON)}$



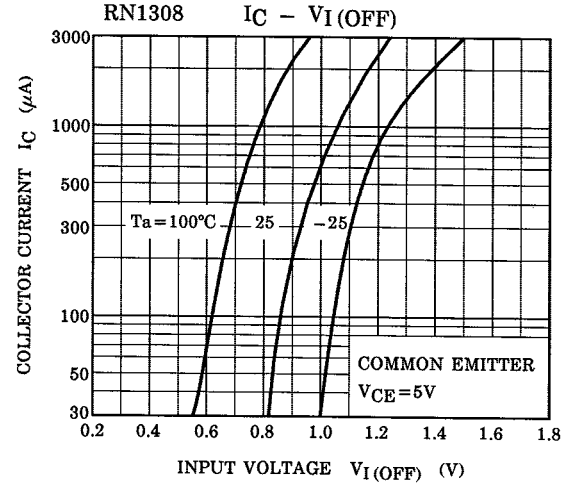
RN1307 $I_C - V_{I(OFF)}$



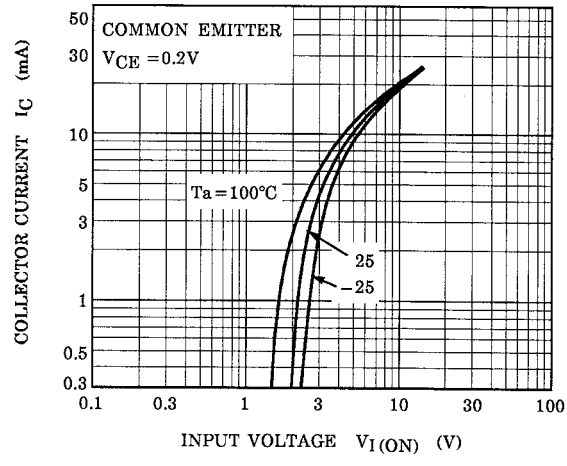
RN1308 $I_C - V_{I(ON)}$



RN1308 $I_C - V_{I(OFF)}$



RN1309 $I_C - V_{I(ON)}$



RN1309 $I_C - V_{I(OFF)}$