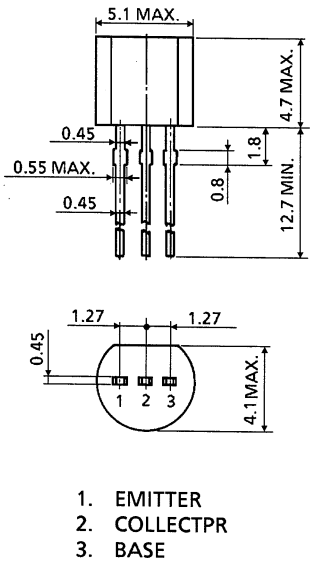
TOSHIBA Transistor Silicon PNP Epitaxial Type (PCT Process)

RN2001,RN2002,RN2003 RN2004,RN2005,RN2006

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 RN1001~RN1006

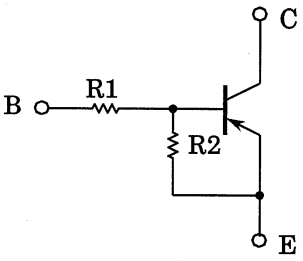
Unit in mm



JEDEC	TO-92
EIAJ	SC-43
TOSHIBA	2-5F1B

Weight: 0.21g

Equivalent Circuit and Bias Resister Values



Type No.	R1 (kΩ)	R2 (kΩ)
RN2001	4.7	4.7
RN2002	10	10
RN2003	22	22
RN2004	47	47
RN2005	2.2	47
RN2006	4.7	47

Maximum Ratings (Ta = 25°C)

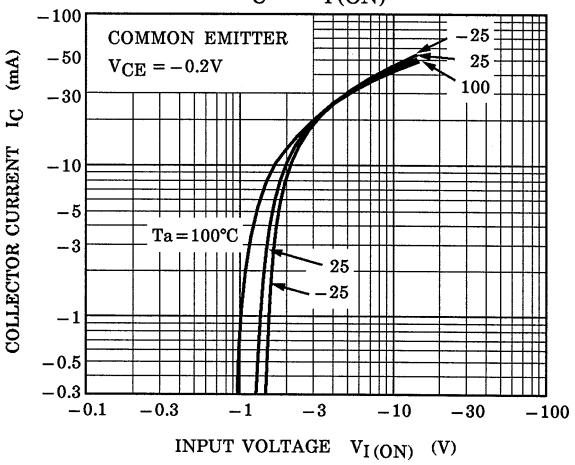
Characteristic		Symbol	Rating	Unit
Collector-base voltage	RN2001~2006	V_{CBO}	−50	V
Collector-emitter voltage		V_{CEO}	−50	V
Emitter-base voltage	RN2001~2004	V_{EBO}	−10	V
	RN2005, 2006		−5	
Collector current	RN2001~2006	I_C	−100	mA
Collector power dissipation		P_C	400	mW
Junction temperature		T_j	150	°C
Storage temperature range		T_{stg}	−55~150	°C

961001EAA2

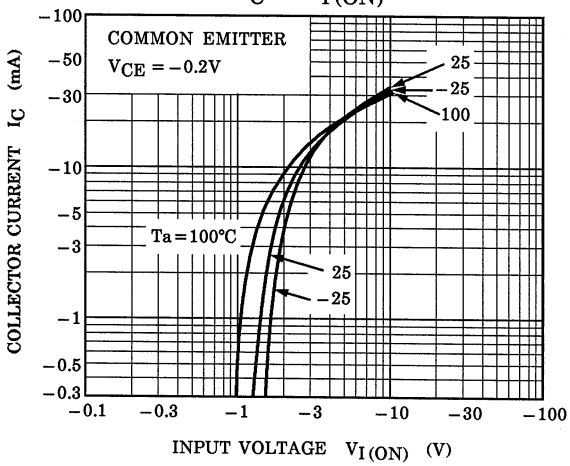
Electrical Characteristics (Ta = 25°C)

Characteristic		Symbol	Test Circuit	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current	RN2001~2006	I_{CBO}	—	V_{CB} = −50V, I_E = 0	—	—	−100	nA
		I_{CEO}		V_{CE} = −50V, I_B = 0	—	—	−500	
Emitter cut-off current	RN2001	I_{EBO}	—	V_{EB} = −10V, I_C = 0	−0.82	—	−1.52	mA
	RN2002				−0.38	—	−0.71	
	RN2003				−0.17	—	−0.33	
	RN2004				−0.082	—	−0.15	
	RN2005			V_{EB} = −5V, I_C = 0	−0.078	—	−0.145	
	RN2006				−0.074	—	−0.138	
DC current gain	RN2001	h_{FE}	—	V_{CE} = −5V, I_C = −10mA	30	—	—	
	RN2002				50	—	—	
	RN2003				70	—	—	
	RN2004				80	—	—	
	RN2005				80	—	—	
	RN2006				80	—	—	
Collector-emitter saturation voltage	RN2001~2006	$V_{CE\ (sat)}$	—	I_C = −5mA, I_B = −0.25mA	—	−0.1	−0.3	V
Input voltage (ON)	RN2001	$V_{I\ (ON)}$	—	V_{CE} = −0.2V, I_C = −5mA	−1.1	—	−2.0	V
	RN2002				−1.2	—	−2.4	
	RN2003				−1.3	—	−3.0	
	RN2004				−1.5	—	−5.0	
	RN2005				−0.6	—	−1.1	
	RN2006				−0.7	—	−1.3	
Input voltage (OFF)	RN2001~2004	$V_{I\ (OFF)}$	—	V_{CE} = −5V, I_C = −0.1mA	−1.0	—	−1.5	V
	RN2005, 2006				−0.5	—	−0.8	
Transition frequency	RN2001~2006	f_T	—	V_{CE} = −10V, I_C = −5mA	—	200	—	MHz
Collector Output capacitance	RN2001~2006	C_{ob}	—	V_{CB} = −10V, I_E = 0, f = 1MHz	—	3	6	pF
Input resistor	RN2001	R1	—		3.29	4.7	6.11	kΩ
	RN2002				7	10	13	
	RN2003				15.4	22	28.6	
	RN2004				32.9	47	61.1	
	RN2005				1.54	2.2	2.86	
	RN2006				3.29	4.7	6.11	
Resistor ratio	RN2001~2004	R1/R2	—		0.9	1.0	1.1	
	RN2005				0.0421	0.0468	0.0515	
	RN2006				0.09	0.1	0.11	

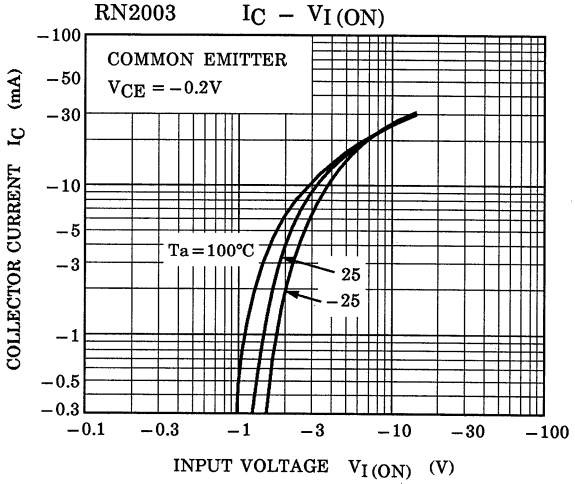
RN2001 $I_C - V_{I(ON)}$



RN2002 $I_C - V_{I(ON)}$



RN2003 $I_C - V_{I(ON)}$



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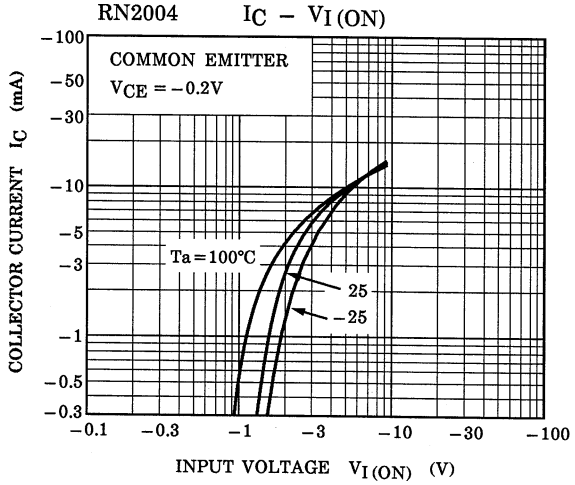

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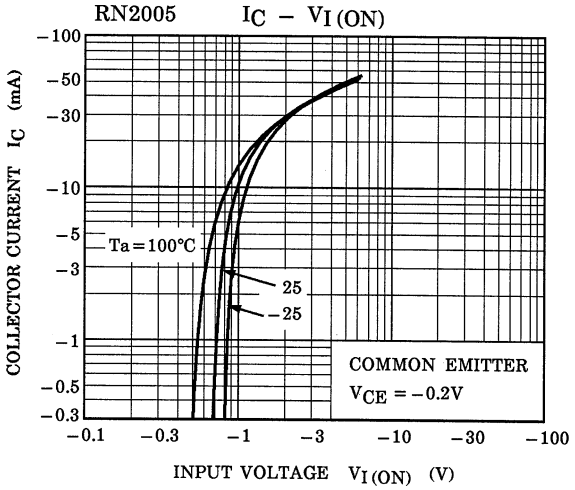

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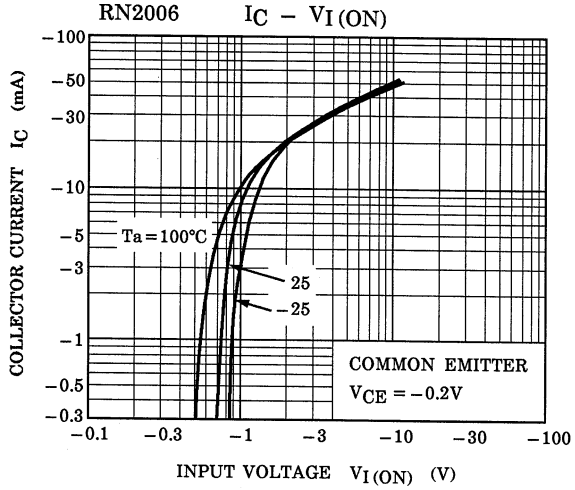
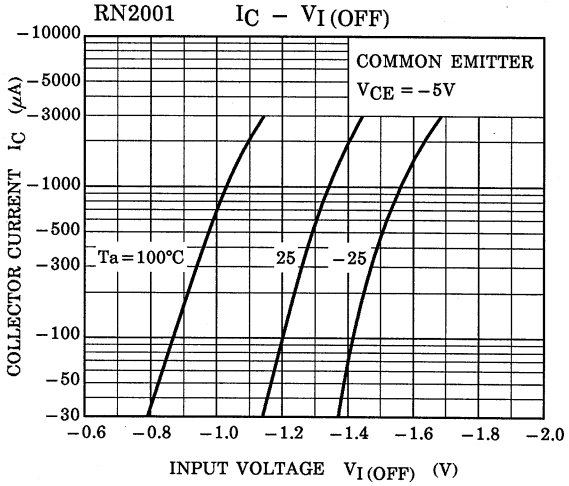


RN2001 $I_C - V_{I(OFF)}$



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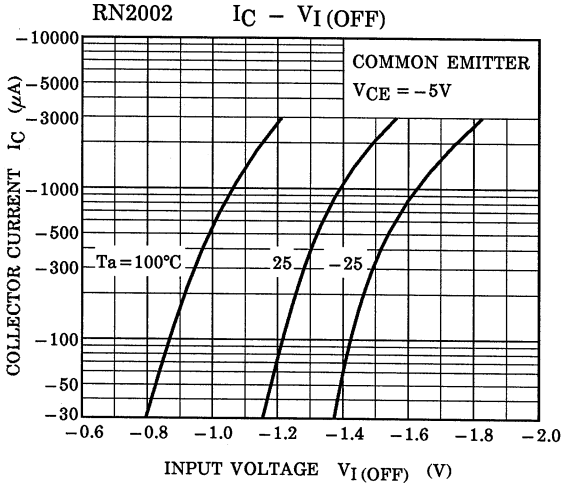

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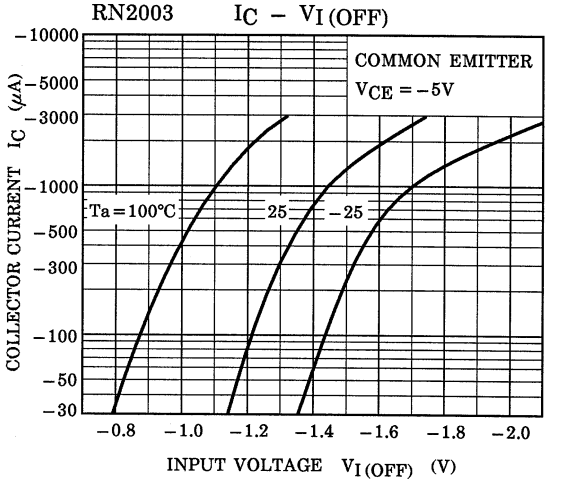

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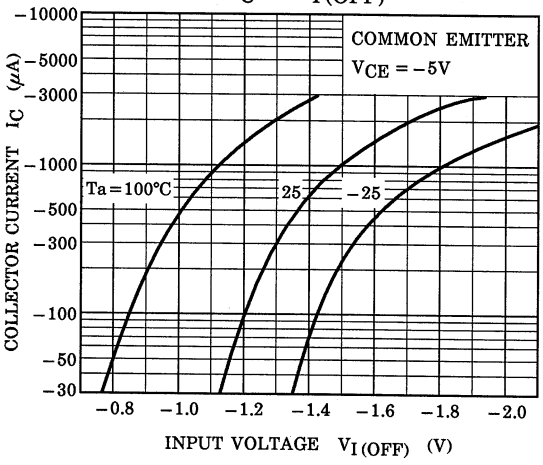

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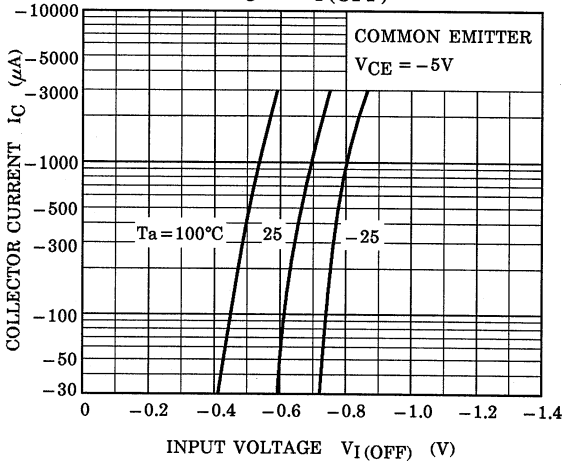

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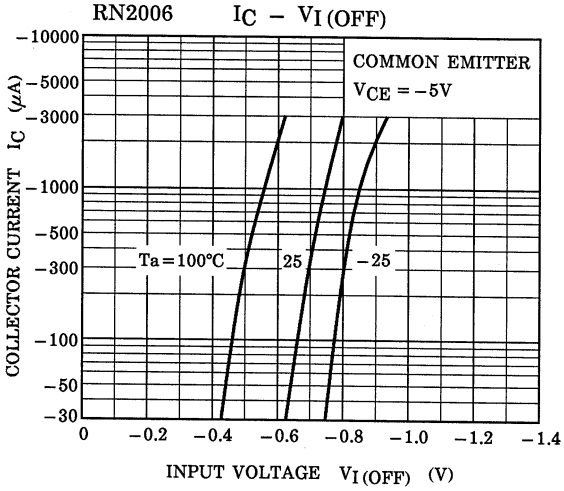
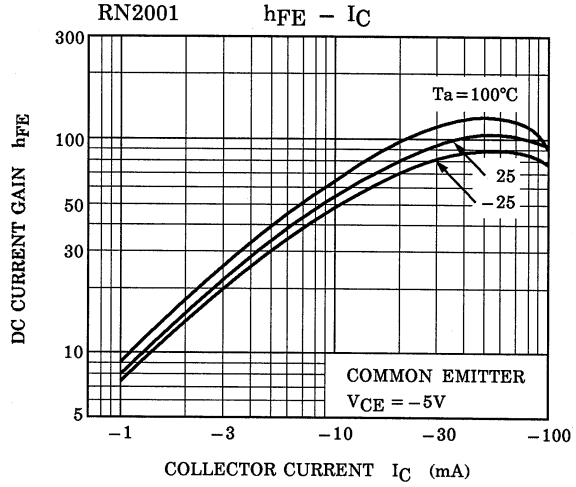


RN2001 h_{FE} – I_C



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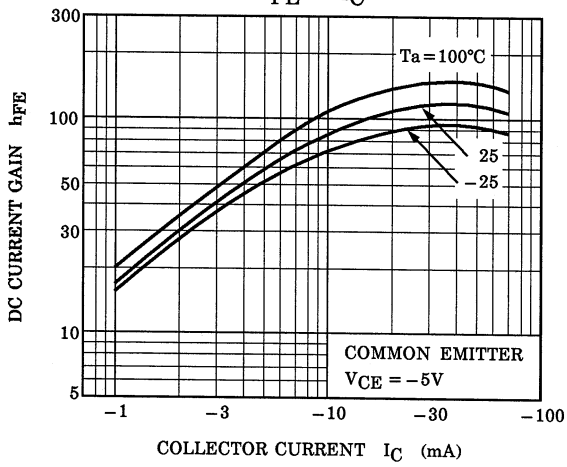

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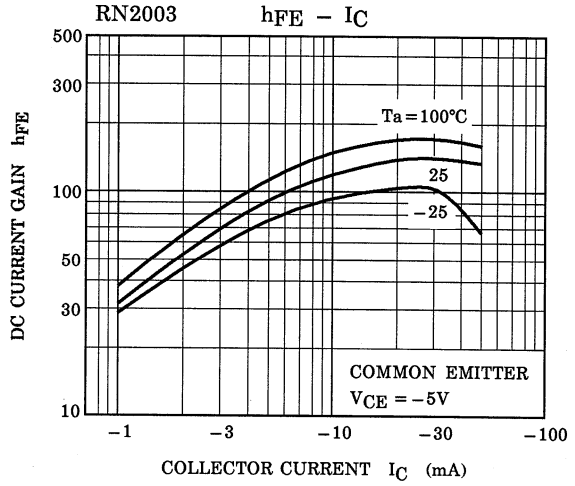

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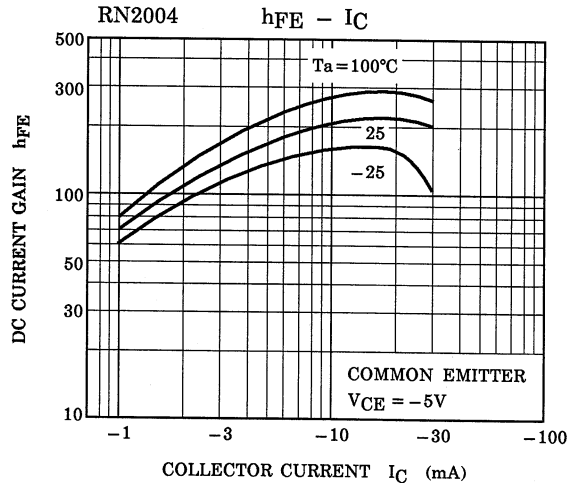

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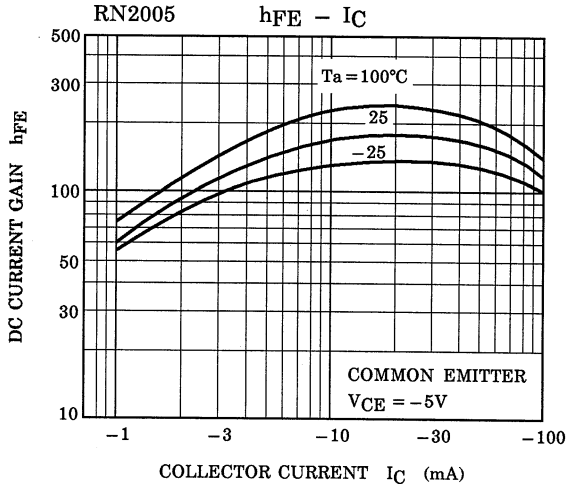

RN2006 h_{FE} – I_C