Unit: mm

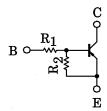
TOSHIBA Transistor Silicon PNP Epitaxial Type (PCT Process) (Bias Resistor built-in Transistor)

# RN2314, RN2315, RN2316, RN2317, RN2318

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 RN1314 to RN1318

### **Equivalent Circuit and Bias Resistor Values**



Type No.	R <sub>1</sub> (kΩ)	R <sub>2</sub> (kΩ)
RN2314	1	10
RN2315	2.2	10
RN2316	4.7	10
RN2317	10	4.7
RN2318	47	10

# 2.1±0.1 1. BASE 2. EMITTER 3. COLLECTOR JEDEC JEITA TOSHIBA 2-2E1A

Weight: 0.006g (typ.)

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

Characteristi	Symbol	Rating	Unit		
Collector-base voltage	RN2314 to 2318	$V_{CBO}$	-50	V	
Collector-emitter voltage	KN2514 to 2516	V <sub>CEO</sub>	-50	V	
Emitter-base voltage	RN2314	RN2314			
	RN2315		-6		
	RN2316 V <sub>EBO</sub>		-7	V	
	RN2317		-15		
	RN2318		-25		
Collector current		IC	-100	mA	
Collector power dissipation	RN2314 to 2318		100	mW	
Junction temperature	KIN2314 (0 2316	Tj	150	°C	
Storage temperature range		T <sub>stg</sub>	−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).

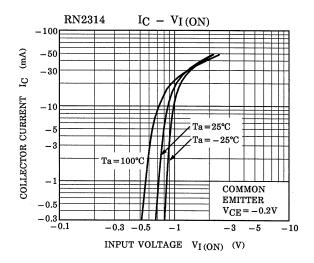
Start of commercial production 1999-01

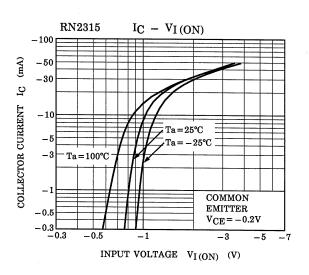


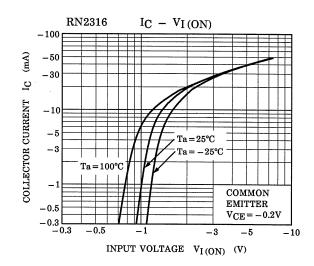
# Electrical Characteristics (Ta = 25°C)

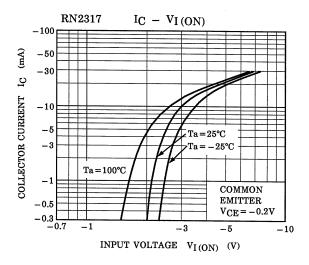
Character	istic	Symbol	Test Circuit	Test Condition	Min	Тур.	Max	Unit
Collector cut-off current	RN2314 to 2318	I <sub>CBO</sub>	_	V <sub>CB</sub> =-50V, I <sub>E</sub> = 0	_	_	-100	nA
	RN2314 to 2318	I <sub>CEO</sub>	_	V <sub>CE</sub> = -50V, I <sub>B</sub> = 0	_	_	-500	nA
	RN2314	I <sub>EBO</sub>	_	$V_{EB} = -5V$ , $I_C = 0$	-0.35	_	-0.65	mA
	RN2315		_	$V_{EB} = -6V, I_C = 0$	-0.37		-0.71	
Emitter cut-off current	RN2316		_	V <sub>EB</sub> = -7V, I <sub>C</sub> = 0	-0.36	-	-0.68	
	RN2317		_	V <sub>EB</sub> = −15V, I <sub>C</sub> = 0	-0.78	-	-1.46	
	RN2318		_	V <sub>EB</sub> = -25V, I <sub>C</sub> = 0	-0.33	_	-0.63	
DC current gain	RN2314 to 16, RN2318	h <sub>FE</sub>	_	V <sub>CE</sub> = -5V, I <sub>C</sub> = -10mA	50	_	_	_
	RN2317		_		30	_	_	
Collector-emitter saturation voltage	RN2314 to 2318	V <sub>CE</sub> (sat)	_	I <sub>C</sub> = -5mA, I <sub>B</sub> = -0.25mA	_	-0.1	-0.3	V
	RN2314		_		-0.5	-	-2.0	
	RN2315		_		-0.6	_	-2.5	V
Input voltage (ON)	RN2316	VI (ON)	_	V <sub>CE</sub> = -0.2V, I <sub>C</sub> = -5mA	-0.7	_	-2.5	
	RN2317		_		-1.5	_	-3.5	
	RN2318		_		-2.5	_	-10.0	
Input voltage (OFF)	RN2314	VI (OFF)	_	V <sub>CE</sub> = -5V, I <sub>C</sub> = -0.1mA	-0.3	_	-0.9	V
	RN2315		_		-0.3	_	-1.0	
	RN2316		_		-0.3	-	-1.1	
	RN2317		_		-0.3	-	-3.0	
	RN2318		_		-0.5	_	-5.7	
Translation frequency	RN2314 to 2318	f <sub>T</sub>	_	V <sub>CE</sub> = −10V, I <sub>C</sub> = −5mA	_	200	-	MHz
Collector output capacitance	RN2314 to 2318	C <sub>ob</sub>	_	V <sub>CB</sub> = -10V, I <sub>E</sub> = 0, f = 1MHz	_	3.0	6.0	pF
	RN2314	R <sub>1</sub>	_	- - - - -	0.7	1.0	1.3	kΩ
Input resistor	RN2315		_		1.54	2.2	2.86	
	RN2316		_		3.29	4.7	6.11	
	RN2317		_		7.0	10.0	13.0	
	RN2318		_		32.9	47.0	61.1	
Resistor ratio	RN2314	R <sub>1</sub> /R <sub>2</sub>	_		_	0.1	_	
	RN2315		_	_	_	0.22	_	
	RN2316		_		_	0.47	_	
	RN2317		_		_	2.13	_	
	RN2318		_		_	4.7	_	

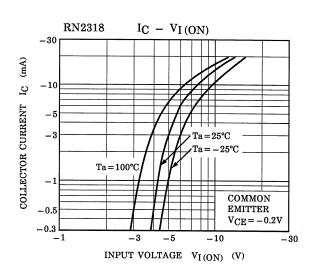
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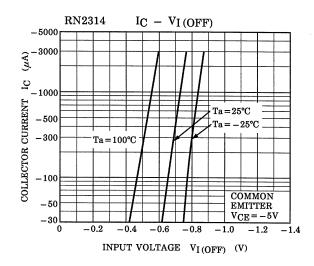


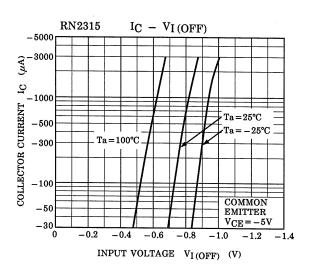


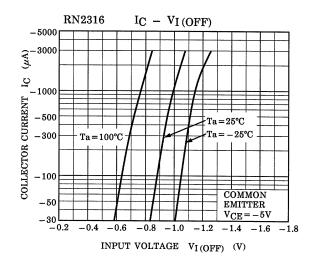


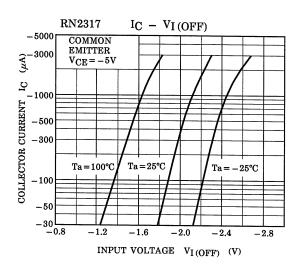


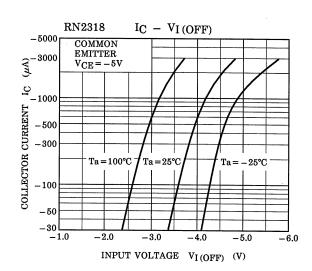


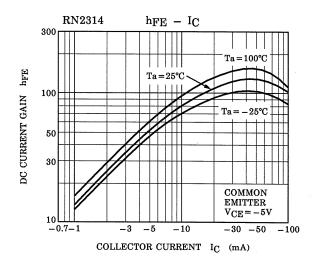


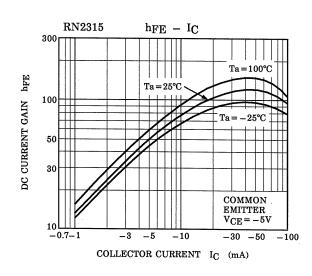


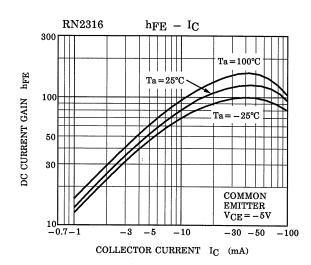


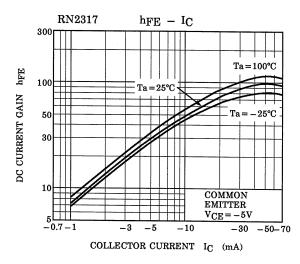


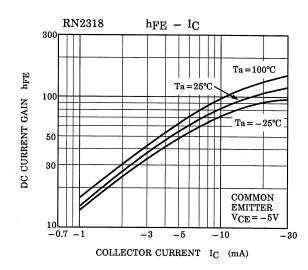




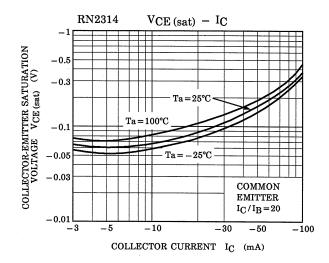


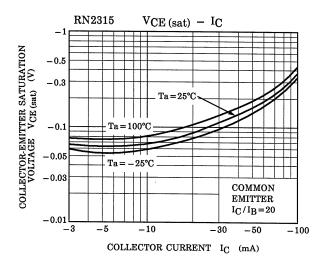


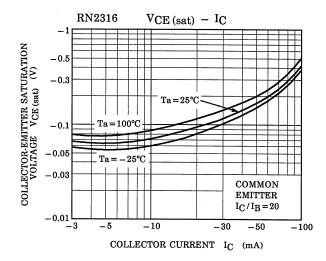


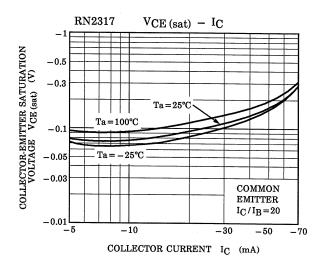


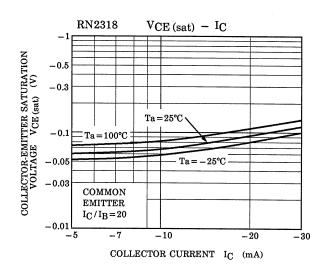
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Type Name	Marking	
RN2314	Type Name Y Q	
RN2315	Type Name YS	
RN2316	Type Name	
RN2317	Type Name	
RN2318	Type Name	

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