

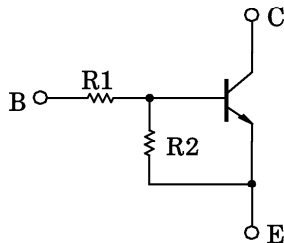
TOSHIBA TRANSISTOR SILICON NPN EPITAXIAL TYPE (PCT PROCESS)

RN1307, RN1308, RN1309

SWITCHING, INVERTER CIRCUIT, INTERFACE CIRCUIT AND DRIVER
CIRCUIT APPLICATIONS

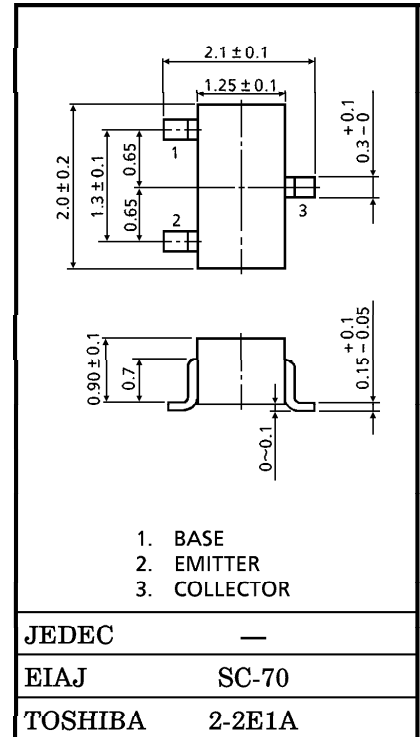
- With Built-in Bias Resistors
- Simplify Circuit Design
- Reduce a Quantity of Parts and Manufacturing Process
- Complementary to RN2307~RN2309

EQUIVALENT CIRCUIT AND BIAS RESISTOR VALUES



TYPE No.	R1 (kΩ)	R2 (kΩ)
RN2207	10	47
RN2208	22	47
RN2209	47	22

Unit in mm



Weight : 0.006g

MAXIMUM RATINGS (Ta = 25°C)

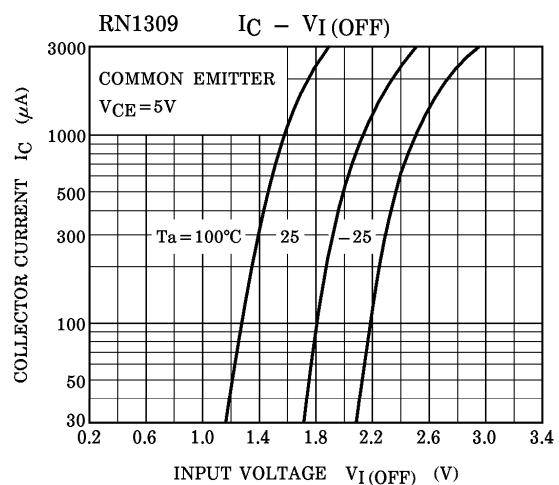
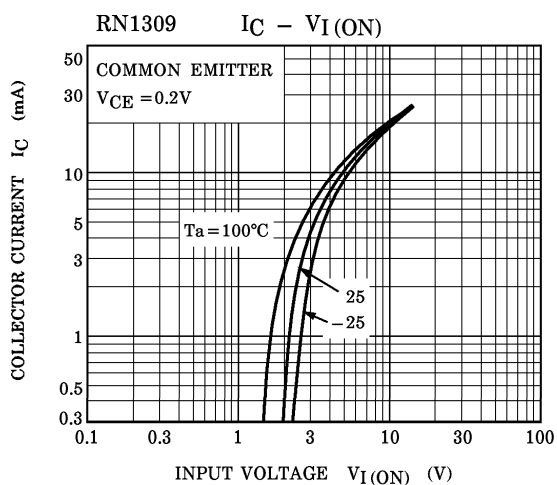
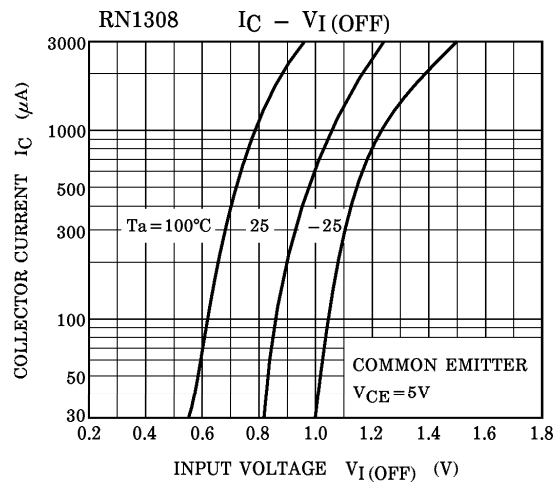
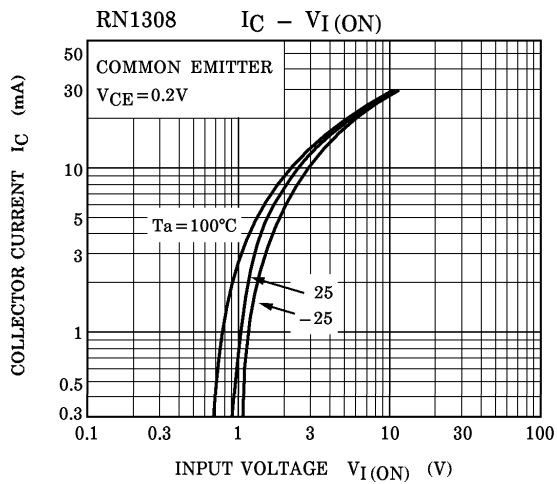
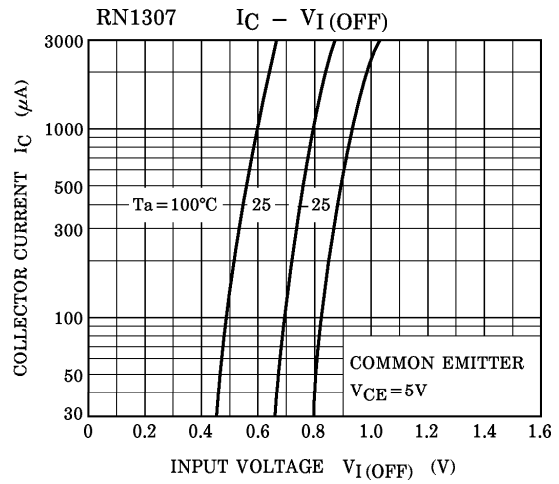
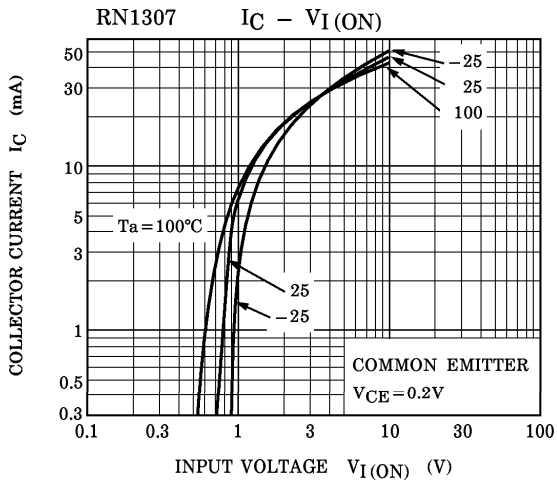
CHARACTERISTIC	SYMBOL	RATING	UNIT
Collector-Base Voltage	V _{CB0}	50	V
Collector-Emitter Voltage	V _{CE0}	50	V
Emitter-Base Voltage	V _{EBO}	6	V
		7	
		15	
Collector Current	I _C	100	mA
Collector Power Dissipation	P _C	100	mW
Junction Temperature	T _j	150	°C
Storage Temperature Range	T _{stg}	-55~150	°C

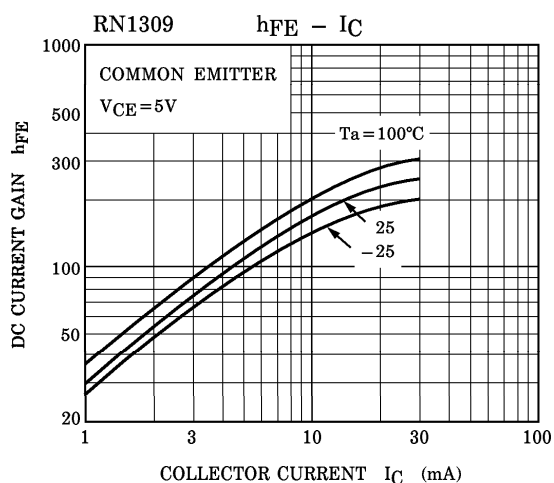
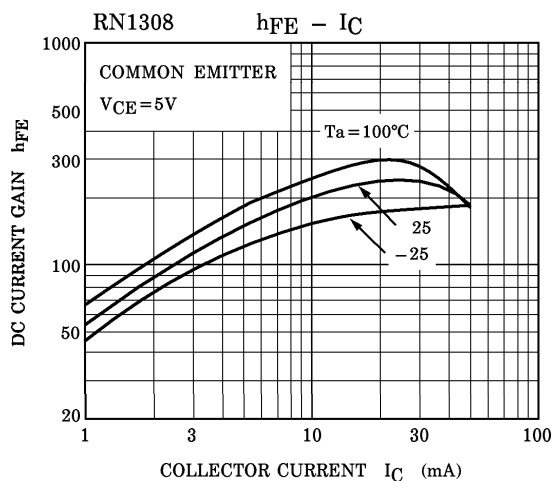
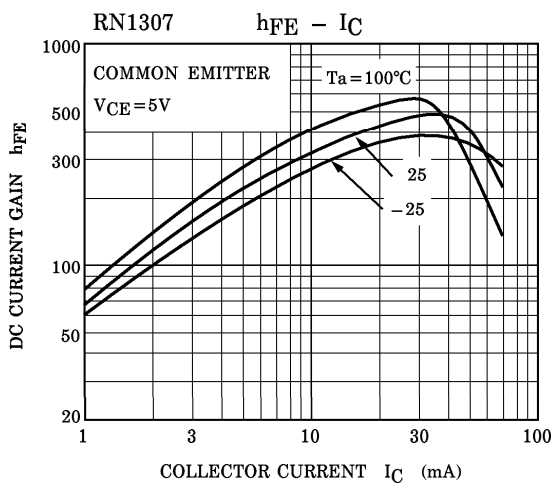
961001EAA1

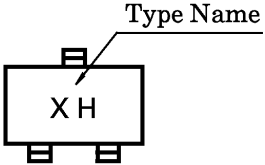
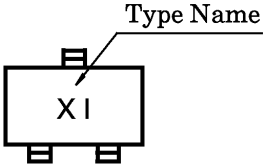
- TOSHIBA is continually working to improve the quality and the reliability of its products. Nevertheless, semiconductor devices in general can malfunction or fail due to their inherent electrical sensitivity and vulnerability to physical stress. It is the responsibility of the buyer, when utilizing 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.
- The information contained herein is presented only as a guide for the applications of our products. No responsibility is assumed by TOSHIBA CORPORATION for any infringements of intellectual property or other rights of the third parties which may result from its use. No license is granted by implication or otherwise under any intellectual property or other rights of TOSHIBA CORPORATION or others.
- The information contained herein is subject to change without notice.

ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current		ICBO	V _{CB} = 50V, I _E = 0	—	—	100	nA
		ICEO	V _{CE} = 50V, I _B = 0	—	—	500	
Emitter Cut-off Current	RN1307	I _{EBO}	V _{EB} = 6V, I _C = 0	0.081	—	0.15	mA
	RN1308		V _{EB} = 7V, I _C = 0	0.078	—	0.145	
	RN1309		V _{EB} = 15V, I _C = 0	0.167	—	0.311	
DC Current Gain	RN1307	h _{FE}	V _{CE} = 5V, I _C = 10mA	80	—	—	
	RN1308			80	—	—	
	RN1309			70	—	—	
Collector-Emitter Saturation Voltage		V _{CE (sat)}	I _C = 5mA, I _B = 0.25mA	—	0.1	0.3	V
Input Voltage (ON)	RN1307	V _{I (ON)}	V _{CE} = 0.2V, I _C = 5mA	0.7	—	1.8	V
	RN1308			1.0	—	2.6	
	RN1309			2.2	—	5.8	
Input Voltage (OFF)	RN1307	V _{I (OFF)}	V _{CE} = 5V, I _C = 0.1mA	0.5	—	1.0	V
	RN1308			0.6	—	1.16	
	RN1309			1.5	—	2.6	
Transition Frequency		f _T	V _{CE} = 10V, I _C = 5mA	—	250	—	MHz
Collector Output Capacitance		C _{ob}	V _{CB} = 10V, I _E = 0, f = 1MHz	—	3	6	pF
Input Resistor	RN1307	R1		7	10	13	kΩ
	RN1308			15.4	22	28.6	
	RN1309			32.9	47	61.1	
Resistor Ratio	RN1307	R1 / R2		0.191	0.213	0.232	
	RN1308			0.421	0.468	0.515	
	RN1309			1.92	2.14	2.35	





TYPE NAME	MARKING
RN1307	
RN1308	
RN1309	