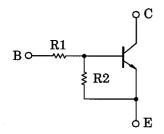
TOSHIBA Transistor Silicon NPN Epitaxial Type (PCT Process)

# RN1407,RN1408,RN1409

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 RN2407~RN2409

### **Equivalent Circuit and Bias Resister Values**



Type No.	R1 (kΩ)	R2 (kΩ)
RN1407	10	47
RN1408	22	47
RN1409	47	22

# 1. BASE 2. EMITTER S-MINI 3. COLLECTOR Unit: mm

2-3F1A

Weight: 0.012g

**TOSHIBA** 

### **Maximum Ratings (Ta = 25°C)**

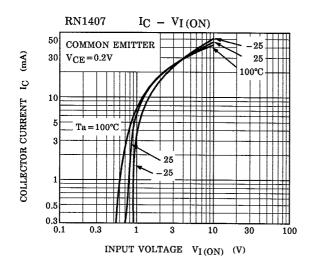
Characteristic		Symbol	Rating	Unit	
Collector-base voltage	RN1407~RN1409	V <sub>CBO</sub>	50	V	
Collector-emitter voltage	RN1407~RN1409	V <sub>CEO</sub>	50	V	
	RN1407		6	٧	
Emitter-base voltage	RN1408	$V_{EBO}$	7		
	RN1409		15		
Collector current	RN1407~RN1409	IC	100	mA	
Collector power dissipation	RN1407~RN1409	PC	200	mW	
Junction temperature	RN1407~RN1409	Tj	150	°C	
Storage temperature range	RN1407~RN1409	T <sub>stg</sub>	-55~150	°C	

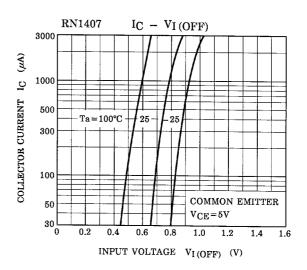


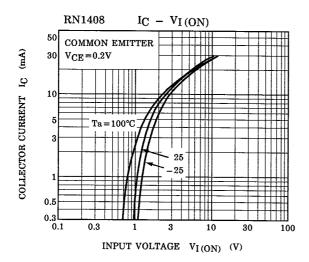
## Electrical Characteristics (Ta = 25°C)

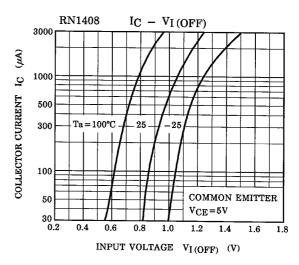
Characteristic		Symbol	Test Circuit	Test Condition	Min	Тур.	Max	Unit
Collector cut-off current	RN1407~1409	I <sub>CBO</sub>	_	$V_{CB} = 50V, I_{E} = 0$	_	_	100	- nA
	1407 1403	I <sub>CEO</sub>		$V_{CE} = 50V, I_B = 0$	_	_	500	
	RN1407			$V_{EB} = 6V, I_{C} = 0$	0.081	_	0.15	
Emitter cut-off current	RN1408	I <sub>EBO</sub>	_	V <sub>EB</sub> = 7V, I <sub>C</sub> = 0	0.078	_	0.145	mA
	RN1409			V <sub>EB</sub> = 15V, I <sub>C</sub> = 0	0.167	_	0.311	
	RN1407				80	_	_	
DC current gain	RN1408	$h_{FE}$	_	V <sub>CE</sub> = 5V, I <sub>C</sub> = 10mA	80	_	_	_
	RN1409				70	_	_	
Collector-emitter saturation voltage	RN1407~1409	V <sub>CE</sub> (sat)	_	I <sub>C</sub> = 5mA, I <sub>B</sub> = 0.25mA	_	0.1	0.3	V
	RN1407				0.7	_	1.8	
Input voltage (ON)	RN1408	$V_{I(ON)}$	_	V <sub>CE</sub> = 0.2V, I <sub>C</sub> = 5mA	1.0	_	2.6	V
	RN1409				2.2	_	5.8	
	RN1407				0.5	_	1.0	
Input voltage (OFF)	RN1408	V <sub>I (OFF)</sub>	_	$V_{CE} = 5V, I_{C} = 0.1mA$	0.6	_	1.16	V
	RN1409				1.5		2.6	
Transition frequency	RN1407~1409	f <sub>T</sub>	_	V <sub>CE</sub> = 10V, I <sub>C</sub> = 5mA	_	250	_	MHz
Collector Output capacitance	RN1407~1409	C <sub>ob</sub>	_	V <sub>CB</sub> = 10V, I <sub>E</sub> = 0, f = 1MH <sub>z</sub>	_	3	6	pF
	RN1407				7	10	13	
Input resistor	RN1408	R1	_	_	15.4	22	28.6	kΩ
	RN1409				32.9	47	61.1	
Resistor ratio	RN1407			_	0.191	0.213	0.232	_
	RN1408	R1/R2	_		0.421	0.468	0.515	
	RN1409				1.92	2.14	2.35	

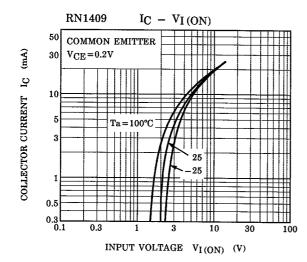
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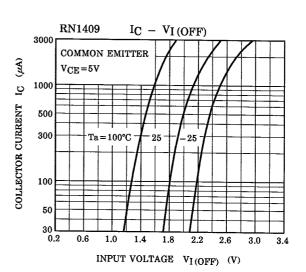




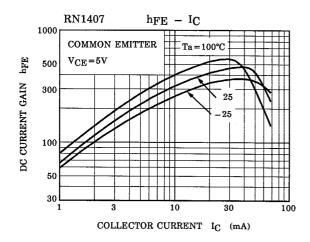


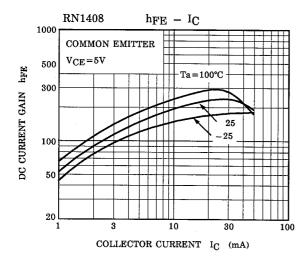


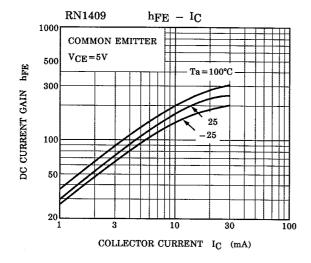




3







Type No.	Marking
RN1407	Type Name  X H
RN1408	Type Name  XI
RN1409	Type Name  X J

5

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000707EAA

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