

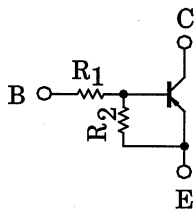
TOSHIBA Transistor Silicon PNP Epitaxial Type (PCT Process)

## RN2114F, RN2115F, RN2116F, RN2117F, RN2118F

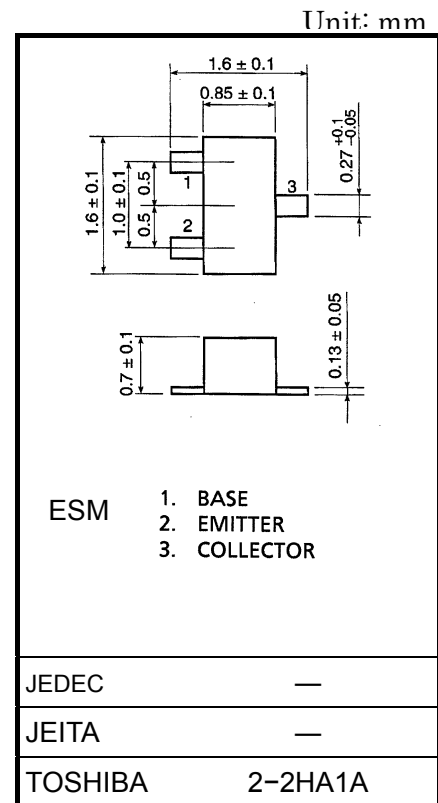
Switching, Inverter Circuit, Interface Circuit  
And Driver Circuit Applications

- With built-in bias resistors
- Simplify circuit design
- Reduce a quantity of parts and manufacturing process
- Complementary to RN1114F~RN1118F

### Equivalent Circuit and Bias Resistor Values



Type No.	R1 (kΩ)	R2 (kΩ)
RN2114F	1	10
RN2115F	2.2	10
RN2116F	4.7	10
RN2117F	10	4.7
RN2118F	47	10



Weight: 0.0023g (typ.)

### Absolute Maximum Ratings (Ta = 25°C)

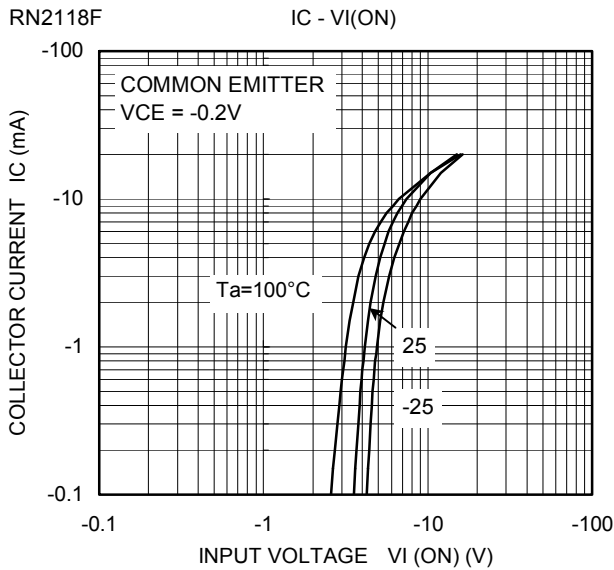
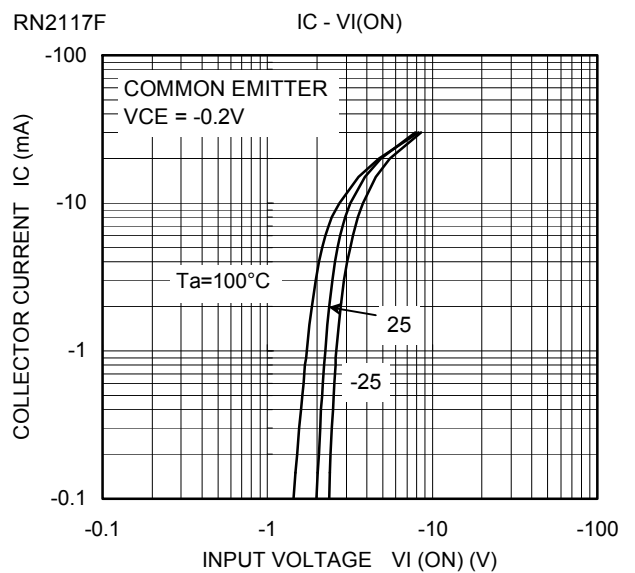
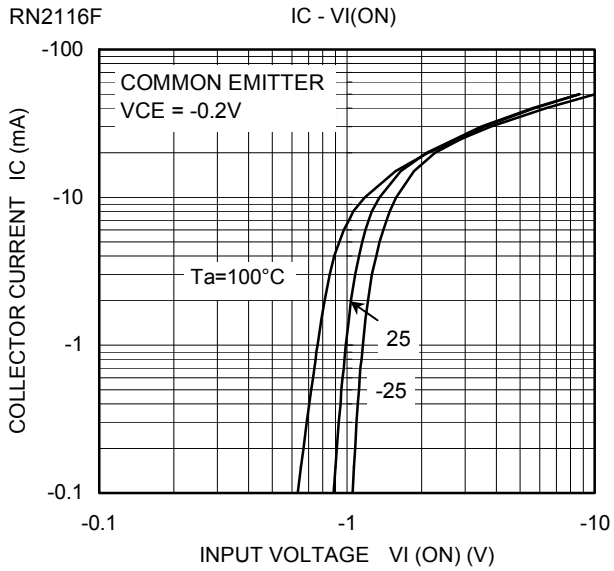
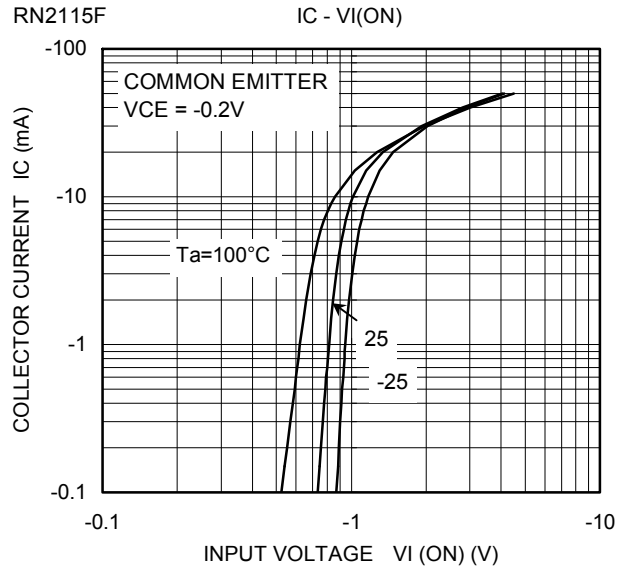
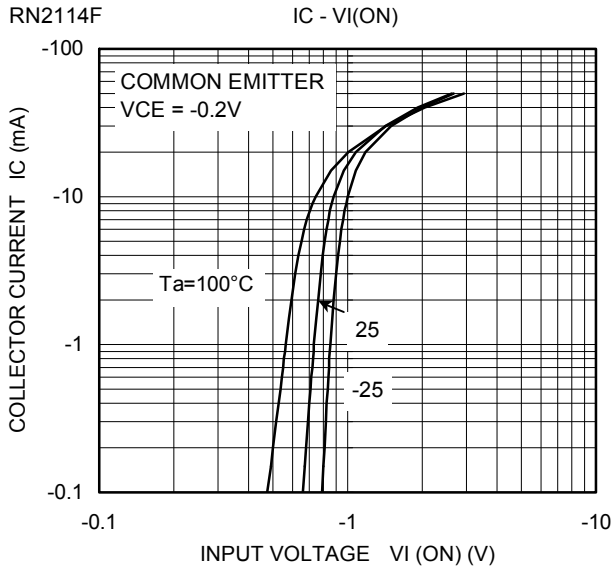
Characteristic	Symbol	Rating	Unit		
Collector-base voltage	RN2114F~2118F	$V_{CBO}$	-50	V	
Collector-emitter voltage		$V_{CEO}$	-50	V	
Emitter-base voltage	RN2114F	$V_{EBO}$	-5	V	
			RN2115F		-6
			RN2116F		-7
			RN2117F		-15
			RN2118F		-25
Collector current	RN2114F~2118F	$I_C$	-100	mA	
Collector power dissipation		$P_C$	100	mW	
Junction temperature		$T_j$	150	°C	
Storage temperature range		$T_{stg}$	-55~150	°C	

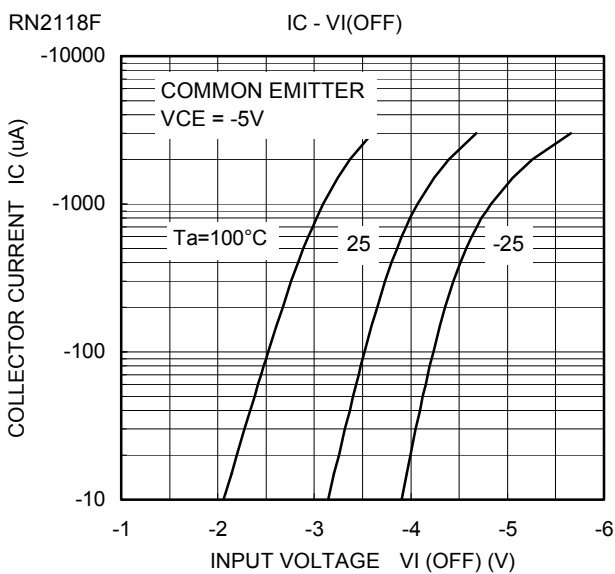
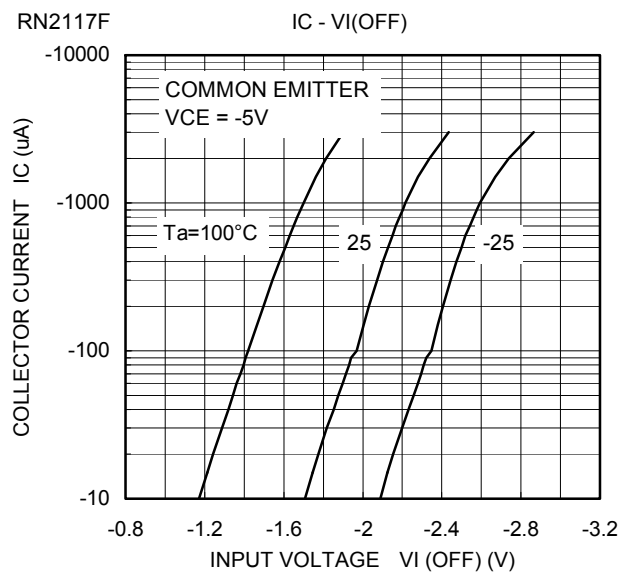
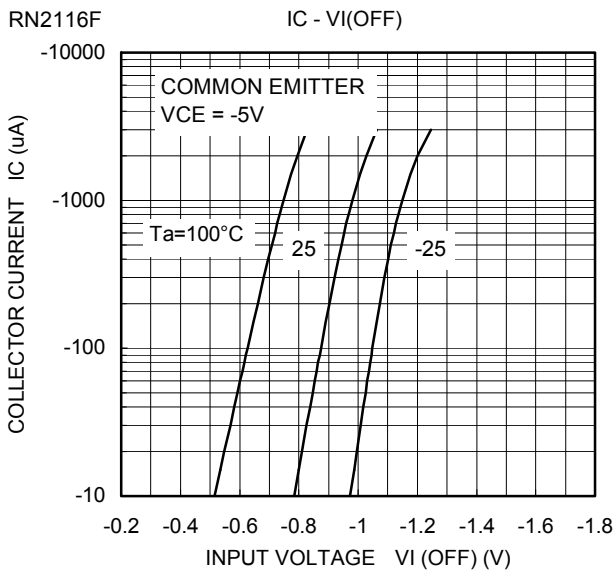
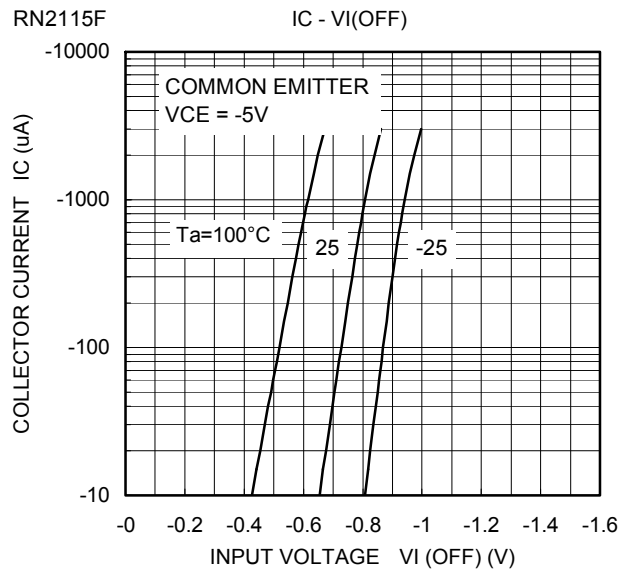
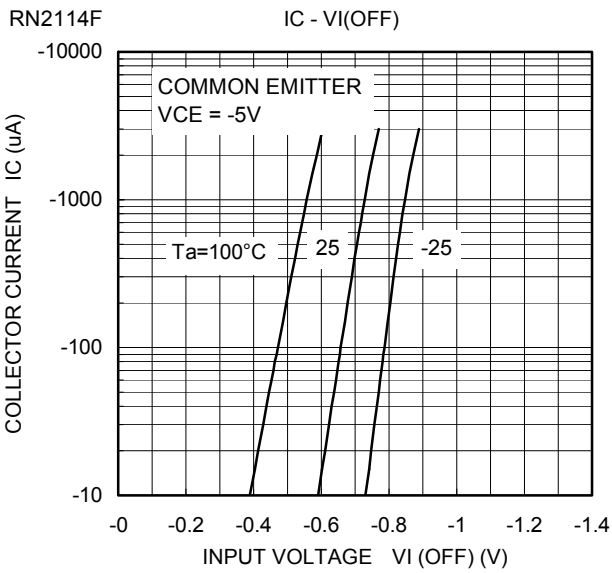
Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.)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

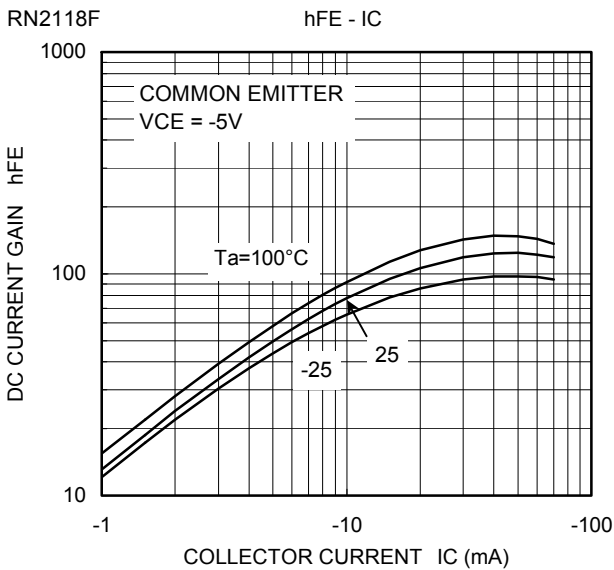
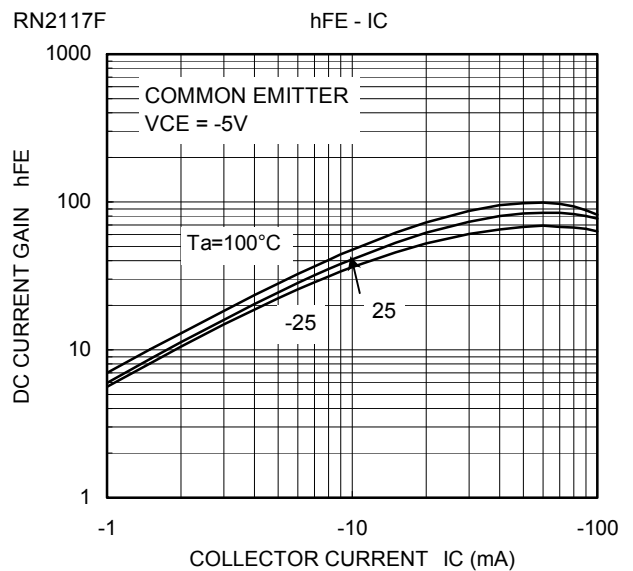
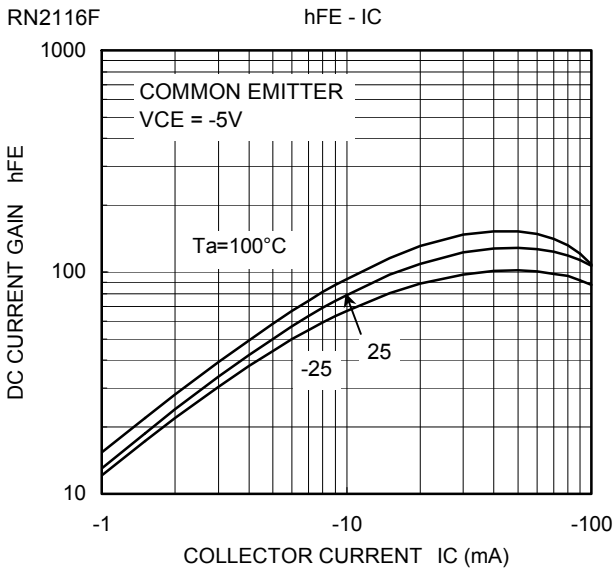
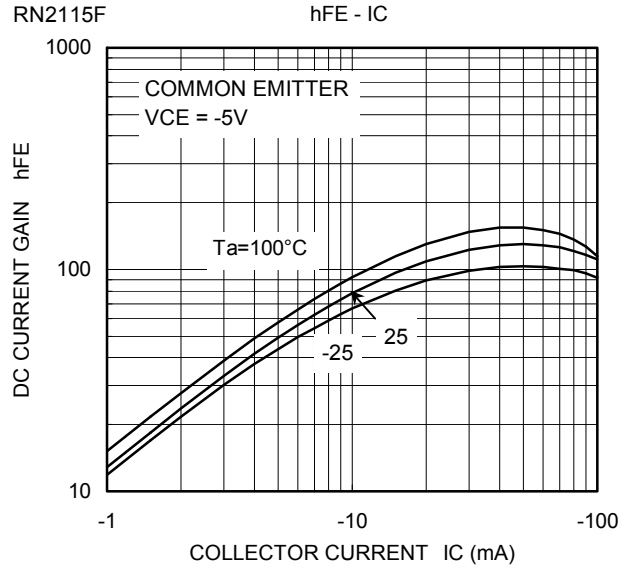
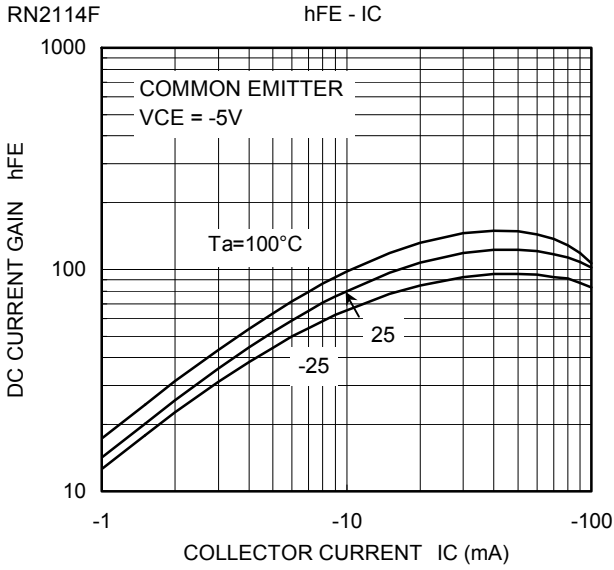
Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/"Derating Concept and Methods") and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

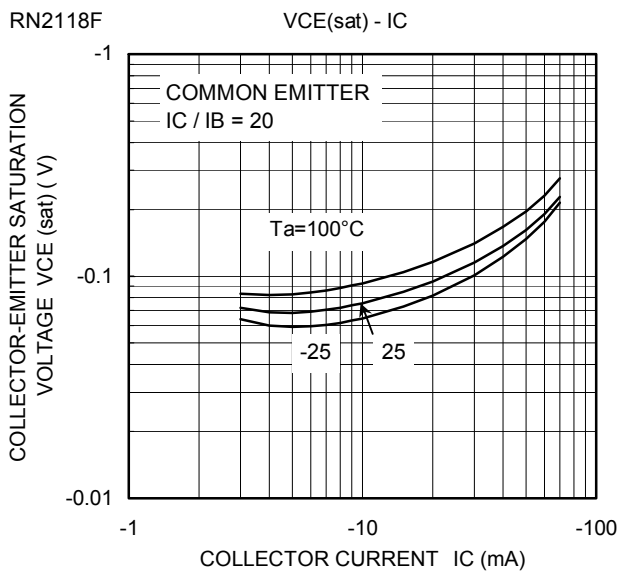
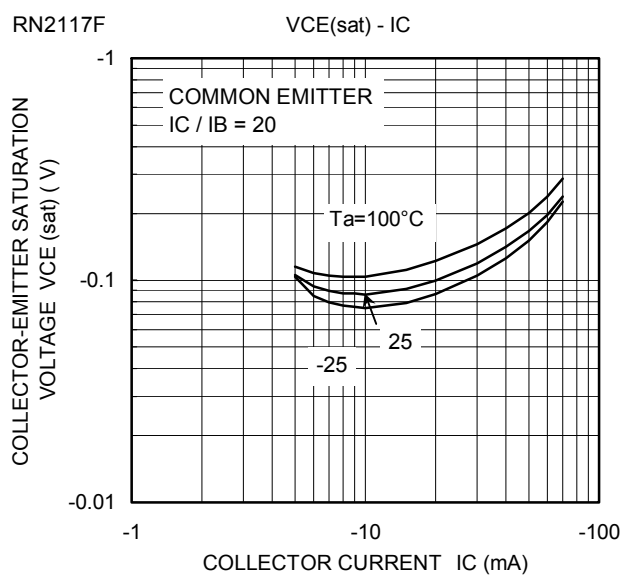
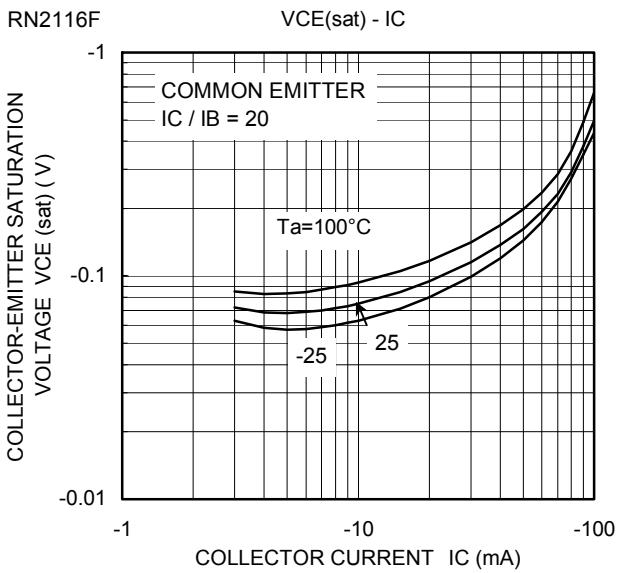
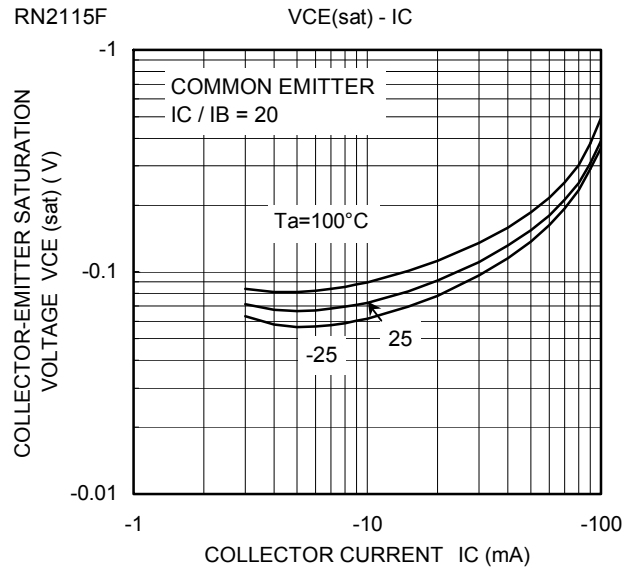
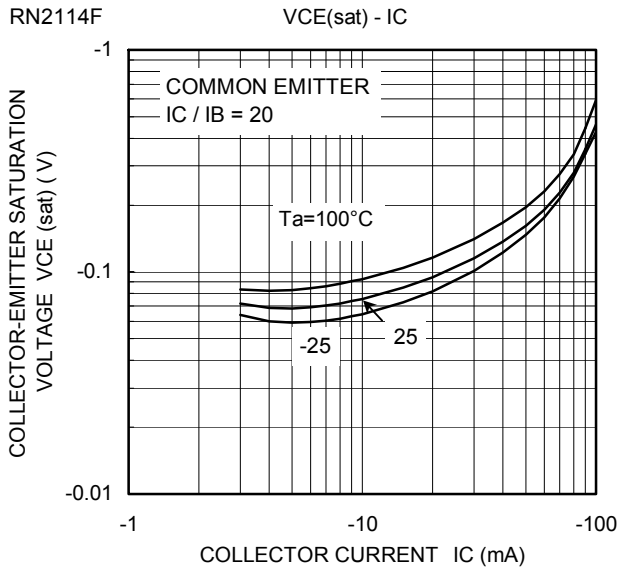
## Electrical Characteristics (Ta = 25°C)

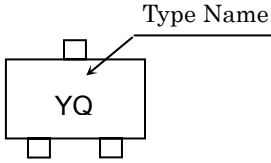
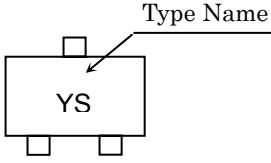
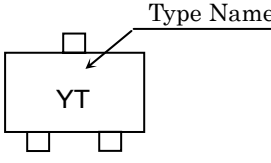
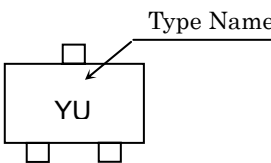
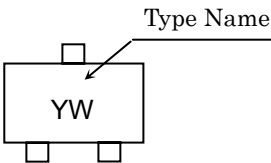
Characteristic		Symbol	Test Circuit	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current	RN2114F~2118F	$I_{CBO}$	—	$V_{CB} = -50V, I_E = 0$	—	—	-100	nA
	RN2114F~2118F	$I_{CEO}$		$V_{CE} = -50V, I_B = 0$	—	—	-500	nA
Emitter cut-off current	RN2114F	$I_{EBO}$	—	$V_{EB} = -5V, I_C = 0$	-0.35	—	-0.65	mA
	RN2115F			$V_{EB} = -6V, I_C = 0$	-0.37	—	-0.71	
	RN2116F			$V_{EB} = -7V, I_C = 0$	-0.36	—	-0.68	
	RN2117F			$V_{EB} = -15V, I_C = 0$	-0.78	—	-1.46	
	RN2118F			$V_{EB} = -25V, I_C = 0$	-0.33	—	-0.63	
DC current gain	RN2114F~16F, 18F	$h_{FE}$	—	$V_{CE} = -5V, I_C = -10mA$	50	—	—	—
	RN2117F				30	—	—	
Collector-emitter saturation voltage	RN2114F~2118F	$V_{CE(sat)}$	—	$I_C = -5mA, I_B = -0.25mA$	—	-0.1	-0.3	V
Input voltage (ON)	RN2114F	$V_{I(ON)}$	—	$V_{CE} = -0.2V, I_C = -5mA$	-0.5	—	-2.0	V
	RN2115F				-0.6	—	-2.5	
	RN2116F				-0.7	—	-2.5	
	RN2117F				-1.5	—	-3.5	
	RN2118F				-2.5	—	-10.0	
Input voltage (OFF)	RN2114F	$V_{I(OFF)}$	—	$V_{CE} = -5V, I_C = -0.1mA$	-0.3	—	-0.9	V
	RN2115F				-0.3	—	-1.0	
	RN2116F				-0.3	—	-1.1	
	RN2117F				-0.3	—	-3.0	
	RN2118F				-0.5	—	-5.7	
Transition frequency	RN2114F~2118F	$f_T$	—	$V_{CE} = -10V, I_C = -5mA$	—	200	—	MHz
Collector Output capacitance	RN2114F~2118F	$C_{ob}$	—	$V_{CB} = -10V, I_E = 0, f = 1MHz$	—	3.0	6.0	pF
Input resistor	RN2114F	R1	—	—	0.7	1.0	1.3	kΩ
	RN2115F				1.54	2.2	2.86	
	RN2116F				3.29	4.7	6.11	
	RN2117F				7.0	10.0	13.0	
	RN2118F				32.9	47.0	61.1	
Resistor ratio	RN2114F	R1/R2	—	—	—	0.1	—	—
	RN2115F				—	0.22	—	
	RN2116F				—	0.47	—	
	RN2117F				—	2.13	—	
	RN2118F				—	4.7	—	









Type Name	Marking
RN2114F	
RN2115F	
RN2116F	
RN2117F	
RN2118F	

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