

TOSHIBA TRANSISTOR SILICON NPN EPITAXIAL TYPE (PCT PROCESS)

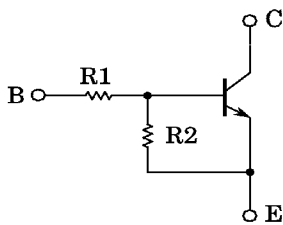
**RN1101F, RN1102F, RN1103F  
RN1104F, RN1105F, RN1106F**

SWITCHING, INVERTER CIRCUIT, INTERFACE CIRCUIT  
AND DRIVER CIRCUIT APPLICATIONS.

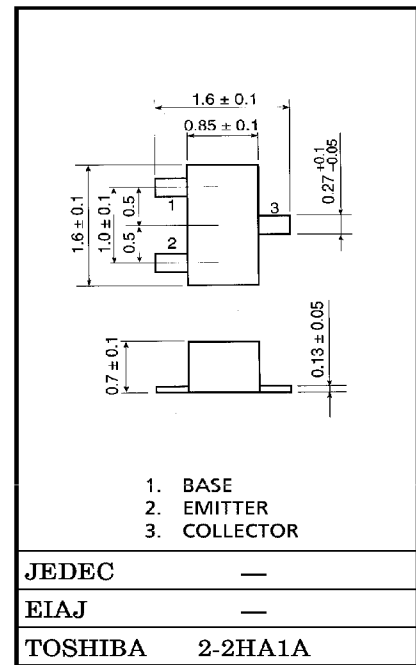
Unit in mm

- With Built-in Bias Resistors
- Simplify Circuit Design
- Reduce a Quantity of Parts and Manufacturing Process
- Complementary to RN2101F~RN2106F

EQUIVALENT CIRCUIT AND BIAS RESISTOR VALUES



TYPE No.	R1 (kΩ)	R2 (kΩ)
RN1101F	4.7	4.7
RN1102F	10	10
RN1103F	22	22
RN1104F	47	47
RN1105F	2.2	47
RN1106F	4.7	47



MAXIMUM RATINGS (Ta = 25°C)

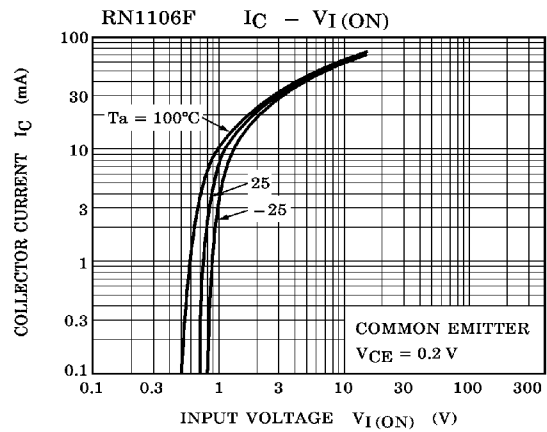
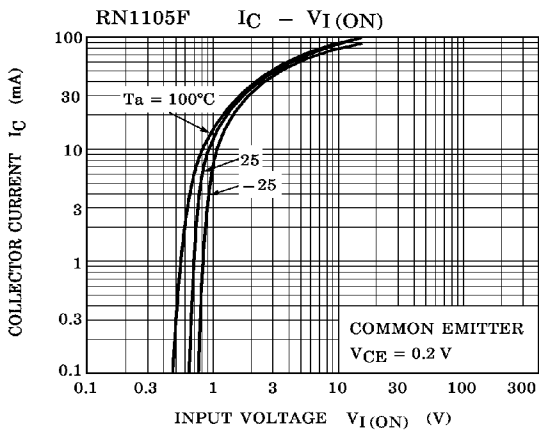
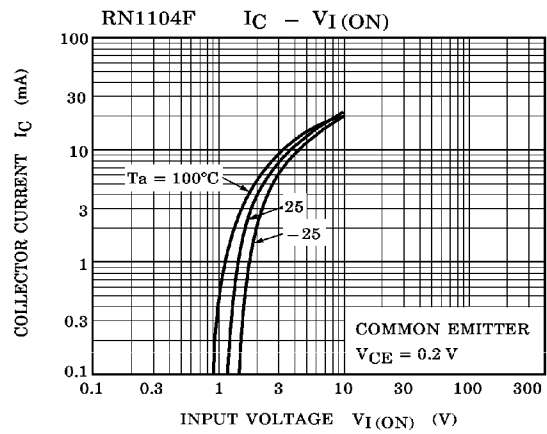
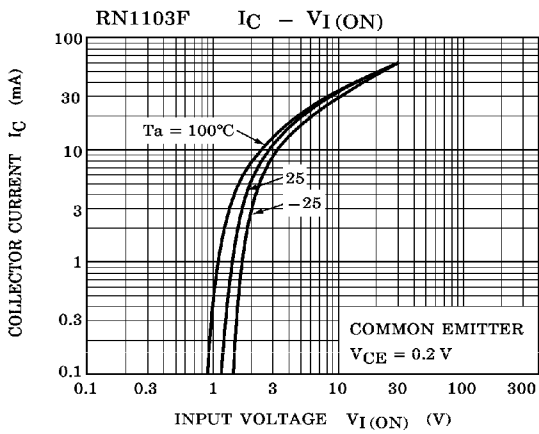
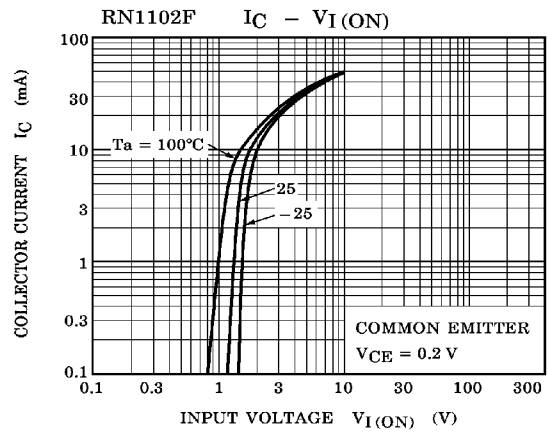
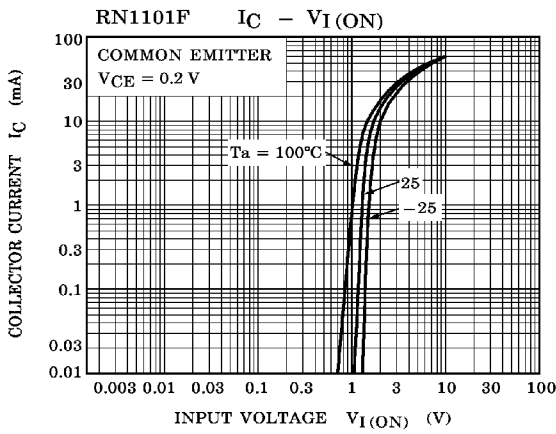
CHARACTERISTIC		SYMBOL	RATING	UNIT
Collector-Base Voltage	RN1101F~1106F	V <sub>CBO</sub>	50	V
Collector-Emitter Voltage		V <sub>CEO</sub>	50	V
Emitter-Base Voltage	RN1101F~1104F	V <sub>EBO</sub>	10	V
	RN1105F, 1106F		5	
Collector Current	RN1101F~1106F	I <sub>C</sub>	100	mA
Collector Power Dissipation		P <sub>C</sub>	100	mW
Junction Temperature		T <sub>j</sub>	150	°C
Storage Temperature Range		T <sub>stg</sub>	-55~150	°C

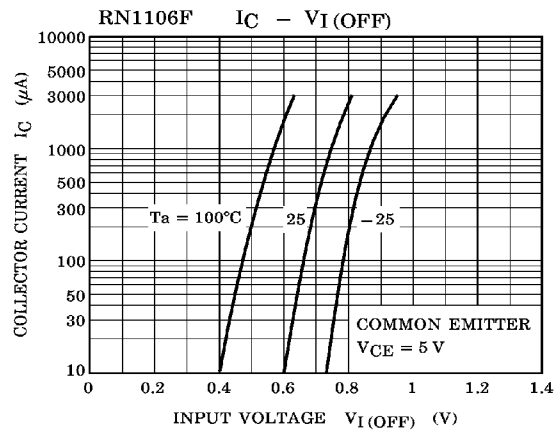
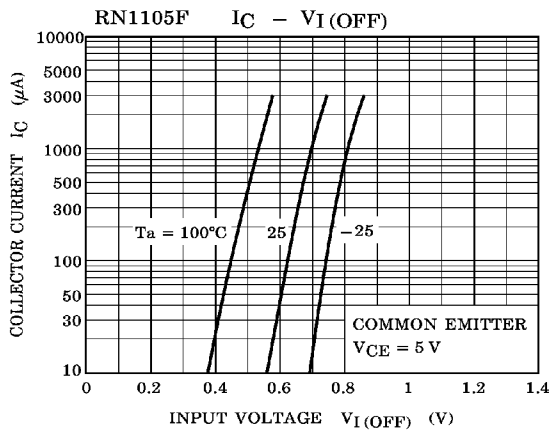
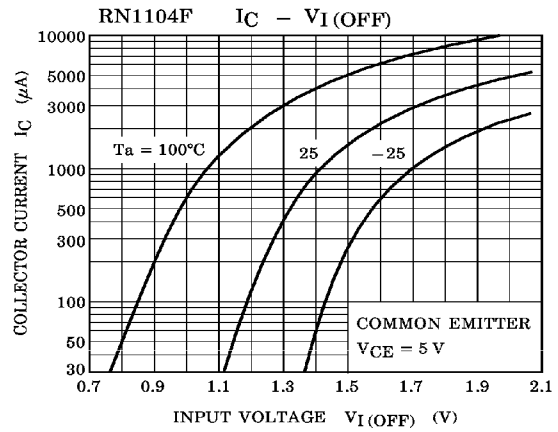
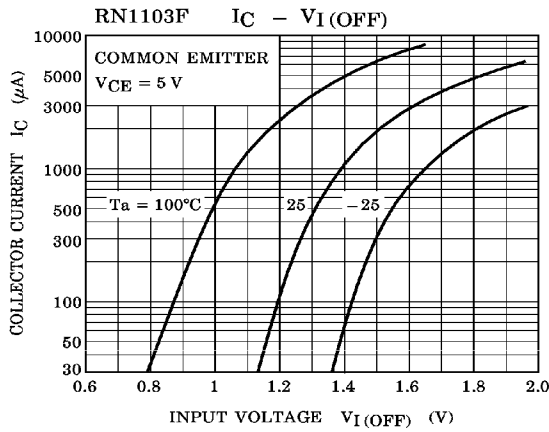
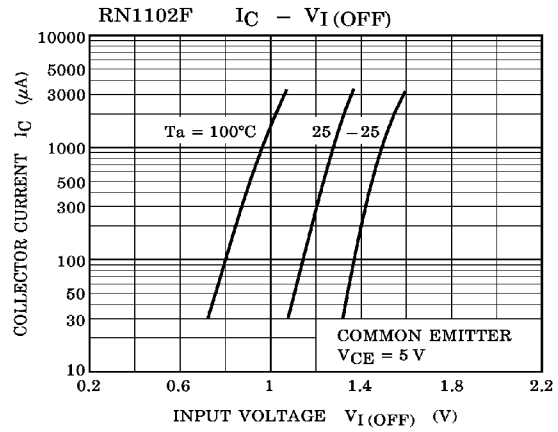
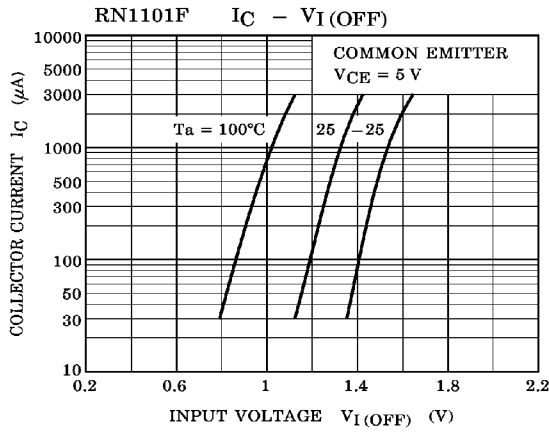
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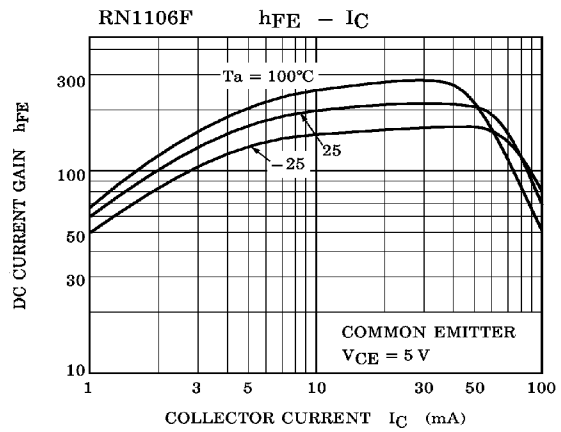
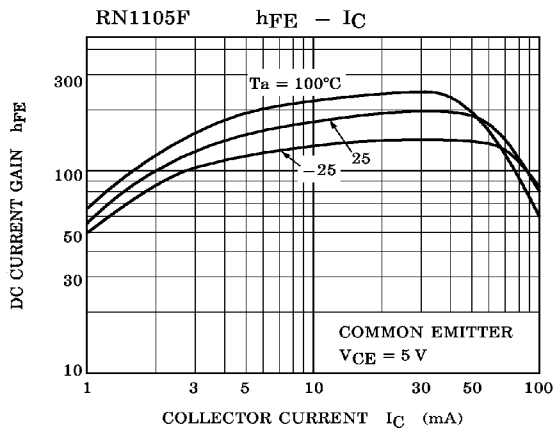
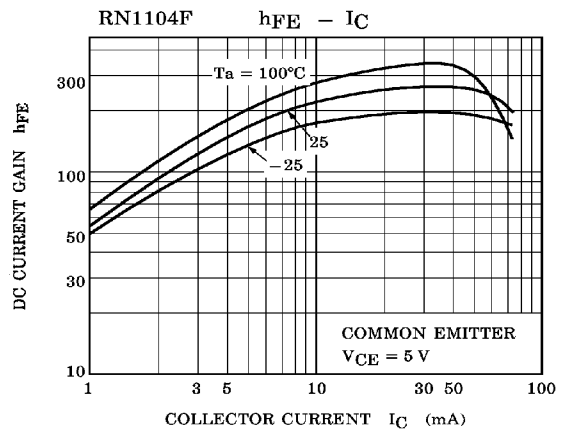
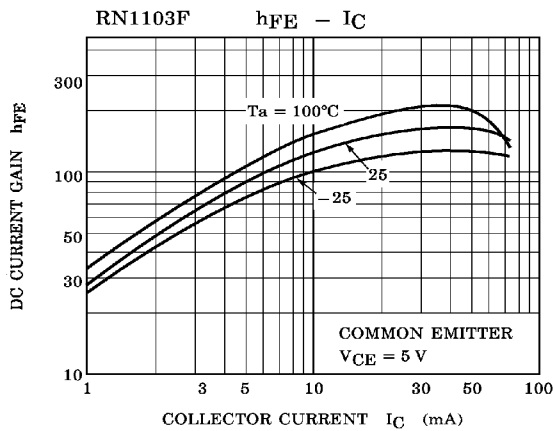
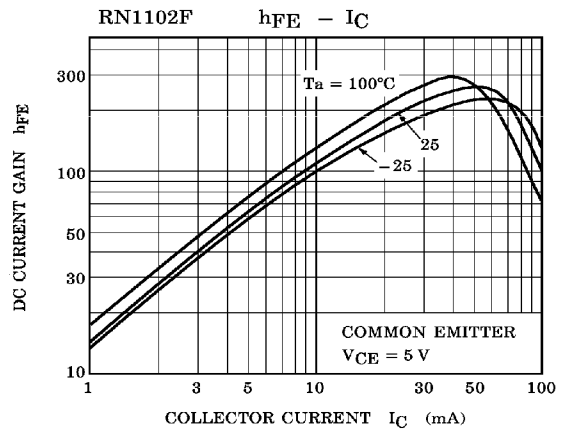
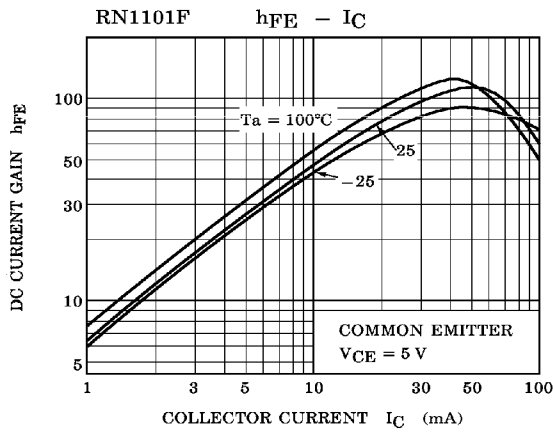
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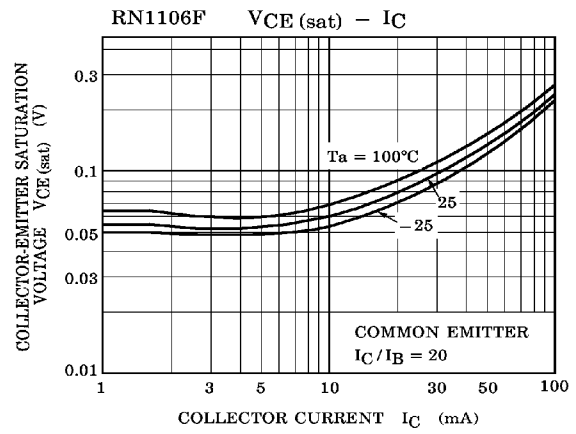
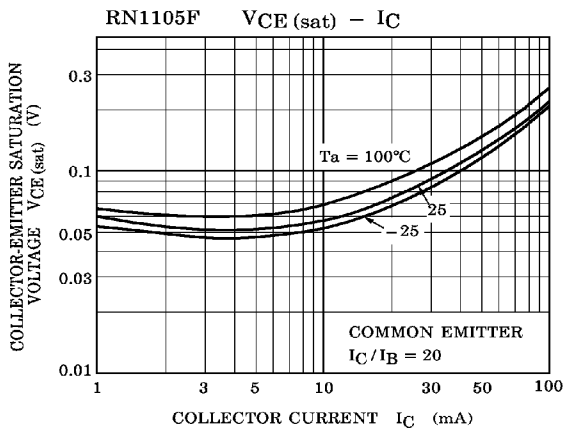
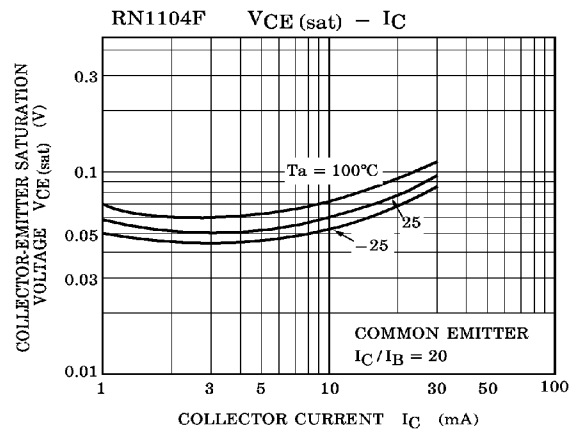
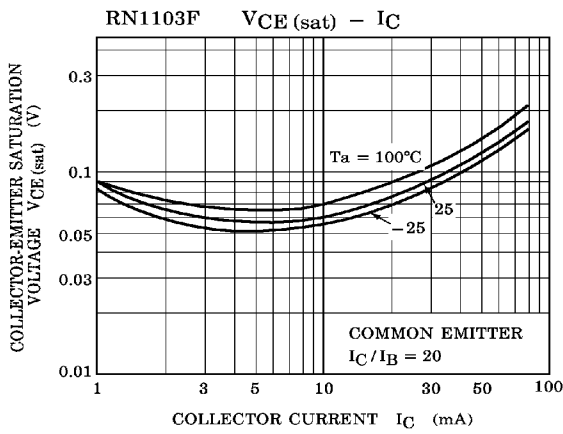
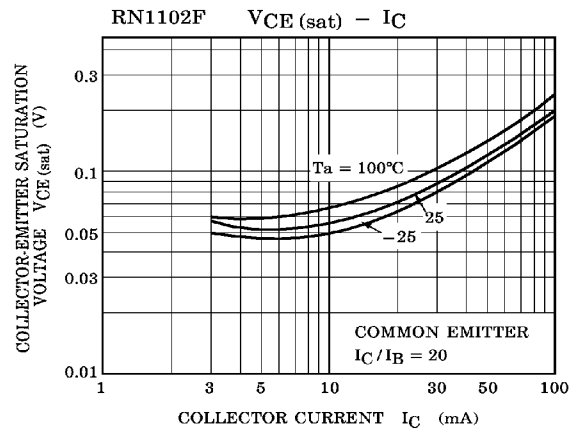
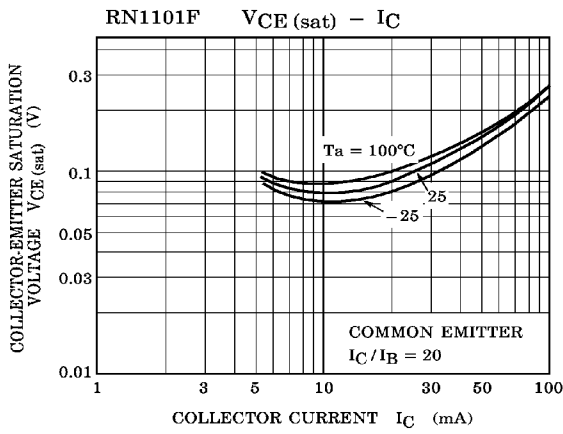
ELECTRICAL CHARACTERISTICS (Ta = 25°C)

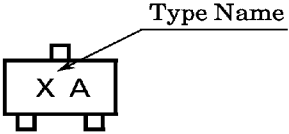
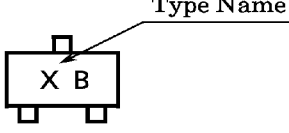
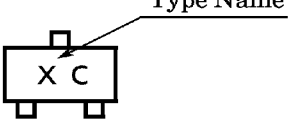
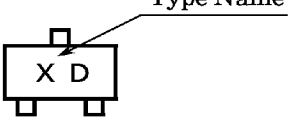
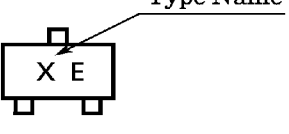
CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current	RN1101F~1106F	ICBO	V <sub>CB</sub> = 50 V, I <sub>E</sub> = 0	—	—	100	nA
		ICEO	V <sub>CE</sub> = 50 V, I <sub>B</sub> = 0	—	—	500	
Emitter Cut-off Current	RN1101F	I <sub>EBO</sub>	V <sub>EB</sub> = 10 V, I <sub>C</sub> = 0	0.82	—	1.52	mA
	RN1102F			0.38	—	0.71	
	RN1103F			0.17	—	0.33	
	RN1104F		0.082	—	0.15		
	RN1105F		V <sub>EB</sub> = 5 V, I <sub>C</sub> = 0	0.078	—	0.145	
	RN1106F			0.074	—	0.138	
DC Current Gain	RN1101F	h <sub>FE</sub>	V <sub>CE</sub> = 5 V, I <sub>C</sub> = 10 mA	30	—	—	
	RN1102F			50	—	—	
	RN1103F			70	—	—	
	RN1104F			80	—	—	
	RN1105F			80	—	—	
	RN1106F			80	—	—	
Collector-Emitter Saturation Voltage	RN1101F~1106F	V <sub>CE (sat)</sub>	I <sub>C</sub> = 5 mA, I <sub>B</sub> = 0.25 mA	—	0.1	0.3	V
Input Voltage (ON)	RN1101F	V <sub>I (ON)</sub>	V <sub>CE</sub> = 0.2 V, I <sub>C</sub> = 5 mA	1.1	—	2.0	V
	RN1102F			1.2	—	2.4	
	RN1103F			1.3	—	3.0	
	RN1104F			1.5	—	5.0	
	RN1105F			0.6	—	1.1	
	RN1106F			0.7	—	1.3	
Input Voltage (OFF)	RN1101F~1104F	V <sub>I (OFF)</sub>	V <sub>CE</sub> = 5 V, I <sub>C</sub> = 0.1 mA	1.0	—	1.5	V
	RN1105F, 1106F			0.5	—	0.8	
Transition Frequency	RN1101F~1106F	f <sub>T</sub>	V <sub>CE</sub> = 10 V, I <sub>C</sub> = 5 mA	—	250	—	MHz
Collector Output Capacitance	RN1101F~1106F	C <sub>ob</sub>	V <sub>CB</sub> = 10 V, I <sub>E</sub> = 0, f = 1 MHz	—	3	6	pF
Input Resistor	RN1101F	R <sub>1</sub>	—	3.29	4.7	6.11	kΩ
	RN1102F			7	10	13	
	RN1103F			15.4	22	28.6	
	RN1104F			32.9	47	61.1	
	RN1105F			1.54	2.2	2.86	
	RN1106F			3.29	4.7	6.11	
Resistor Ratio	RN1101F~1104F	R <sub>1</sub> / R <sub>2</sub>	—	0.9	1.0	1.1	
	RN1105F			0.0421	0.0468	0.0515	
	RN1106F			0.09	0.1	0.11	









TYPE NAME	MARKING
RN1101F	
RN1102F	
RN1103F	
RN1104F	
RN1105F	
RN1106F	