

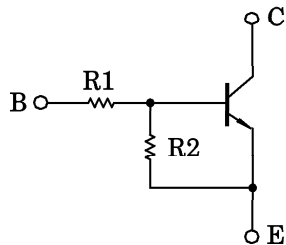
TOSHIBA TRANSISTOR SILICON NPN EPITAXIAL TYPE (PCT PROCESS)

RN1707, RN1708, RN1709

SWITCHING, INVERTER CIRCUIT, INTERFACE CIRCUIT
AND DRIVER CIRCUIT APPLICATIONS.

- Including Two Devices in USV (Ultra Super Mini Type with 5 leads)
- With Built-in Bias Resistors
- Simplify Circuit Design
- Reduce a Quantity of Parts and Manufacturing Process
- Complementary to RN2707~RN2709

EQUIVALENT CIRCUIT AND BIAS RESISTOR VALUES



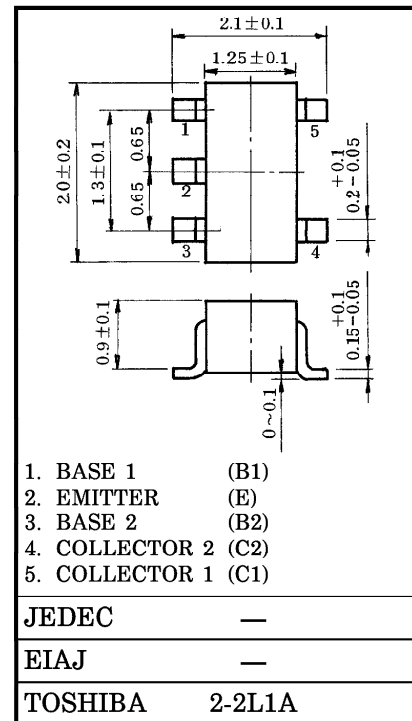
TYPE No.	R1 (kΩ)	R2 (kΩ)
RN1707	10	47
RN1708	22	47
RN1709	47	22

MAXIMUM RATINGS (Ta = 25°C) (Q1, Q2 COMMON)

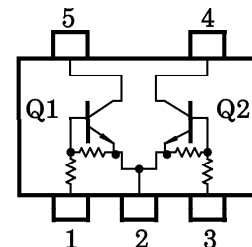
CHARACTERISTIC		SYMBOL	RATING	UNIT
Collector-Base Voltage	RN1707~1709	V _{CBO}	50	V
Collector-Emitter Voltage		V _{CEO}	50	V
Emitter-Base Voltage	RN1707	V _{EBO}	6	V
	RN1708		7	
	RN1709		15	
Collector Current	RN1707~1709	I _C	100	mA
Collector Power Dissipation		P _C *	200	mW
Junction Temperature		T _j	150	°C
Storage Temperature Range		T _{stg}	-55~150	°C

* : Total Rating

Unit in mm



EQUIVALENT CIRCUIT (TOP VIEW)



961001EAA2

● TOSHIBA is continually working to improve the quality and the reliability of its products. Nevertheless, semiconductor devices in general can malfunction or fail due to their inherent electrical sensitivity and vulnerability to physical stress. It is the responsibility of the buyer, when utilizing TOSHIBA products, to observe standards of safety, and to avoid situations in which a malfunction or failure of a TOSHIBA product could cause loss of human life, bodily injury or damage to property. In developing your designs, please ensure that TOSHIBA products are used within specified operating ranges as set forth in the most recent products specifications. Also, please keep in mind the precautions and conditions set forth in the TOSHIBA Semiconductor Reliability Handbook.

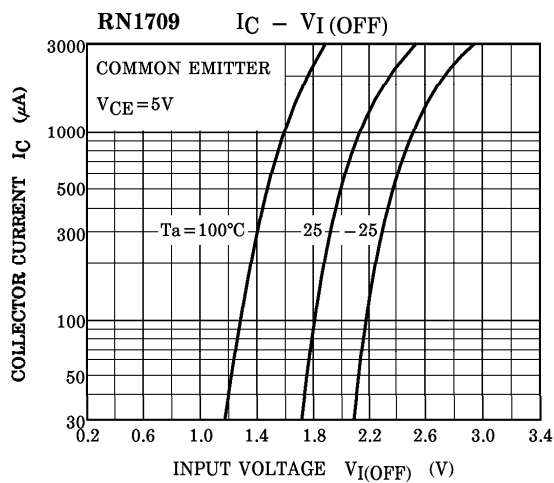
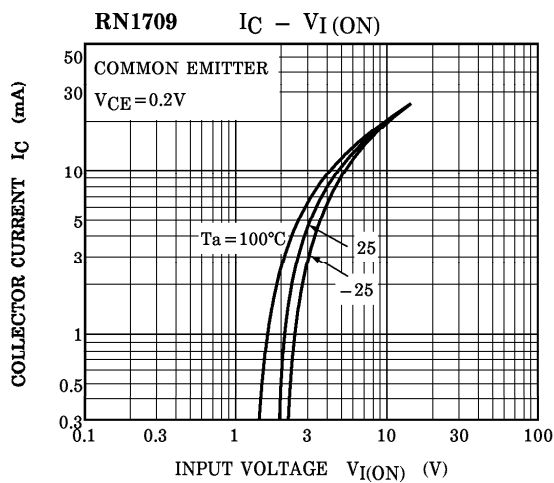
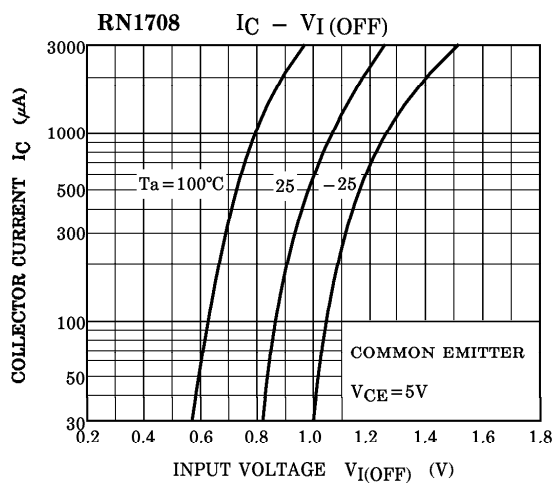
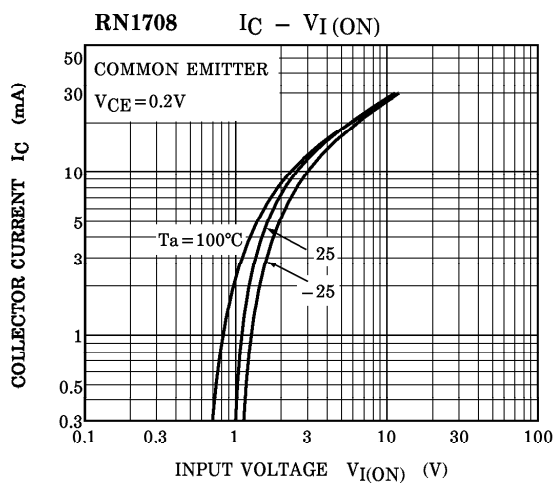
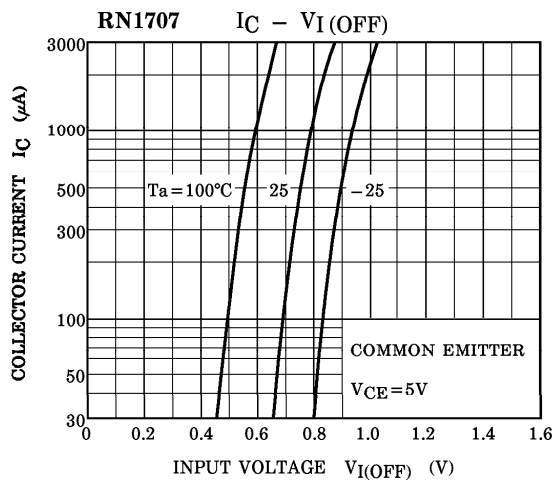
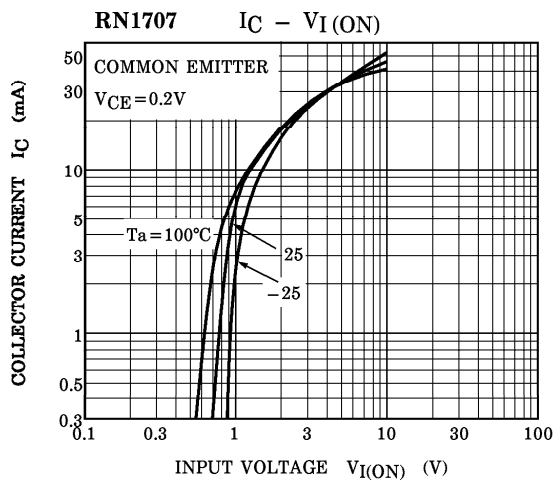
ELECTRICAL CHARACTERISTICS (Ta = 25°C) (Q1, Q2 COMMON)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current	RN1707~ 1709	ICBO	V _{CB} = 50V, I _E = 0	—	—	100	nA
		ICEO	V _{CE} = 50V, I _B = 0	—	—	500	nA
Emitter Cut-off Current	RN1707	IEBO	V _{EB} = 6V, I _C = 0	0.081	—	0.15	mA
	RN1708		V _{EB} = 7V, I _C = 0	0.078	—	0.145	
	RN1709		V _{EB} = 15V, I _C = 0	0.167	—	0.311	
DC Current Gain	RN1707	h _{FE}	V _{CE} = 5V, I _C = 10mA	80	—	—	
	RN1708			80	—	—	
	RN1709			70	—	—	
Collector-Emitter Saturation Voltage	RN1707~ 1709	V _{CE (sat)}	I _C = 5mA, I _B = 0.25mA	—	0.1	0.3	V
Input Voltage (ON)	RN1707	V _{I (ON)}	V _{CE} = 0.2V, I _C = 5mA	0.7	—	1.8	V
	RN1708			1.0	—	2.6	
	RN1709			2.2	—	5.8	
Input Voltage (OFF)	RN1707	V _{I (OFF)}	V _{CE} = 5V, I _C = 0.1mA	0.5	—	1.0	V
	RN1708			0.6	—	1.16	
	RN1709			1.5	—	2.6	
Transition Frequency	RN1707~ 1709	f _T	V _{CE} = 10V, I _C = 5mA	—	250	—	MHz
Collector Output Capacitance	RN1707~ 1709	C _{ob}	V _{CB} = 10V, I _E = 0, f = 1MHz	—	3	6	pF
Input Resistor	RN1707	R1		7	10	13	kΩ
	RN1708			15.4	22	28.6	
	RN1709			32.9	47	61.1	
Resistor Ratio	RN1707	R1 / R2		0.191	0.213	0.232	
	RN1708			0.421	0.468	0.515	
	RN1709			1.92	2.14	2.35	

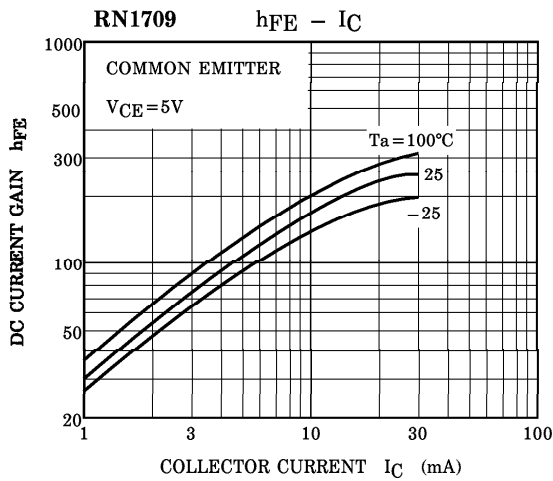
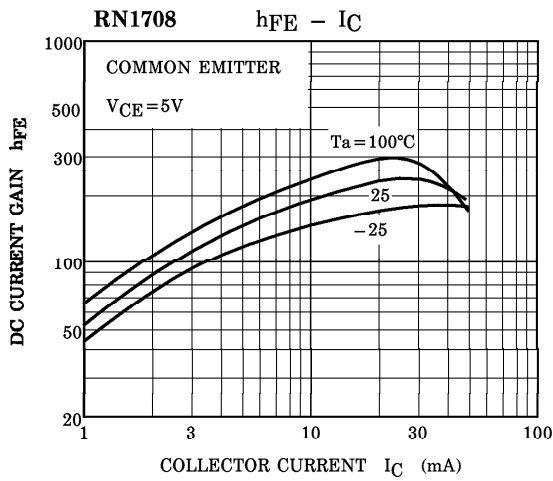
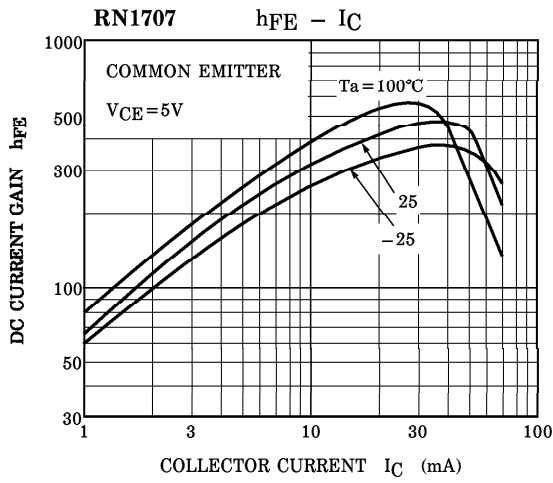
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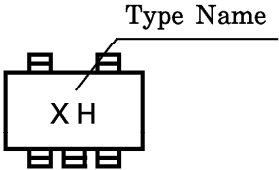
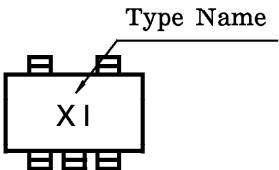
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(Q1, Q2 COMMON)



(Q1, Q2 COMMON)



TYPE NAME	MARKING
RN1707	
RN1708	
RN1709	