

TOSHIBA Transistor Silicon PNP Epitaxial Type (PCT Process)

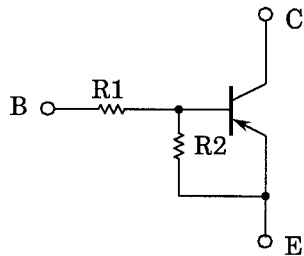
## RN2207, RN2208, RN2209

Unit: mm

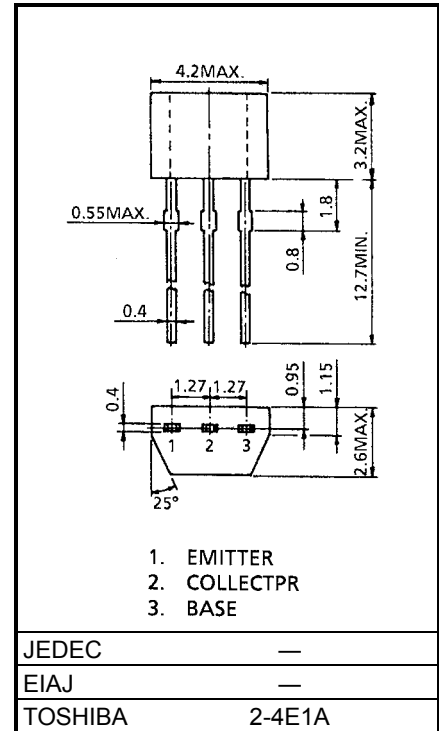
Switching, Inverter Circuit, Interface Circuit  
And Driver Circuit Applications

- With built-in bias resistors
- Simplify circuit design
- Reduce a quantity of parts and manufacturing process
- Complementary to RN1207~RN1209

### Equivalent Circuit and Bias Resistor Values



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



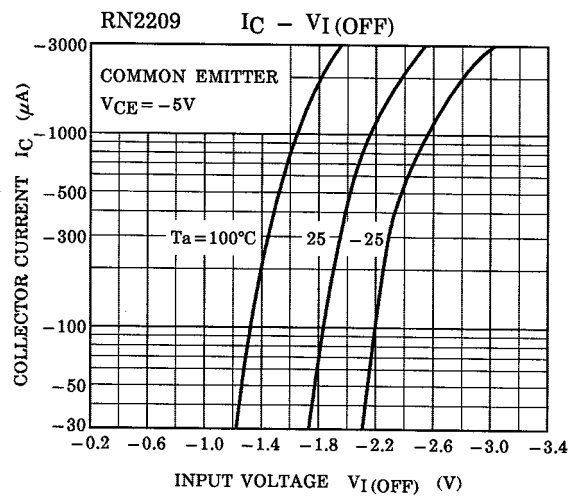
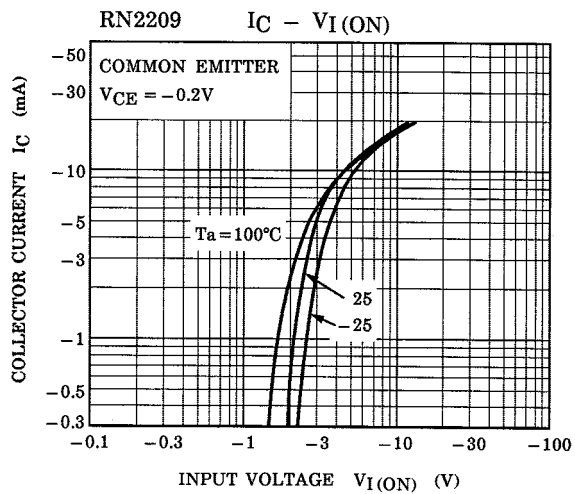
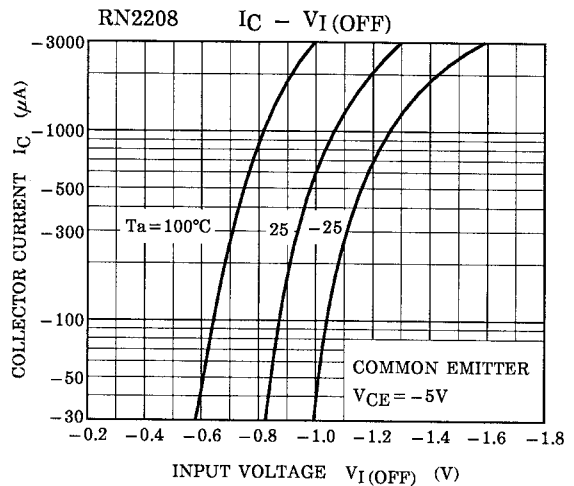
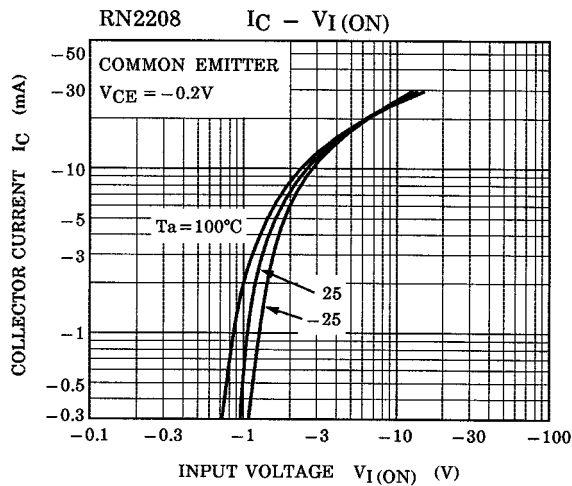
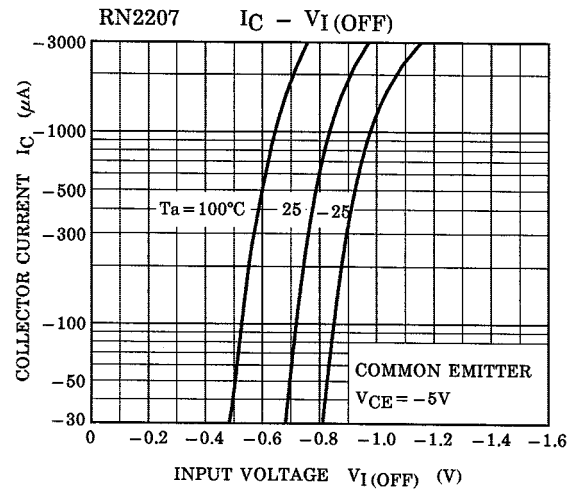
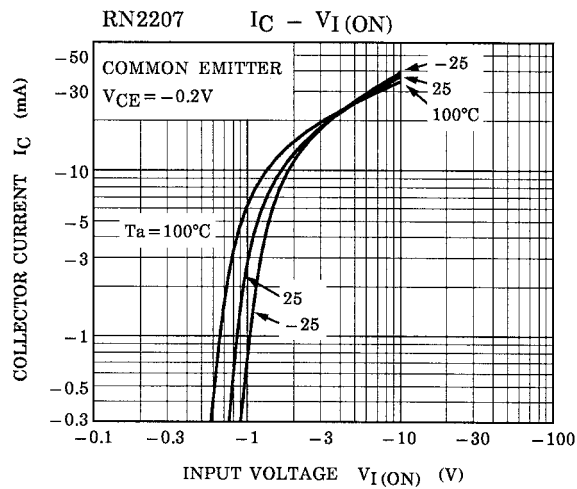
Weight: 0.13g

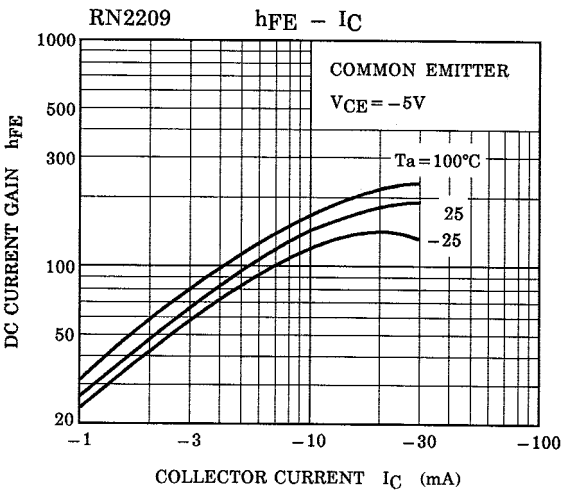
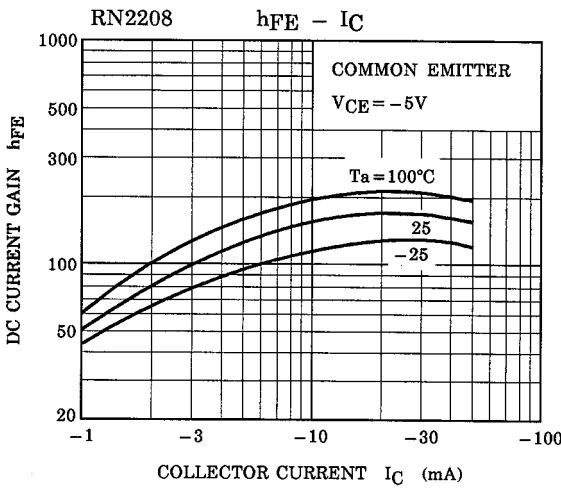
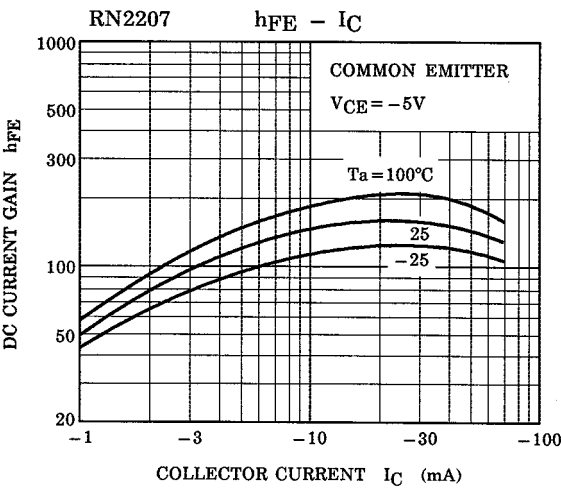
### Maximum Ratings (Ta = 25°C)

Characteristic	Symbol	Rating	Unit
Collector-base voltage	$V_{CBO}$	-50	V
Collector-emitter voltage	$V_{CEO}$	-50	V
Emitter-base voltage	RN2207	-6	V
	RN2208	-7	
	RN2209	-15	
Collector current	$I_C$	-100	mA
Collector power dissipation	$P_C$	300	mW
Junction temperature	$T_j$	150	°C
Storage temperature range	$T_{stg}$	-55~150	°C

**Electrical Characteristics (Ta = 25°C)**

Characteristic		Symbol	Test Circuit	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current		$I_{CBO}$	—	$V_{CB} = -50V, I_E = 0$	—	—	-100	nA
		$I_{CEO}$	—	$V_{CE} = -50V, I_B = 0$	—	—	-500	
Emitter cut-off current	RN2207	$I_{EBO}$	—	$V_{EB} = -6V, I_C = 0$	-0.081	—	-0.15	mA
	RN2208		—	$V_{EB} = -7V, I_C = 0$	-0.078	—	-0.145	
	RN2209		—	$V_{EB} = -15V, I_C = 0$	-0.167	—	-0.311	
DC current gain	RN2207	$h_{FE}$	—	$V_{CE} = -5V, I_C = -10mA$	80	—	—	—
	RN2208		—		80	—	—	
	RN2209		—		70	—	—	
Collector-emitter saturation voltage		$V_{CE(sat)}$	—	$I_C = -5mA, I_B = -0.25mA$	—	-0.1	-0.3	V
Input voltage (ON)	RN2207	$V_{I(ON)}$	—	$V_{CE} = -0.2V, I_C = -5mA$	-0.7	—	-1.8	V
	RN2208		—		-1.0	—	-2.6	
	RN2209		—		-2.2	—	-5.8	
Input voltage (OFF)	RN2207	$V_{I(OFF)}$	—	$V_{CE} = -5V, I_C = -0.1mA$	-0.5	—	-1.0	V
	RN2208		—		-0.6	—	-1.16	
	RN2209		—		-1.5	—	-2.6	
Translation frequency		$f_T$	—	$V_{CE} = -10V, I_C = -5mA$	—	200	—	MHz
Collector output capacitance		$C_{ob}$	—	$V_{CB} = -10V, I_E = 0, f = 1MHz$	—	3	6	pF
Input resistor	RN2207	R1	—	—	7	10	13	kΩ
	RN2208		—		15.4	22	28.6	
	RN2209		—		32.9	47	61.1	
Resistor ratio	RN2207	R1/R2	—	—	0.191	0.213	0.232	—
	RN2208		—		0.421	0.468	0.515	
	RN2209		—		1.92	2.14	2.35	





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