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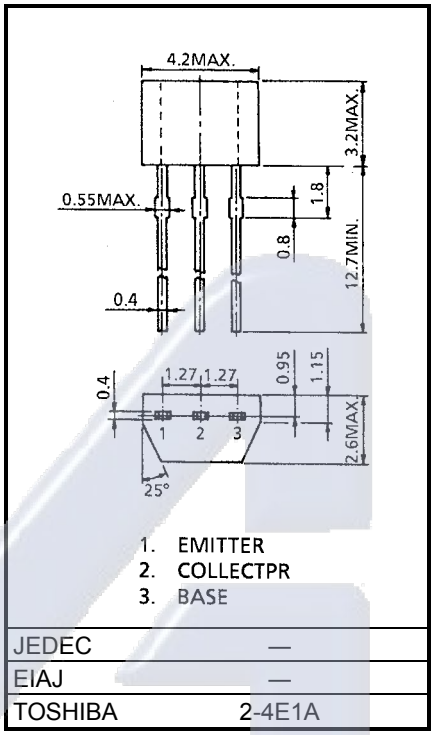
TOSHIBA Transistor Silicon PNP Epitaxial Type (PCT Process)

RN2201,RN2202,RN2203 RN2204,RN2205,RN2206

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 RN1201~RN1206

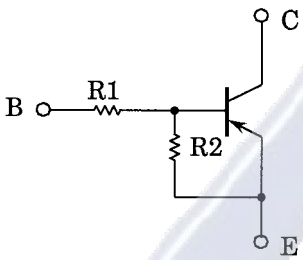
Unit: mm



JEDEC	—
EIAJ	—
TOSHIBA	2-4E1A

Weight: 0.13g

Equivalent Circuit and Bias Resistor Values



Type No.	R1 (kΩ)	R2 (kΩ)
RN2201	4.7	4.7
RN2202	10	10
RN2203	22	22
RN2204	47	47
RN2205	2.2	47
RN2206	4.7	47

Maximum Ratings (Ta = 25°C)

Characteristic		Symbol	Rating	Unit
Collector-base voltage	RN2201~2206	V_{CBO}	−50	V
Collector-emitter voltage		V_{CEO}	−50	V
Emitter-base voltage	RN2201~2204	V_{EBO}	−10	V
	RN2205, 2206		−5	
Collector current	RN2201~2206	I_C	−100	mA
Collector power dissipation		P_C	300	mW
Junction temperature		T_j	150	°C
Storage temperature range		T_{stg}	−55~150	°C

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Electrical Characteristics (Ta = 25°C)

Characteristic		Symbol	Test Circuit	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current	RN2201~2206	I_{CBO}	—	V_{CB} = −50V, I_E = 0	—	—	−100	nA
		I_{CEO}	—	V_{CE} = −50V, I_B = 0	—	—	−500	
Emitter cut-off current	RN2201	I_{EBO}	—	V_{EB} = −10V, I_C = 0	−0.82	—	−1.52	mA
	RN2202		—		−0.38	—	−0.71	
	RN2203		—		−0.17	—	−0.33	
	RN2204		—		−0.082	—	−0.15	
	RN2205		—	V_{EB} = −5V, I_C = 0	−0.078	—	−0.145	
	RN2206		—		−0.074	—	−0.138	
DC current gain	RN2201	h_{FE}	—	V_{CE} = −5V, I_C = −10mA	30	—	—	—
	RN2202		—		50	—	—	
	RN2203		—		70	—	—	
	RN2204		—		80	—	—	
	RN2205		—		80	—	—	
	RN2206		—		80	—	—	
Collector-emitter saturation voltage	RN2201~2206	$V_{CE\ (sat)}$	—	I_C = −5mA, I_B = −0.25mA	—	−0.1	−0.3	V
Input voltage (ON)	RN2201	$V_{I\ (ON)}$	—	V_{CE} = −0.2V, I_C = −5mA	−1.1	—	−2.0	V
	RN2202		—		−1.2	—	−2.4	
	RN2203		—		−1.3	—	−3.0	
	RN2204		—		−1.5	—	−5.0	
	RN2205		—		−0.6	—	−1.1	
	RN2206		—		−0.7	—	−1.3	
Input voltage (OFF)	RN2201~2204	$V_{I\ (OFF)}$	—	V_{CE} = −5V, I_C = −0.1mA	−1.0	—	−1.5	V
	RN2205, 2206		—		−0.5	—	−0.8	
Translation frequency	RN2201~2206	f_T	—	V_{CE} = −10V, I_C = −5mA	—	200	—	MHz
Collector output capacitance	RN2201~2206	C_{ob}	—	V_{CB} = −10V, I_E = 0, f = 1MHz	—	3	6	pF
Input resistor	RN2201	R1	—	—	3.29	4.7	6.11	kΩ
	RN2202		—		7	10	13	
	RN2203		—		15.4	22	28.6	
	RN2204		—		32.9	47	61.1	
	RN2205		—		1.54	2.2	2.86	
	RN2206		—		3.29	4.7	6.11	
Resistor ratio	RN2201~2204	R1/R2	—	—	0.9	1.0	1.1	—
	RN2205		—		0.0421	0.0468	0.0515	
	RN2206		—		0.09	0.1	0.11	

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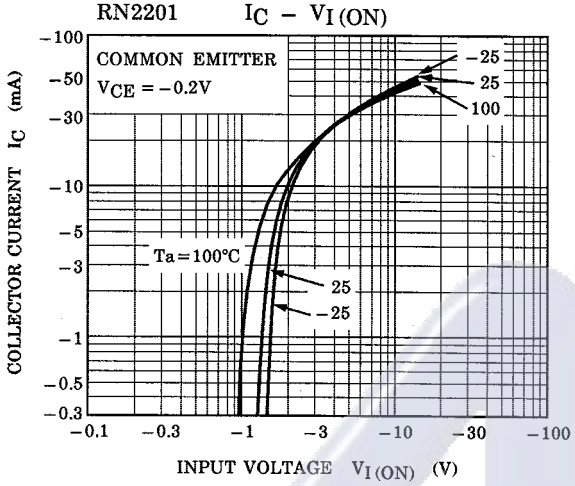
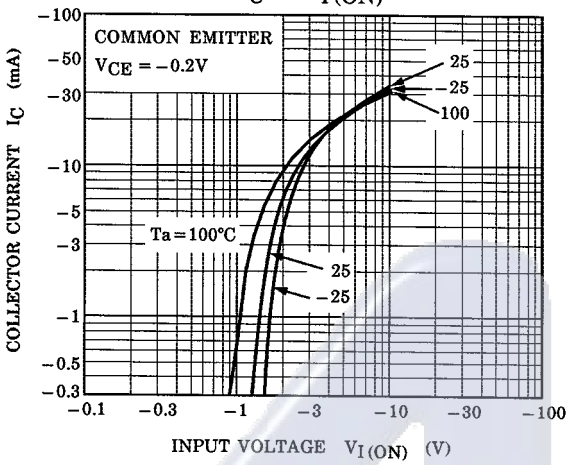
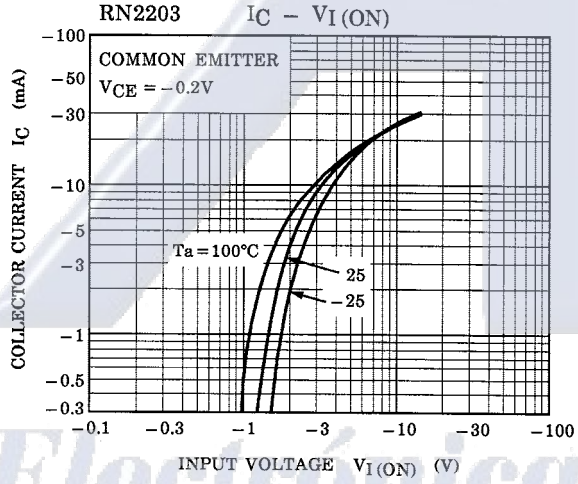
RN2201 I_C – $V_{I(ON)}$



RN2202 I_C – $V_{I(ON)}$



RN2203 I_C – $V_{I(ON)}$



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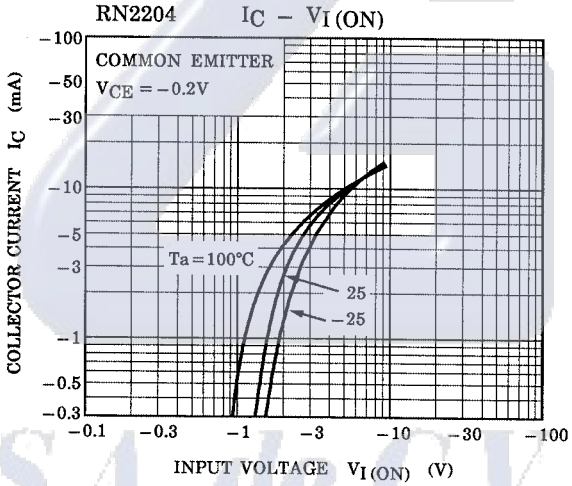
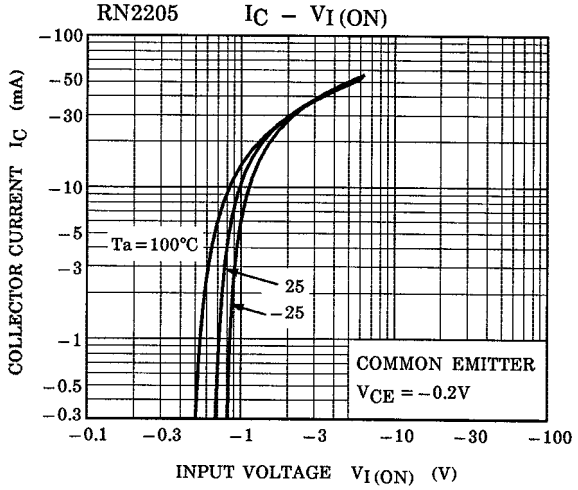


RN2205 I_C – $V_{I(ON)}$



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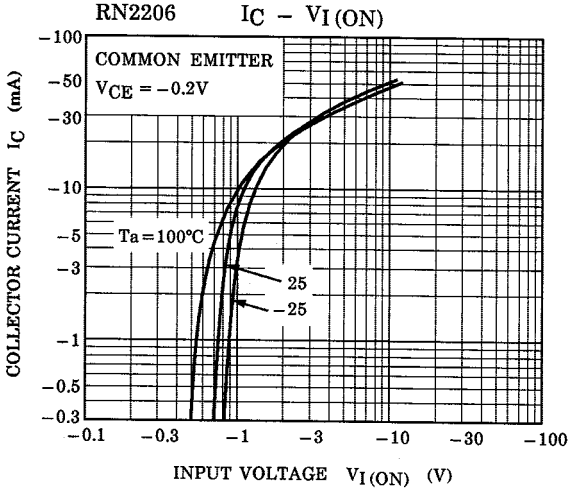

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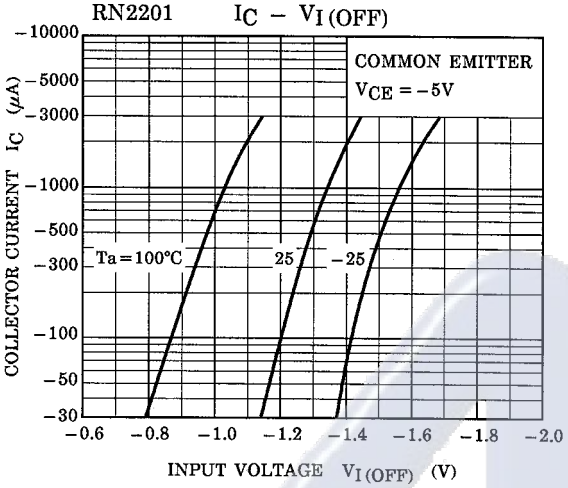
RN2201 I_C – $V_{I(OFF)}$



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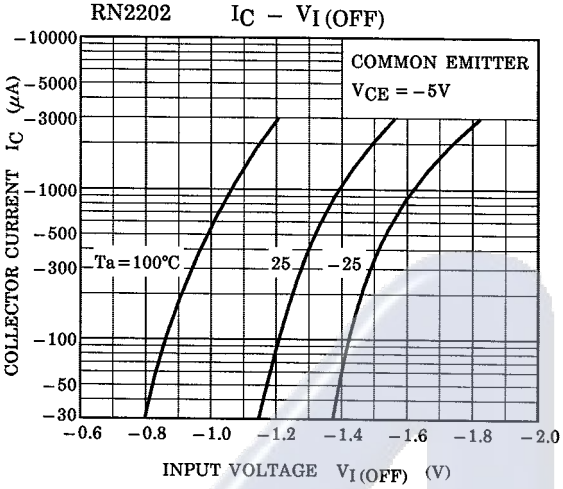

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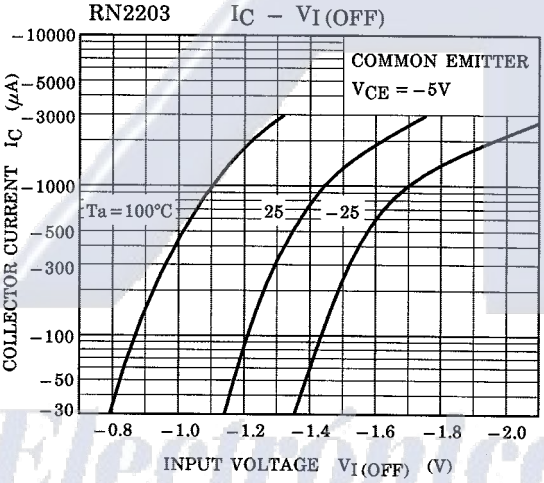

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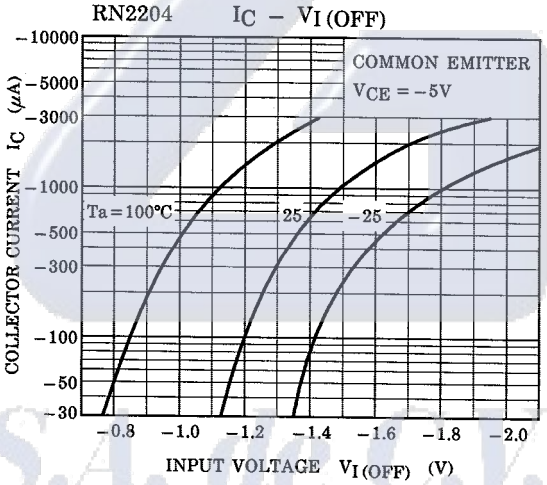

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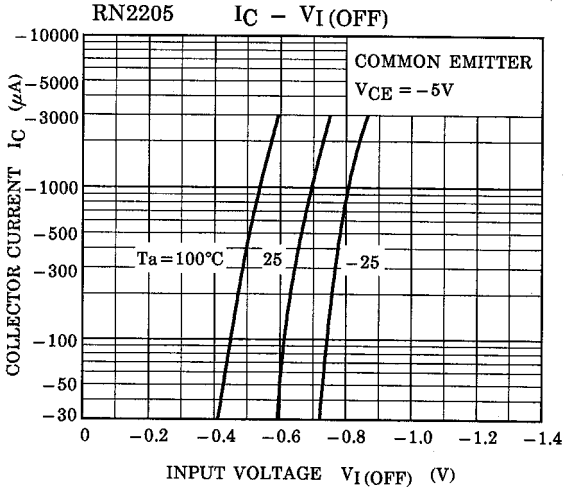

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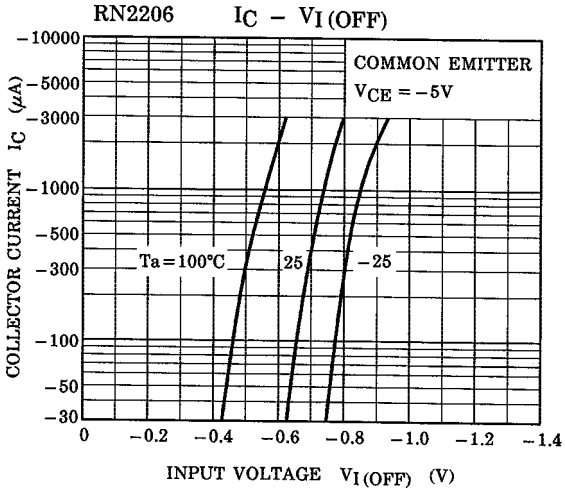

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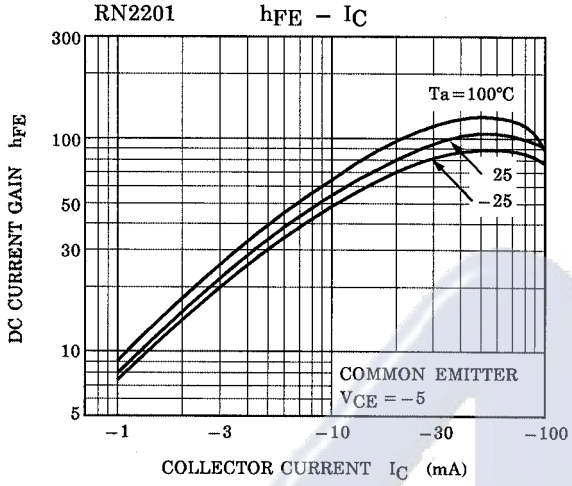
RN2201 h_{FE} – I_C



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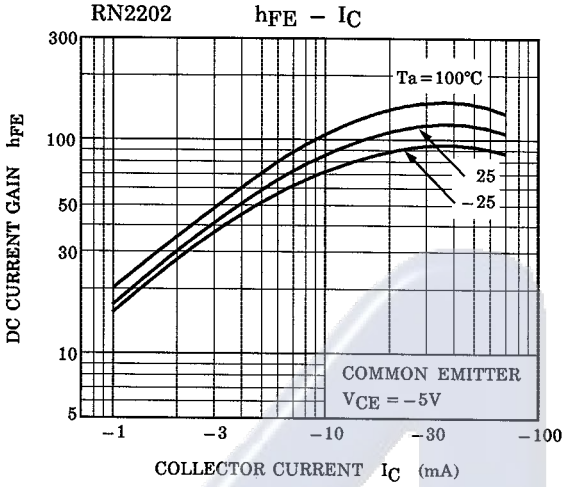

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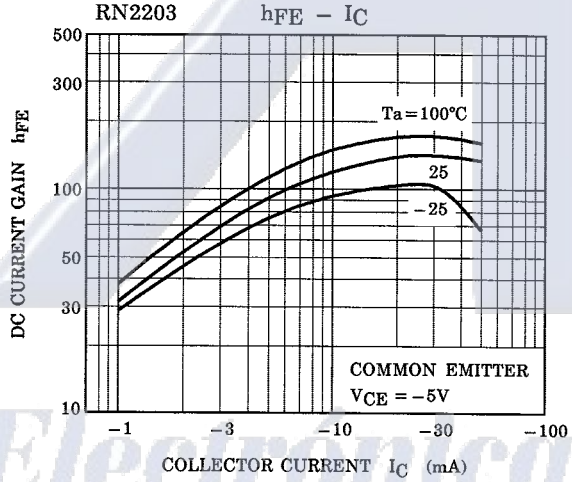

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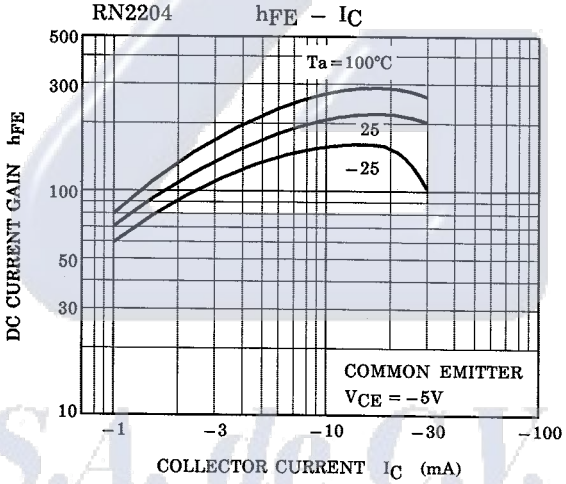
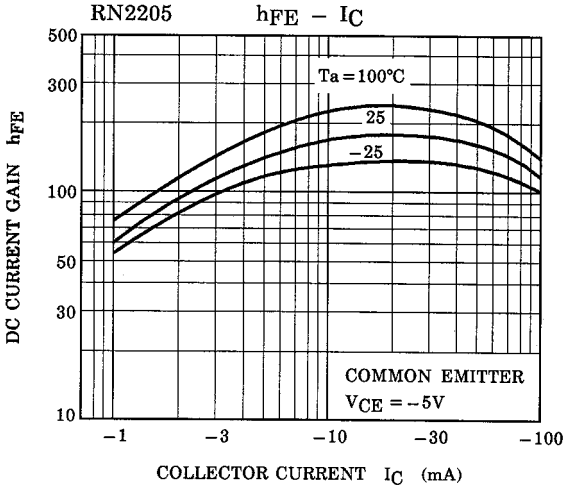
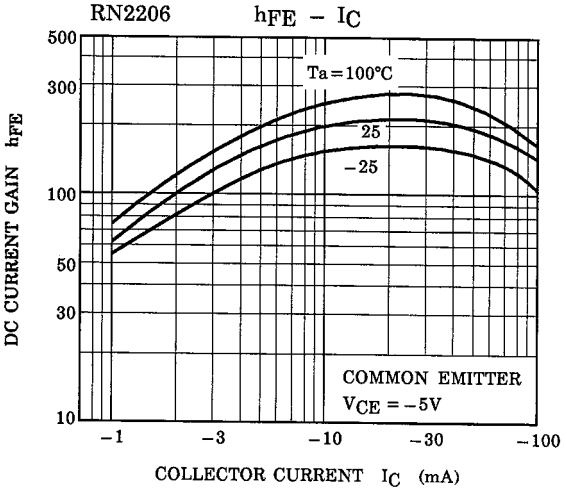


RN2205 h_{FE} – I_C



RN2206 h_{FE} – I_C



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