

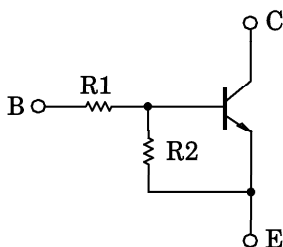
TOSHIBA TRANSISTOR SILICON NPN EPITAXIAL TYPE (PCT PROCESS)

**RN1301, RN1302, RN1303  
RN1304, RN1305, RN1306**

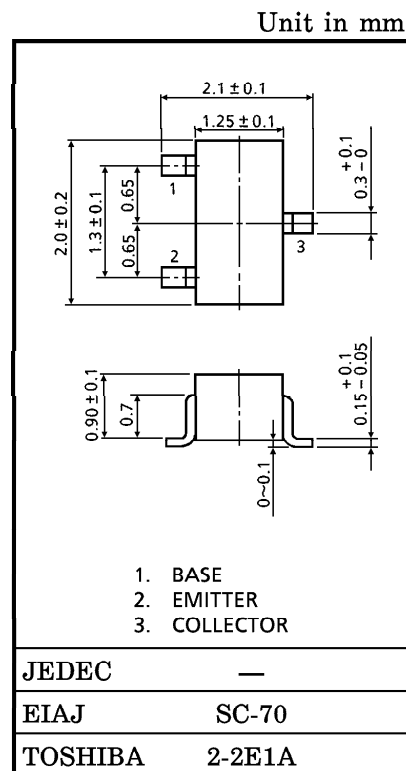
SWITCHING, INVERTER CIRCUIT, INTERFACE CIRCUIT  
AND DRIVER CIRCUIT APPLICATIONS

- With Built-in Bias Resistors
- Simplify Circuit Design
- Reduce a Quantity of Parts and Manufacturing Process
- Complementary to RN2301~RN2306

EQUIVALENT CIRCUIT AND BIAS RESISTOR VALUES



TYPE No.	R1 (kΩ)	R2 (kΩ)
RN1301	4.7	4.7
RN1302	10	10
RN1303	22	22
RN1304	47	47
RN1305	2.2	47
RN1306	4.7	47



Weight : 0.006g

MAXIMUM RATINGS (Ta = 25°C)

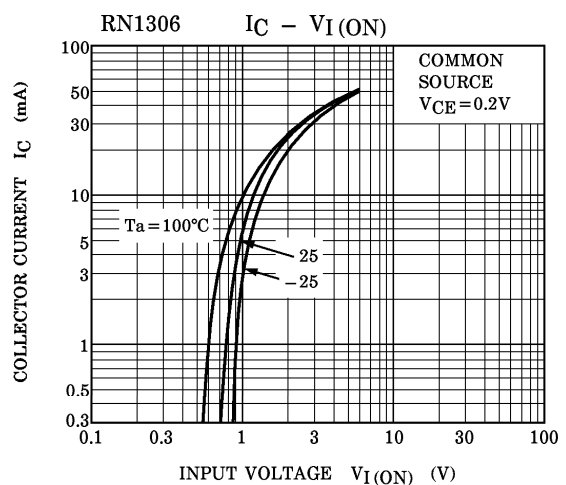
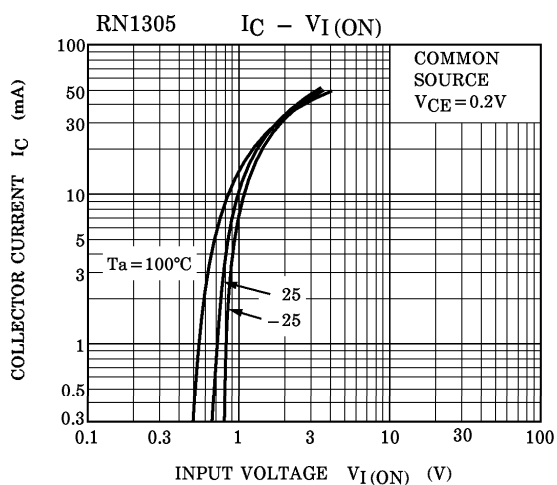
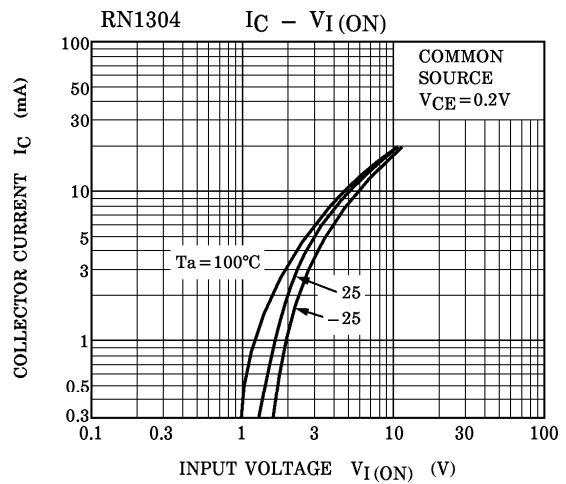
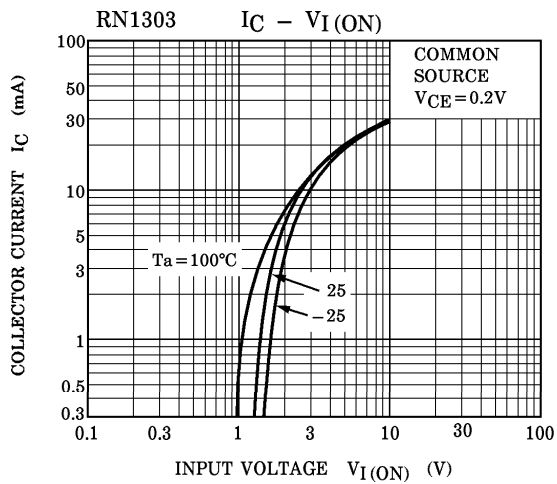
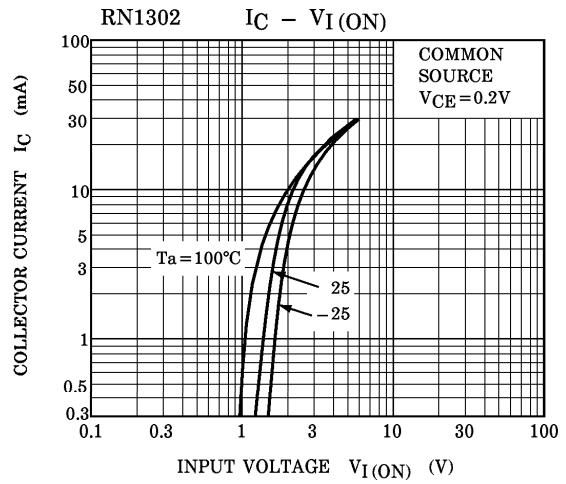
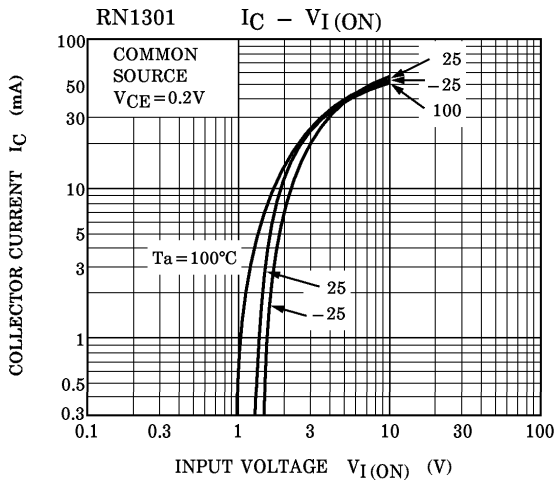
CHARACTERISTIC		SYMBOL	RATING	UNIT
Collector-Base Voltage	RN1301~1306	V <sub>CBO</sub>	50	V
Collector-Emitter Voltage		V <sub>CEO</sub>	50	V
Emitter-Base Voltage	RN1301~1304	V <sub>EBO</sub>	10	V
	RN1305, 1306		5	
Collector Current	RN1301~1306	I <sub>C</sub>	100	mA
Collector Power Dissipation		P <sub>C</sub>	100	mW
Junction Temperature		T <sub>j</sub>	150	°C
Storage Temperature Range		T <sub>stg</sub>	-55~150	°C

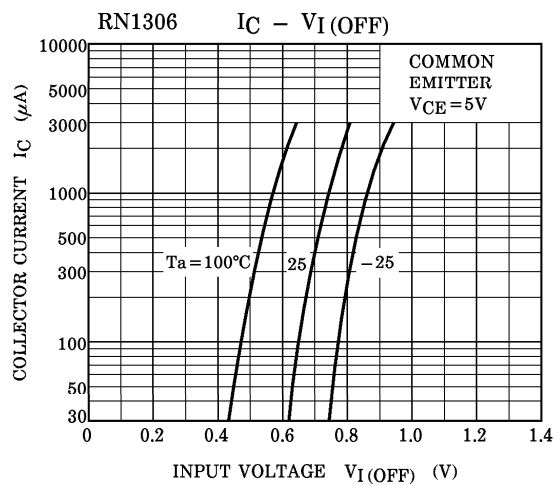
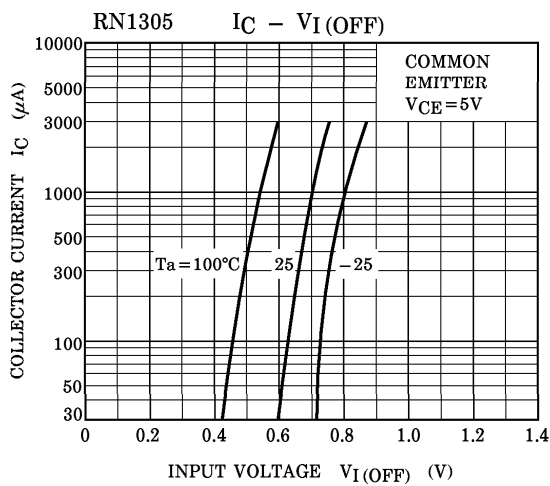
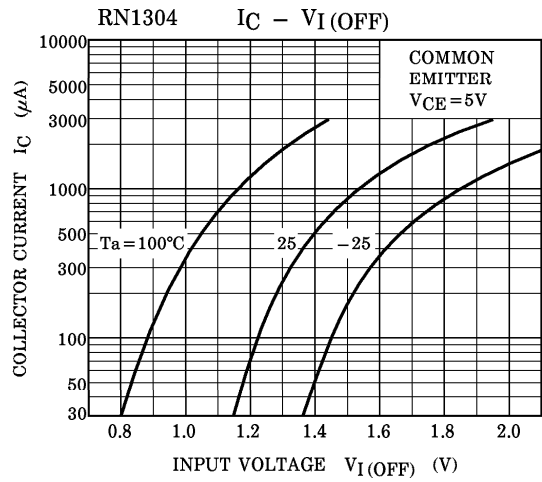
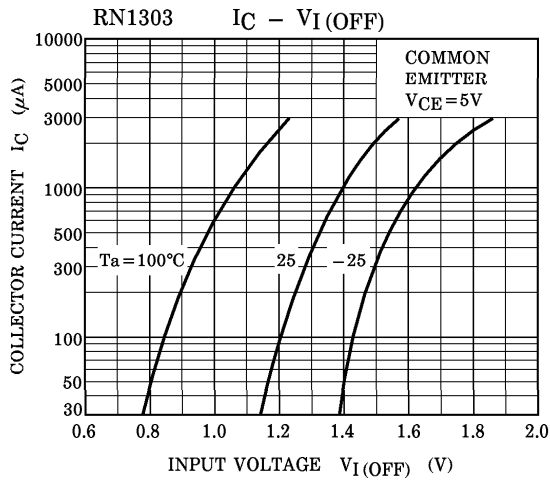
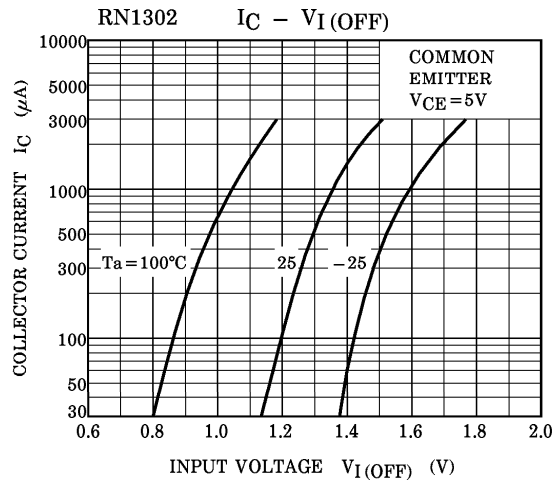
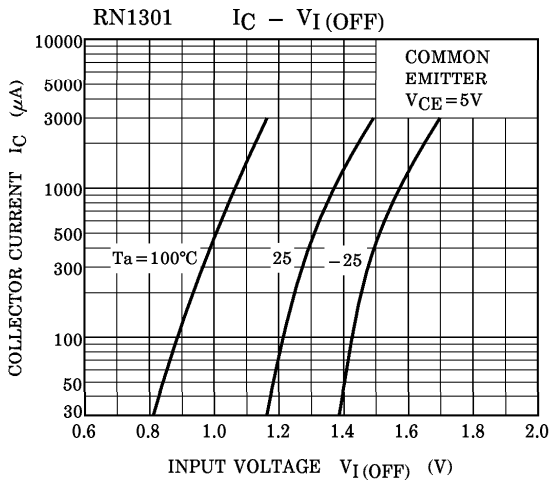
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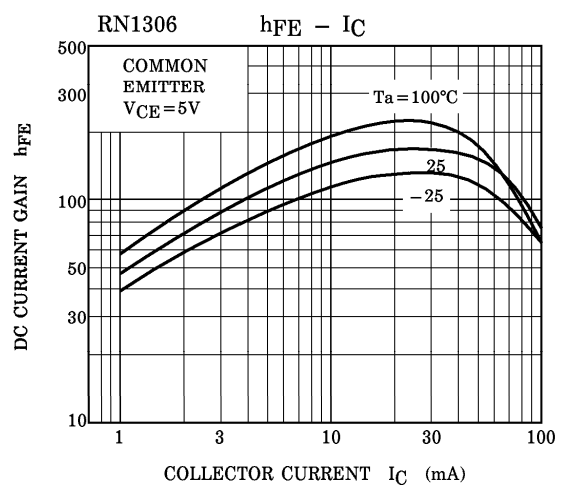
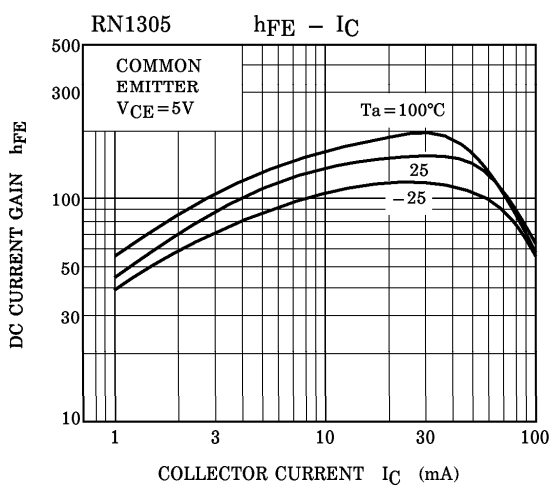
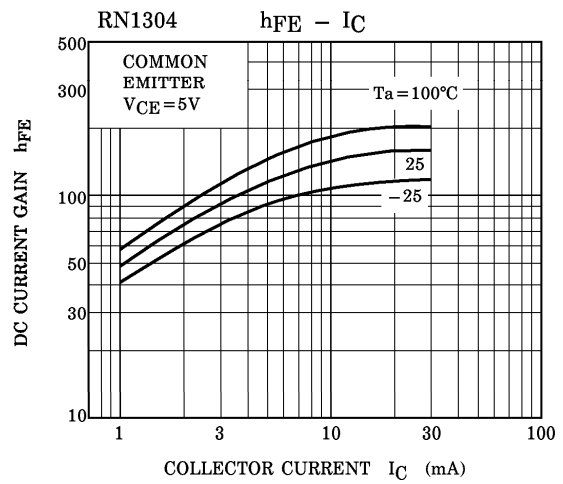
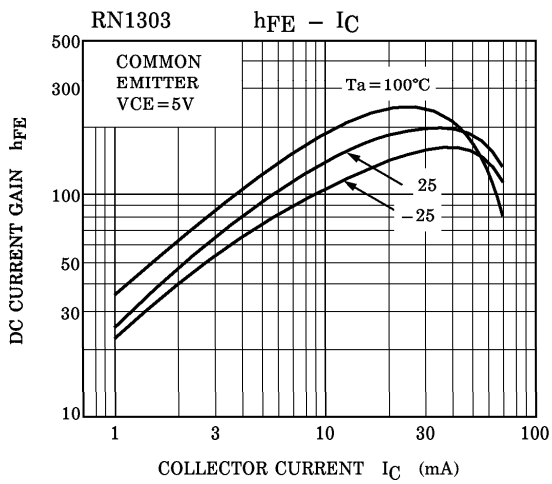
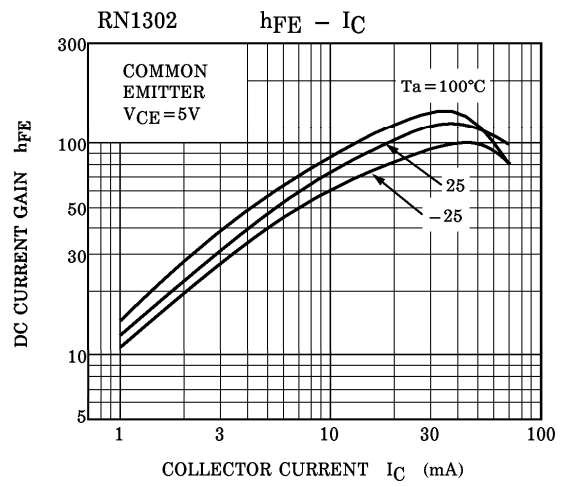
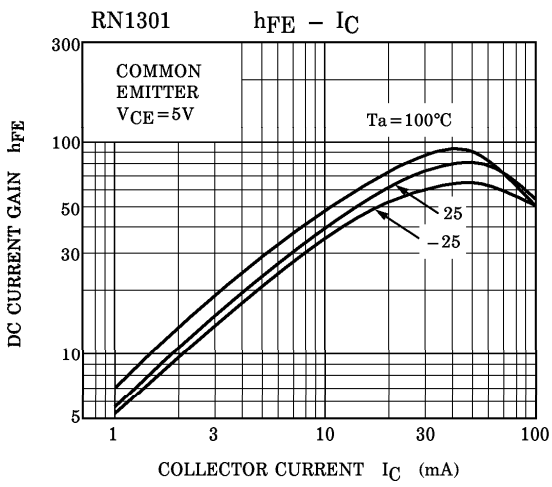
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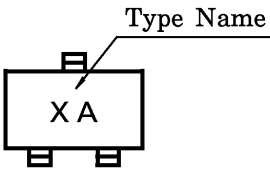
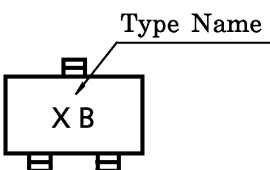
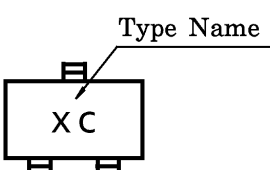
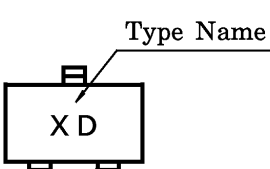
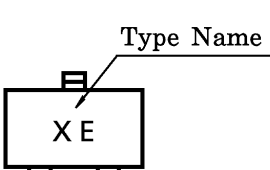
## ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current	RN1301~1306	ICBO	V <sub>CB</sub> = 50V, I <sub>E</sub> = 0	—	—	100	nA
		ICEO	V <sub>CE</sub> = 50V, I <sub>B</sub> = 0	—	—	500	
Emitter Cut-off Current	RN1301	I <sub>EBO</sub>	V <sub>EB</sub> = 10V, I <sub>C</sub> = 0	0.82	—	1.52	mA
	RN1302			0.38	—	0.71	
	RN1303			0.17	—	0.33	
	RN1304		0.082	—	0.15		
	RN1305		V <sub>EB</sub> = 5V, I <sub>C</sub> = 0	0.078	—	0.145	
	RN1306			0.074	—	0.138	
DC Current Gain	RN1301	h <sub>FE</sub>	V <sub>CE</sub> = 5V, I <sub>C</sub> = 10mA	30	—	—	—
	RN1302			50	—	—	
	RN1303			70	—	—	
	RN1304			80	—	—	
	RN1305			80	—	—	
	RN1306			80	—	—	
Collector-Emitter Saturation Voltage	RN1301~1306	V <sub>CE(sat)</sub>	I <sub>C</sub> = 5mA, I <sub>B</sub> = 0.25mA	—	0.1	0.3	V
Input Voltage (ON)	RN1301	V <sub>I(ON)</sub>	V <sub>CE</sub> = 0.2V, I <sub>C</sub> = 5mA	1.1	—	2.0	V
	RN1302			1.2	—	2.4	
	RN1303			1.3	—	3.0	
	RN1304			1.5	—	5.0	
	RN1305			0.6	—	1.1	
	RN1306			0.7	—	1.3	
Input Voltage (OFF)	RN1301~1304	V <sub>I(OFF)</sub>	V <sub>CE</sub> = 5V, I <sub>C</sub> = 0.1mA	1.0	—	1.5	V
	RN1305, 1306			0.5	—	0.8	
Transition Frequency	RN1301~1306	f <sub>T</sub>	V <sub>CE</sub> = 10V, I <sub>C</sub> = 5mA	—	250	—	MHz
Collector Output Capacitance	RN1301~1306	C <sub>ob</sub>	V <sub>CB</sub> = 10V, I <sub>E</sub> = 0, f = 1MHz	—	3	6	pF
Input Resistor	RN1301	R <sub>1</sub>		3.29	4.7	6.11	kΩ
	RN1302			7	10	13	
	RN1303			15.4	22	28.6	
	RN1304			32.9	47	61.1	
	RN1305			1.54	2.2	2.86	
	RN1306			3.29	4.7	6.11	
Resistor Ratio	RN1301~1304	R <sub>1</sub> / R <sub>2</sub>		0.9	1.0	1.1	—
	RN1305			0.0421	0.0468	0.0515	
	RN1306			0.09	0.1	0.11	







TYPE NAME	MARKING
RN1301	
RN1302	
RN1303	
RN1304	
RN1305	
RN1306	