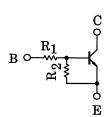
TOSHIBA Transistor Silicon NPN Epitaxial Type (PCT Process)

RN1114F,RN1115F,RN11116F,RN11117F,RN11118F

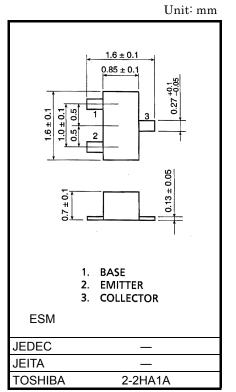
Switching, Inverter Circuit, Interface Circuit and Driver Circuit Applications

- With built-in bias resistors.
- Simplify circuit design
- Reduce a quantity of parts and manufacturing process
- Complementary to RN2114F to 2118F

Equivalent Circuit and Bias Resistor Values



Type No.	R ₁ (kΩ)	R_2 (k Ω)
RN1114F	1	10
RN1115F	2.2	10
RN1116F	4.7	10
RN1117F	10	4.7
RN1118F	47	10



Weight: 2.3 mg (typ.)

Absolute Maximum Ratings (Ta = 25°C)

Characteristics		Symbol	Rating	Unit	
Collector-base voltage	RN1114F to 1118F	V_{CBO}	50	V	
Collector-emitter voltage	KINTITAL TO LITTOL	V _{CEO}	50	V	
Emitter-base voltage	RN1114F		5	V	
	RN1115F		6		
	RN1116F	V_{EBO}	7		
	RN1117F		15		
	RN1118F		25		
Collector current		Ic	100	mA	
Collector power dissipation	RN1114F to 1118F	PC	100	mW	
Junction temperature	1 KN1114F (0 1110F	Tj	150	°C	
Storage temperature range		T _{stg}	−55 to 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).

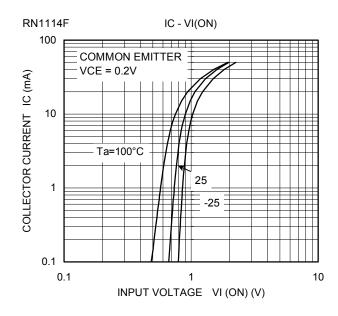
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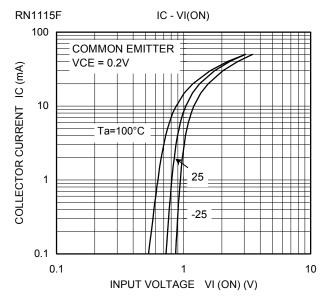


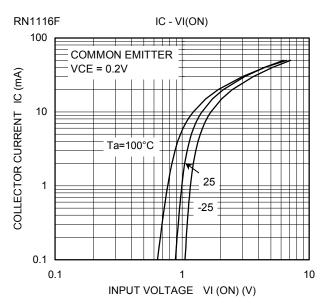
Electrical Characteristics (Ta = 25°C)

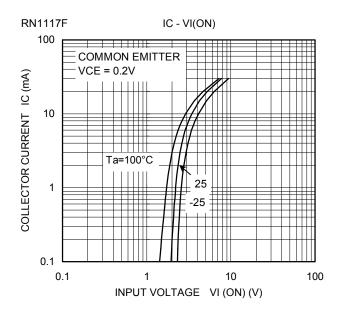
Characte	ristics	Symbol	Test Circuit	Test Condition	Min	Тур.	Max	Unit
Callagtar out off gurrant	RN1114F to 1118F	I _{CBO}	_	V _{CB} = 50V, I _E = 0	_	_	100	nA
Collector cut-off current	RN1114F to 1118F	I _{CEO}	_	V _{CE} = 50V, I _B = 0	_	_	500	nA
	RN1114F	I _{EBO}	_	V _{EB} = 5V, I _C = 0	0.35	_	0.65	mA
	RN1115F		_	V _{EB} = 6V, I _C = 0	0.37	_	0.71	
Emitter cut-off current	RN1116F		_	V _{EB} = 7V, I _C = 0	0.36	_	0.68	
	RN1117F		_	V _{EB} = 15V, I _C = 0	0.78	_	1.46	
	RN1118F		_	$V_{EB} = 25V, I_{C} = 0$	0.33	_	0.63	
DC current gain	RN1114F to 16F, 18F	h _{FE}	_	V _{CE} = 5V, I _C = 10mA	50	-	ı	1
	RN1117F		_		30	_	_	
Collector-emitter saturation voltage	RN1114F to 1118F	V _{CE (sat)}	_	I _C = 5mA, I _B = 0.25mA		0.1	0.3	٧
	RN1114F	V _I (ON)	_		0.6	_	2.0	V
	RN1115F		_		0.7	_	2.5	
Input voltage (ON)	RN1116F		_	V _{CE} = 0.2V, I _C = 5mA	8.0	_	2.5	
	RN1117F		_		1.5	_	3.5	
	RN1118F		_		2.5	_	10.0	
Input voltage (OFF)	RN1114F	V _I (OFF)	_	V _{CE} = 5V, I _C = 0.1mA	0.3	_	0.9	V
	RN1115F		_		0.3	_	1.0	
	RN1116F		_		0.3	_	1.1	
	RN1117F		_		0.3	_	2.3	
	RN1118F		_		0.5	_	5.7	
Transition frequency	RN1114F to 1118F	f _T	_	V _{CE} = 10V, I _C = 5mA	_	250	_	MHz
Collector output capacitance	RN1114F to 1118F	C _{ob}	_	V _{CB} = 10V, I _E = 0, f = 1MHz	_	3.0	6.0	pF
	RN1114F	R ₁	_		0.7	1.0	1.3	
	RN1115F		_	1.54	2.2	2.86		
Input Resistor	RN1116F		_	_	3.29	4.7	6.11	kΩ
	RN1117F		_		7.0	10.0	13.0	
	RN1118F		_		32.9	47.0	61.1	
Resistor Ratio	RN1114F	R ₁ /R ₂	_		_	0.1	_	
	RN1115F		_		_	0.22	_	_
	RN1116F		_	_	_	0.47	_	
	RN1117F		_	1	_	2.13	_	
	RN1118F		_		_	4.7	_	

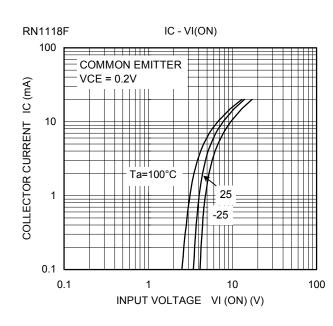
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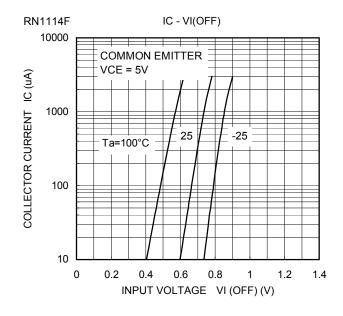


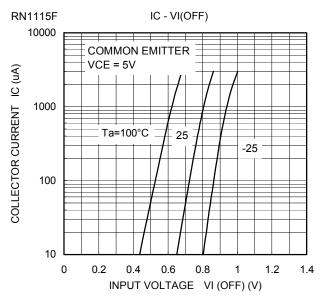


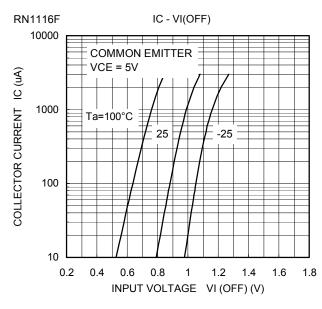


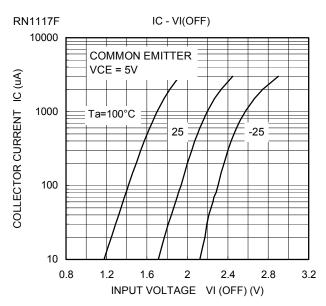


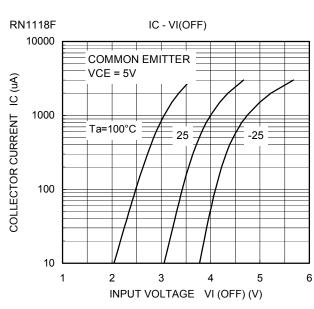


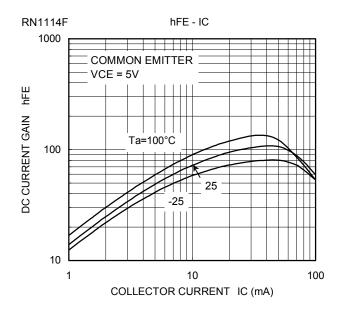


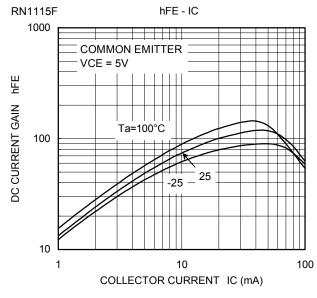


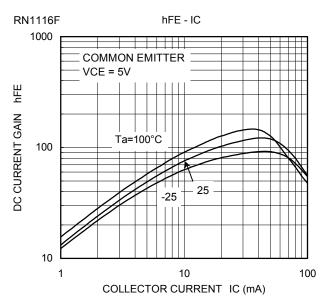


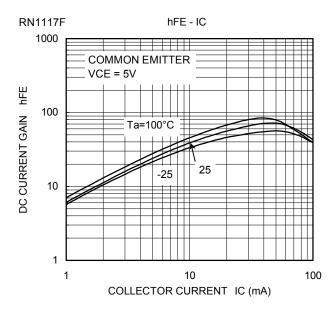


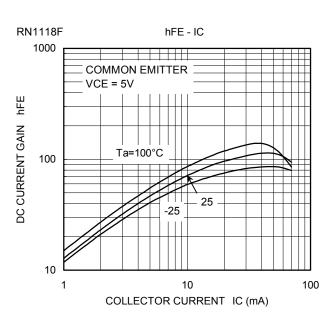


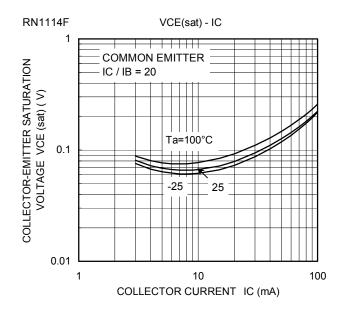


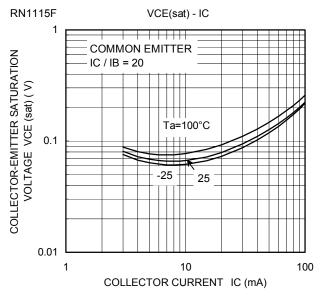


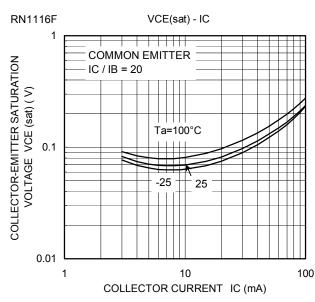


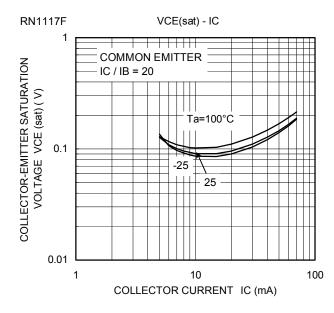


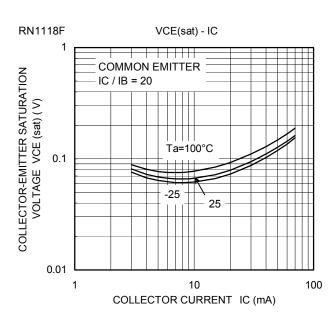












Type Name	Marking
RN1114F	Type Name XQ
RN1115F	Type Name XS
RN1116F	Type Name XT
RN1117F	Type Name XU
RN1118F	Type Name XW

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