

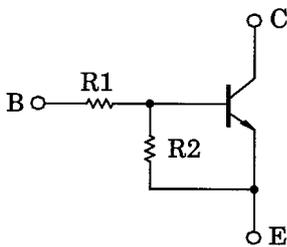
TOSHIBA Transistor Silicon NPN Epitaxial Type (PCT Process)

**RN1001,RN1002,RN1003  
RN1004,RN1005,RN1006**

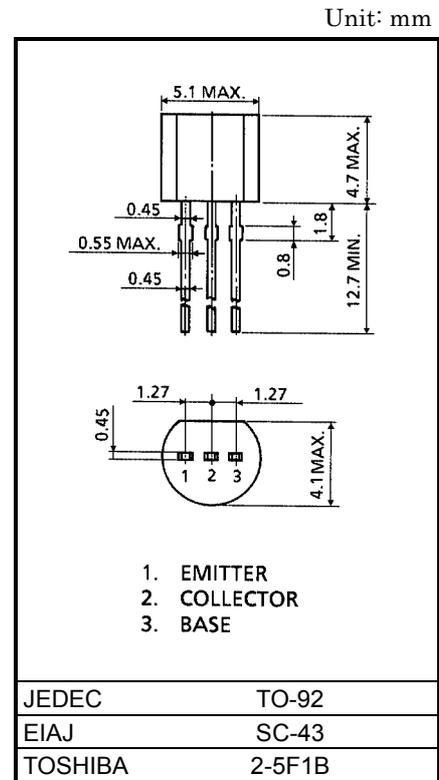
Switching, Inverter Circuit, Interface Circuit  
And Driver Circuit Applications

- With built-in bias resistors
- Simplify circuit design
- Reduce a quantity of parts and manufacturing process
- Complementary to RN2001~RN2006

**Equivalent Circuit and Bias Resister Values**



Type No.	R1 (kΩ)	R2 (kΩ)
RN1001	4.7	4.7
RN1002	10	10
RN1003	22	22
RN1004	47	47
RN1005	2.2	47
RN1006	4.7	47



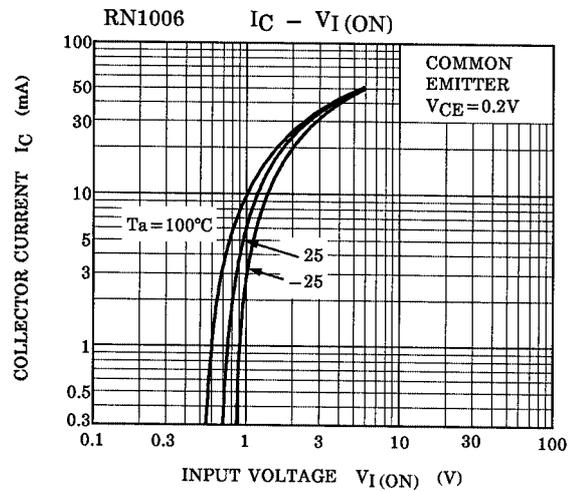
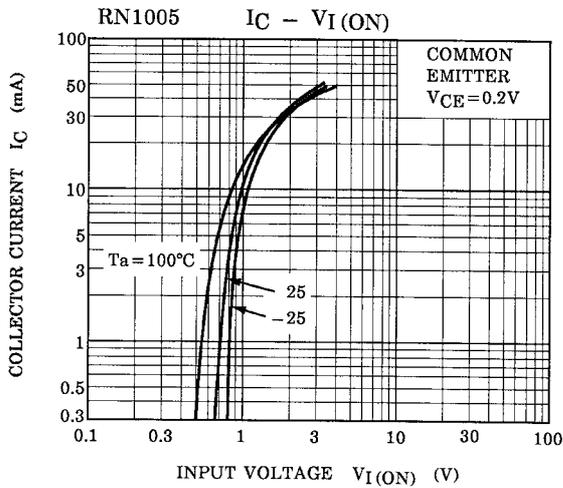
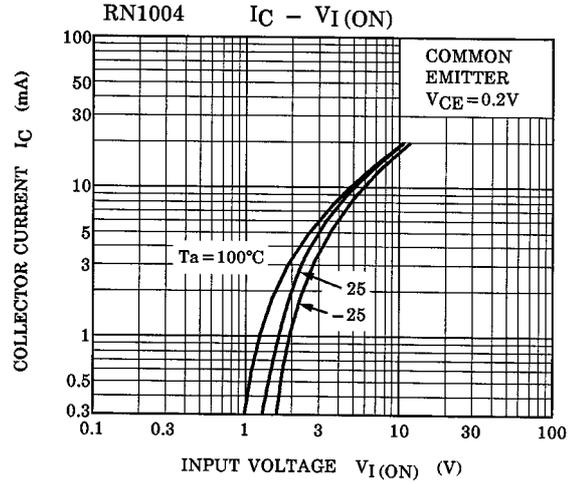
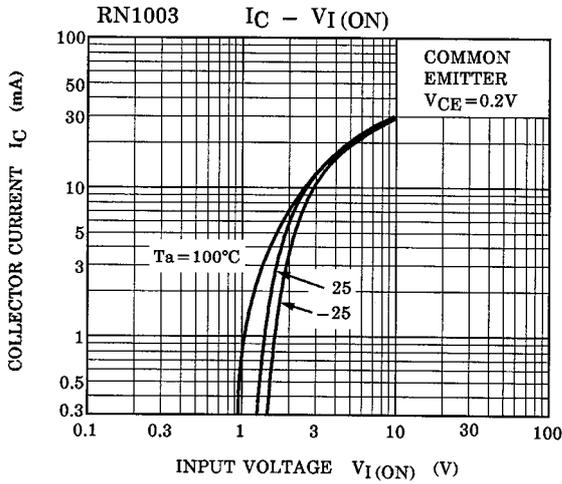
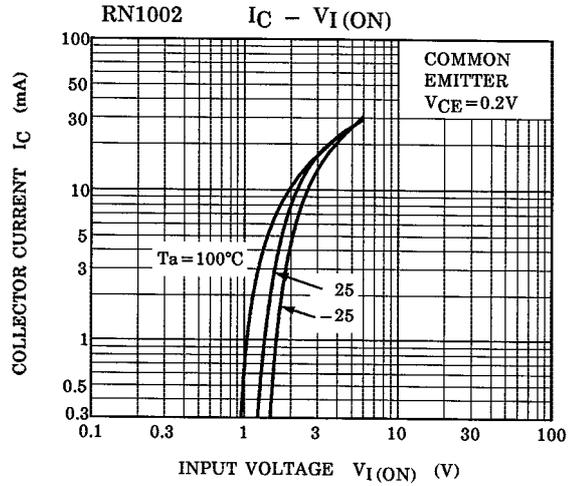
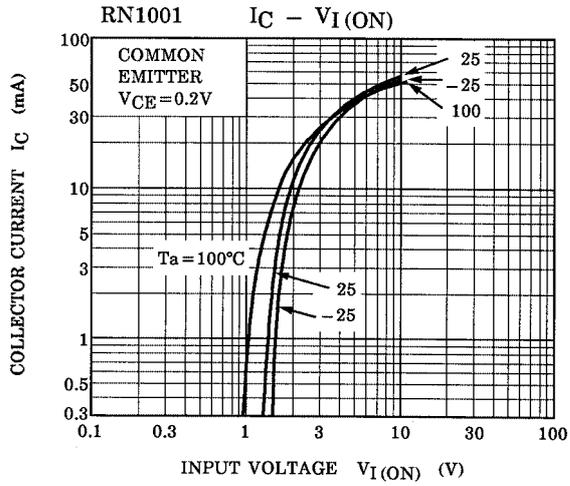
Weight: 0.21g

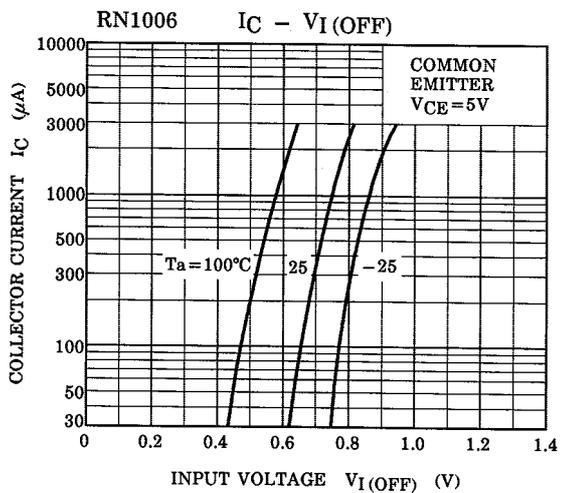
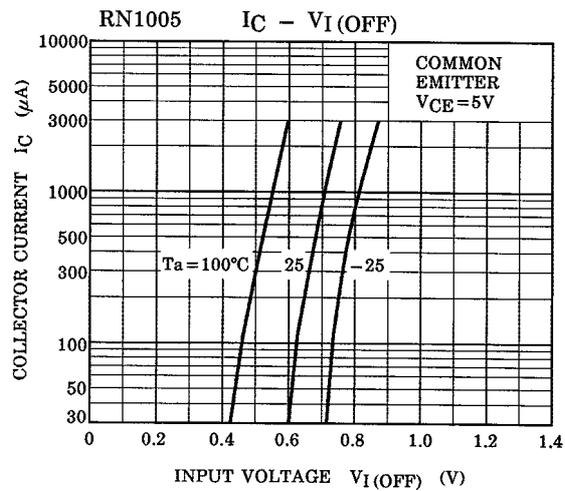
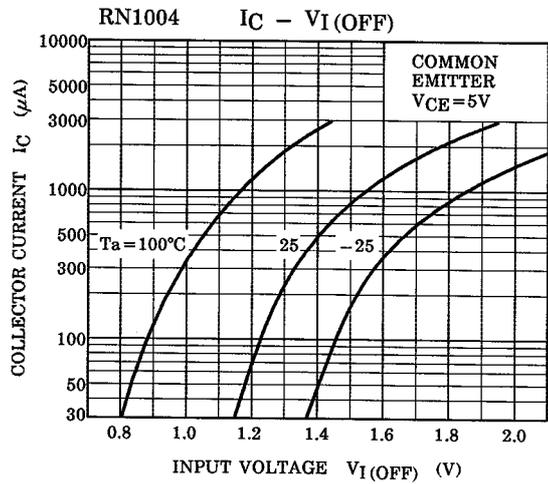
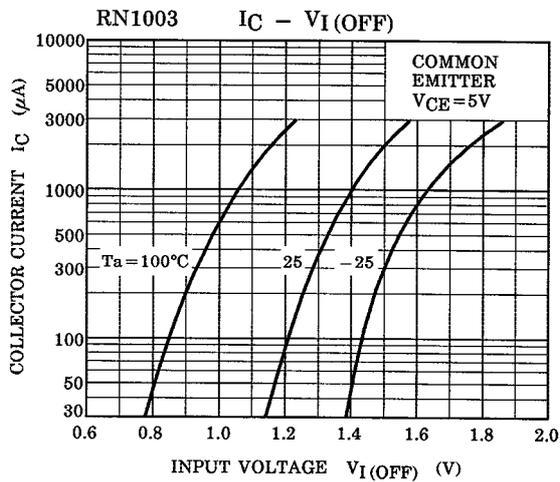
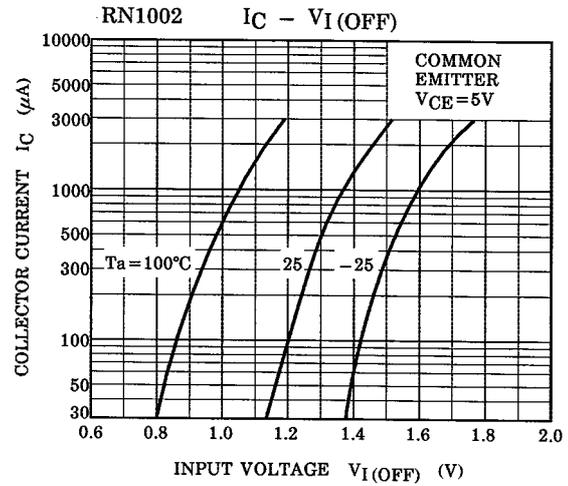
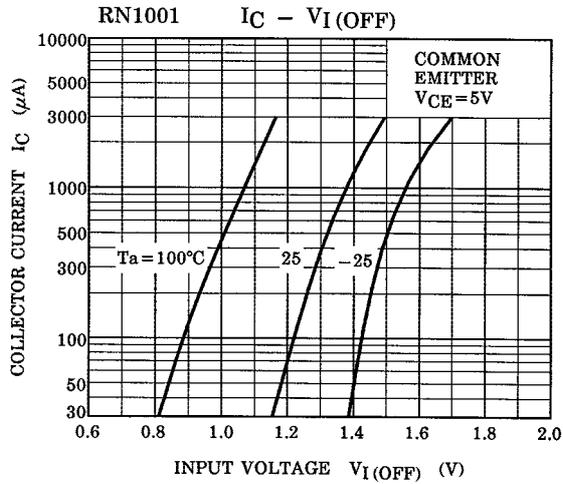
**Maximum Ratings (Ta = 25°C)**

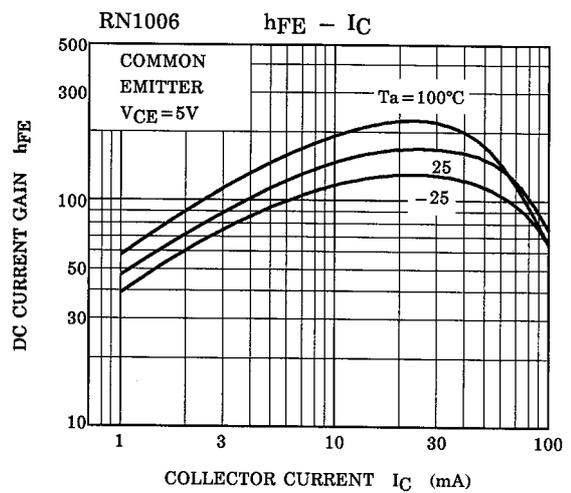
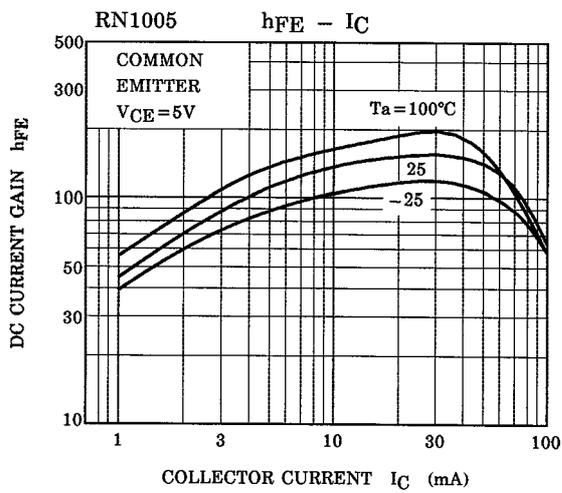
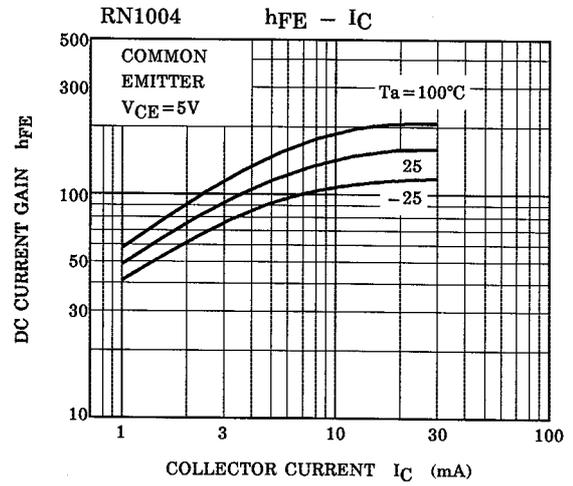
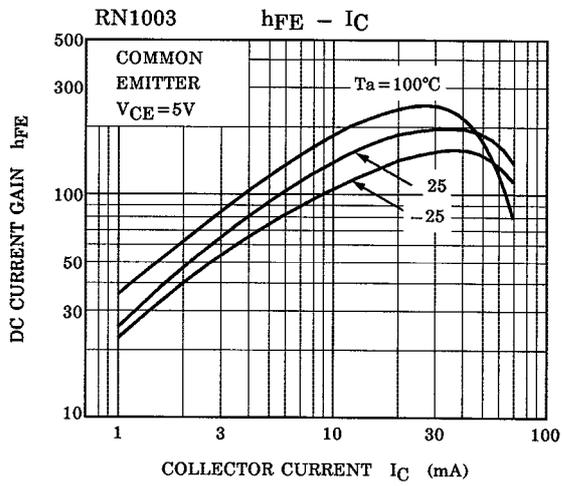
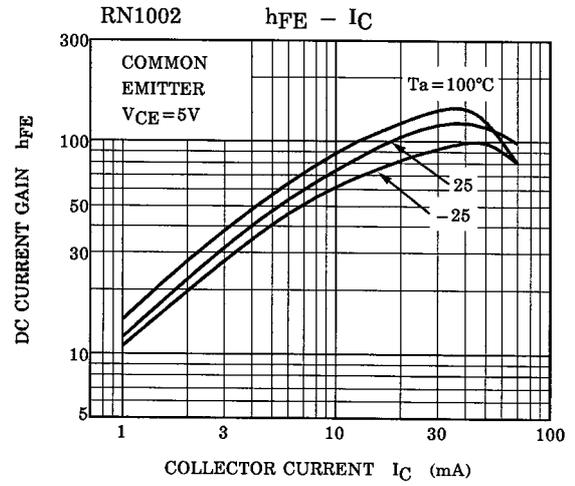
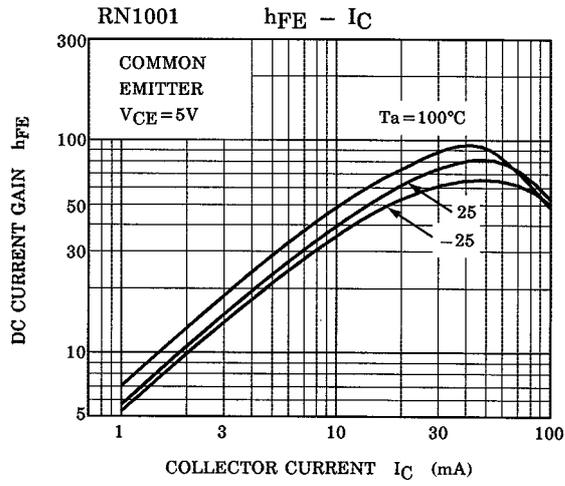
Characteristic	Symbol	Rating	Unit
Collector-base voltage	$V_{CBO}$	50	V
Collector-emitter voltage	$V_{CEO}$	50	V
Emitter-base voltage	$V_{EBO}$	10	V
		5	
Collector current	$I_C$	100	mA
Collector power dissipation	$P_C$	400	mW
Junction temperature	$T_j$	150	°C
Storage temperature range	$T_{stg}$	-55~150	°C

## Electrical Characteristics (Ta = 25°C)

Characteristic		Symbol	Test Circuit	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current	RN1001~1006	$I_{CBO}$	—	$V_{CB} = 50V, I_E = 0$	—	—	100	nA
		$I_{CEO}$		$V_{CE} = 50V, I_B = 0$	—	—	500	
Emitter cut-off current	RN1001	$I_{EBO}$	—	$V_{EB} = 10V, I_C = 0$	0.82	—	1.52	mA
	RN1002				0.38	—	0.71	
	RN1003				0.17	—	0.33	
	RN1004				0.082	—	0.15	
	RN1005			$V_{EB} = 5V, I_C = 0$	0.078	—	0.145	
	RN1006				0.074	—	0.138	
DC current gain	RN1001	$h_{FE}$	—	$V_{CE} = 5V, I_C = 10mA$	30	—	—	—
	RN1002				50	—	—	
	RN1003				70	—	—	
	RN1004				80	—	—	
	RN1005				80	—	—	
	RN1006				80	—	—	
Collector-emitter saturation voltage	RN1001~1006	$V_{CE(sat)}$	—	$I_C = 5mA, I_B = 0.25mA$	—	0.1	0.3	V
Input voltage (ON)	RN1001	$V_{I(ON)}$	—	$V_{CE} = 0.2V, I_C = 5mA$	1.1	—	2.0	V
	RN1002				1.2	—	2.4	
	RN1003				1.3	—	3.0	
	RN1004				1.5	—	5.0	
	RN1005				0.6	—	1.1	
	RN1006				0.7	—	1.3	
Input voltage (OFF)	RN1001~1004	$V_{I(OFF)}$	—	$V_{CE} = 5V, I_C = 0.1mA$	1.0	—	1.5	V
	RN1005, 1006				0.5	—	0.8	
Transition frequency	RN1001~1006	$f_T$	—	$V_{CE} = 10V, I_C = 5mA$	—	250	—	MHz
Collector Output capacitance	RN1001~1006	$C_{ob}$	—	$V_{CB} = 10V, I_E = 0, f = 1MHz$	—	3	6	pF
Input resistor	RN1001	R1	—		3.29	4.7	6.11	kΩ
	RN1002				7	10	13	
	RN1003				15.4	22	28.6	
	RN1004				32.9	47	61.1	
	RN1005				1.54	2.2	2.86	
	RN1006				3.29	4.7	6.11	
Resistor ratio	RN1001~1004	R1/R2	—		0.9	1.0	1.1	—
	RN1005				0.0421	0.0468	0.0515	
	RN1006				0.09	0.1	0.11	







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