

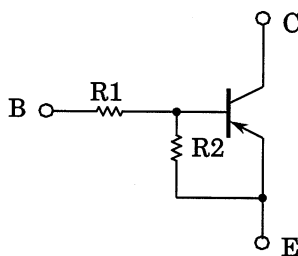
TOSHIBA Transistor Silicon PNP Epitaxial Type (PCT Process)

RN2101F, RN2102F, RN2103F RN2104F, RN2105F, RN2106F

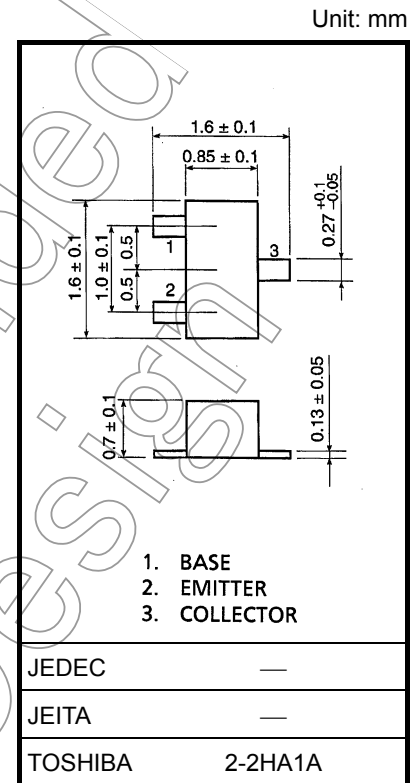
Switching, Inverter Circuit, Interface Circuit
and Driver Circuit Applications

- With built-in bias resistors
- Simplify circuit design
- Reduce a quantity of parts and manufacturing process
- Complementary to RN1101F~RN1106F

Equivalent Circuit and Bias Resister Values



Type No.	R1 (kΩ)	R2 (kΩ)
RN2101F	4.7	4.7
RN2102F	10	10
RN2103F	22	22
RN2104F	47	47
RN2105F	2.2	47
RN2106F	4.7	47



Weight: 2.3 mg (typ.)

Absolute Maximum Ratings (Ta = 25°C)

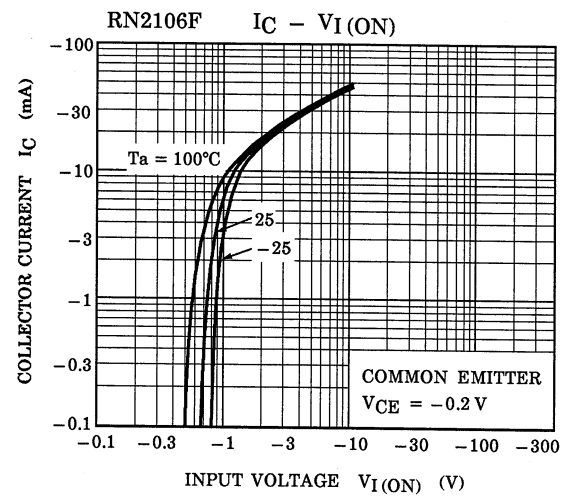
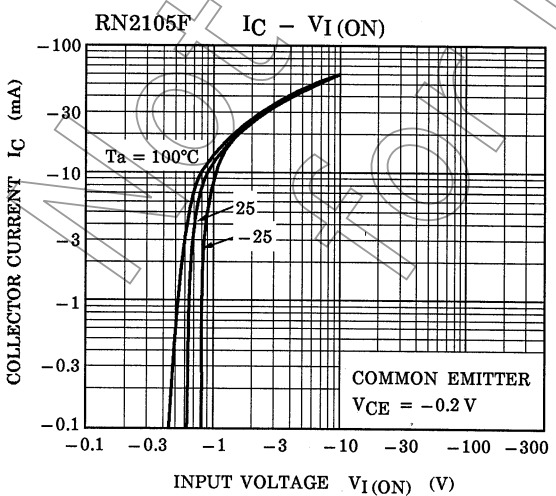
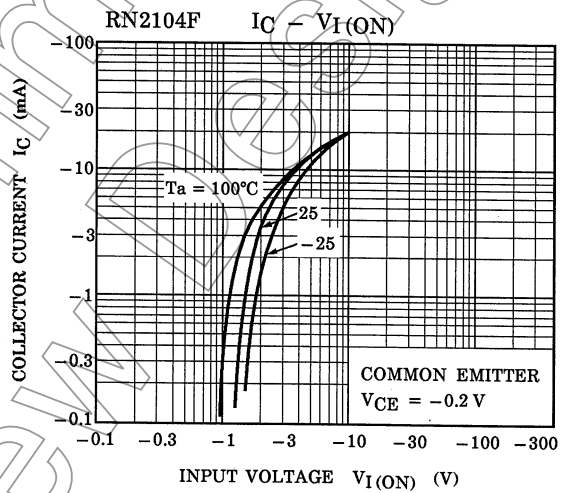
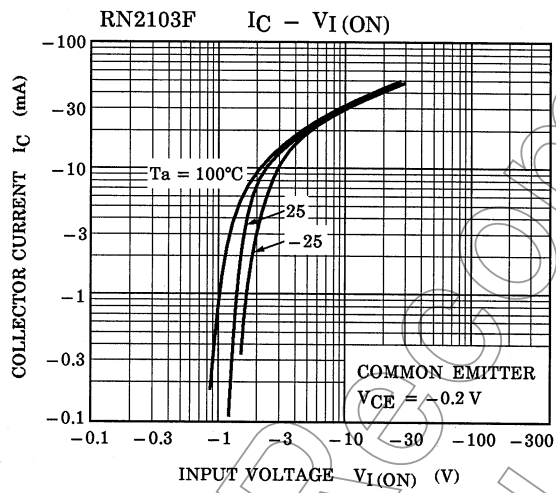
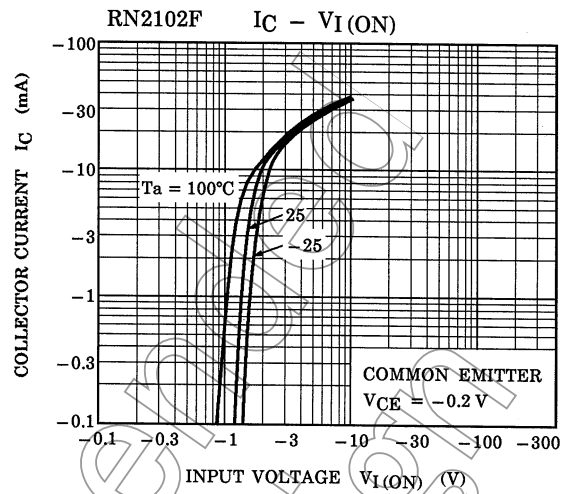
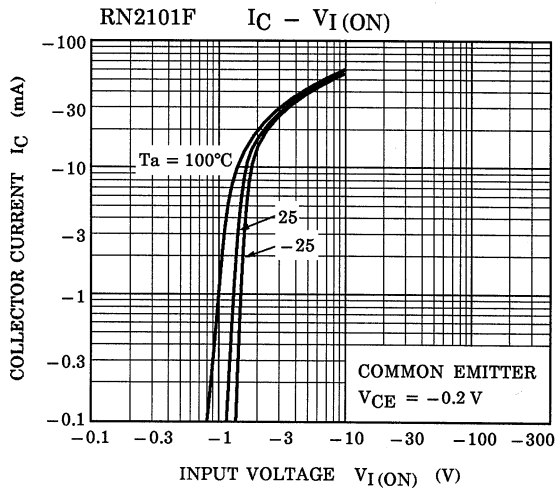
Characteristic	Symbol	Rating	Unit
Collector-base voltage	V _{CB0}	-50	V
Collector-emitter voltage			
Emitter-base voltage	RN2101F~2104F	-10	V
	RN2105F, 2106F	-5	
Collector current	I _C	-100	mA
Collector power dissipation	P _C	100	mW
Junction temperature	T _j	150	°C
Storage temperature range	T _{stg}	-55~150	°C

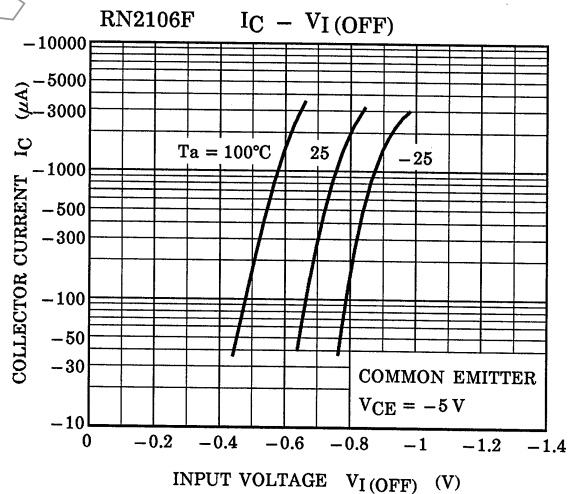
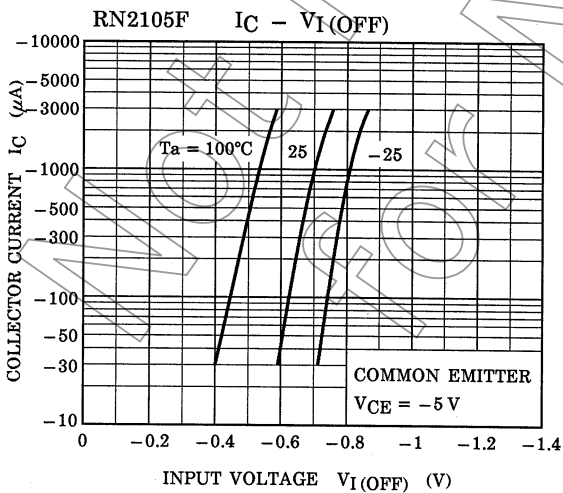
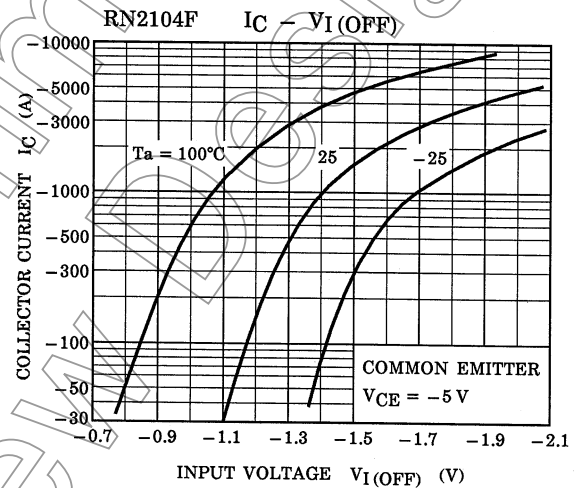
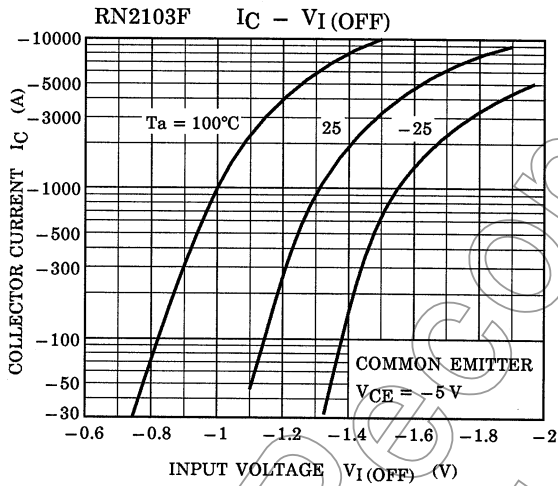
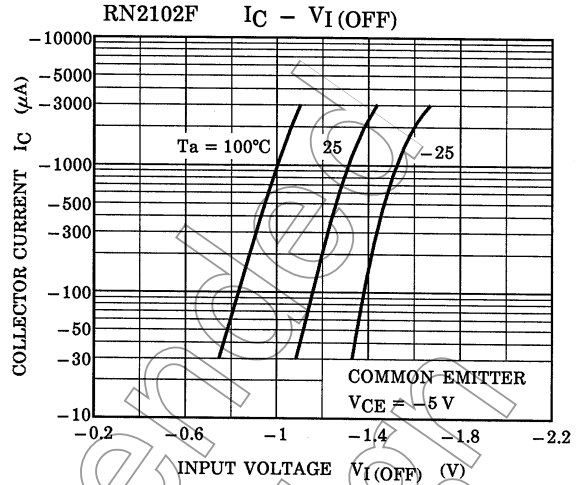
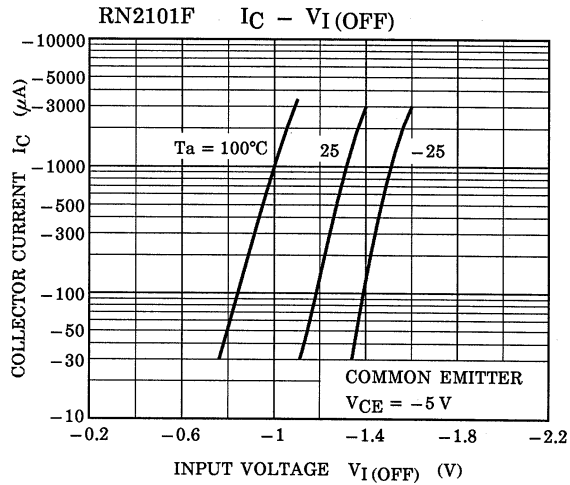
Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) are within the absolute maximum ratings.

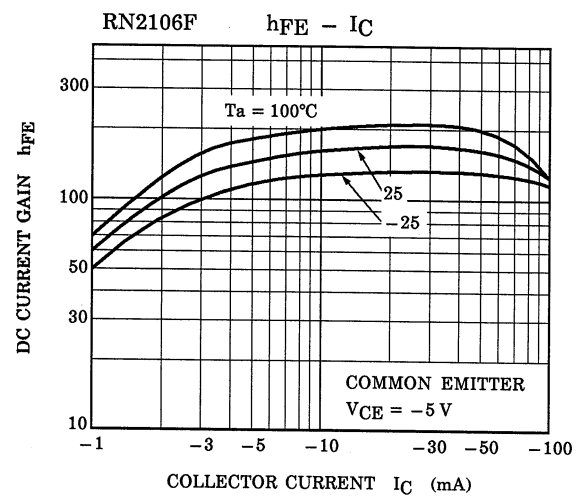
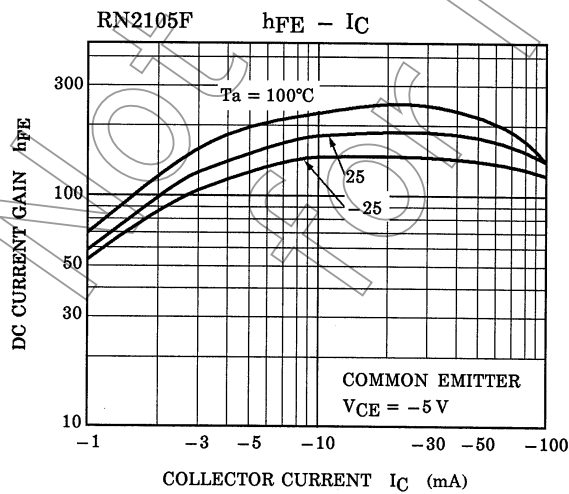
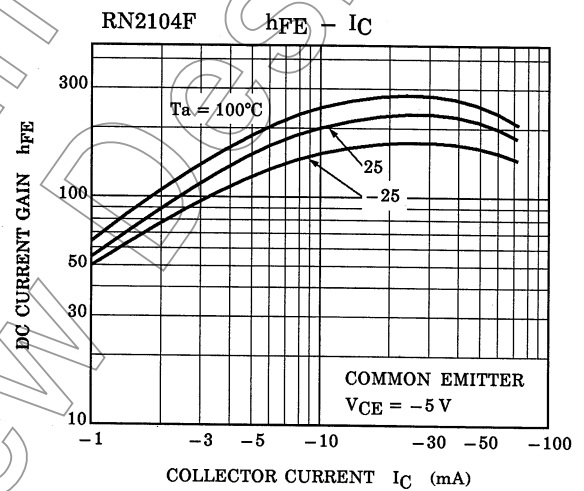
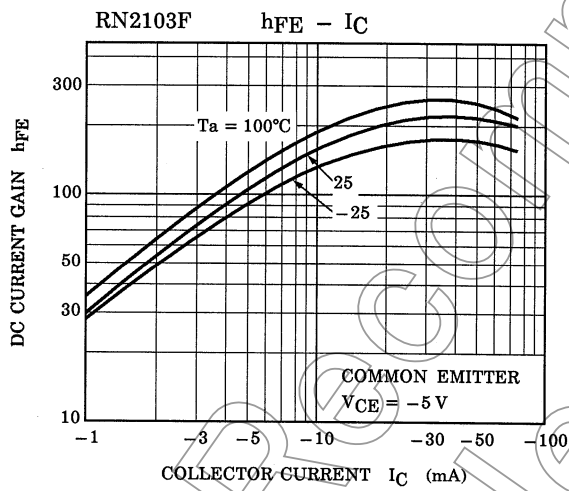
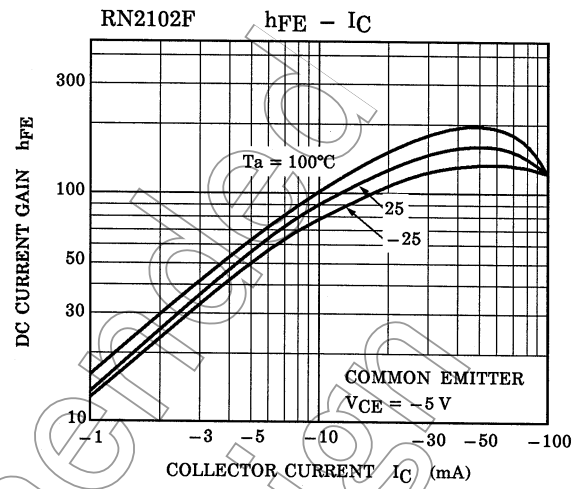
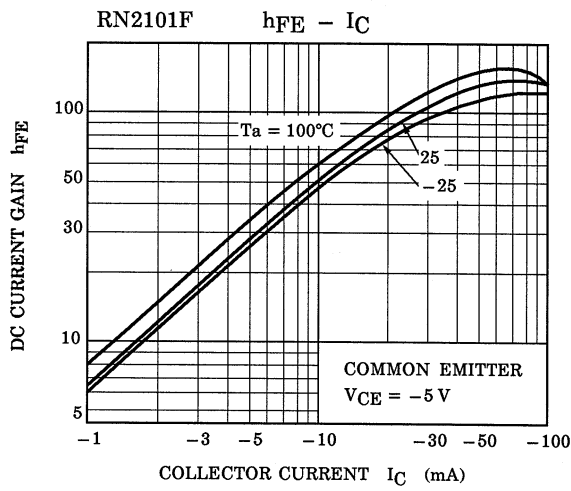
Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/"Derating Concept and Methods") and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

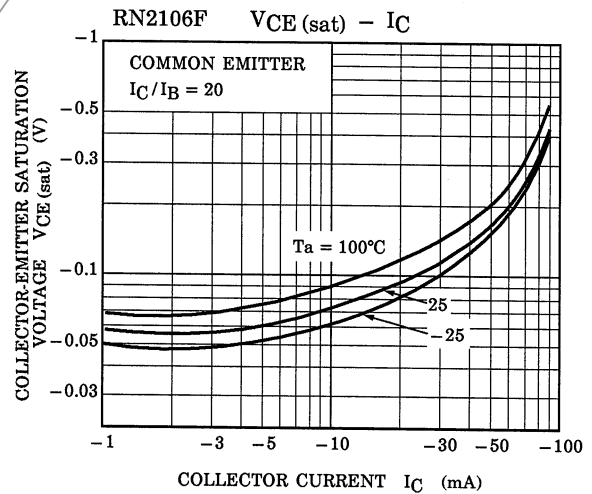
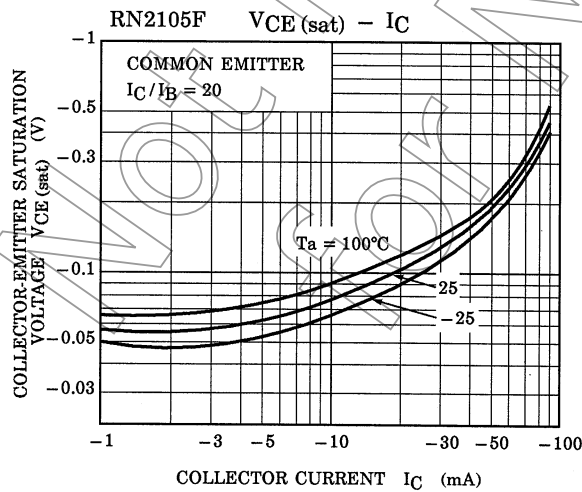
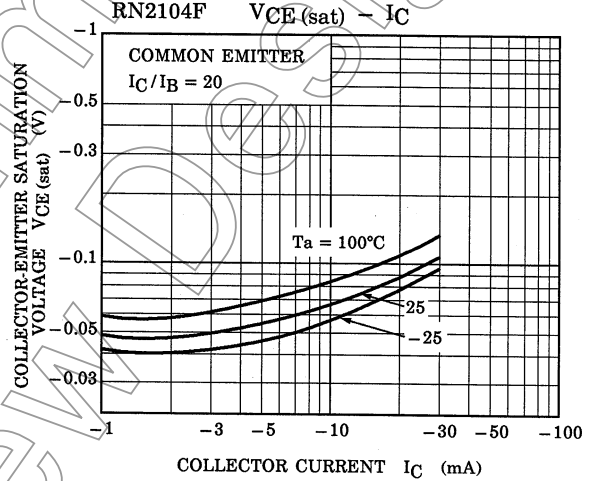
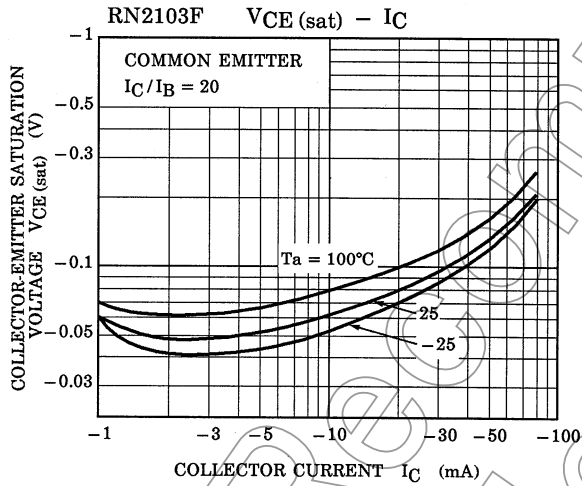
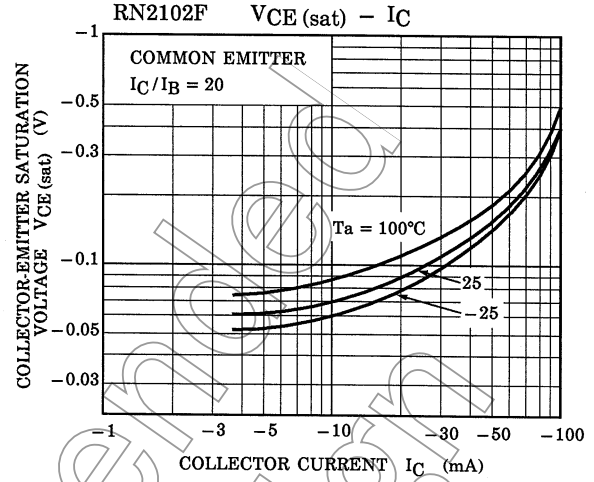
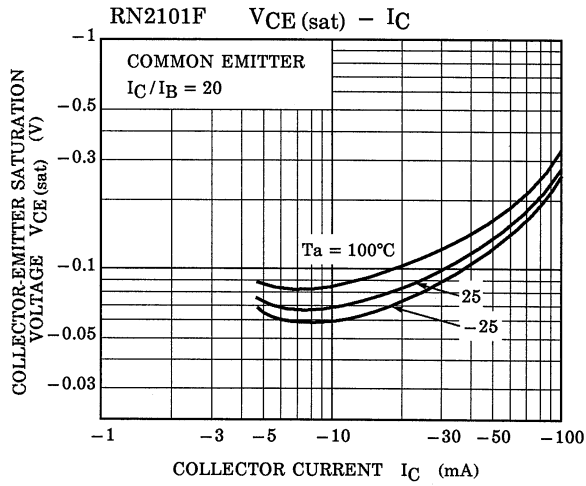
Electrical Characteristics (Ta = 25°C)

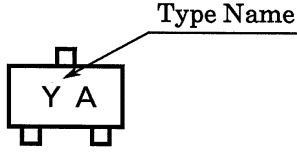
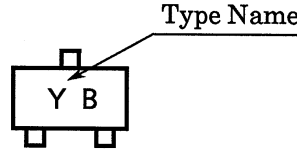
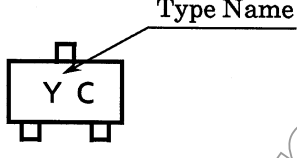
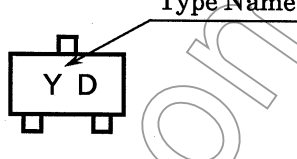
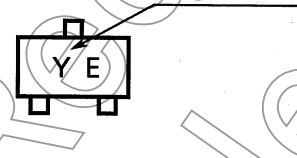

Characteristic		Symbol	Test Circuit	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current	RN2101F ~2106F	I _{CBO}	—	V _{CB} = -50V, I _E = 0	—	—	-100	nA
		I _{CEO}	—	V _{CE} = -50V, I _B = 0	—	—	-500	
Emitter cut-off current	RN2101F	I _{EBO}	—	V _{EB} = -10V, I _C = 0	-0.82	—	-1.52	mA
	RN2102F				-0.38	—	-0.71	
	RN2103F				-0.17	—	-0.33	
	RN2104F			-0.082	—	-0.15		
	RN2105F			-0.078	—	-0.145		
	RN2106F			-0.074	—	-0.138		
DC current gain	RN2101F	h _{FE}	—	V _{CE} = -5V, I _C = -10mA	30	—	—	
	RN2102F				50	—	—	
	RN2103F				70	—	—	
	RN2104F				80	—	—	
	RN2105F				80	—	—	
	RN2106F				80	—	—	
Collector-emitter saturation voltage	RN2101F ~2106F	V _{CE (sat)}	—	I _C = -5mA, I _B = -0.25mA	—	-0.1	-0.3	V
Input voltage (ON)	RN2101F	V _{I (ON)}	—	V _{CE} = -0.2V, I _C = -5mA	-1.1	—	-2.0	V
	RN2102F				-1.2	—	-2.4	
	RN2103F				-1.3	—	-3.0	
	RN2104F				-1.5	—	-5.0	
	RN2105F				-0.6	—	-1.1	
	RN2106F				-0.7	—	-1.3	
Input voltage (OFF)	RN2101F ~2104F	V _{I (OFF)}	—	V _{CE} = -5V, I _C = -0.1mA	-1.0	—	-1.5	V
	RN2105F, 2106F				-0.5	—	-0.8	
Transition frequency	RN2101F ~2106F	f _T	—	V _{CE} = -10V, I _C = -5mA	—	200	—	MHz
Collector Output capacitance	RN2101F ~2106F	C _{ob}	—	V _{CB} = -10V, I _E = 0, f = 1MHz	—	3	6	pF
Input resistor	RN2101F	R ₁	—		3.29	4.7	6.11	kΩ
	RN2102F				7	10	13	
	RN2103F				15.4	22	28.6	
	RN2104F				32.9	47	61.1	
	RN2105F				1.54	2.2	2.86	
	RN2106F				3.29	4.7	6.11	
Resistor ratio	RN2101F ~2104F	R _{1/R2}	—		0.9	1.0	1.1	
	RN2105F				0.0421	0.0468	0.0515	
	RN2106F				0.09	0.1	0.11	









Type Name	Marking
RN2101F	
RN2102F	
RN2103F	
RN2104F	
RN2105F	
RN2106F	

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