

TOSHIBA Transistor Silicon PNP Epitaxial Type (PCT Process)

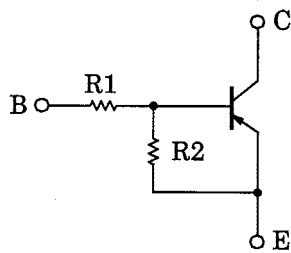
## RN2961, RN2962, RN2963, RN2964, RN2965, RN2966

Switching, Inverter Circuit, Interface Circuit  
And Driver Circuit Applications

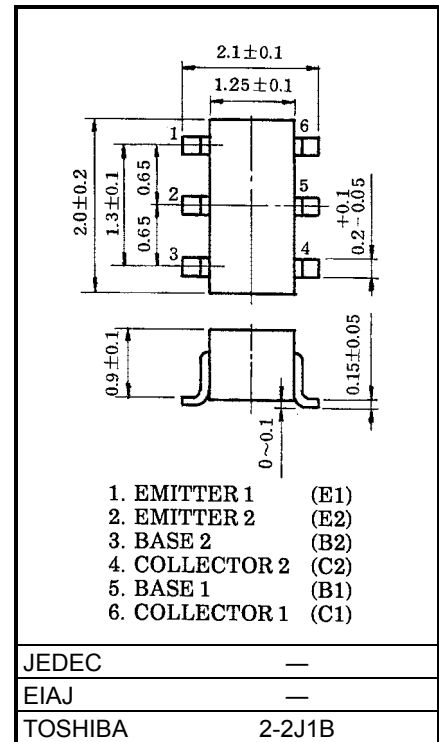
Unit: mm

- Including two devices in US6 (ultra super mini type with 6 leads)
- With built-in bias resistors
- Simplify circuit design
- Reduce a quantity of parts and manufacturing process
- Complementary to RN1961~RN1966

### Equivalent Circuit and Bias Resistor Values



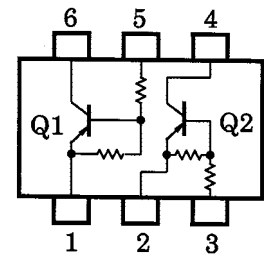
Type No.	R1 (kΩ)	R2 (kΩ)
RN2961	4.7	4.7
RN2962	10	10
RN2963	22	22
RN2964	47	47
RN2965	2.2	47
RN2966	4.7	47



JEDEC	—
EIAJ	—
TOSHIBA	2-2J1B

Weight: 6.8mg

### Equivalent Circuit (Top View)



### Maximum Ratings (Ta = 25°C)

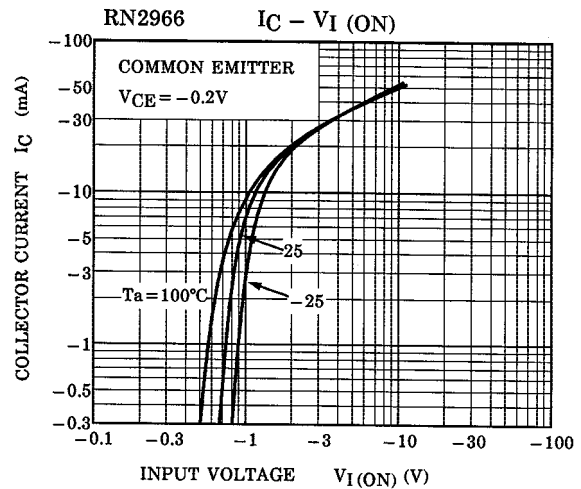
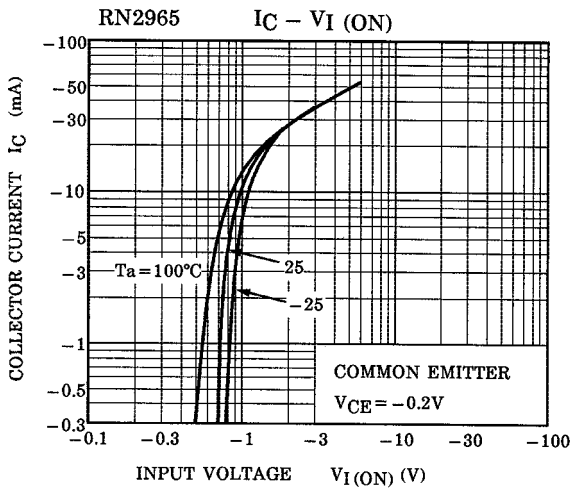
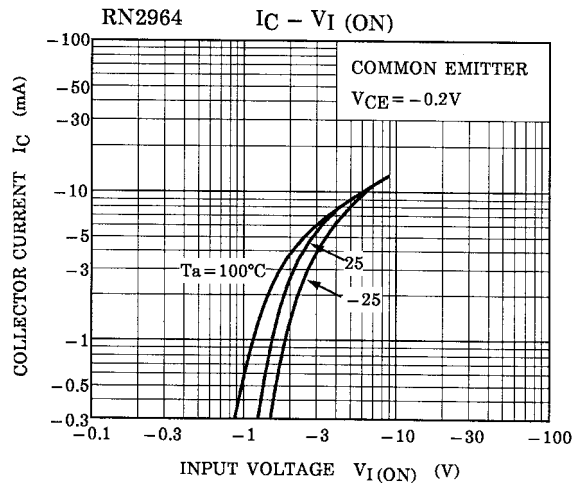
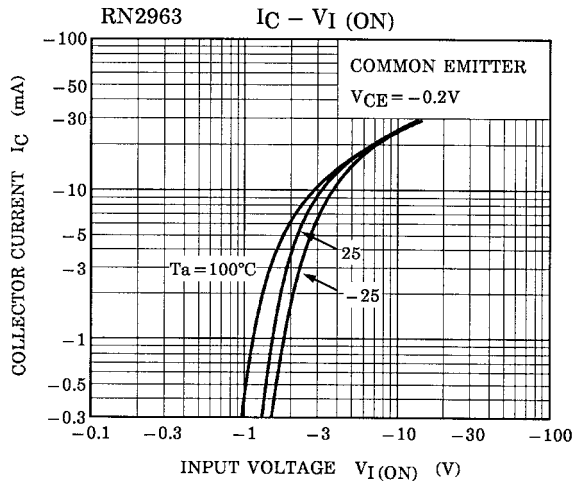
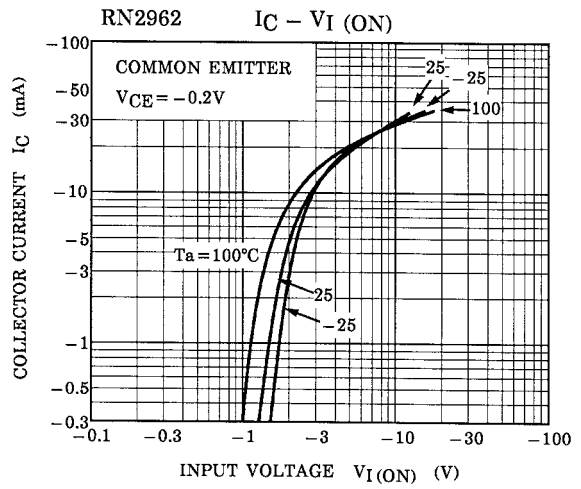
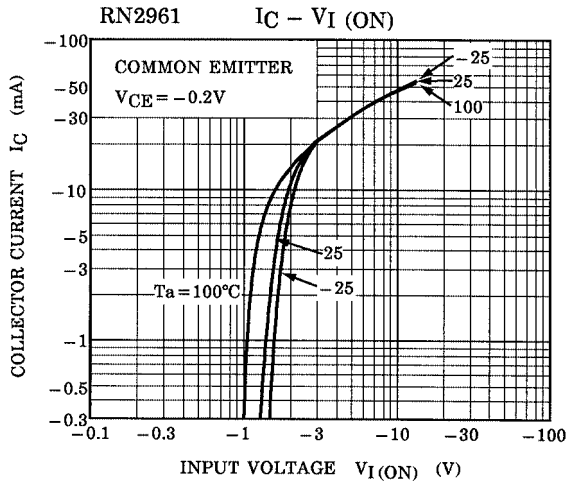
Characteristic		Symbol	Rating	Unit
Collector-base voltage	RN2961~2966	$V_{CB0}$	-50	V
Collector-emitter voltage		$V_{CEO}$	-50	V
	RN2961~2964		-10	
	RN2965, 2966		-5	
Collector current		$I_C$	-100	mA
Collector power dissipation		$P_C^*$	200	mW
Junction temperature		$T_j$	150	°C
Storage temperature range		$T_{stg}$	-55~150	°C

\* : Total rating

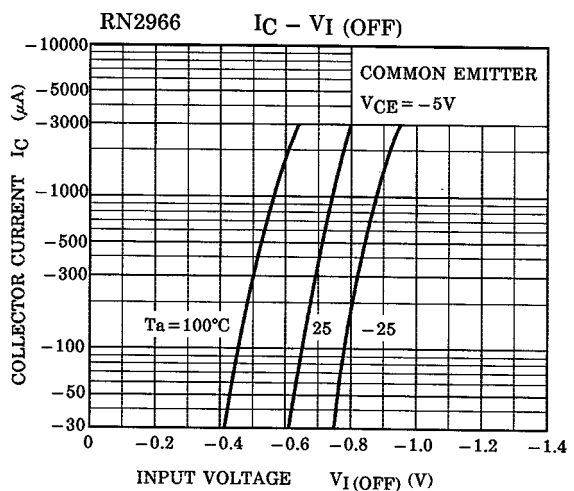
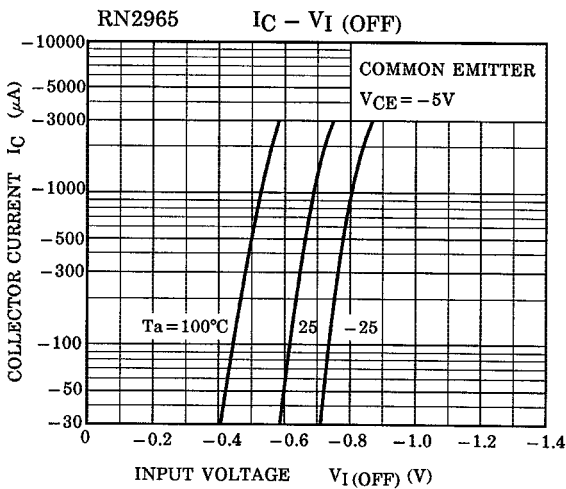
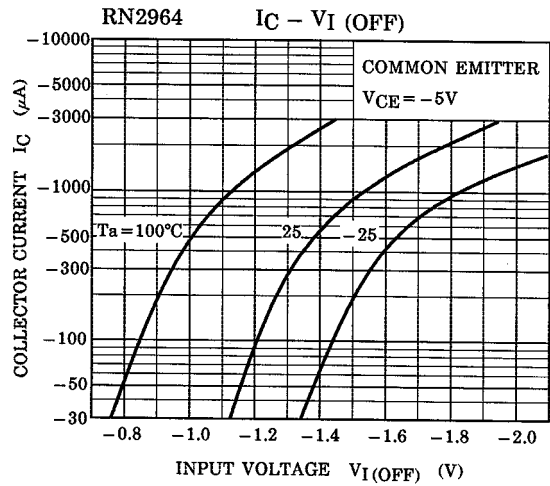
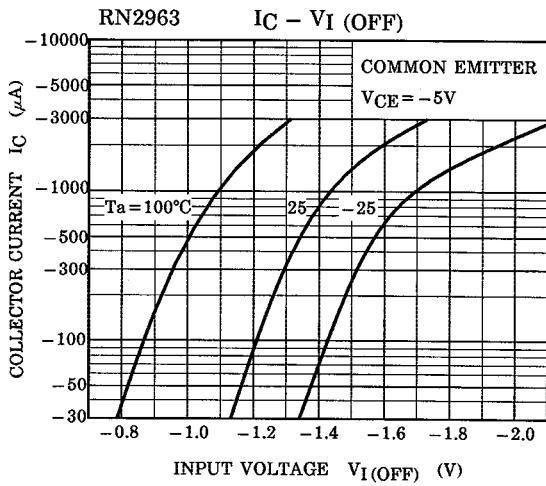
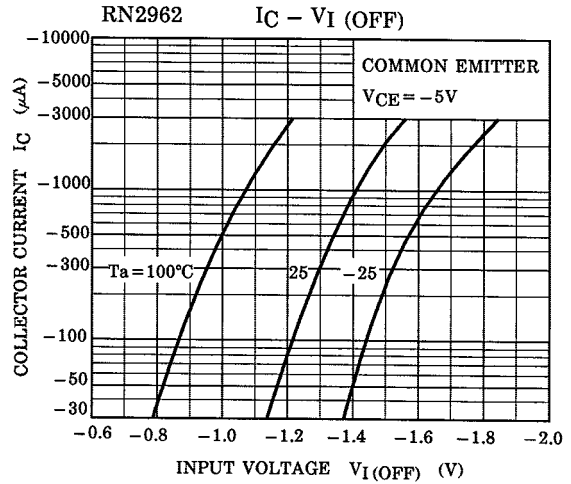
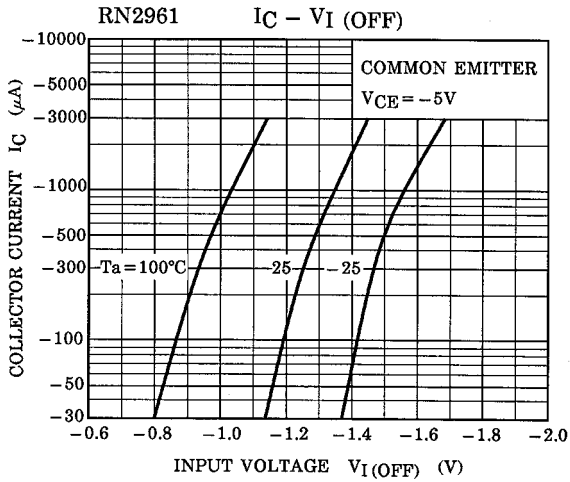
## Electrical Characteristics (Ta = 25°C) (Q1, Q2 Common)

Characteristic		Symbol	Test Circuit	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current	RN2961~2966	$I_{CBO}$	—	$V_{CB} = -50V, I_E = 0$	—	—	-100	nA
		$I_{CEO}$	—	$V_{CE} = -50V, I_B = 0$	—	—	-500	
Emitter cut-off current	RN2961	$I_{EBO}$	—	$V_{EB} = -10V, I_C = 0$	-0.82	—	-1.52	mA
	RN2962		—		-0.38	—	-0.71	
	RN2963		—		-0.17	—	-0.33	
	RN2964		—	-0.082	—	-0.15		
	RN2965		—	$V_{EB} = -5V, I_C = 0$	-0.078	—	-0.145	
	RN2966		—		-0.074	—	-0.138	
DC current gain	RN2961	$h_{FE}$	—	$V_{CE} = -5V$ $I_C = -10mA$	30	—	—	—
	RN2962		—		50	—	—	
	RN2963		—		70	—	—	
	RN2964		—		80	—	—	
	RN2965		—		80	—	—	
	RN2966		—		80	—	—	
Collector-emitter saturation voltage	RN2961~2966	$V_{CE(sat)}$	—	$I_C = -5mA$ $I_B = -0.25mA$	—	-0.1	-0.3	V
Input voltage (ON)	RN2961	$V_{I(ON)}$	—	$V_{CE} = -0.2V$ $I_C = -5mA$	-1.1	—	-2.0	V
	RN2962		—		-1.2	—	-2.4	
	RN2963		—		-1.3	—	-3.0	
	RN2964		—		-1.5	—	-5.0	
	RN2965		—		-0.6	—	-1.1	
	RN2966		—		-0.7	—	-1.3	
Input voltage (OFF)	RN2961~2964	$V_{I(OFF)}$	—	$V_{CE} = -5V,$ $I_C = -0.1mA$	-1.0	—	-1.5	V
	RN2965, 2966		—		-0.5	—	-0.8	
Translation frequency	RN2961~2966	$f_T$	—	$V_{CE} = -10V,$ $I_C = -5mA$	—	200	—	MHz
Collector output capacitance	RN2961~2966	$C_{ob}$	—	$V_{CB} = -10V, I_E = 0$ $f = 1MHz$	—	3	6	pF
Input resistor	RN2961	R1	—	—	3.29	4.7	6.11	kΩ
	RN2962		—		7	10	13	
	RN2963		—		15.4	22	28.6	
	RN2964		—		32.9	47	61.1	
	RN2965		—		1.54	2.2	2.86	
	RN2966		—		3.29	4.7	6.11	
Resistor ratio	RN2961~2964	R1/R2	—	—	0.9	1.0	1.1	—
	RN2965		—		0.0421	0.0468	0.0515	
	RN2966		—		0.09	0.1	0.11	

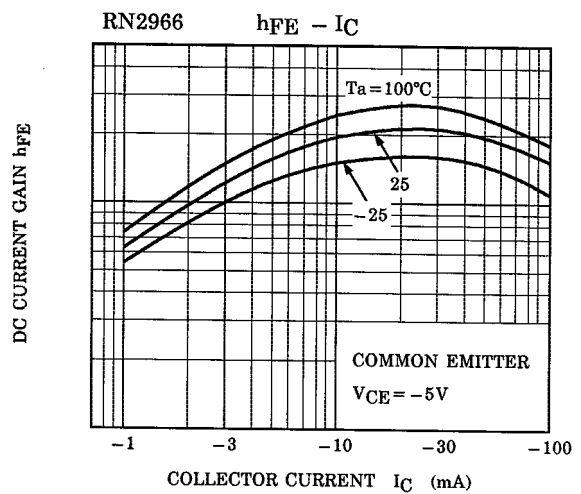
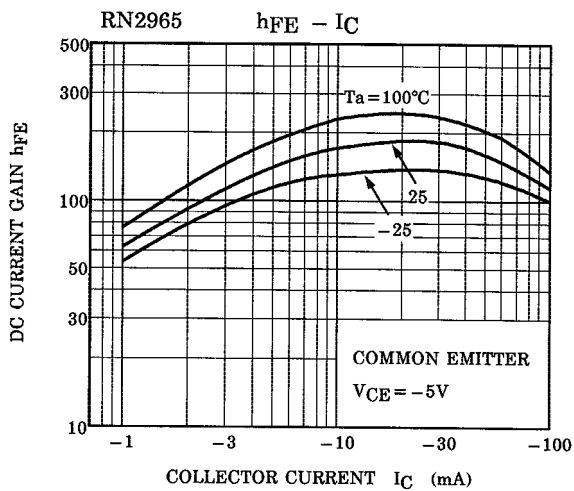
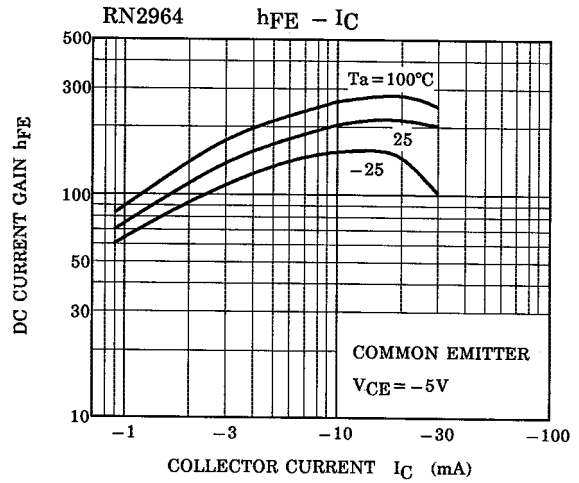
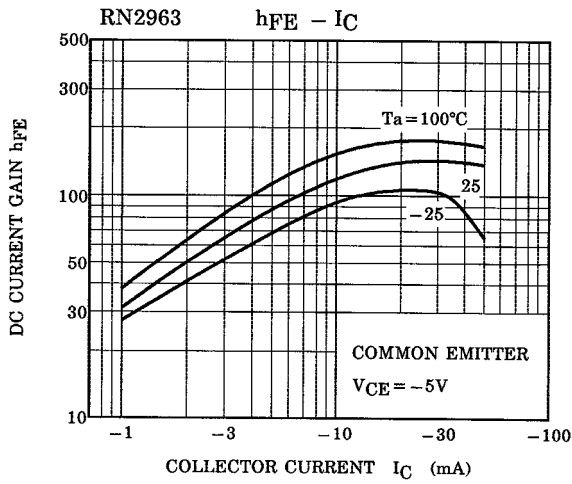
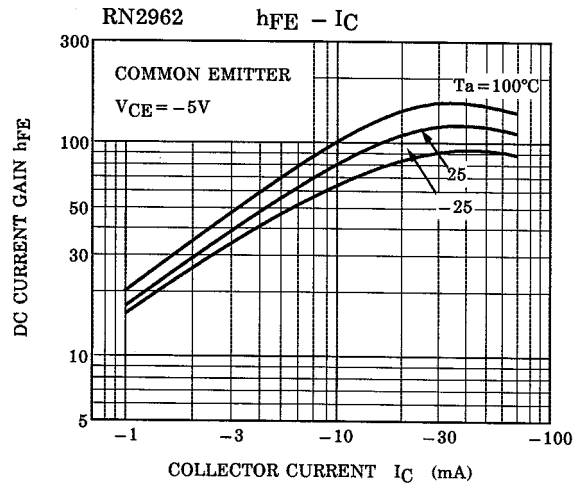
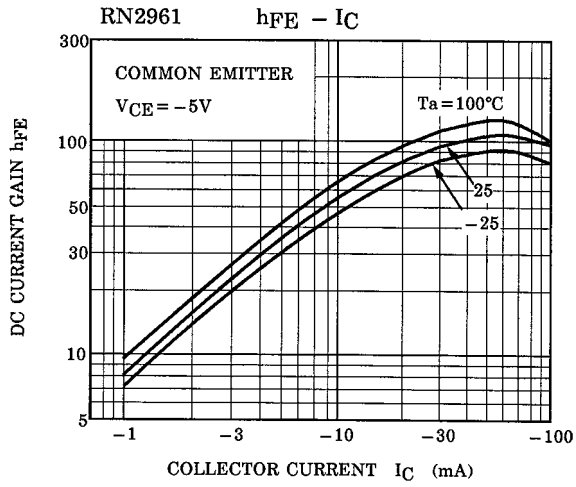
(Q1, Q2 Common)

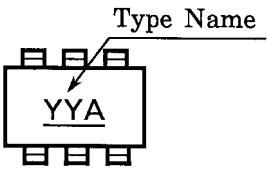
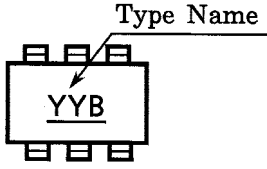
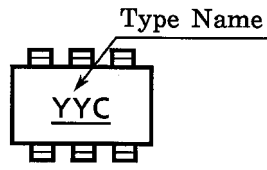
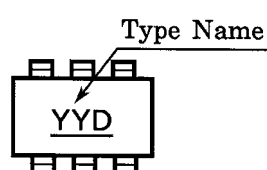
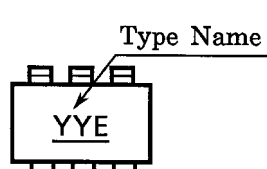
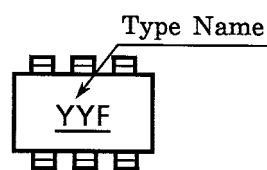


(Q1, Q2 Common)



(Q1, Q2 Common)



Type Name	Marking
RN2961	
RN2962	
RN2963	
RN2964	
RN2965	
RN2966	

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000707EAA

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