

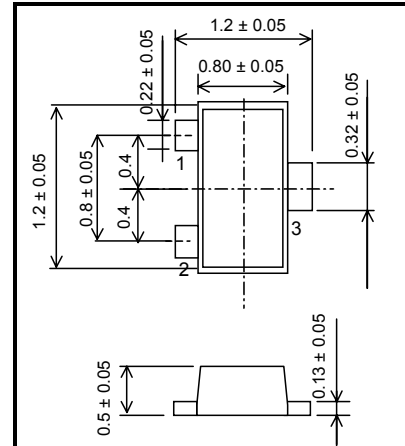
TOSHIBA Transistor Silicon NPN Epitaxial Type (PCT Process)

**RN1101FV, RN1102FV, RN1103FV
RN1104FV, RN1105FV, RN1106FV**

Switching, Inverter Circuit, Interface Circuit and Driver Circuit Applications

- Ultra-small package, suited to very high density mounting
- Incorporating bias resistance into the transistor reduces the number of parts, so enabling the manufacture of ever more compact equipment and lowering assembly cost.
- A wide range of resistor values is available for use in various circuits.
- Complementary to RN2101FV~RN2106FV

Unit in mm



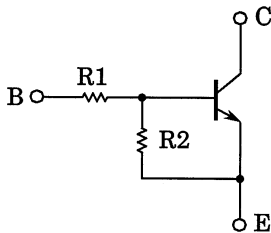
VESM

- 1.BASE
- 2.EMITTER
- 3.COLLECTOR

JEDEC	—
JEITA	—
TOSHIBA	2-1L1A

Weight: 0.0015 g(typ.)

Equivalent Circuit and Bias Resistor Values

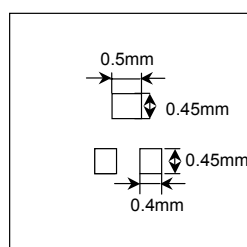


Type No.	R1 (kΩ)	R2 (kΩ)
RN1101FV	4.7	4.7
RN1102FV	10	10
RN1103FV	22	22
RN1104FV	47	47
RN1105FV	2.2	47
RN1106FV	4.7	47

Maximum Ratings (Ta = 25°C)

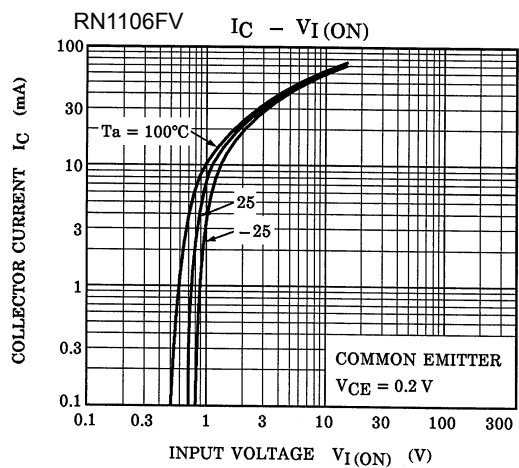
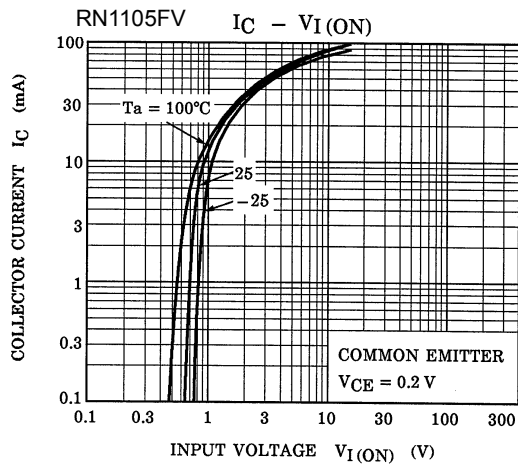
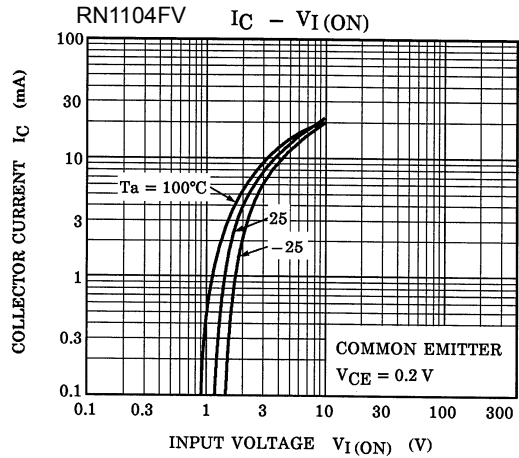
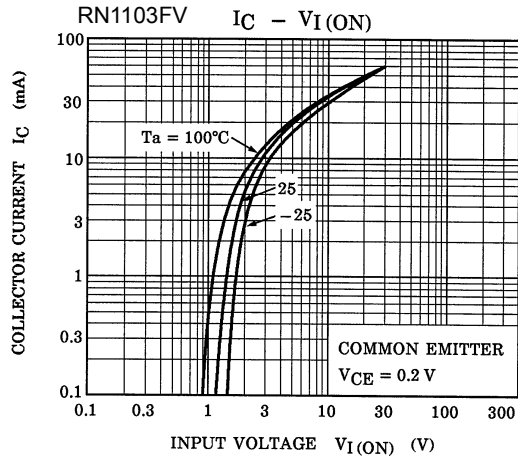
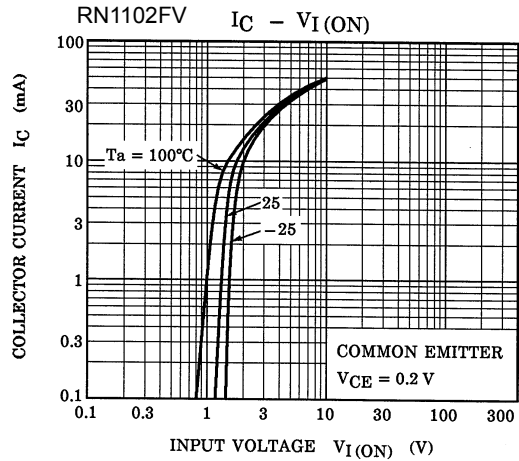
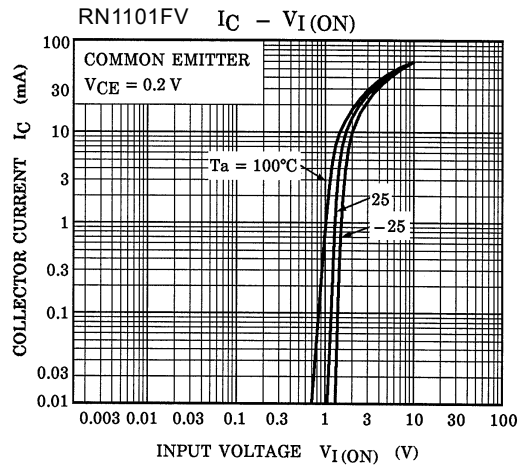
Characteristic		Symbol	Rating	Unit
Collector-base voltage	RN1101FV~1106FV	V_{CBO}	50	V
Collector-emitter voltage		V_{CEO}	50	V
Emitter-base voltage	RN1101FV~1104FV	V_{EBO}	10	V
	RN1105FV, 1106FV		5	
Collector current	RN1101FV~1106FV	I_C	100	mA
Collector power dissipation		$P_C(\text{Note})$	150	mW
Junction temperature		T_j	150	°C
Storage temperature range		T_{stg}	-55~150	°C

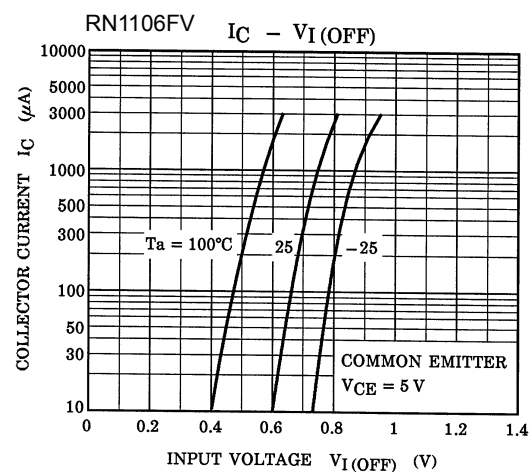
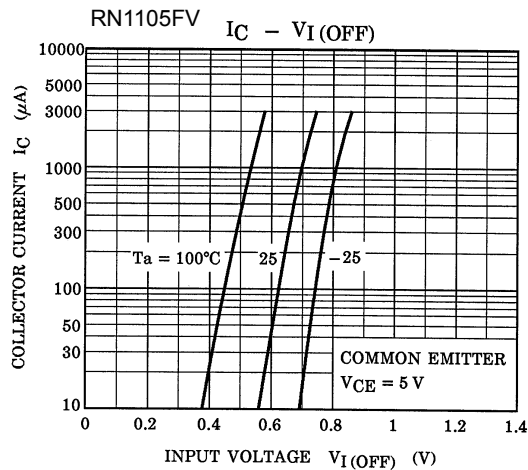
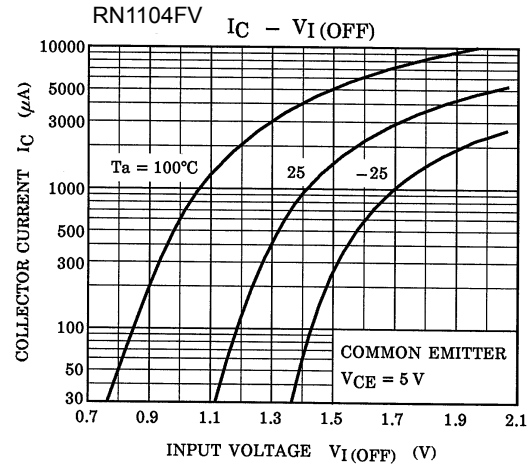
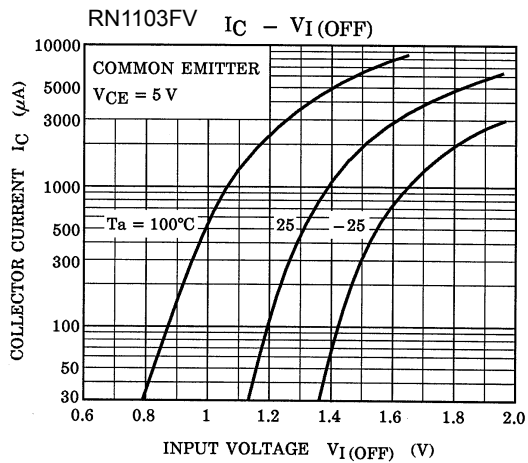
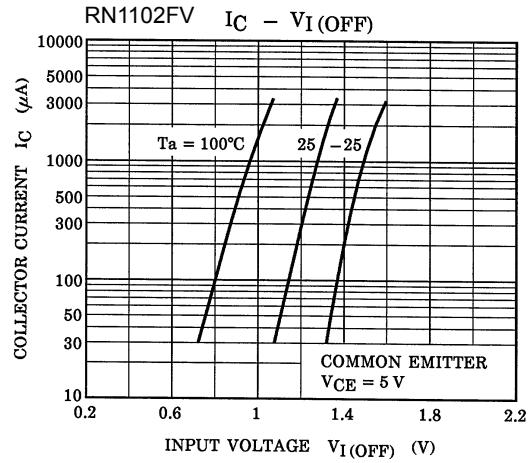
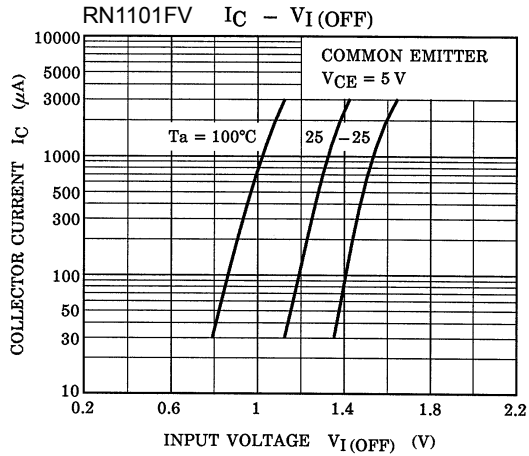
Note : Mounted on FR4 board (25.4 mm × 25.4 mm × 1.6mm)

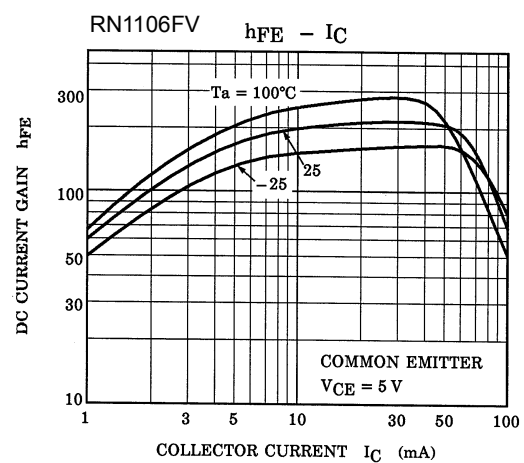
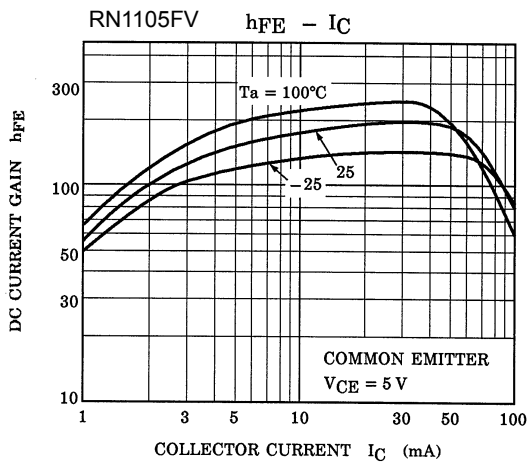
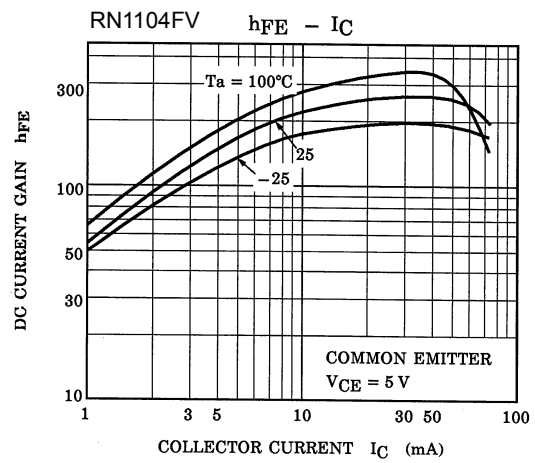
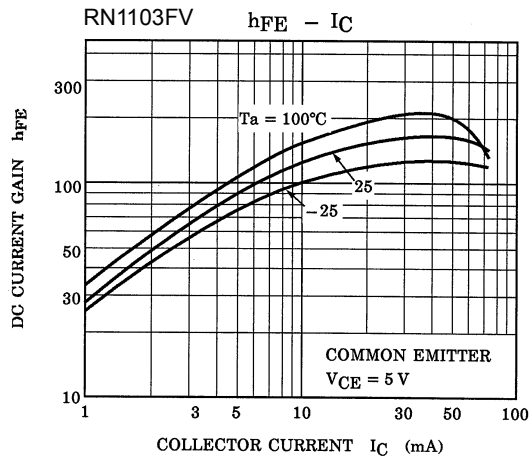
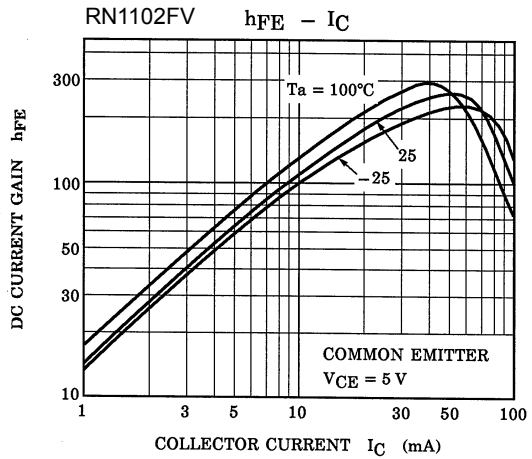
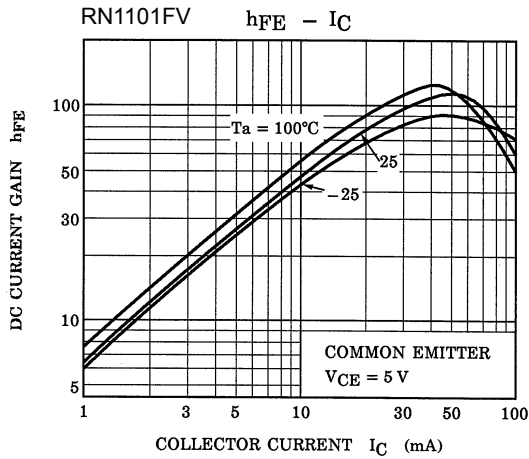


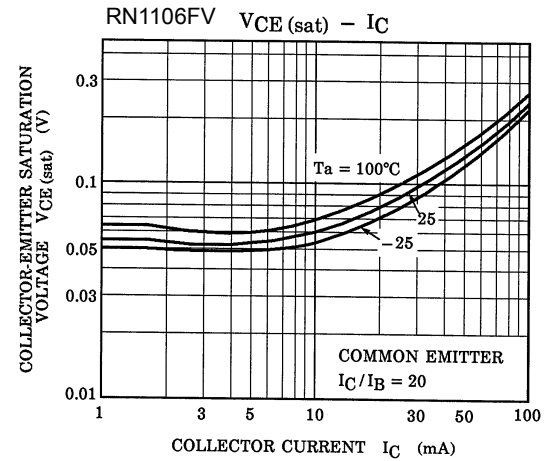
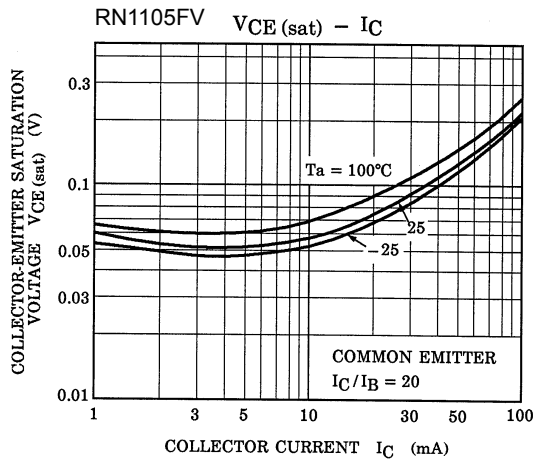
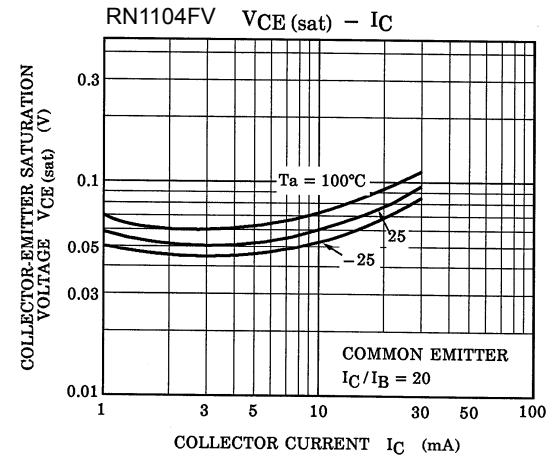
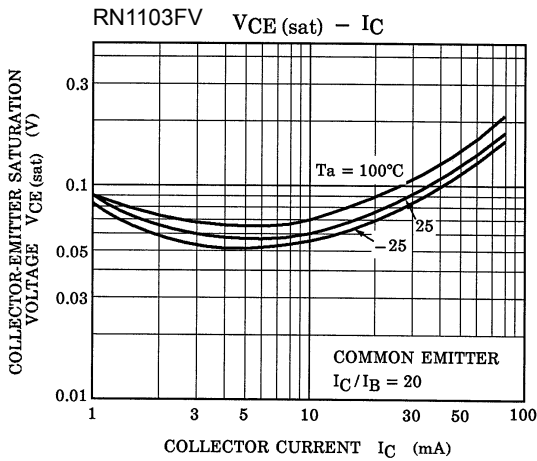
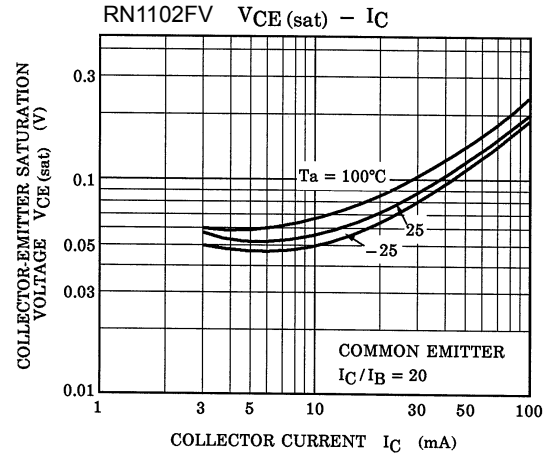
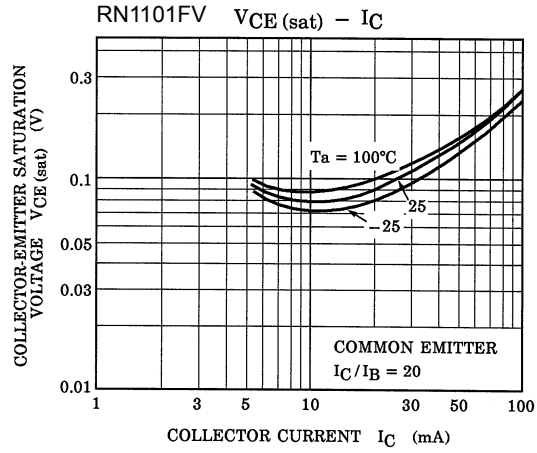
Electrical Characteristics (Ta = 25°C)

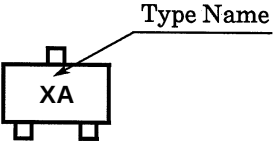
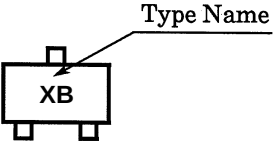
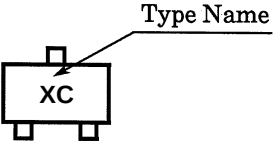
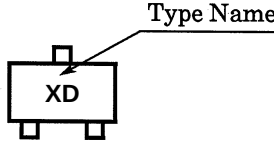
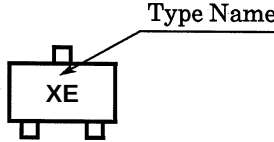
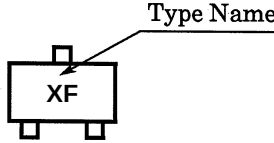
Characteristic		Symbol	Test Circuit	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current	RN1101FV~1106FV	I_{CBO}	—	$V_{CB} = 50V, I_E = 0$	—	—	100	nA
		I_{CEO}		$V_{CE} = 50V, I_B = 0$	—	—	500	
Emitter cut-off current	RN1101FV	I_{EBO}	—	$V_{EB} = 10V, I_C = 0$	0.82	—	1.52	mA
	RN1102FV				0.38	—	0.71	
	RN1103FV				0.17	—	0.33	
	RN1104FV				0.082	—	0.15	
	RN1105FV			$V_{EB} = 5V, I_C = 0$	0.078	—	0.145	
	RN1106FV				0.074	—	0.138	
DC current gain	RN1101FV	h_{FE}	—	$V_{CE} = 5V, I_C = 10mA$	30	—	—	
	RN1102FV				50	—	—	
	RN1103FV				70	—	—	
	RN1104FV				80	—	—	
	RN1105FV				80	—	—	
	RN1106FV				80	—	—	
Collector-emitter saturation voltage	RN1101FV~1106FV	$V_{CE(sat)}$	—	$I_C = 5mA, I_B = 0.25mA$	—	0.1	0.3	V
Input voltage (ON)	RN1101FV	$V_{I(ON)}$	—	$V_{CE} = 0.2V, I_C = 5mA$	1.1	—	2.0	V
	RN1102FV				1.2	—	2.4	
	RN1103FV				1.3	—	3.0	
	RN1104FV				1.5	—	5.0	
	RN1105FV				0.6	—	1.1	
	RN1106FV				0.7	—	1.3	
Input voltage (OFF)	RN1101FV~1104FV	$V_{I(OFF)}$	—	$V_{CE} = 5V, I_C = 0.1mA$	1.0	—	1.5	V
	RN1105FV, 1106FV				0.5	—	0.8	
Transition frequency	RN1101FV~1106FV	f_T	—	$V_{CE} = 10V, I_C = 5mA$	—	250	—	MHz
Collector output capacitance	RN1101FV~1106FV	C_{ob}	—	$V_{CB} = 10V, I_E = 0, f = 1MHz$	—	3	—	pF
Input resistor	RN1101FV	R1	—	—	3.29	4.7	6.11	kΩ
	RN1102FV				7	10	13	
	RN1103FV				15.4	22	28.6	
	RN1104FV				32.9	47	61.1	
	RN1105FV				1.54	2.2	2.86	
	RN1106FV				3.29	4.7	6.11	
Resistor ratio	RN1101FV~1104FV	R1/R2	—	—	0.9	1.0	1.1	
	RN1105FV				0.0421	0.0468	0.0515	
	RN1106FV				0.09	0.1	0.11	









Type Name	Marking
RN1101FV	
RN1102FV	
RN1103FV	
RN1104FV	
RN1105FV	
RN1106FV	

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