

TOSHIBA Transistor Silicon PNP Epitaxial Type (PCT Process)

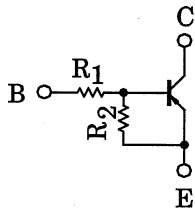
RN2114FT, RN2115FT, RN2116FT, RN2117FT, RN2118FT

Switching, Inverter Circuit, Interface Circuit and Driver Circuit Applications

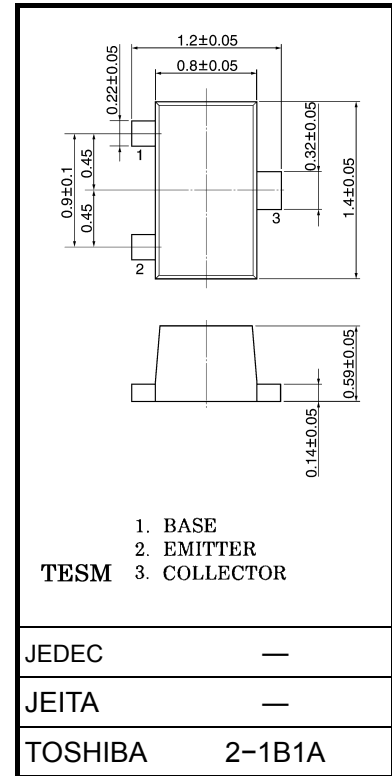
Unit: mm

- Built-in bias resistors
- Enabling simplified circuit design
- Enabling reduction in the quantity of parts and manufacturing process
- Complementary to the RN1114FT~RN1118FT

Equivalent Circuit and Bias Resistor Values



Type No.	R1 (kΩ)	R2 (kΩ)
RN2114FT	1	10
RN2115FT	2.2	10
RN2116FT	4.7	10
RN2117FT	10	4.7
RN2118FT	47	10



Weight: 0.0022 g (typ.)

Absolute Maximum Ratings (Ta = 25°C)

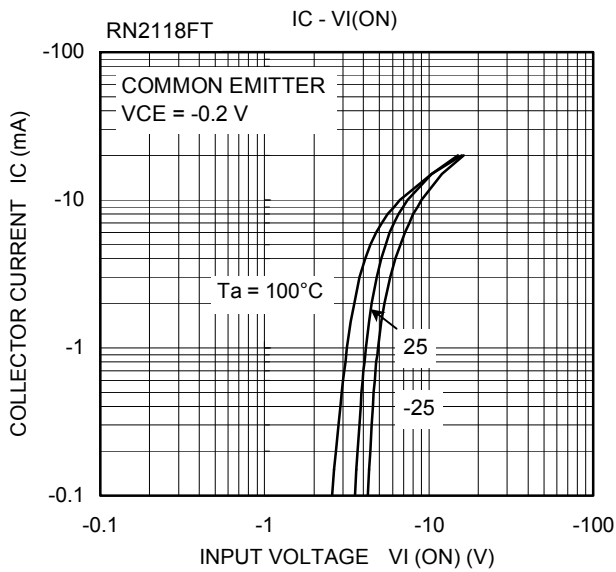
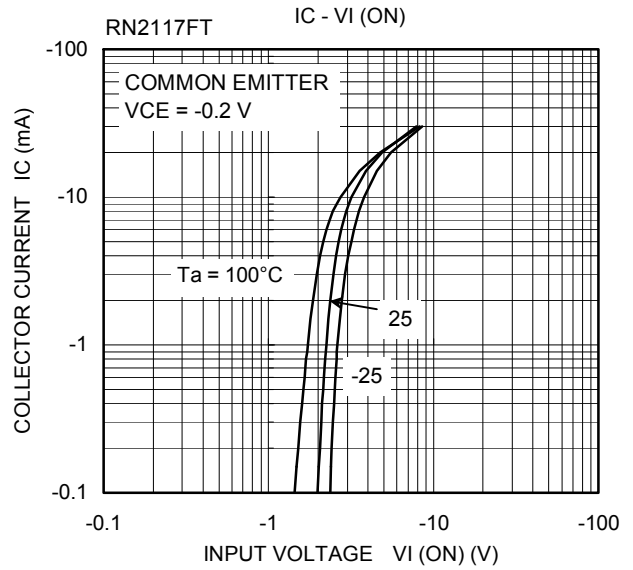
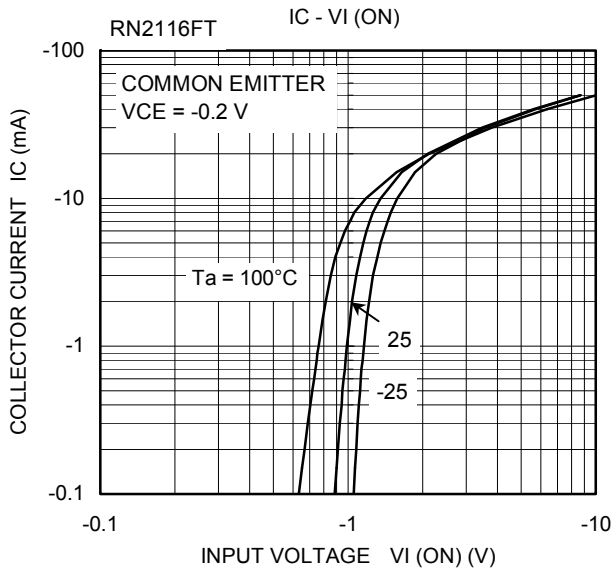
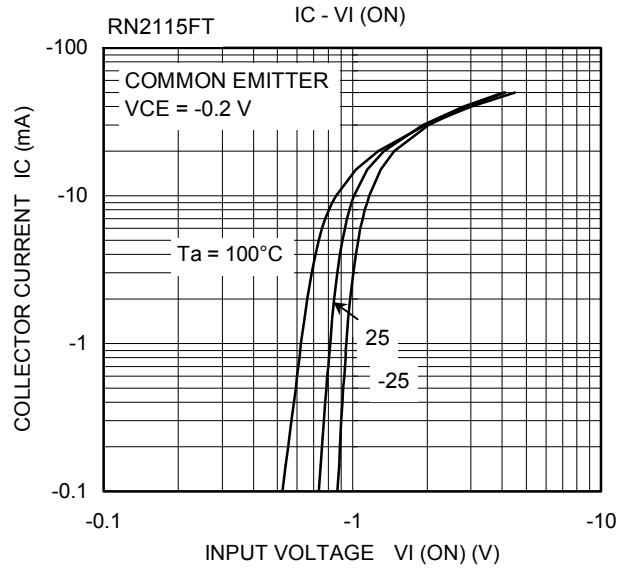
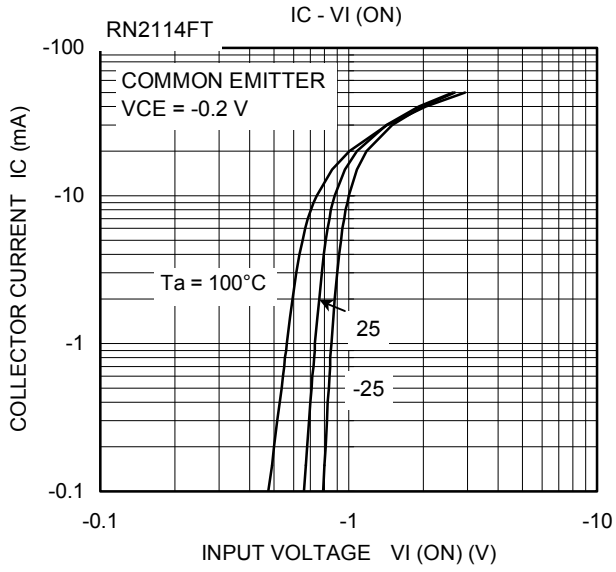
Characteristics	Symbol	Rating	Unit				
Collector-base voltage	RN2114FT~2118FT	V _{CB0}	-50	V			
Collector-emitter voltage					V _{CEO}	-50	
Emitter-base voltage	RN2114FT	V _{EBO}	-5	V			
	RN2115FT		-6				
	RN2116FT		-7				
	RN2117FT		-15				
	RN2118FT		-25				
Collector current	RN2114FT~2118FT	I _C	-100	mA			
Collector power dissipation					P _C	100	mW
Junction temperature					T _j	150	°C
Storage temperature range					T _{stg}	-55~150	°C

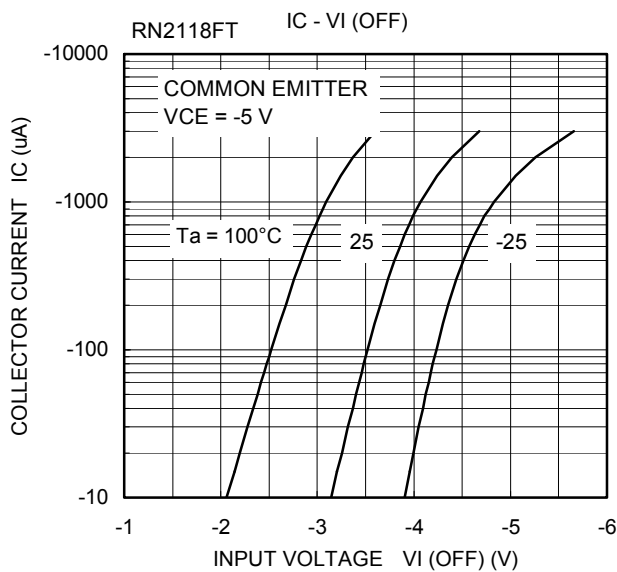
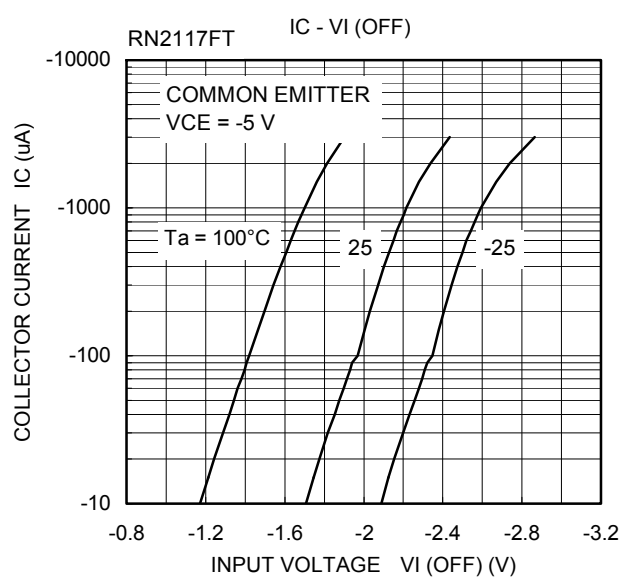
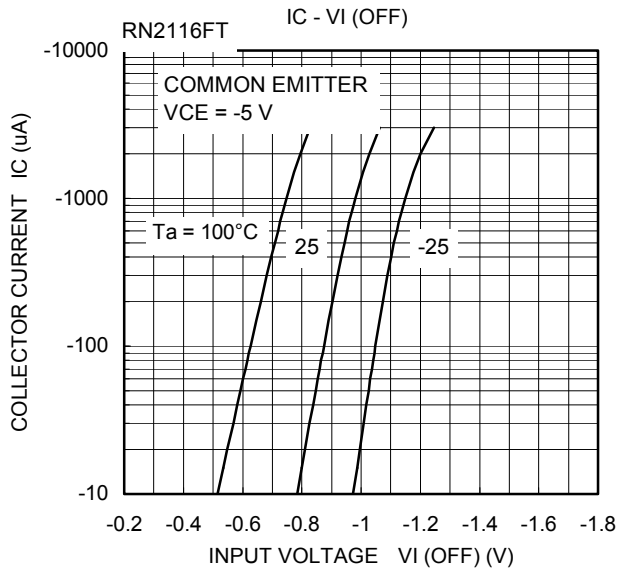
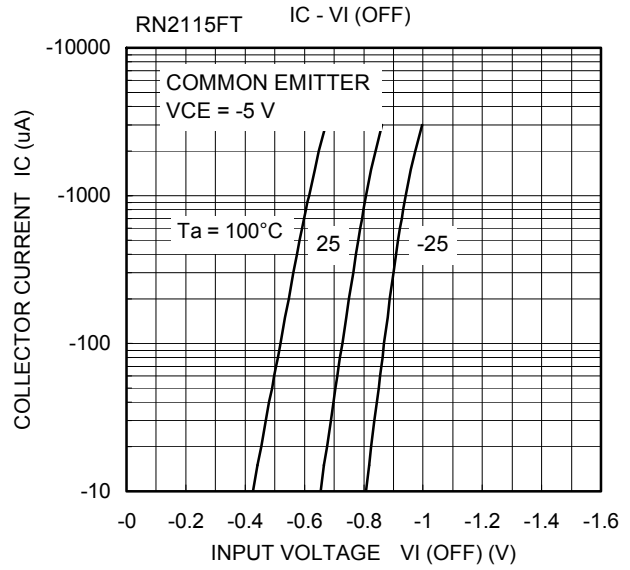
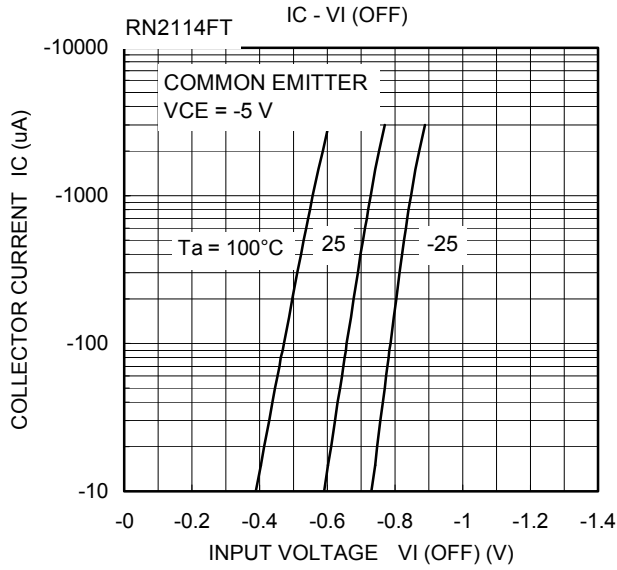
Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.)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

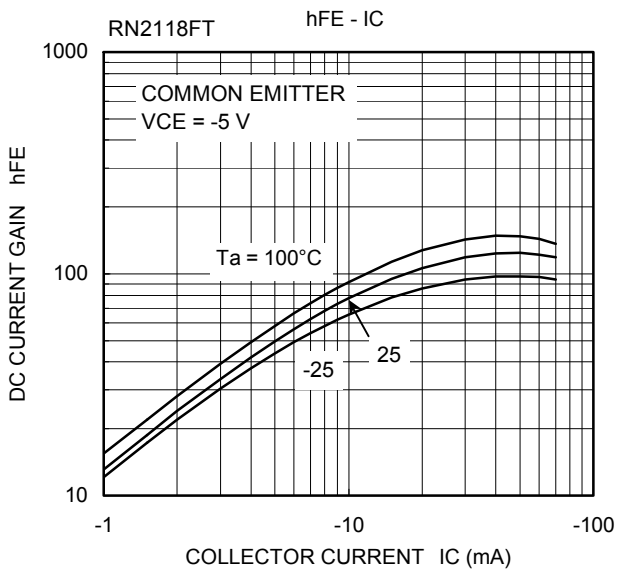
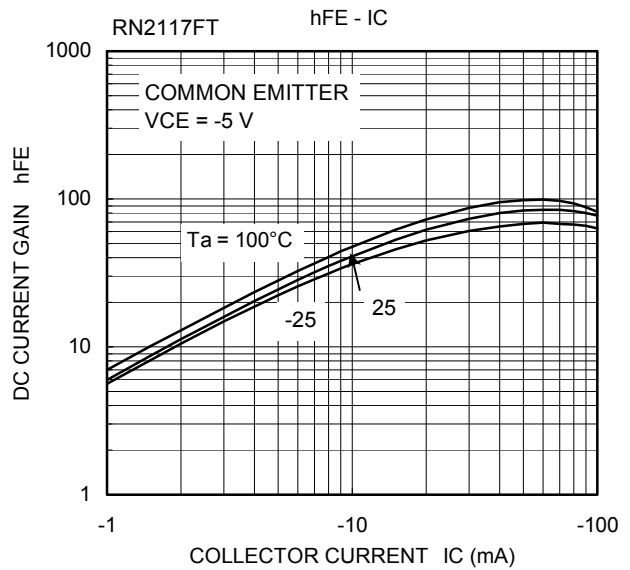
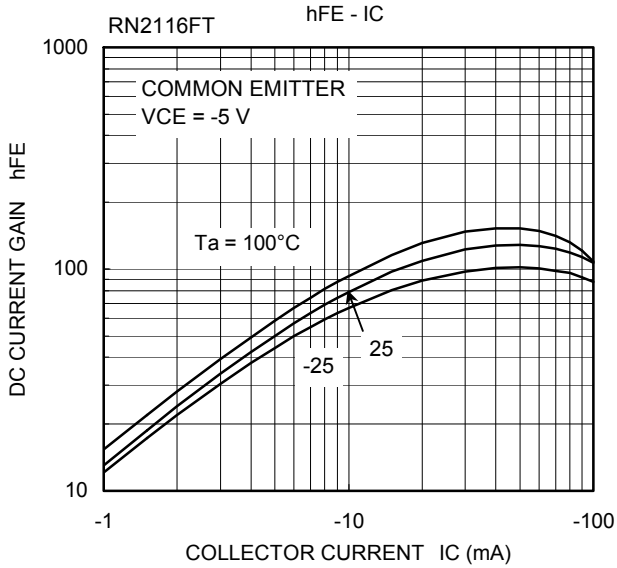
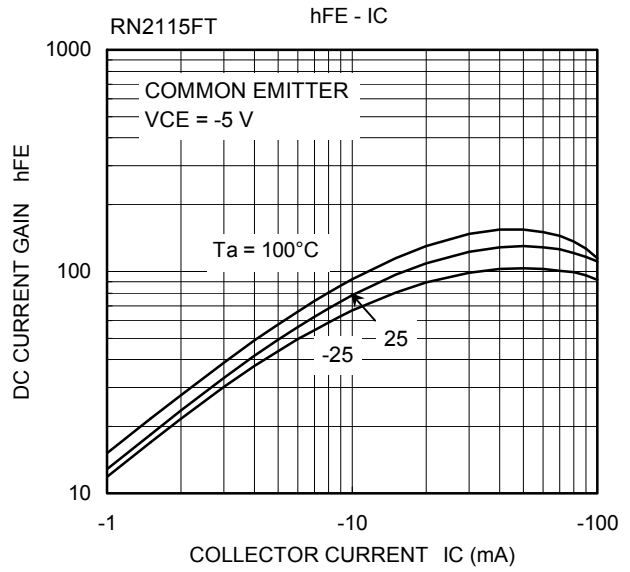
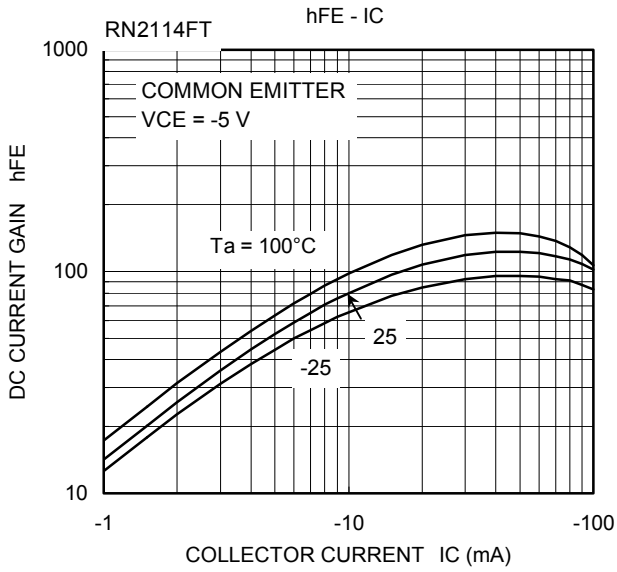
Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/"Derating Concept and Methods") and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

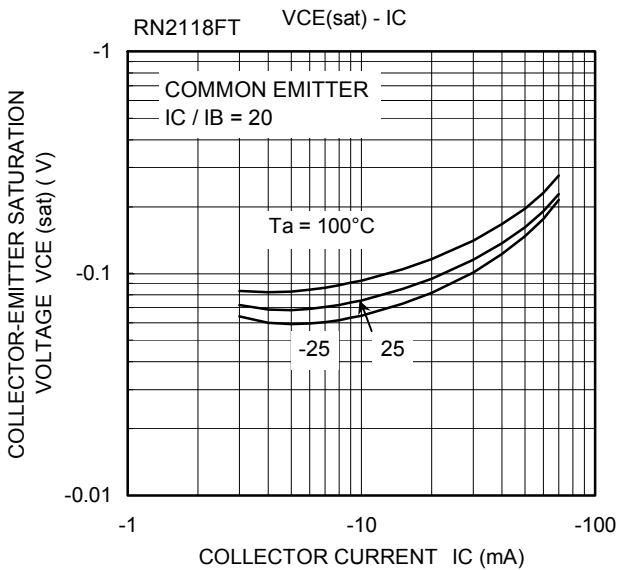
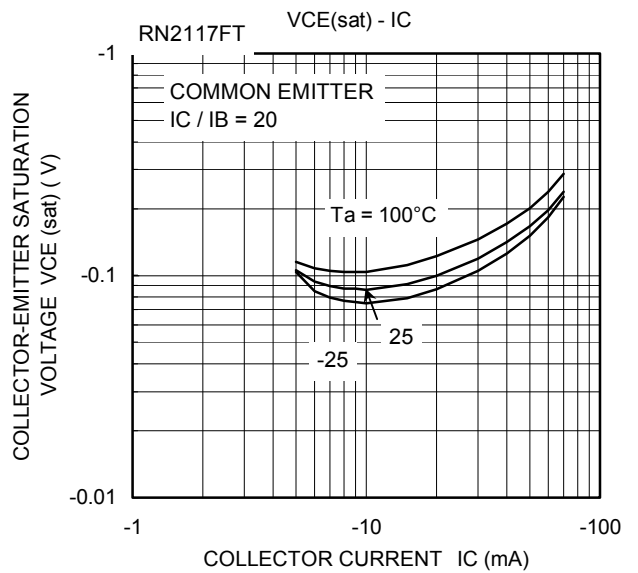
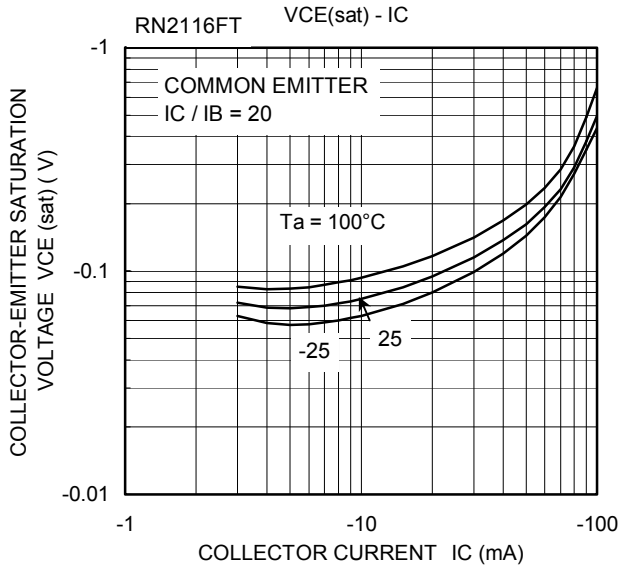
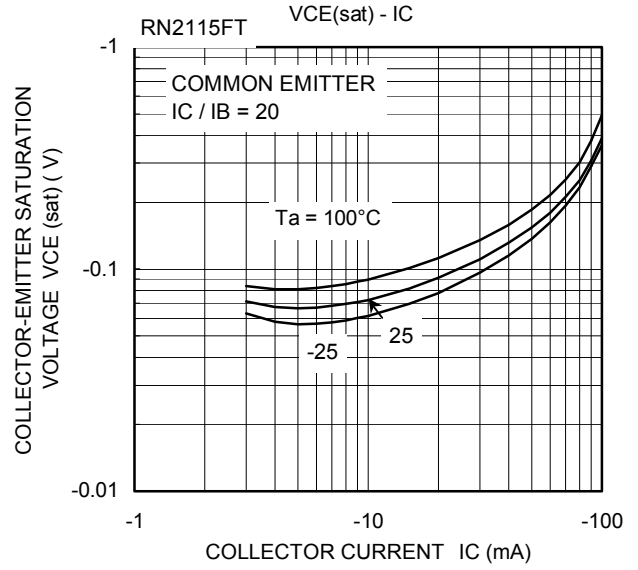
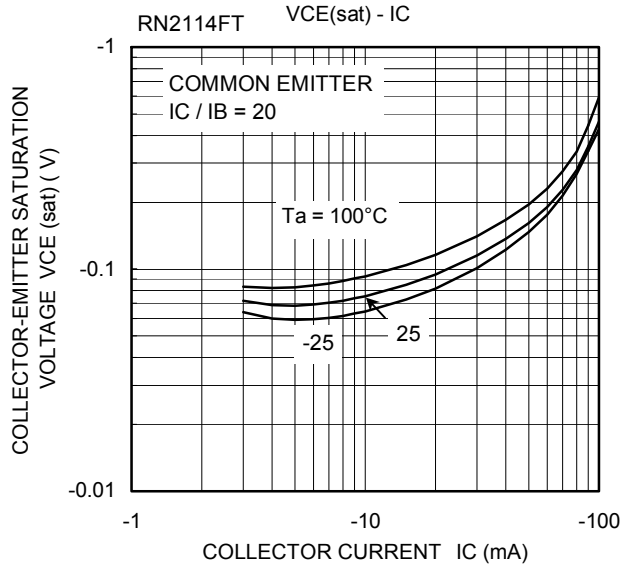
Electrical Characteristics (Ta = 25°C)

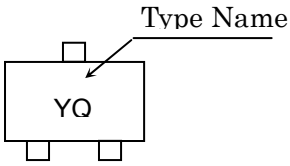
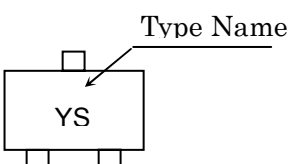
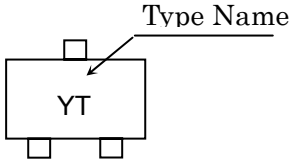
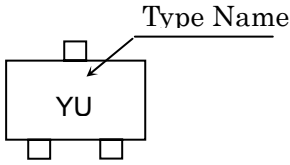
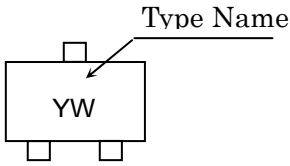
Characteristics		Symbol	Test Circuit	Test Condition	Min	Typ.	Max	Unit
Collector cutoff current	RN2114FT~2118FT	I_{CBO}	—	$V_{CB} = -50\text{ V}, I_E = 0$	—	—	-100	nA
	RN2114FT~2118FT	I_{CEO}		$V_{CE} = -50\text{ V}, I_B = 0$	—	—	-500	nA
Emitter cutoff current	RN2114FT	I_{EBO}	—	$V_{EB} = -5\text{ V}, I_C = 0$	-0.35	—	-0.65	mA
	RN2115FT			$V_{EB} = -6\text{ V}, I_C = 0$	-0.37	—	-0.71	
	RN2116FT			$V_{EB} = -7\text{ V}, I_C = 0$	-0.36	—	-0.68	
	RN2117FT			$V_{EB} = -15\text{ V}, I_C = 0$	-0.78	—	-1.46	
	RN2118FT			$V_{EB} = -25\text{ V}, I_C = 0$	-0.33	—	-0.63	
DC current gain	RN2114FT~16FT, 18FT	h_{FE}	—	$V_{CE} = -5\text{ V}, I_C = -10\text{ mA}$	50	—	—	—
	RN2117FT				30	—	—	
Collector-emitter saturation voltage	RN2114FT~2118FT	$V_{CE(sat)}$	—	$I_C = -5\text{ mA}, I_B = -0.25\text{ mA}$	—	-0.1	-0.3	V
Input voltage (ON)	RN2114FT	$V_{I(ON)}$	—	$V_{CE} = -0.2\text{ V}, I_C = -5\text{ mA}$	-0.5	—	-2.0	V
	RN2115FT				-0.6	—	-2.5	
	RN2116FT				-0.7	—	-2.5	
	RN2117FT				-1.5	—	-3.5	
	RN2118FT				-2.5	—	-10.0	
Input voltage (OFF)	RN2114FT	$V_{I(OFF)}$	—	$V_{CE} = -5\text{ V}, I_C = -0.1\text{ mA}$	-0.3	—	-0.9	V
	RN2115FT				-0.3	—	-1.0	
	RN2116FT				-0.3	—	-1.1	
	RN2117FT				-0.3	—	-3.0	
	RN2118FT				-0.5	—	-5.7	
Transition frequency	RN2114FT~2118FT	f_T	—	$V_{CE} = -10\text{ V}, I_C = -5\text{ mA}$	—	200	—	MHz
Collector output capacitance	RN2114FT~2118FT	C_{ob}	—	$V_{CB} = -10\text{ V}, I_E = 0, f = 1\text{ MHz}$	—	3.0	6.0	pF
Input resistor	RN2114FT	R1	—	—	0.7	1.0	1.3	kΩ
	RN2115FT				1.54	2.2	2.86	
	RN2116FT				3.29	4.7	6.11	
	RN2117FT				7.0	10.0	13.0	
	RN2118FT				32.9	47.0	61.1	
Resistor ratio	RN2114FT	R1/R2	—	—	—	0.1	—	—
	RN2115FT				—	0.22	—	
	RN2116FT				—	0.47	—	
	RN2117FT				—	2.13	—	
	RN2118FT				—	4.7	—	









Type Name	Marking
RN2114FT	
RN2115FT	
RN2116FT	
RN2117FT	
RN2118FT	

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