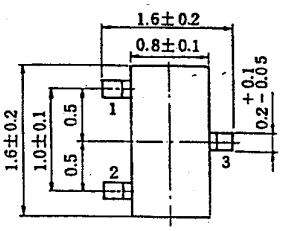
TOSHIBA Transistor Silicon NPN Epitaxial Type (PCT Process)

RN1101,RN1102,RN1103
RN1104,RN1105,RN1106

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 RN2101~RN2106

Unit: mm

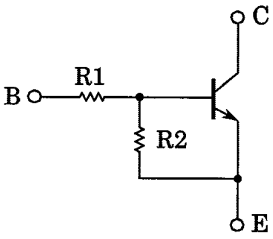


1. BASE
2. EMITTER
3. COLLECTOR

JEDEC	—
EIAJ	—
TOSHIBA	2-2H1A

Weight: 2.4mg

Equivalent Circuit and Bias Resister Values



Type No.	R1 (kΩ)	R2 (kΩ)
RN1101	4.7	4.7
RN1102	10	10
RN1103	22	22
RN1104	47	47
RN1105	2.2	47
RN1106	4.7	47

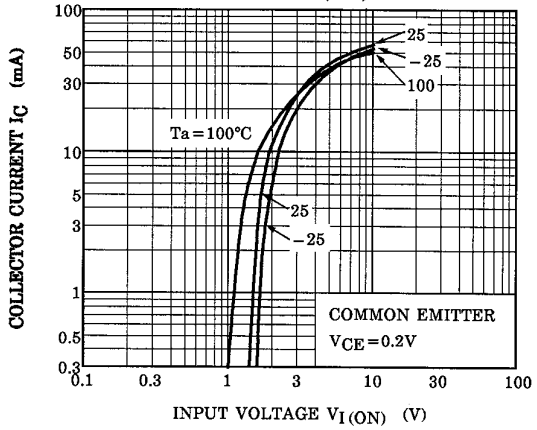
Maximum Ratings (Ta = 25°C)

Characteristic		Symbol	Rating	Unit
Collector-base voltage	RN1101~1106	V_{CBO}	50	V
Collector-emitter voltage		V_{CEO}	50	V
Emitter-base voltage	RN1101~1104	V_{EBO}	10	V
	RN1105, 1106		5	
Collector current	RN1101~1106	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

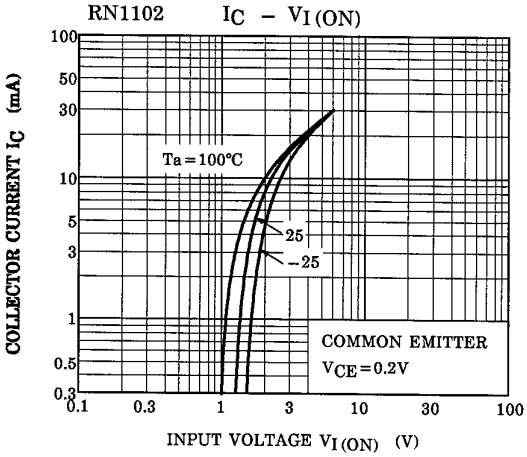
Electrical Characteristics (Ta = 25°C)

Characteristic		Symbol	Test Circuit	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current	RN1101~1106	I_{CBO}	—	V_{CB} = 50V, I_E = 0	—	—	100	nA
		I_{CEO}		V_{CE} =50V, I_B = 0	—	—	500	
Emitter cut-off current	RN1101	I_{EBO}	—	V_{EB} = 10V, I_C = 0	0.82	—	1.52	mA
	RN1102				0.38	—	0.71	
	RN1103				0.17	—	0.33	
	RN1104				0.082	—	0.15	
	RN1105			V_{EB} = 5V, I_C = 0	0.078	—	0.145	
	RN1106				0.074	—	0.138	
DC current gain	RN1101	h_{FE}	—	V_{CE} = 5V, I_C = 10mA	30	—	—	—
	RN1102				50	—	—	
	RN1103				70	—	—	
	RN1104				80	—	—	
	RN1105				80	—	—	
	RN1106				80	—	—	
Collector-emitter saturation voltage	RN1101~1106	$V_{CE\ (sat)}$	—	I_C = 5mA, I_B = 0.25mA	—	0.1	0.3	V
Input voltage (ON)	RN1101	$V_{I\ (ON)}$	—	V_{CE} = 0.2V, I_C = 5mA	1.1	—	2.0	V
	RN1102				1.2	—	2.4	
	RN1103				1.3	—	3.0	
	RN1104				1.5	—	5.0	
	RN1105				0.6	—	1.1	
	RN1106				0.7	—	1.3	
Input voltage (OFF)	RN1101~1104	$V_{I\ (OFF)}$	—	V_{CE} = 5V, I_C = 0.1mA	1.0	—	1.5	V
	RN1105, 1106				0.5	—	0.8	
Transition frequency	RN1101~1106	f_T	—	V_{CE} = 10V, I_C = 5mA	—	250	—	MH_Z
Collector Output capacitance	RN1101~1106	C_{ob}	—	V_{CB} = 10V, I_E = 0, f = 1MH_Z	—	3	6	pF
Input resistor	RN1101	R1	—		3.29	4.7	6.11	kΩ
	RN1102				7	10	13	
	RN1103				15.4	22	28.6	
	RN1104				32.9	47	61.1	
	RN1105				1.54	2.2	2.86	
	RN1106				3.29	4.7	6.11	
Resistor ratio	RN1101~1104	R1/R2	—		0.9	1.0	1.1	—
	RN1105				0.0421	0.0468	0.0515	
	RN1106				0.09	0.1	0.11	

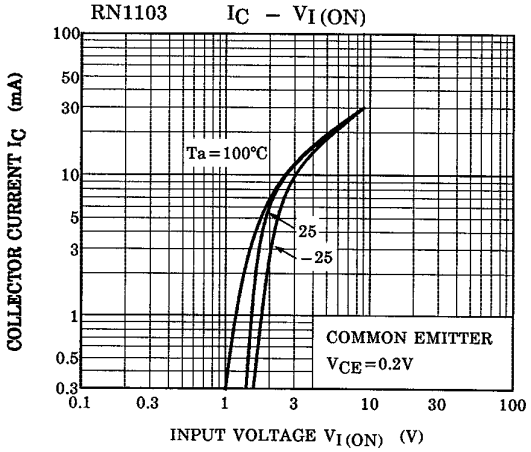
RN1101 I_C – $V_{I(ON)}$



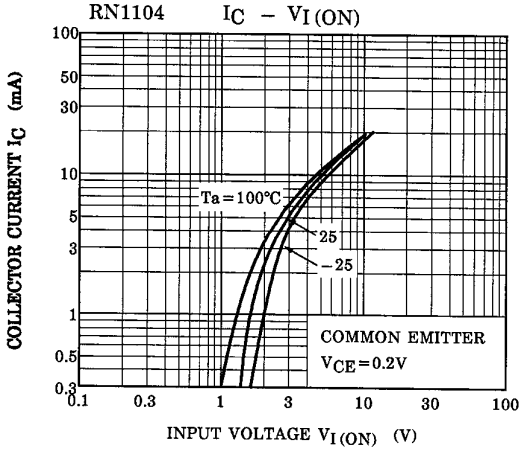
RN1102 I_C – $V_{I(ON)}$



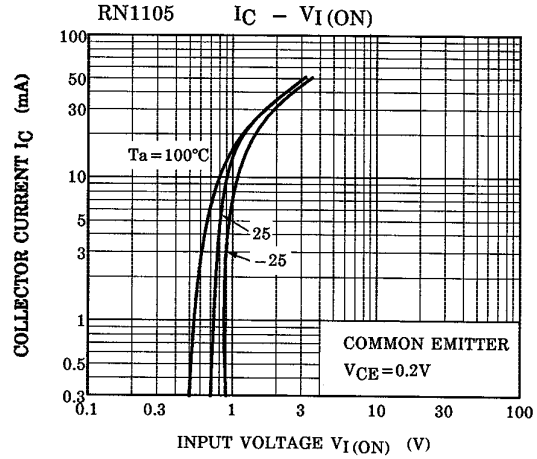
RN1103 I_C – $V_{I(ON)}$



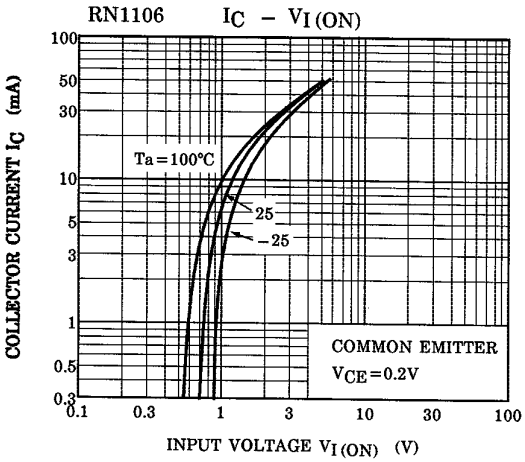
RN1104 I_C – $V_{I(ON)}$



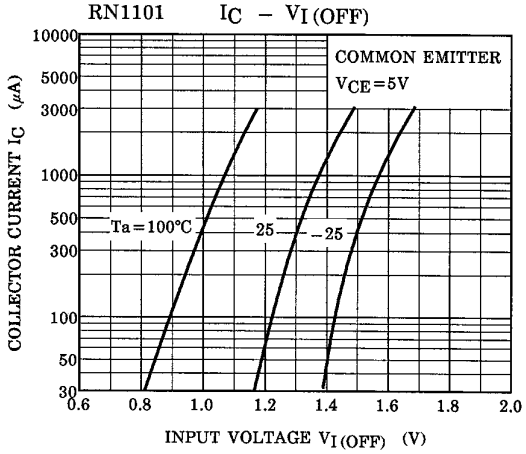
RN1105 I_C – $V_{I(ON)}$



RN1106 I_C – $V_{I(ON)}$



RN1101 I_C – $V_{I(OFF)}$



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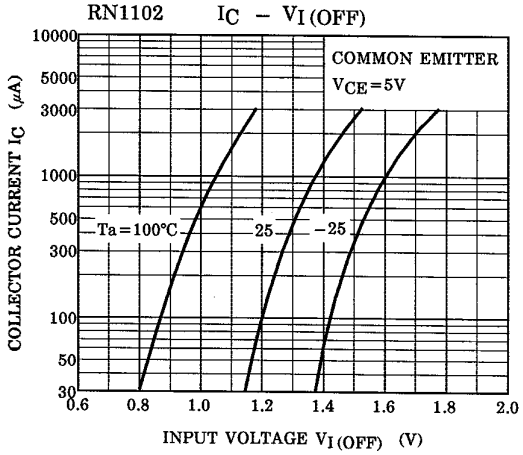

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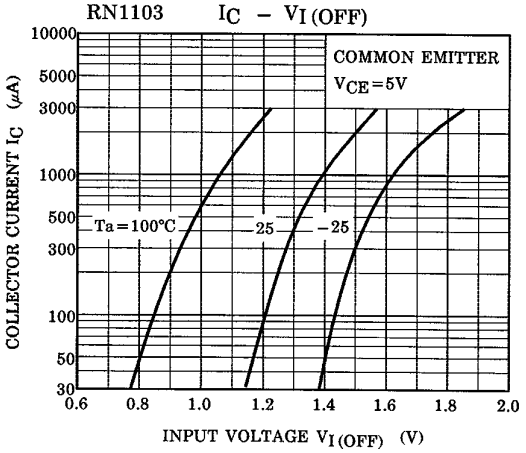

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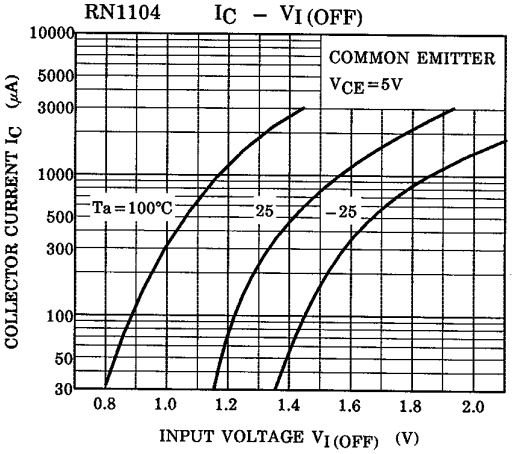

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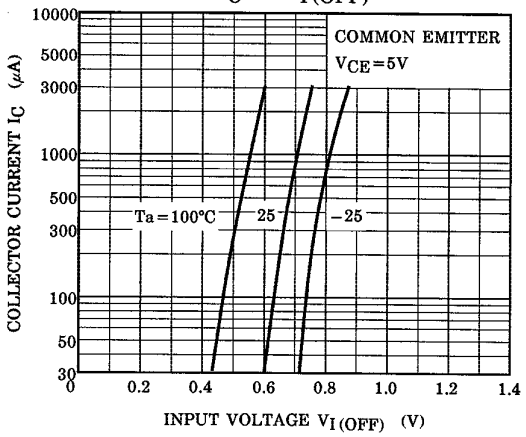

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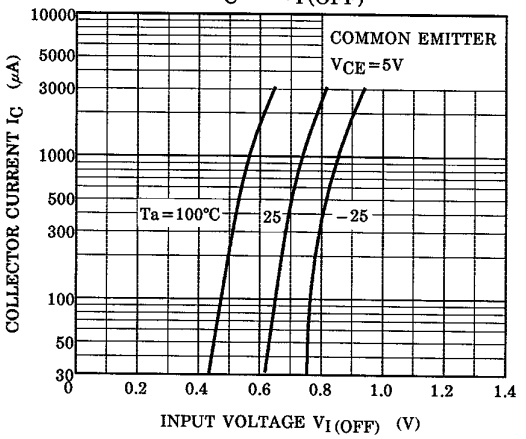
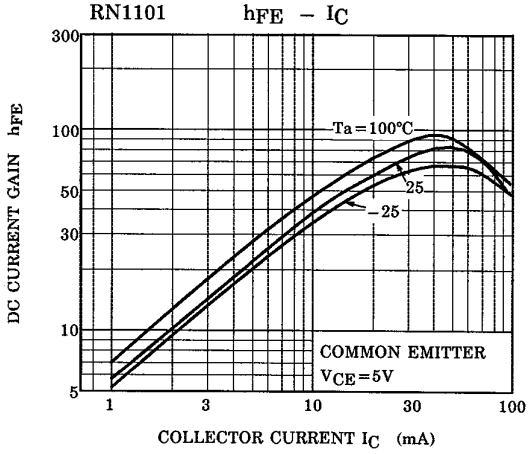
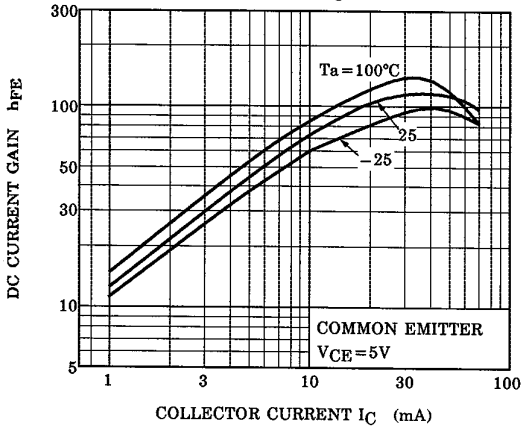


RN1101 h_{FE} – I_C



RN1102 h_{FE} – I_C



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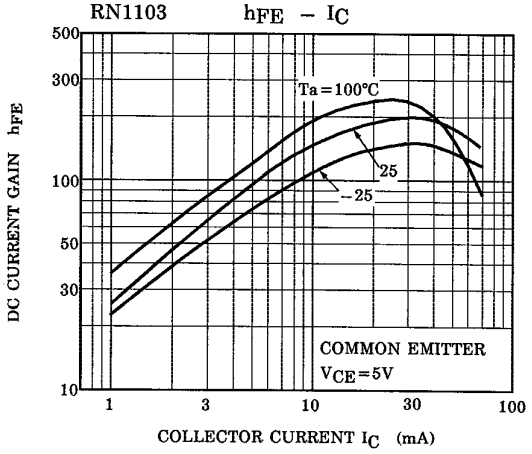
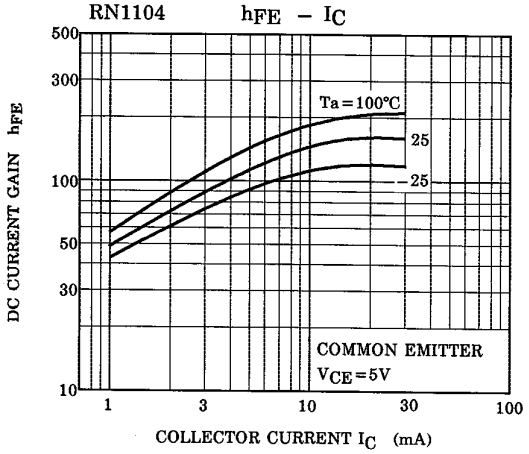


RN1104 h_{FE} – I_C



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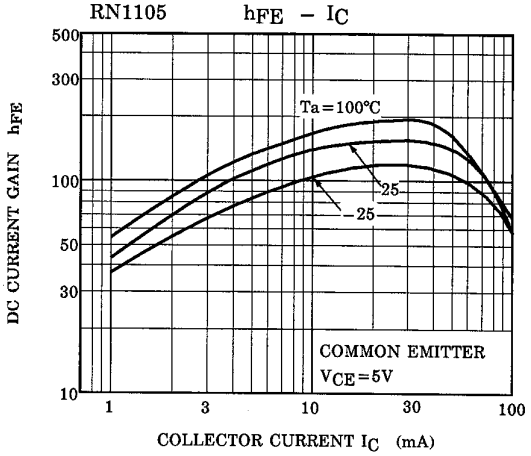
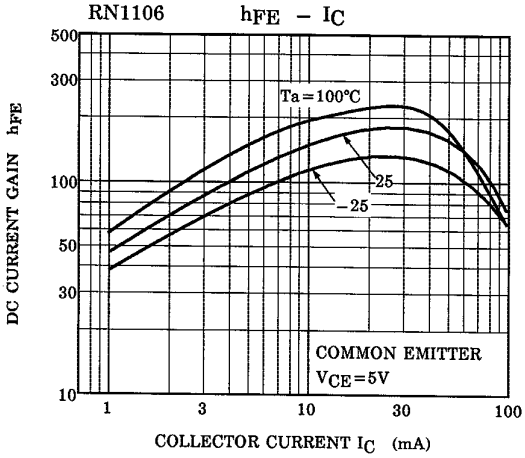
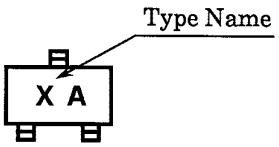
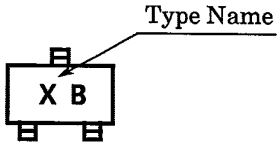
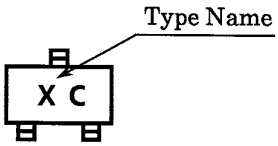
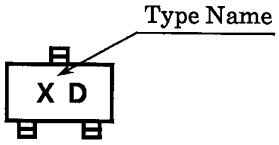
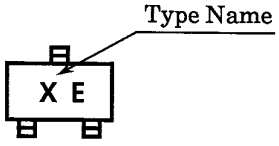
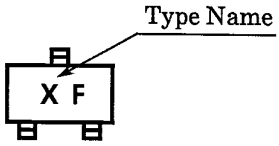


RN1106 h_{FE} – I_C



Type Name	Marking
RN1101	
RN1102	
RN1103	
RN1104	
RN1105	
RN1106	

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