

TOSHIBA Transistor Silicon NPN Epitaxial Type (PCT Process)

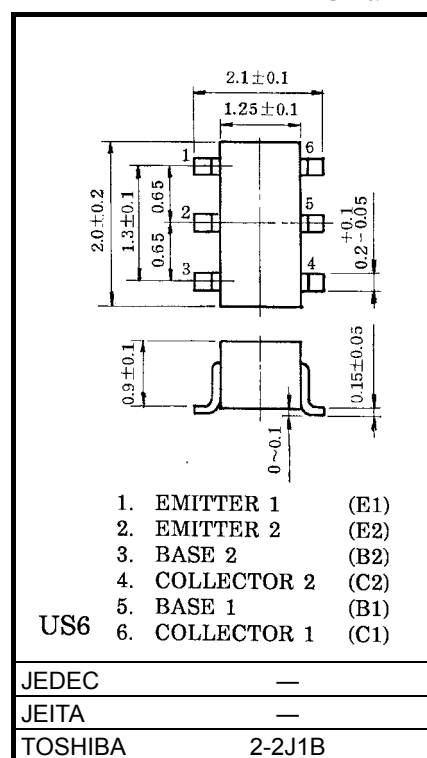
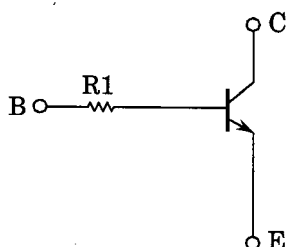
## RN1970,RN1971

Switching, Inverter Circuit, Interface Circuit  
And Driver Circuit Applications

Unit: mm

- Including two devices in US6 (ultra super mini type 6 leads)
- With built-in bias resistors
- Simplify circuit design
- Reduce a quantity of parts and manufacturing process
- Complementary to RN2970~RN2971

### Equivalent Circuit



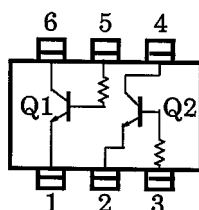
Weight: 6.8mg(typ.)

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

Characterisitic	Symbol	Rating	Unit
Collector-base voltage	$V_{CBO}$	50	V
Collector-emitter voltage	$V_{CEO}$	50	V
Emitter-base voltage	$V_{EBO}$	5	V
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

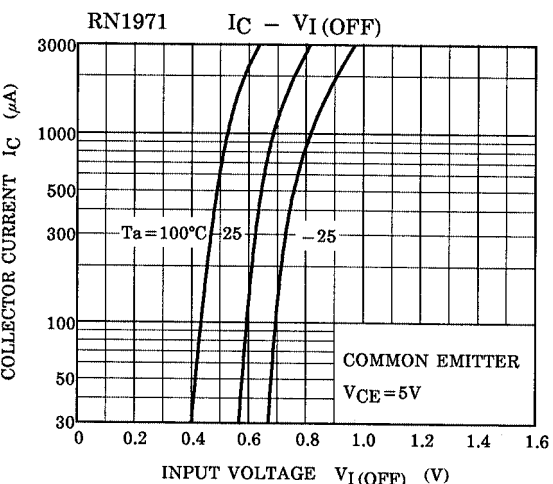
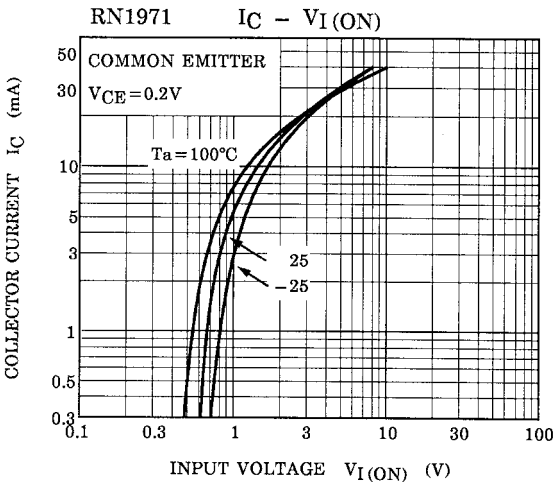
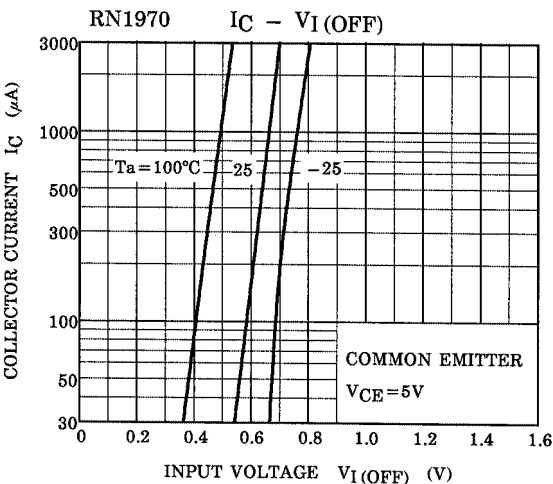
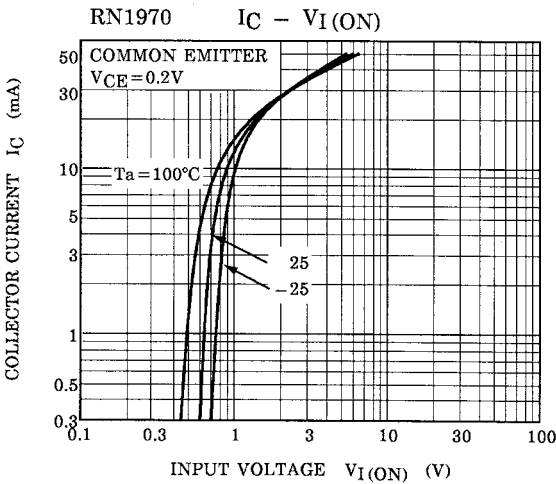
### Equivalent Circuit (Top View)



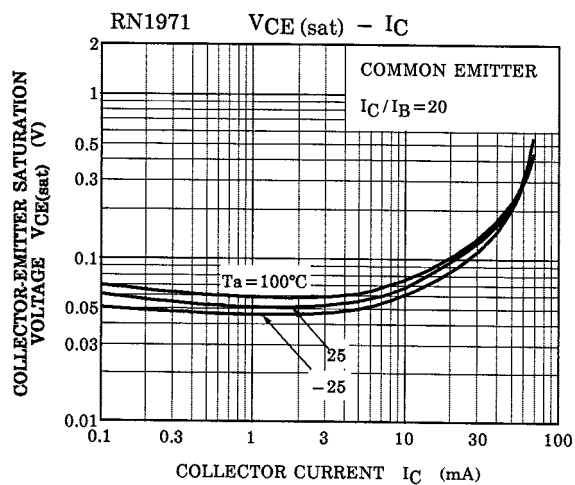
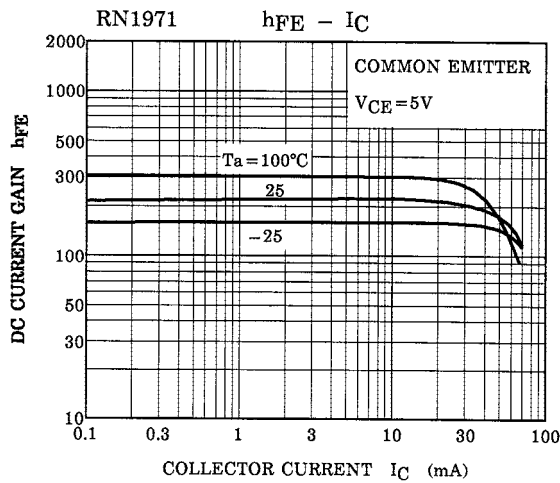
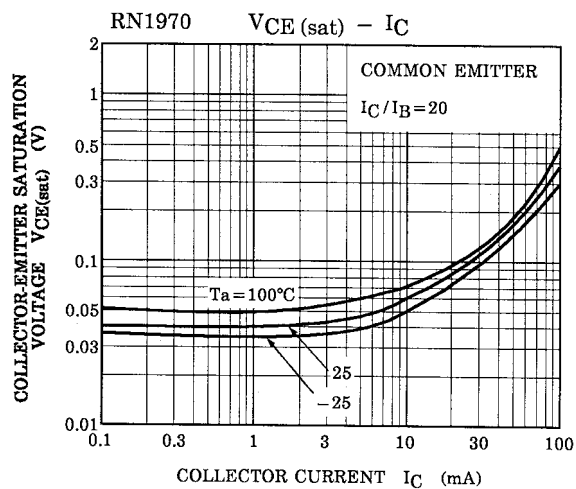
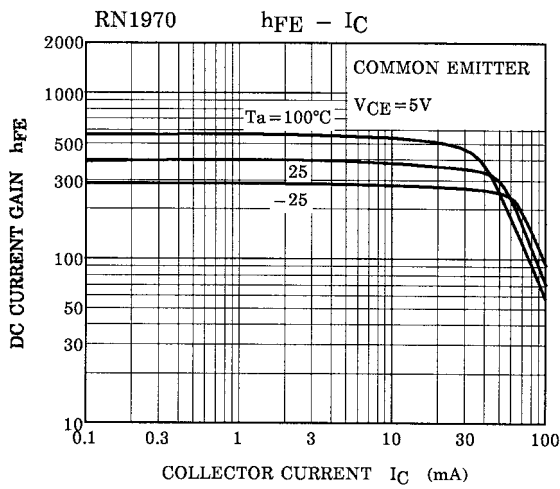
**Electrical Characteristics (Ta = 25°C) (Q1, Q2 Common)**

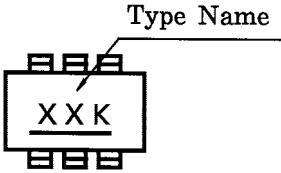
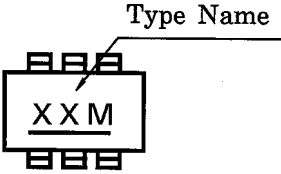
Characteristic		Symbol	Test Circuit	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current		$I_{CBO}$	—	$V_{CB} = 5V, I_E = 0$	—	—	100	nA
Emitter cut-off current		$I_{EBO}$	—	$V_{EB} = 5V, I_C = 0$	—	—	100	nA
DC current gain		$h_{FE}$	—	$V_{CE} = 5V, I_C = 1mA$	120	—	700	—
Collector-emitter saturation voltage		$V_{CE(sat)}$	—	$I_C = 5mA, I_B = 0.25mA$	—	0.1	0.3	V
Translation frequency		$f_T$	—	$V_{CE} = 10V, I_C = 5mA$	—	250	—	MHz
Collector output capacitance		$C_{ob}$	—	$V_{CB} = 10V, I_E = 0, f = 1MHz$	—	3	6	pF
Input resistor	RN1970	R1	—	—	3.29	4.7	6.11	kΩ
	RN1971				7	10	13	

(Q1, Q2 Common)



(Q1, Q2 Common)



Type Name	Marking
RN1970	 <p>The diagram shows a rectangular marking area with a double horizontal line at the bottom. Inside, the characters 'X X K' are printed. Above the rectangle, the text 'Type Name' is written with a line pointing to the top of the rectangle. Above the rectangle, the characters '8 8 8' are printed. Below the rectangle, the characters '8 8 8' are printed.</p>
RN1971	 <p>The diagram shows a rectangular marking area with a double horizontal line at the bottom. Inside, the characters 'X X M' are printed. Above the rectangle, the text 'Type Name' is written with a line pointing to the top of the rectangle. Above the rectangle, the characters '8 8 8' are printed. Below the rectangle, the characters '8 8 8' are printed.</p>

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