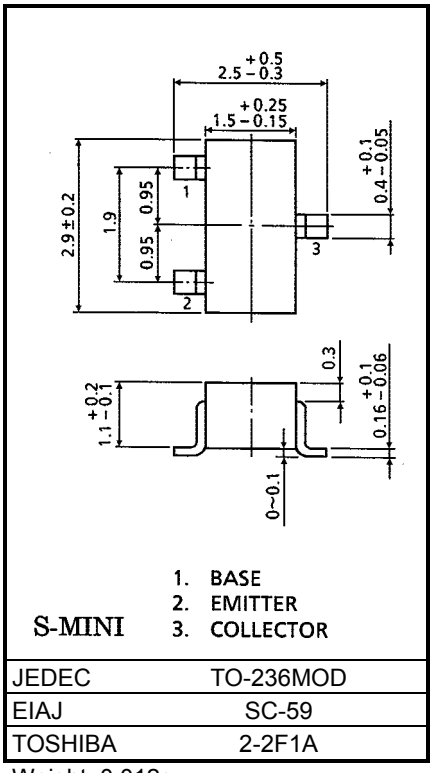
TOSHIBA Transistor Silicon PNP Epitaxial Type (PCT Process)

RN2401,RN2402,RN2403 RN2404,RN2405,RN2406

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 RN1401~1406

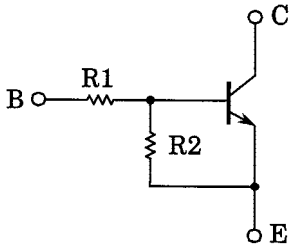
Unit: mm



JEDEC	TO-236MOD
EIAJ	SC-59
TOSHIBA	2-2F1A

Weight: 0.012g

Equivalent Circuit



Bias Resistor Values

Type No.	R1 (kΩ)	R2 (kΩ)
RN2401	4.7	4.7
RN2402	10	10
RN2403	22	22
RN2404	47	47
RN2405	2.2	47
RN2406	4.7	47

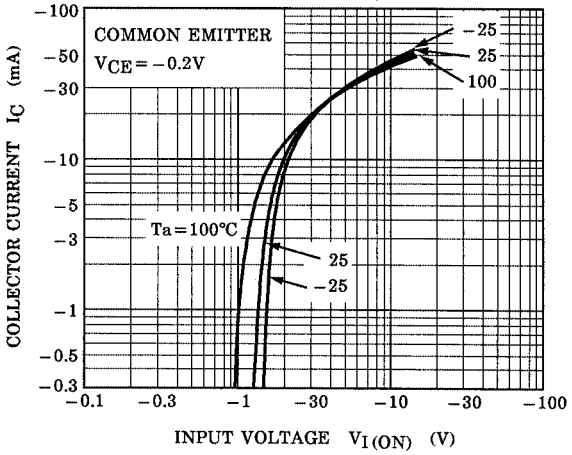
Maximum Ratings (Ta = 25°C)

Characteristic		Symbol	Rating	Unit
Collector-base voltage	RN2401~2406	V_{CBO}	−50	V
Collector-emitter voltage		V_{CEO}	−50	V
Emitter-base voltage	RN2401~2404	V_{EBO}	−10	V
	RN2405, 2406		−5	V
Collector current	RN2401~2406	I_C	−100	mA
Collector power dissipation		P_C	200	mW
Junction temperature		T_j	150	°C
Storage temperature range		T_{stg}	−55~150	°C

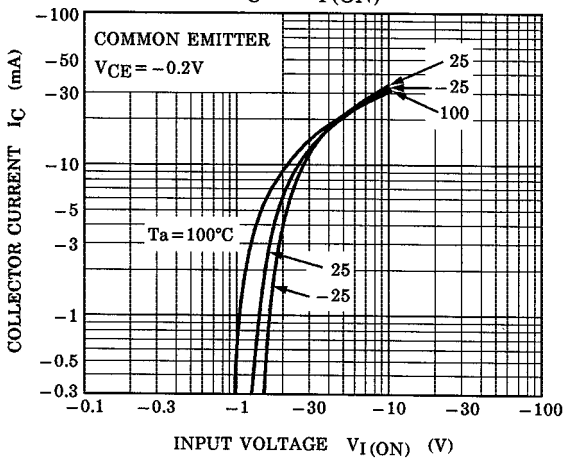
Electrical Characteristics (Ta = 25°C)

Characteristic		Symbol	Test Circuit	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current	RN2401~2406	I_{CBO}	—	V_{CB} = −50V, I_E = 0	—		−100	nA
		I_{CEO}	—	V_{CE} = −50V, I_B = 0	—	—	−500	
Emitter cut-off current	RN2401	I_{EBO}	—	V_{EB} = −10V, I_C = 0	−0.82	—	−1.52	mA
	RN2402		—		−0.38	—	−0.71	
	RN2403		—		−0.17	—	−0.33	
	RN2404		—		−0.082	—	−0.15	
	RN2405		—	V_{EB} = −5V, I_C = 0	−0.078	—	−0.145	
	RN2406		—		−0.074	—	−0.138	
DC current gain	RN2401	h_{FE}	—	V_{CE} = −5V I_C = −10mA	30	—	—	—
	RN2402		—		50	—	—	
	RN2403		—		70	—	—	
	RN2404		—		80	—	—	
	RN2405		—		80	—	—	
	RN2406		—		80	—	—	
Collector-emitter saturation voltage	RN2401~2406	$V_{CE\ (sat)}$	—	I_C = −5mA I_B = −0.25mA	—	−0.1	−0.3	V
Input voltage (ON)	RN2401	$V_{I\ (ON)}$	—	V_{CE} = −0.2V I_C = −5mA	−1.1	—	−2.0	V
	RN2402		—		−1.2	—	−2.4	
	RN2403		—		−1.3	—	−3.0	
	RN2404		—		−1.5	—	−5.0	
	RN2405		—		−0.6	—	−1.1	
	RN2406		—		−0.7	—	−1.3	
Input voltage (OFF)	RN2401~2404	$V_{I\ (OFF)}$	—	V_{CE} = −5V, I_C = −0.1mA	−1.0	—	−1.5	V
	RN2405, 2406		—		−0.5	—	−0.8	
Translation frequency	RN2401~2406	f_T	—	V_{CE} = −10V, I_C = −5mA	—	200	—	MHz
Collector output capacitance	RN2401~2406	C_{ob}	—	V_{CB} = −10V, I_E = 0 f = 1MHz	—	3	6	pF
Input resistor	RN2401	R1	—	—	3.29	4.7	6.11	kΩ
	RN2402		—		7	10	13	
	RN2403		—		15.4	22	28.6	
	RN2404		—		32.9	47	61.1	
	RN2405		—		1.54	2.2	2.86	
	RN2406		—		3.29	4.7	6.11	
Resistor ratio	RN2401~2404	R1/R2	—	—	0.9	1.0	1.1	—
	RN2405		—		0.0421	0.0468	0.0515	
	RN2406		—		0.09	0.1	0.11	

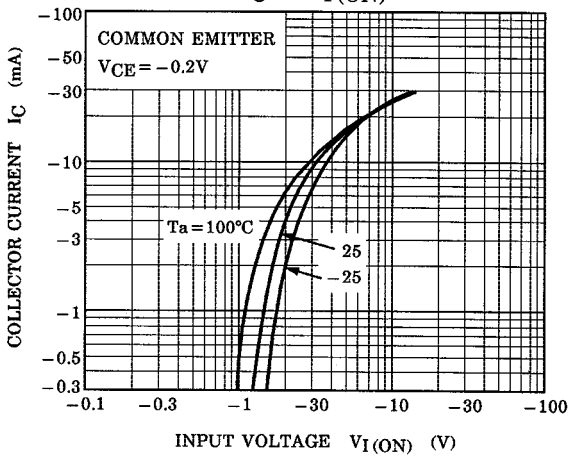
RN2401 $I_C - V_{I(ON)}$



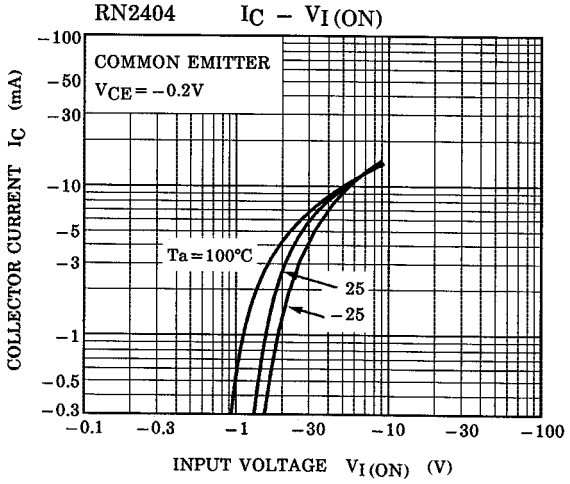
RN2402 $I_C - V_{I(ON)}$



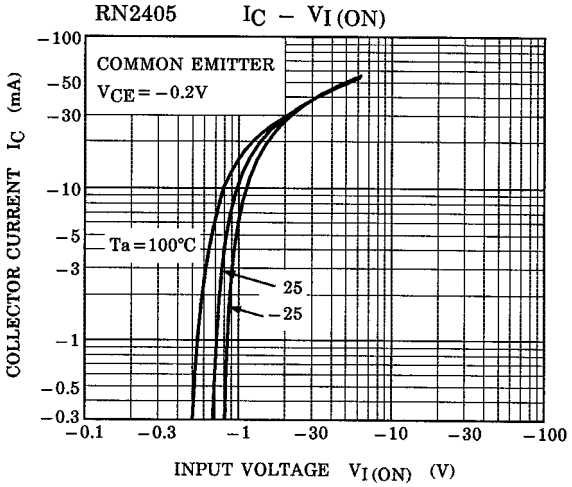
RN2403 $I_C - V_{I(ON)}$



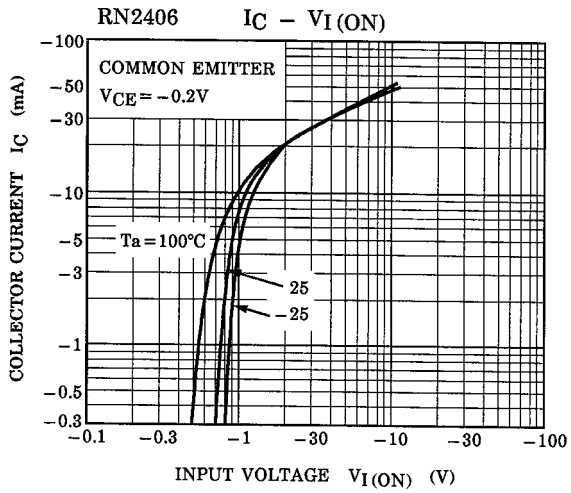
RN2404 $I_C - V_{I(ON)}$



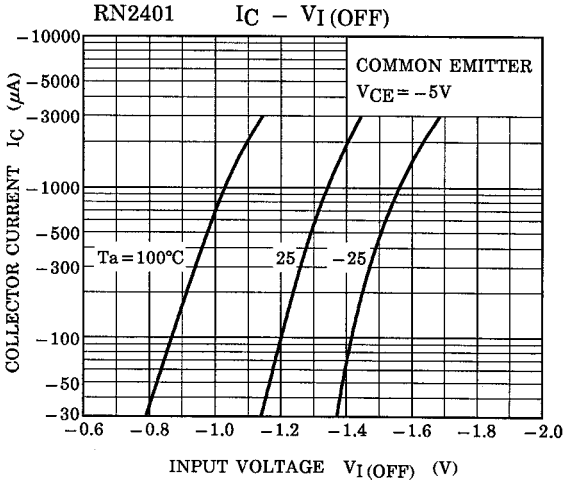
RN2405 $I_C - V_{I(ON)}$



RN2406 $I_C - V_{I(ON)}$



RN2401 $I_C - V_{I(OFF)}$



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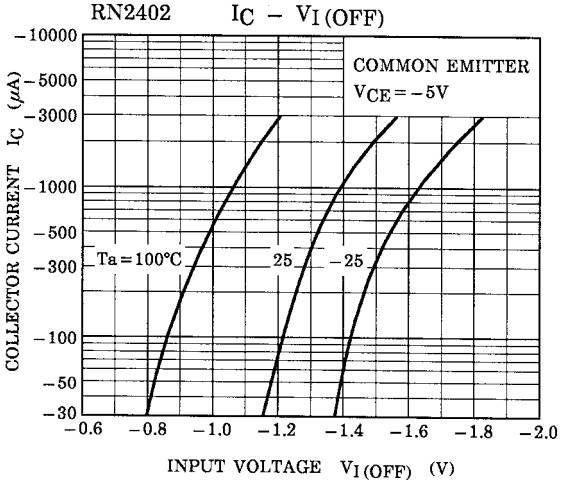

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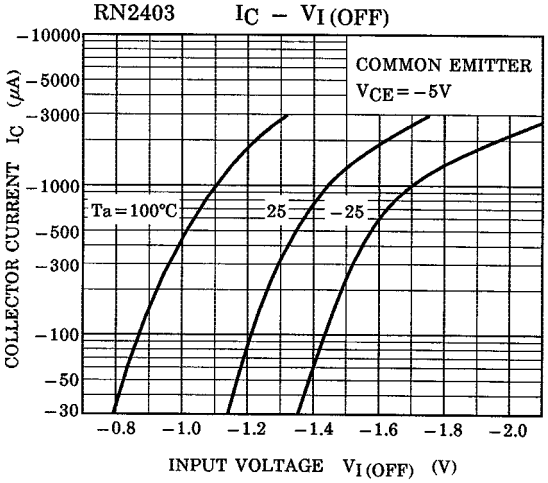

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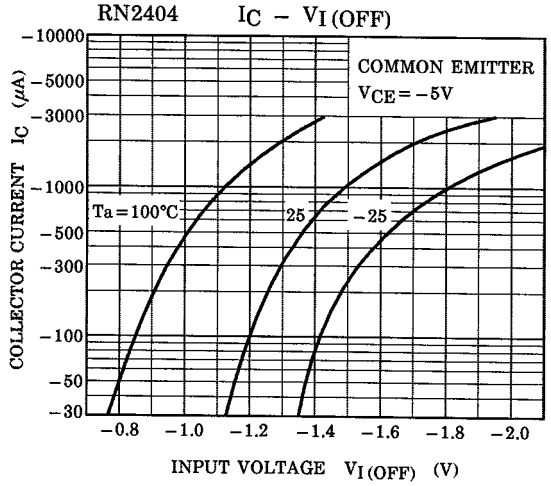

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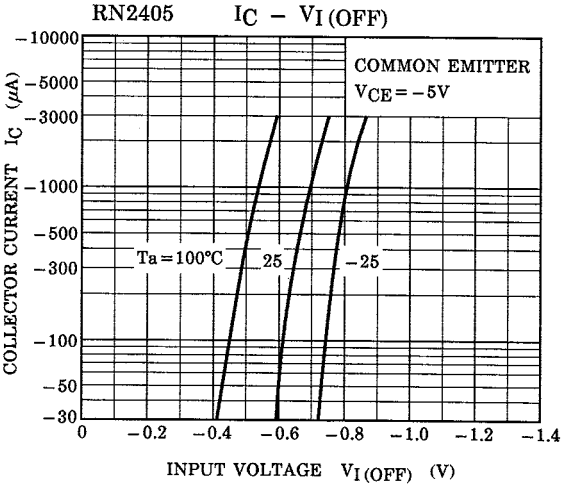
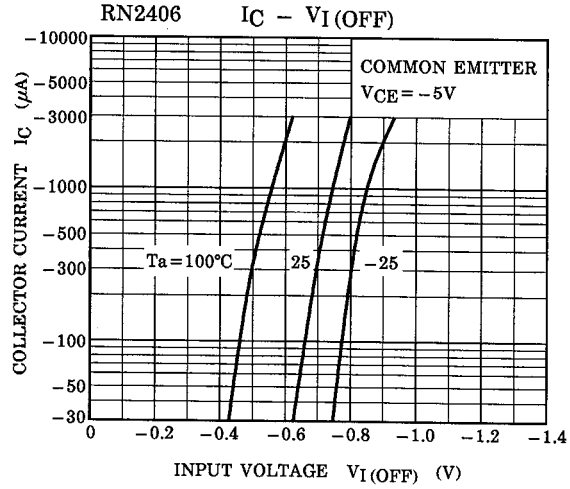
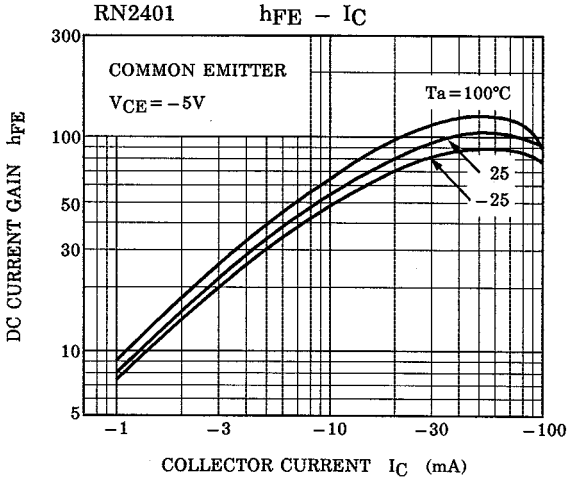


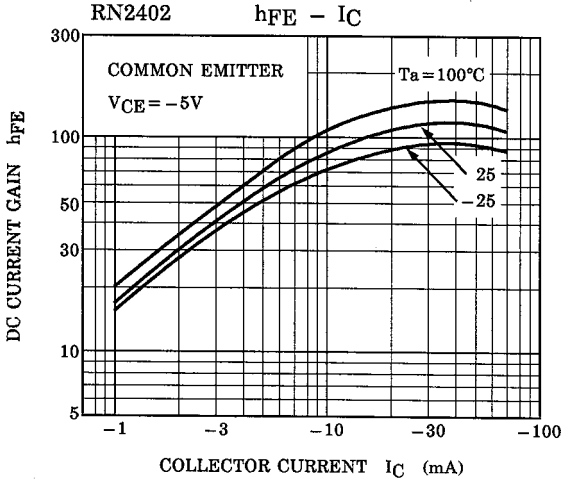
RN2406 $I_C - V_{I(OFF)}$



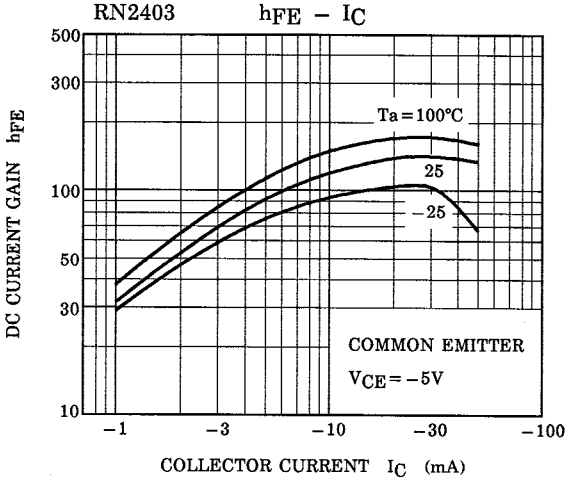
RN2401 h_{FE} – I_C



RN2402 h_{FE} – I_C



RN2403 h_{FE} – I_C



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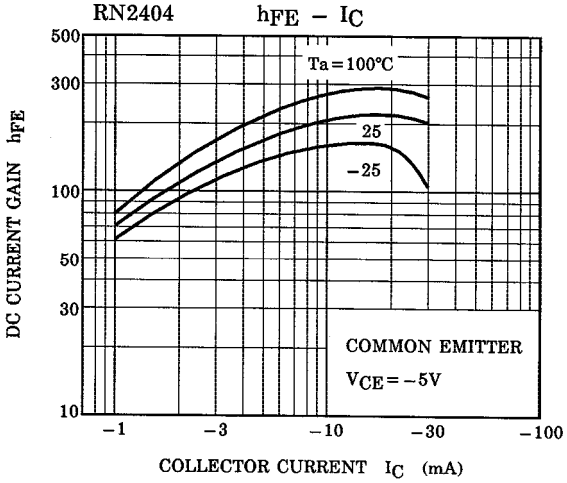
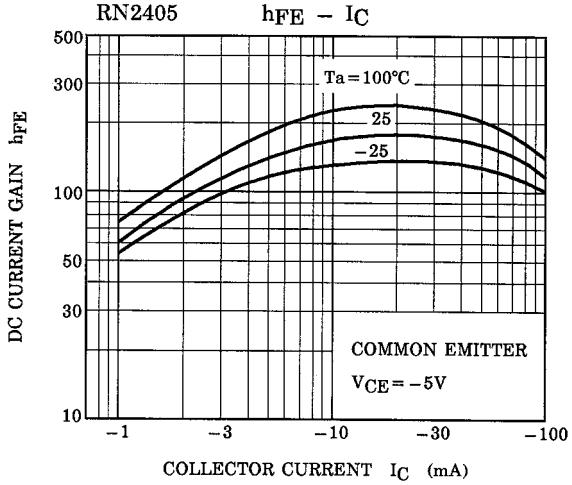
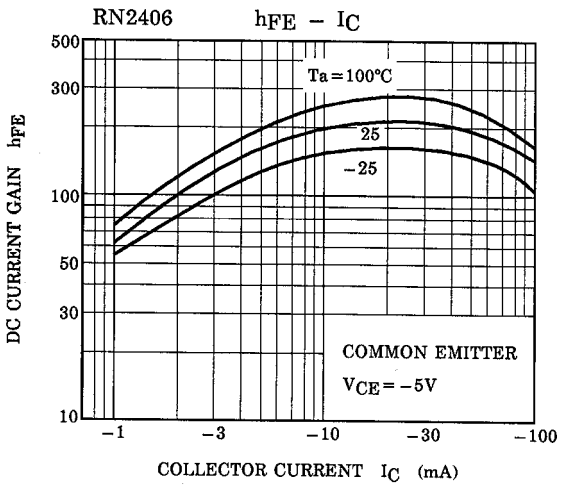


RN2405 h_{FE} – I_C



RN2406 h_{FE} – I_C



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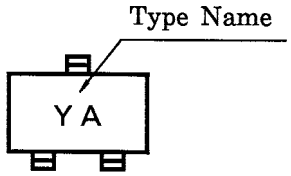
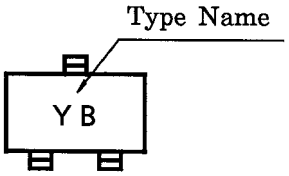
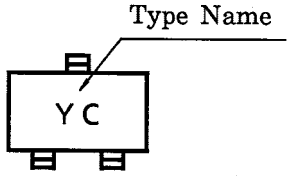
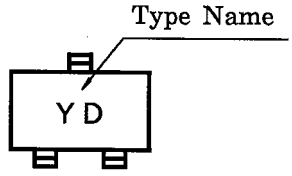
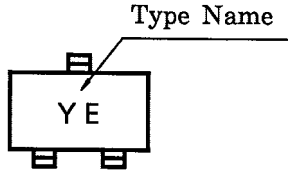
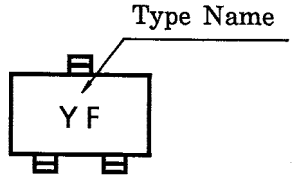
RN2401	
RN2402	
RN2403	
RN2404	
RN2405	
RN2406	

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000707EAA

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