

TOSHIBA Transistor Silicon PNP Epitaxial Type (PCT Process)

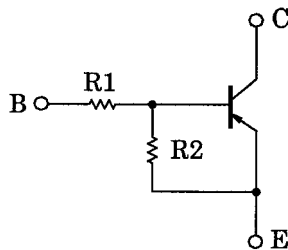
## RN2107F, RN2108F, RN2109F

Switching, Inverter Circuit, Interface Circuit  
and Driver Circuit Applications

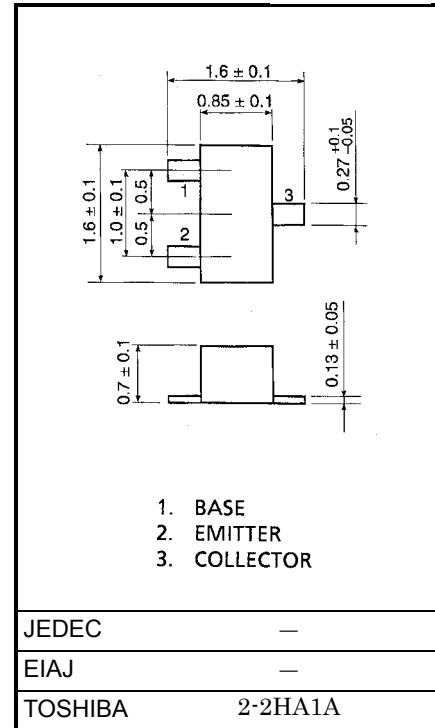
Unit in mm

- With built-in bias resistors
- Simplify circuit design
- Reduce a quantity of parts and manufacturing process
- Complementary to RN1107F~RN1109F

### Equivalent Circuit and Bias Resister Values



Type No.	R1 (kΩ)	R2 (kΩ)
RN2107F	10	47
RN2108F	22	47
RN2109F	47	22



### Maximum Ratings (Ta = 25°C)

Weight: 2.3 mg

Characteristic	Symbol	Rating	Unit
Collector-base voltage	$V_{CBO}$	-50	V
Collector-emitter voltage	$V_{CEO}$	-50	V
Emitter-base voltage	$V_{EBO}$	-6	V
		-7	V
		-15	V
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

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## Electrical Characteristics (Ta = 25°C)

Characteristic		Symbol	Test Circuit	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current	RN2107F ~RN2109F	$I_{CBO}$	—	$V_{CB} = -50V, I_E = 0$	—	—	-100	nA
		$I_{CEO}$		$V_{CE} = -50V, I_B = 0$	—	—	-500	nA
Emitter cut-off current	RN2107F	$I_{EBO}$	—	$V_{EB} = -6V, I_C = 0$	-0.081	—	-0.15	mA
	RN2108F			$V_{EB} = -7V, I_C = 0$	-0.078	—	-0.145	
	RN2109F			$V_{EB} = -15V, I_C = 0$	-0.167	—	-0.311	
DC current gain	RN2107F	$h_{FE}$	—	$V_{CE} = -5V,$ $I_C = -10mA$	80	—	—	—
	RN2108F				80	—	—	
	RN2109F				70	—	—	
Collector-emitter saturation voltage	RN2107F ~RN2109F	$V_{CE(sat)}$	—	$I_C = -5mA,$ $I_B = -0.25mA$	—	-0.1	-0.3	V
Input voltage (ON)	RN2107F	$V_{I(ON)}$	—	$V_{CE} = -0.2V,$ $I_C = -5mA$	-0.7	—	-1.8	V
	RN2108F				-1.0	—	-2.6	
	RN2109F				-2.2	—	-5.8	
Input voltage (OFF)	RN2107F	$V_{I(OFF)}$	—	$V_{CE} = -5V,$ $I_C = -0.1mA$	-0.5	—	-1.0	V
	RN2108F				-0.6	—	-1.16	
	RN2109F				-1.5	—	-2.6	
Transition frequency	RN2107F ~RN2109F	$f_T$	—	$V_{CE} = -10V,$ $I_C = -5mA$	—	200	—	MHz
Collector Output capacitance	RN2107F ~RN2109F	$C_{ob}$	—	$V_{CB} = -10V, I_E = 0,$ $f = 1MHz$	—	3	6	pF
Input resistor	RN2107F	R1	—	—	7	10	13	kΩ
	RN2108F				15.4	22	28.6	
	RN2109F				32.9	47	61.1	
Resistor ratio	RN2107F	R1/R2	—	—	0.191	0.213	0.232	—
	RN2108F				0.421	0.468	0.515	
	RN2109F				1.92	2.14	2.35	