

TOSHIBA Transistor Silicon PNP Epitaxial Type (PCT Process)

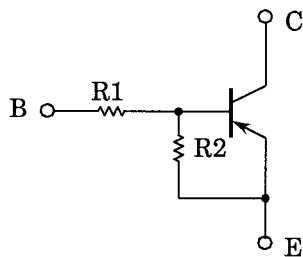
## RN2201, RN2202, RN2203 RN2204, RN2205, RN2206

Switching, Inverter Circuit, Interface Circuit  
And Driver Circuit Applications

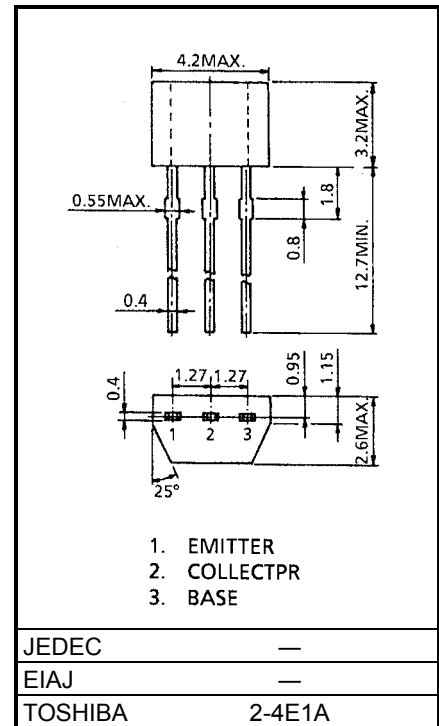
Unit: mm

- With built-in bias resistors
- Simplify circuit design
- Reduce a quantity of parts and manufacturing process
- Complementary to RN1201~RN1206

### 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



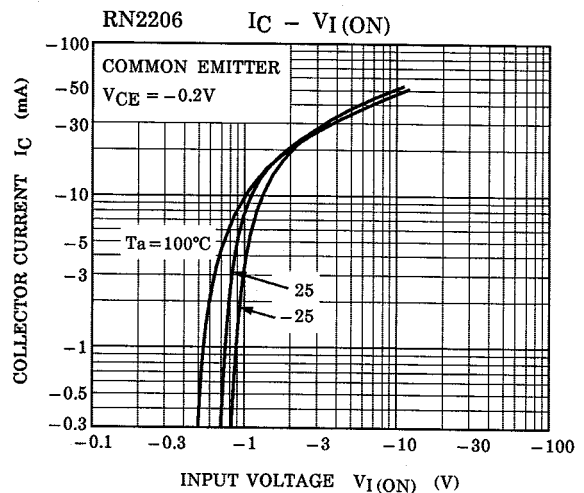
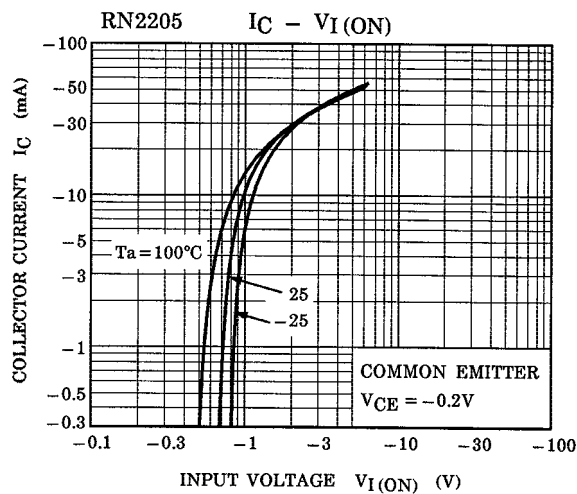
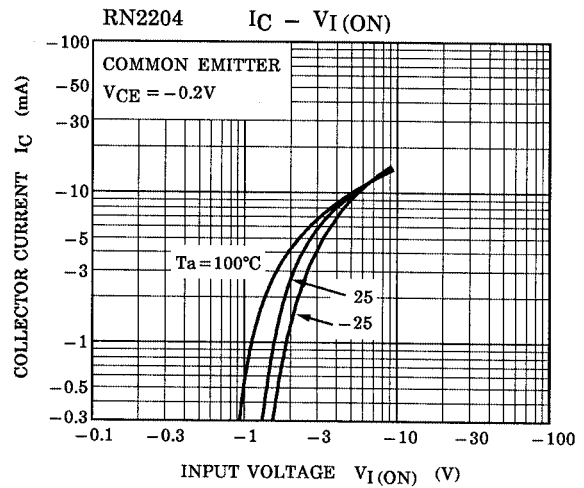
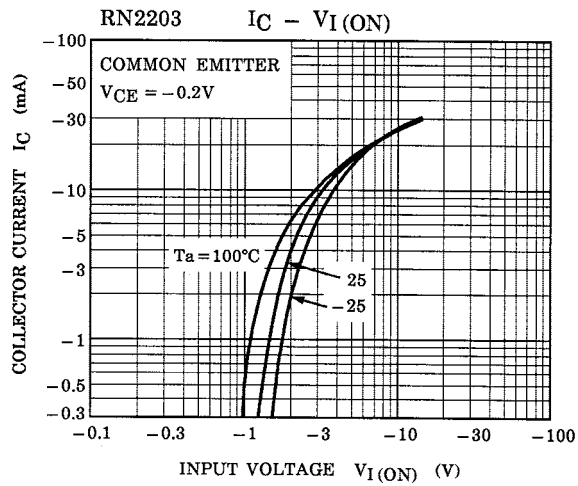
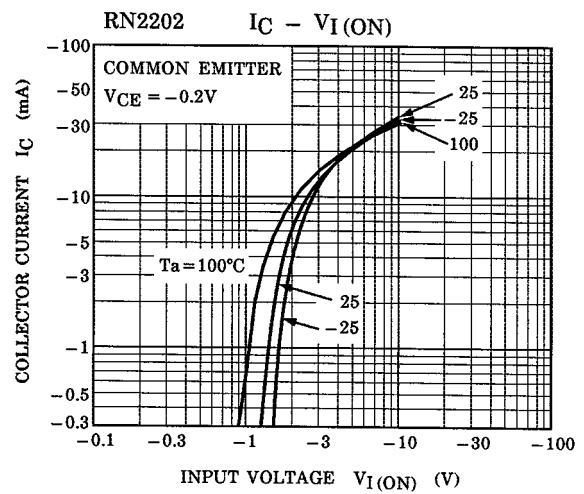
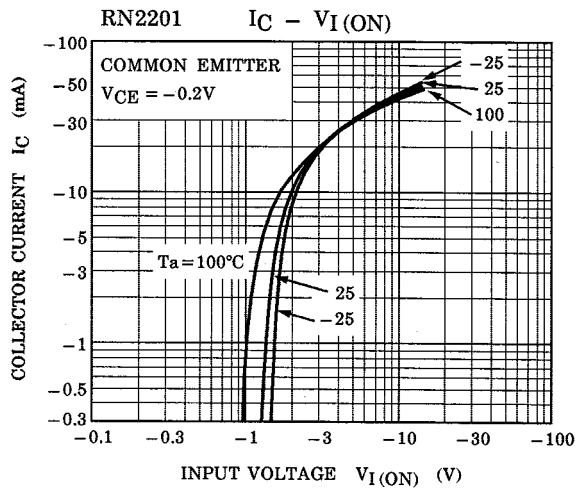
Weight: 0.13g

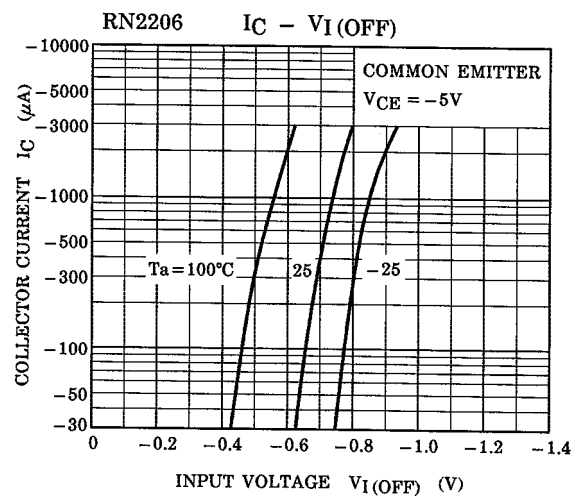
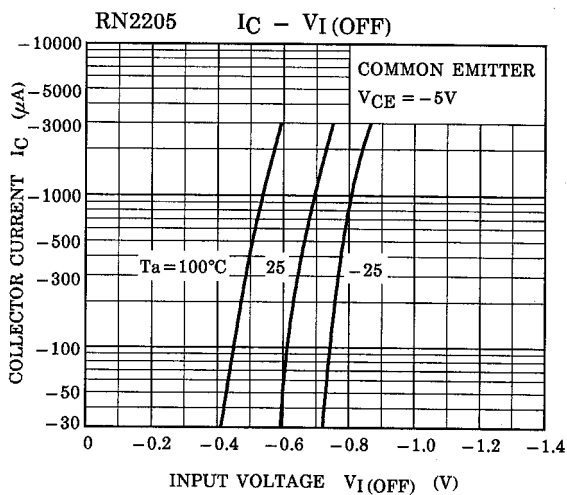
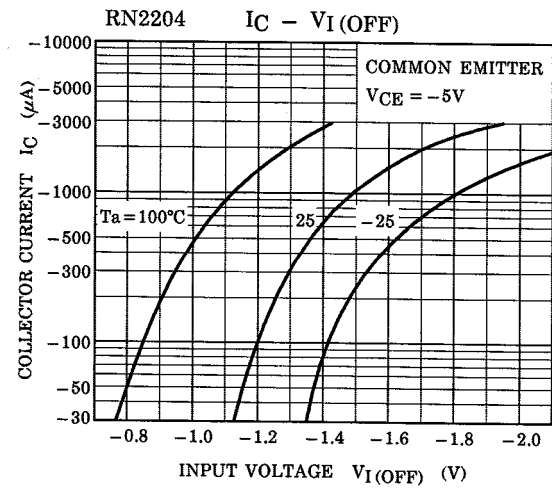
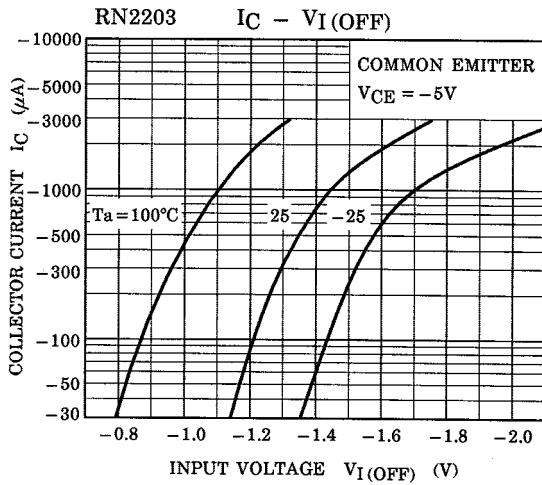
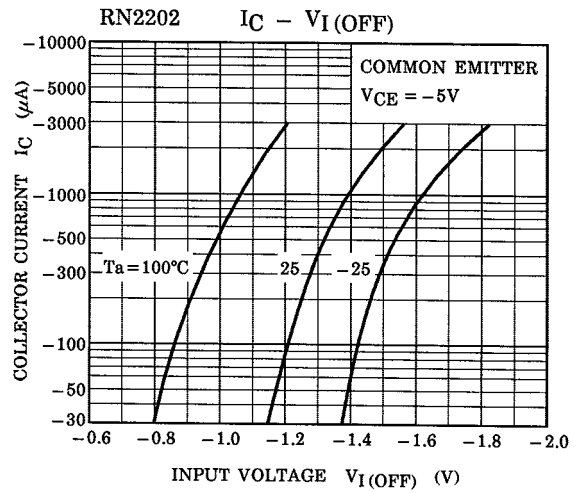
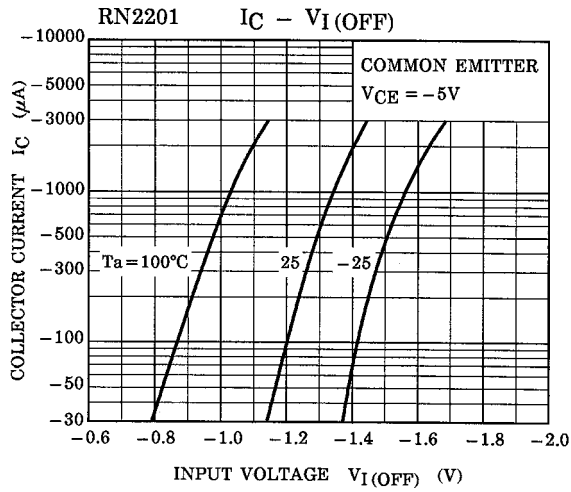
### Maximum Ratings (Ta = 25°C)

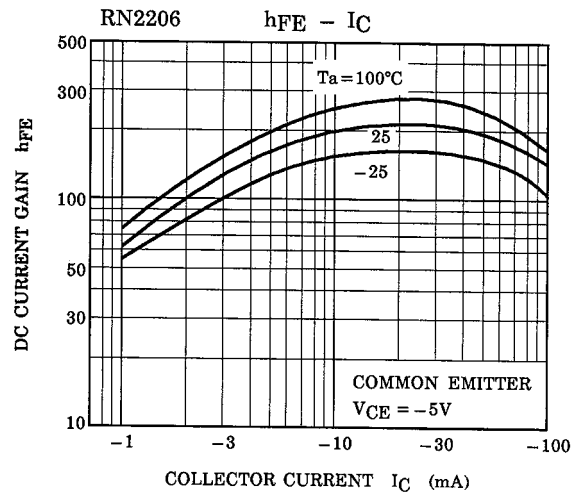
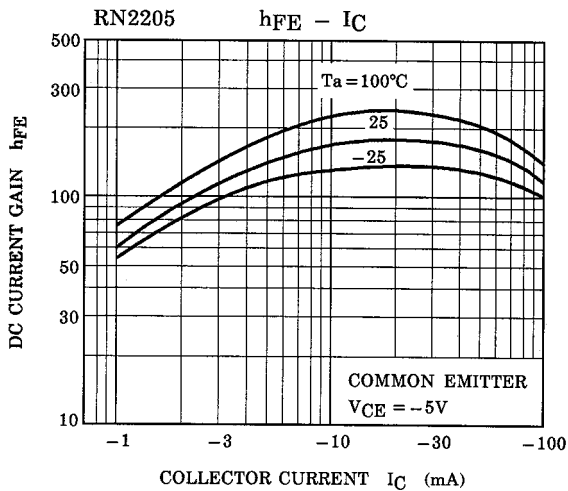
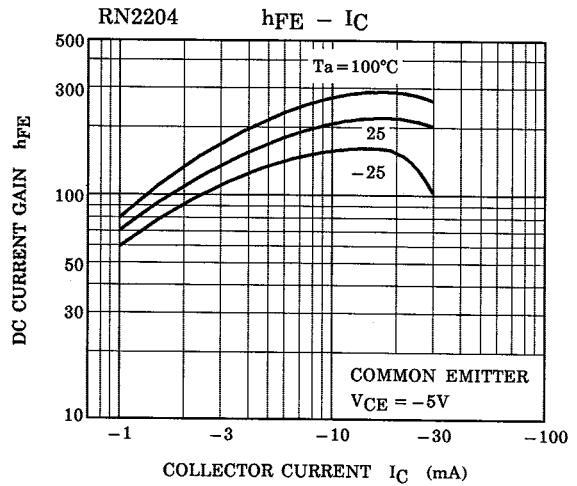
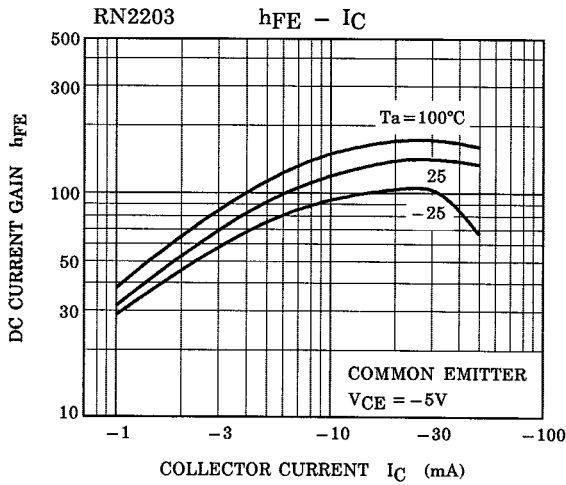
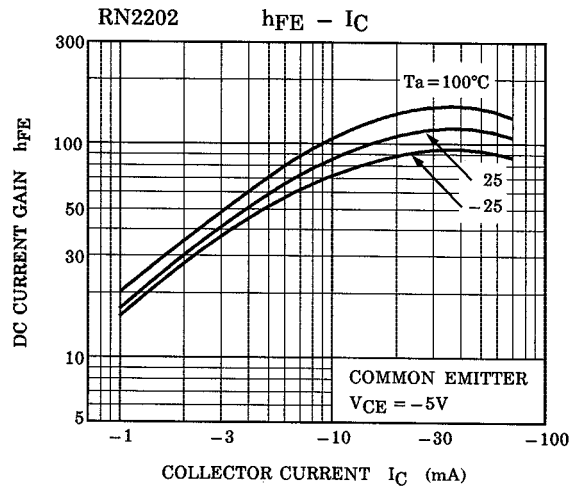
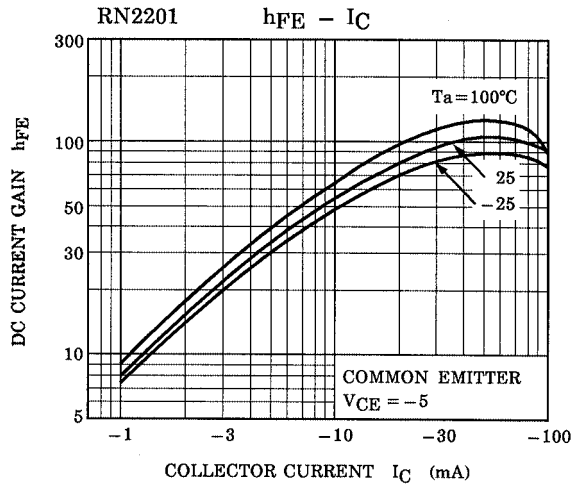
Characteristic	Symbol	Rating	Unit
Collector-base voltage	$V_{CBO}$	-50	V
Collector-emitter voltage	$V_{CEO}$	-50	V
Emitter-base voltage	$V_{EBO}$	-10	V
		-5	
Collector current	$I_C$	-100	mA
Collector power dissipation	$P_C$	300	mW
Junction temperature	$T_j$	150	°C
Storage temperature range	$T_{stg}$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

## 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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