

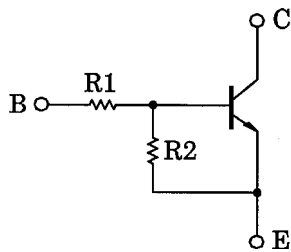
TOSHIBA Transistor Silicon NPN Epitaxial Type (PCT Process)

## RN1601,RN1602,RN1603 RN1604,RN1605,RN1606

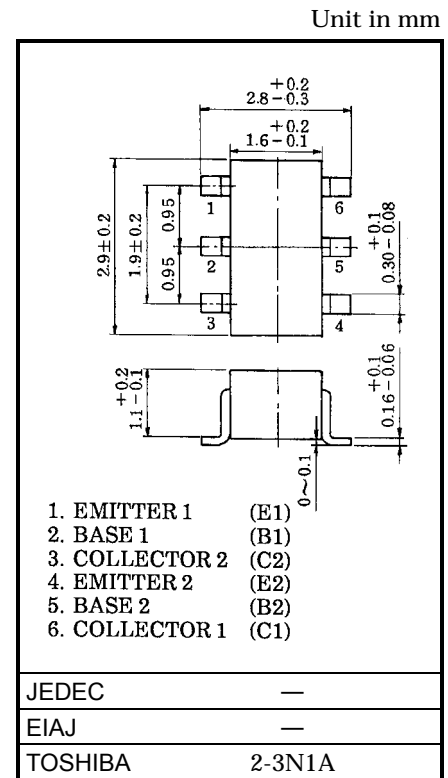
Switching, Inverter Circuit, Interface Circuit  
And Driver Circuit Applications

- Including two devices in SM6 (super mini type with 6 leads)
- With built-in bias resistors
- Simplify circuit design
- Reduce a quantity of parts and manufacturing process
- Complementary to RN2601~RN2606

### Equivalent Circuit and Bias Resistor Values

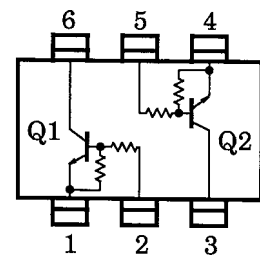


Type No.	R1 (kΩ)	R2 (kΩ)
RN1601	4.7	4.7
RN1602	10	10
RN1603	22	22
RN1604	47	47
RN1605	2.2	47
RN1606	4.7	47



Weight: 0.015g

### Equivalent Circuit (Top View)



### Maximum Ratings (Ta = 25°C) (Q1, Q2 Common)

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

\* Total rating

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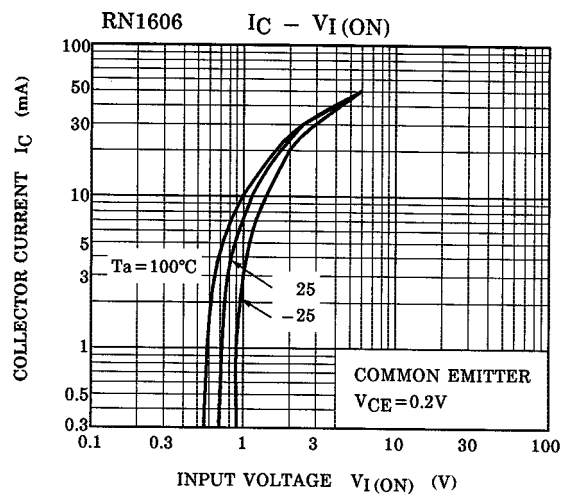
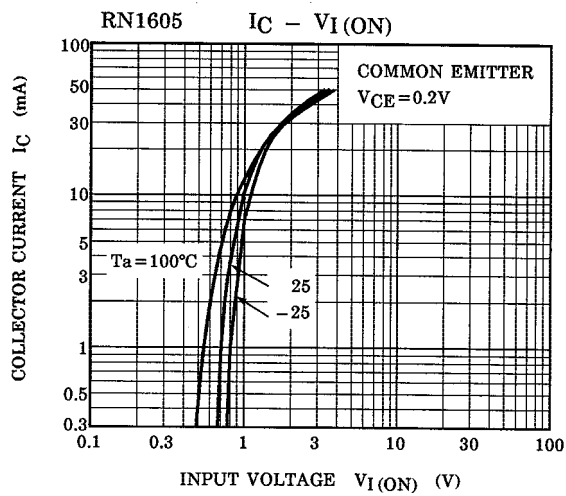
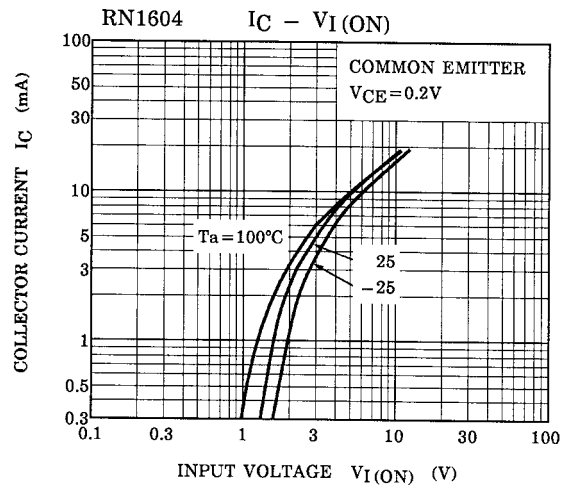
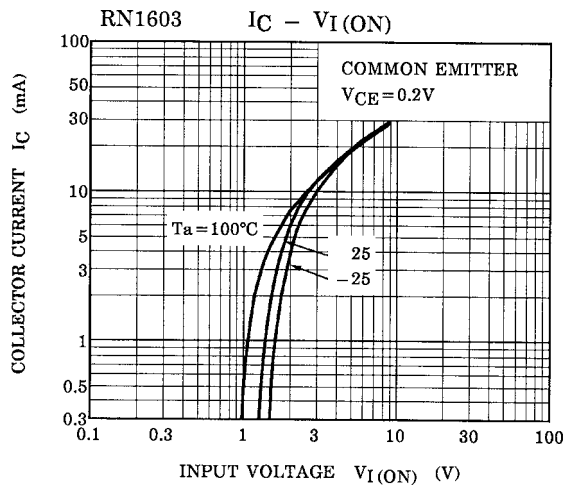
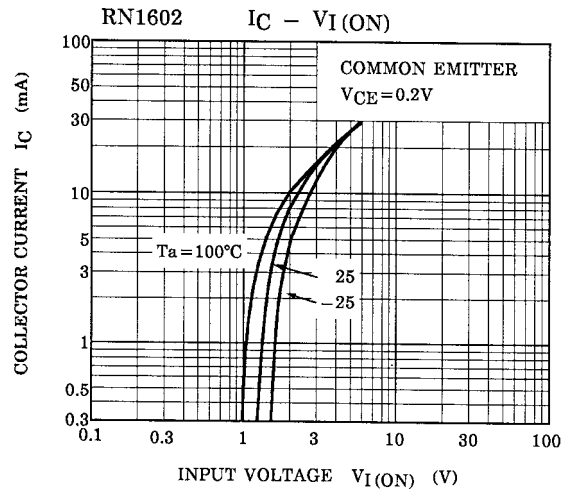
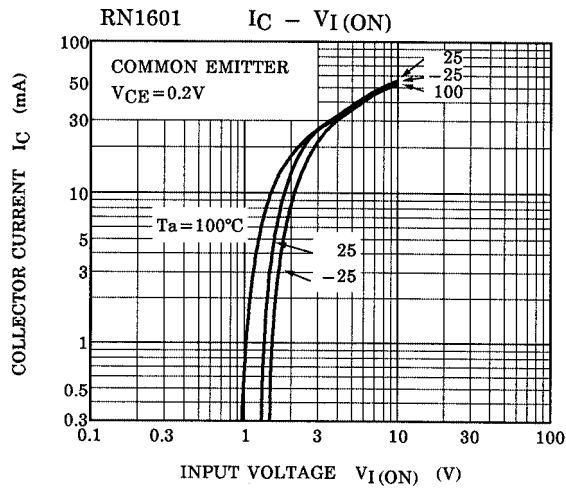
**Electrical Characteristics (Ta = 25°C) (Q1, Q2 Common)**

Characteristic		Symbol	Test Circuit	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current	RN1601~1606	$I_{CBO}$	—	$V_{CB} = 50V, I_E = 0$	—	—	100	nA
		$I_{CEO}$	—	$V_{CE} = 50V, I_B = 0$	—	—	500	
Emitter cut-off current	RN1601	$I_{EBO}$	—	$V_{EB} = 10V, I_C = 0$	0.82	—	1.52	mA
	RN1602		—		0.38	—	0.71	
	RN1603		—		0.17	—	0.33	
	RN1604		—	0.082	—	0.15		
	RN1605		$V_{EB} = 5V, I_C = 0$	—	0.078	—	0.145	
	RN1606			—	0.074	—	0.138	
DC current gain	RN1601	$h_{FE}$	—	$V_{CE} = 5V, I_C = 10mA$	30	—	—	—
	RN1602		—		50	—	—	
	RN1603		—		70	—	—	
	RN1604		—		80	—	—	
	RN1605		—		80	—	—	
	RN1606		—		80	—	—	
Collector-emitter saturation voltage	RN1601~1606	$V_{CE(sat)}$	—	$I_C = 5mA, I_B = 0.25mA$	—	0.1	0.3	V
Input voltage (ON)	RN1601	$V_{I(ON)}$	—	$V_{CE} = 0.2V, I_C = 5mA$	1.1	—	2.0	V
	RN1602		—		1.2	—	2.4	
	RN1603		—		1.3	—	3.0	
	RN1604		—		1.5	—	5.0	
	RN1605		—		0.6	—	1.1	
	RN1606		—		0.7	—	1.3	
Input voltage (OFF)	RN1601~1604	$V_{I(OFF)}$	—	$V_{CE} = 5V, I_C = 0.1mA$	1.0	—	1.5	V
	RN1605~1606		—		0.5	—	0.8	
Translation frequency	RN1601~1606	$f_T$	—	$V_{CE} = 10V, I_C = 5mA$	—	250	—	MHz
Collector output capacitance	RN1601~1606	$C_{ob}$	—	$V_{CB} = 10V, I_E = 0$ $f = 1MHz$	—	3	6	pF
Input resistor	RN1601	R1	—	—	3.29	4.7	6.11	kΩ
	RN1602		—		7	10	13	
	RN1603		—		15.4	22	28.6	
	RN1604		—		32.9	47	61.1	
	RN1605		—		1.54	2.2	2.86	
	RN1606		—		3.29	4.7	6.11	
Resistor ratio	RN1601~1605	R1/R2	—	—	0.9	1.0	1.1	—
	RN1605		—		0.0421	0.0468	0.0515	
	RN1606		—		0.09	0.1	0.11	

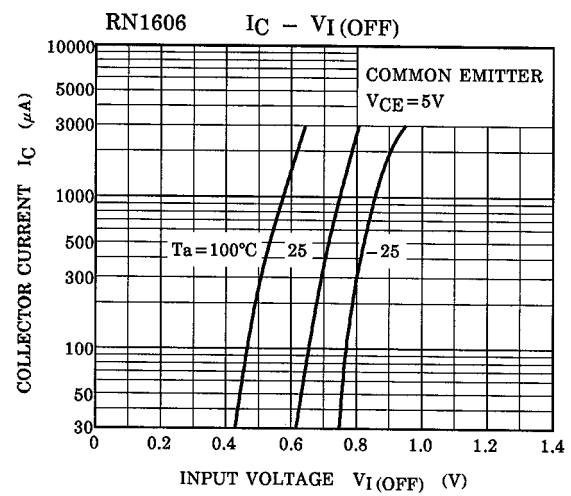
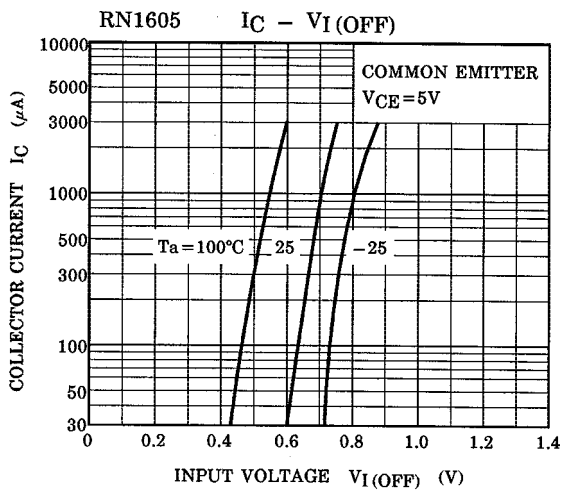
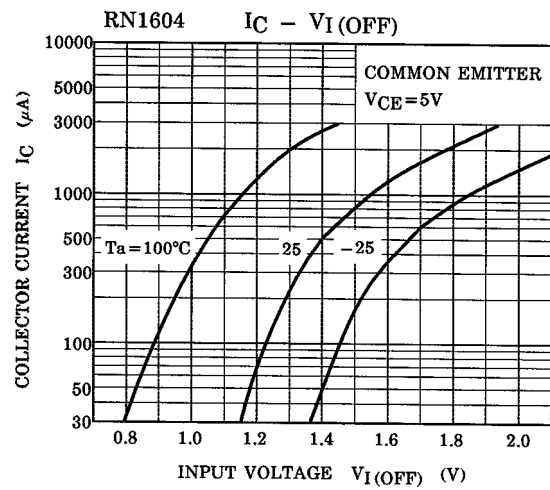
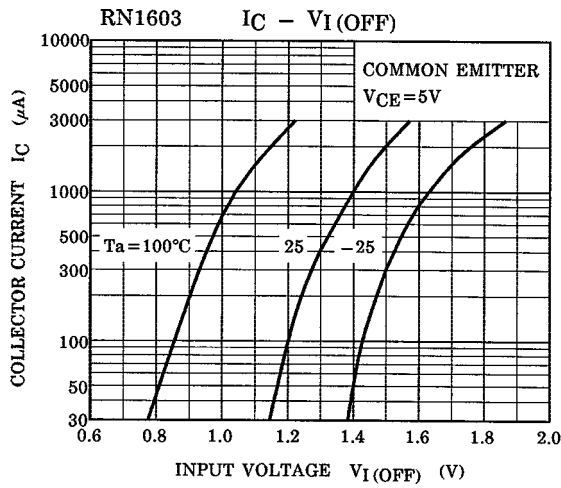
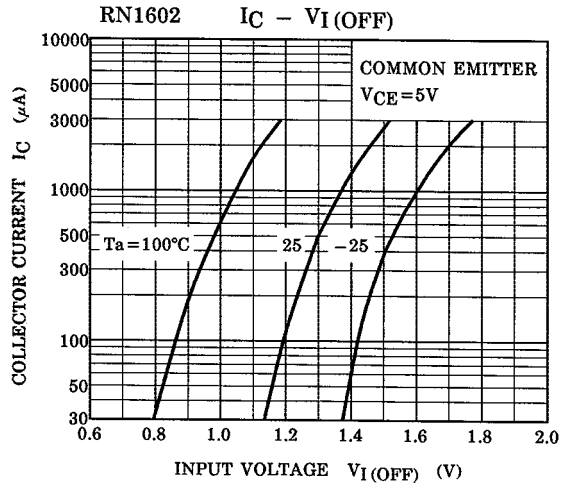
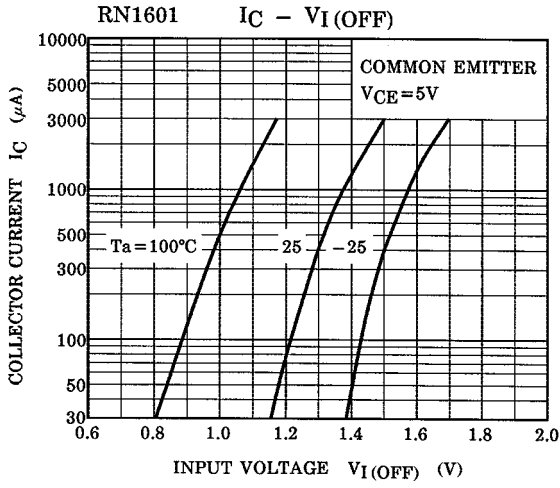
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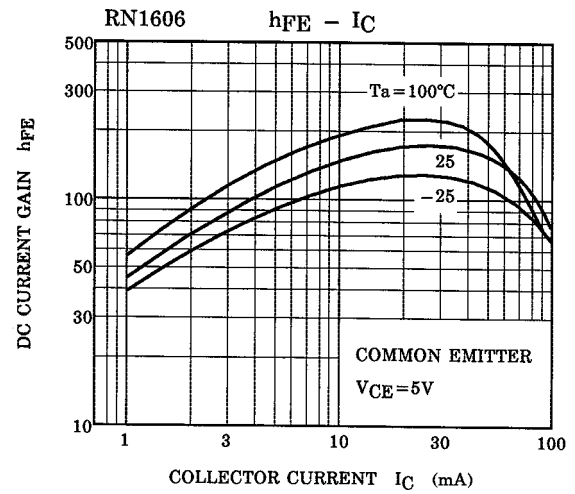
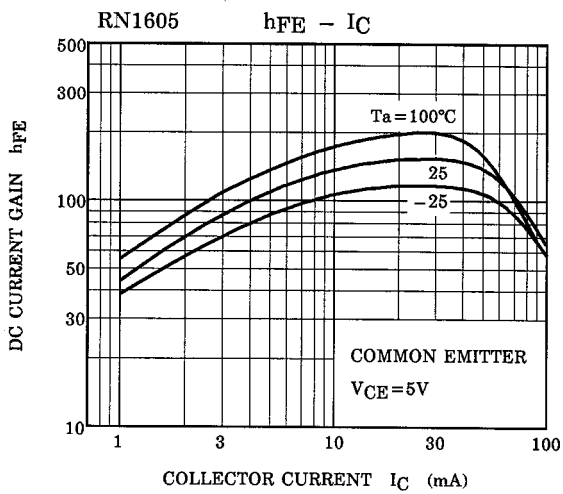
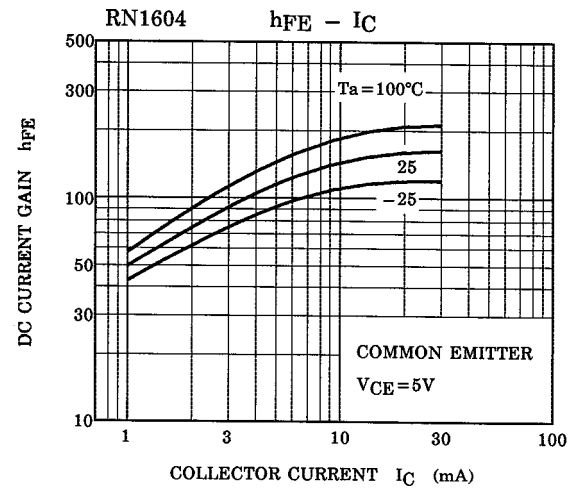
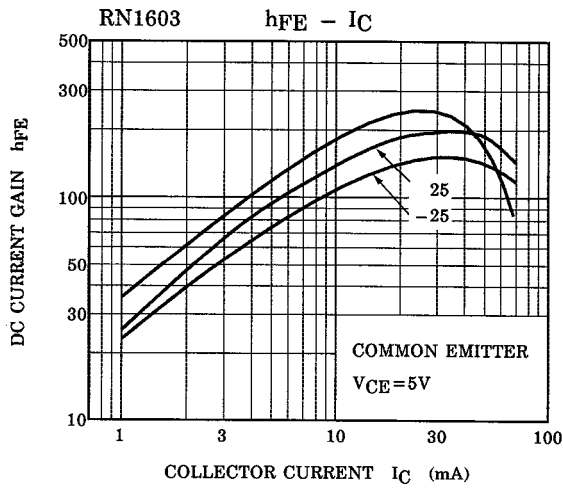
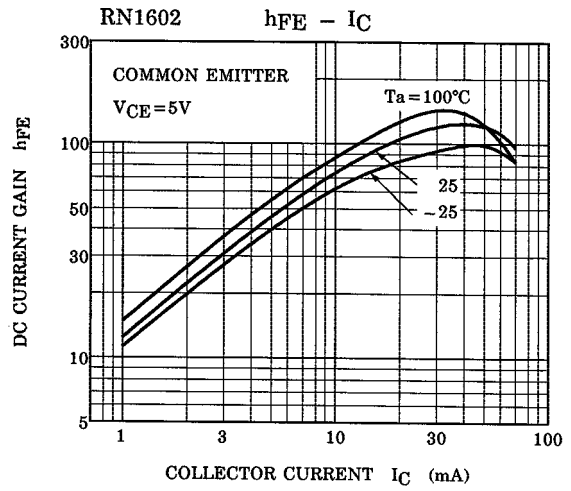
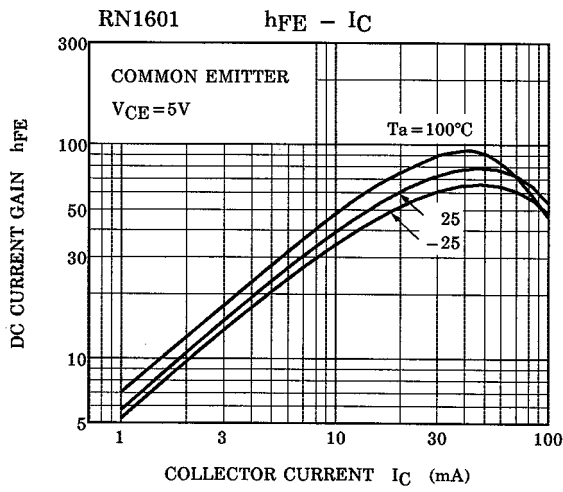
(Q1 Q2 Common)

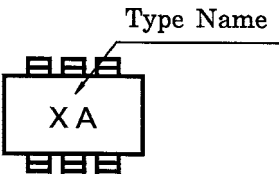
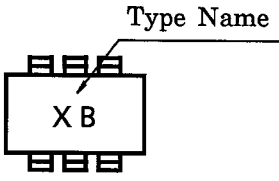
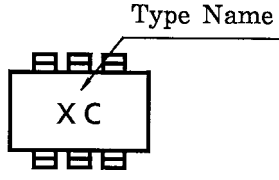
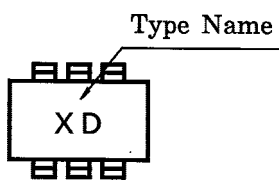
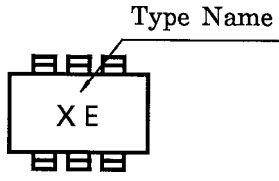


(Q1, Q2 Common)



(Q1, Q2 Common)



Type Name	Marking
RN1601	
RN1602	
RN1603	
RN1604	
RN1605	
RN1606	