

TOSHIBA Transistor Silicon NPN Epitaxial Type (PCT process) (Bias Resistor built-in Transistor)

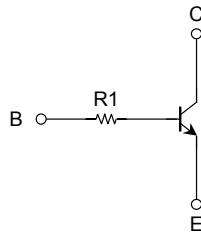
RN1970HFE,RN1971HFE

Switching, Inverter Circuit, Interface Circuit and Driver Circuit Applications

Unit: mm

- Two devices are incorporated into an Extreme-Super-Mini (6 pin) package.
- Incorporating a bias resistor into a transistor reduces parts count. Reducing the parts count enable the manufacture of ever more compact equipment and save assembly cost.
- Complementary to RN2970HFE, RN2971HFE

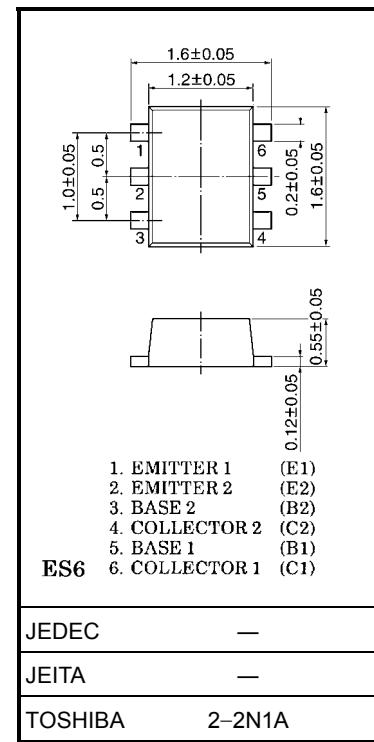
Equivalent Circuit



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

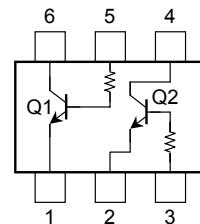
Characteristics	Symbol	Rating	Unit
Collector-base voltage	V _{CBO}	40	V
Collector-emitter voltage	V _{CEO}	40	V
Emitter-base voltage	V _{EBO}	5	V
Collector current	I _C	100	mA
Collector power dissipation	P _C (Note)	100	mW
Junction temperature	T _j	150	°C
Storage temperature range	T _{stg}	-55~150	°C

Note: Total rating



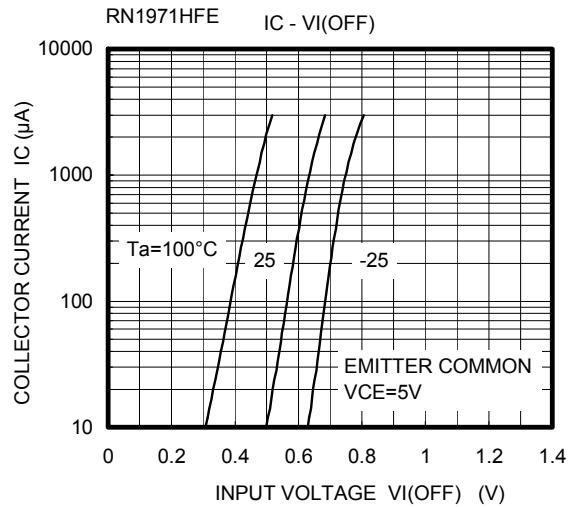
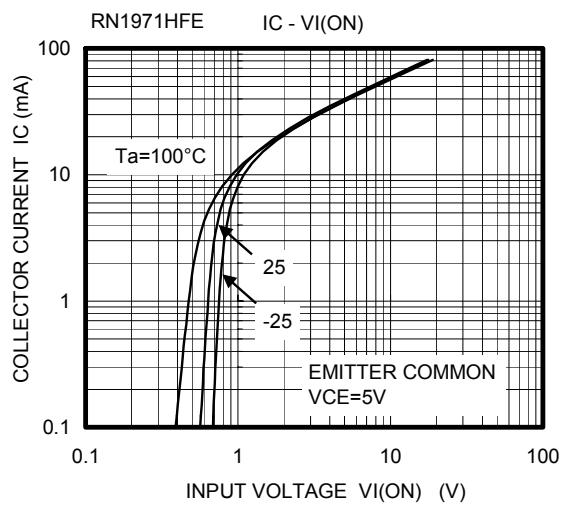
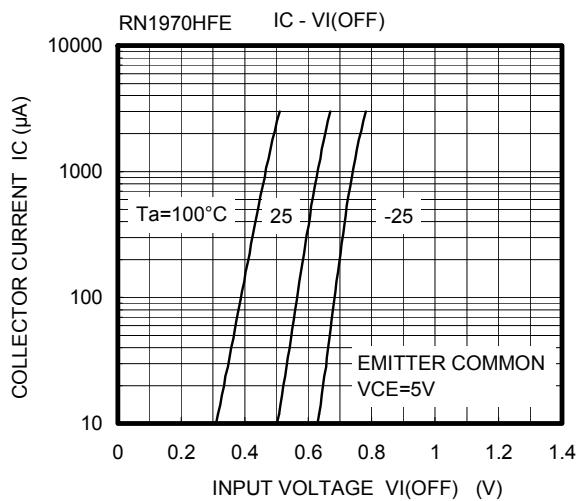
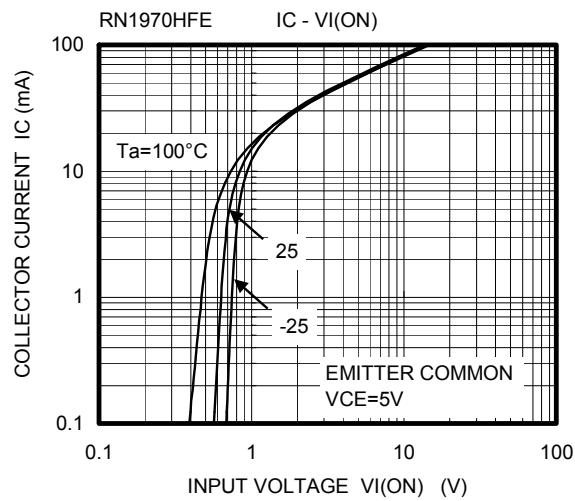
Weight:0.003g (typ.)

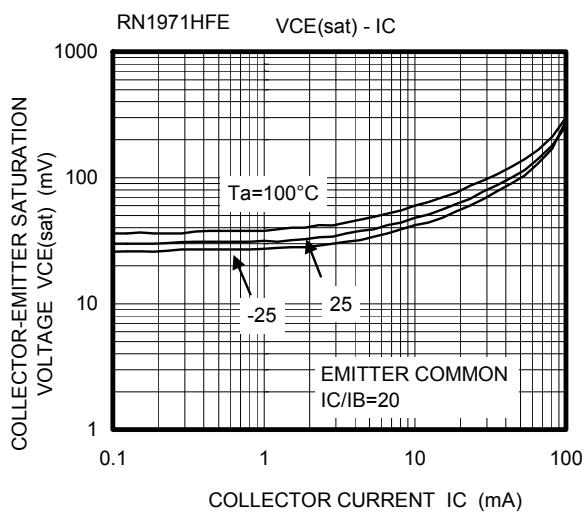
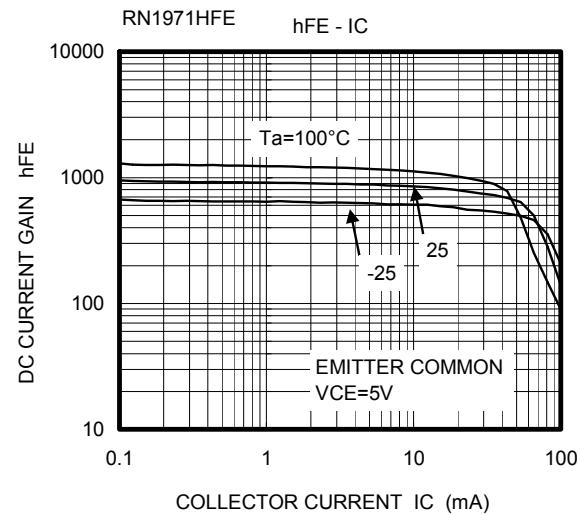
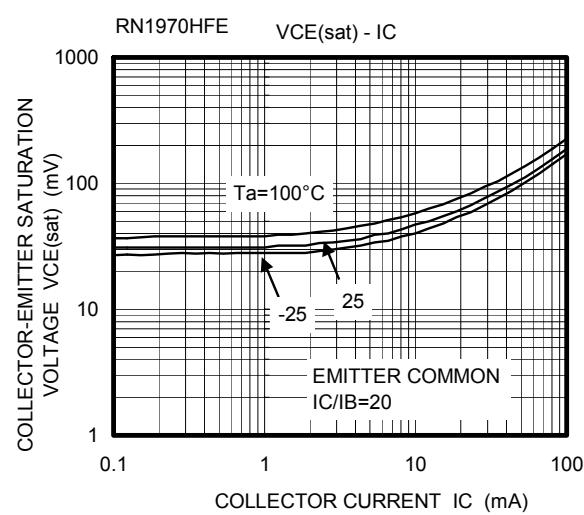
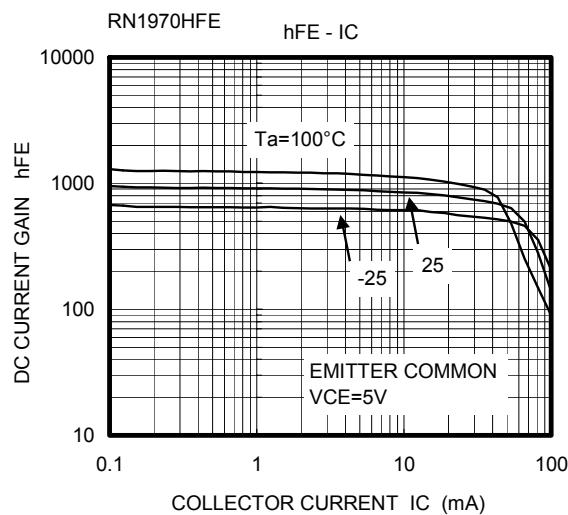
Equivalent Circuit (top view)

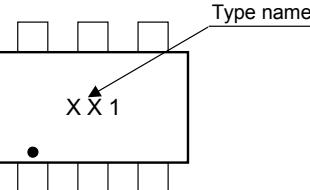
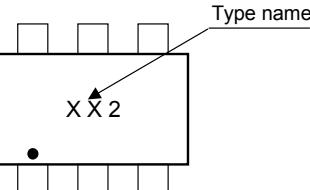


Electrical Characteristics (Ta = 25°C) (Q1, Q2 common)

Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit	
Collector cut-off current	I_{CBO}	$V_{CB} = 40 \text{ V}$, $I_E = 0$	—	—	100	nA	
Emitter cut-off current	I_{EBO}	$V_{EB} = 5 \text{ V}$, $I_C = 0$	—	—	100	nA	
DC current gain	h_{FE}	$V_{CE} = 5 \text{ V}$, $I_C = 1 \text{ mA}$	300	—	—		
Collector-emitter saturation voltage	$V_{CE} (\text{sat})$	$I_C = 5 \text{ mA}$, $I_B = 0.25 \text{ mA}$	—	0.06	0.15	V	
Transition frequency	f_T	$V_{CE} = 10 \text{ V}$, $I_C = 5 \text{ mA}$	—	250	—	MHz	
Collector output capacitance	C_{ob}	$V_{CB} = 10 \text{ V}$, $I_E = 0$, $f = 1 \text{ MHz}$	—	3	—	pF	
Input resistor	RN1970HFE	R1	—	3.76	4.7	5.64	kΩ
	RN1971HFE			8	10	12	

Q1,Q2 Common

Q1,Q2 Common

Type Name	Marking
RN1970HFE	
RN1971HFE	

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