

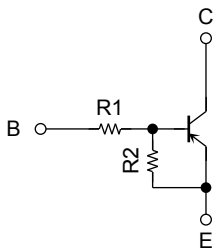
TOSHIBA Transistor Silicon PNP Epitaxial Type (PCT process) (Bias Resistor built-in Transistor)

# RN2107ACT, RN2108ACT, RN2109ACT

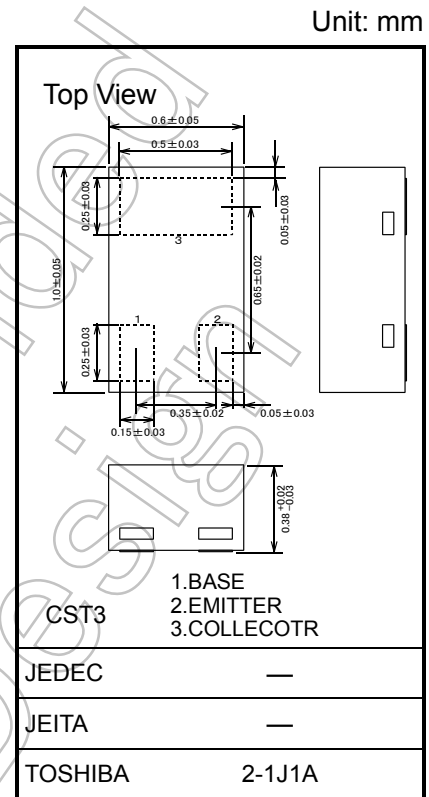
Switching, Inverter Circuit, Interface Circuit and Driver Circuit Applications

- Extra small package (CST3) is applicable for extra high density fabrication.
- Incorporating a bias resistor into a transistor reduces parts count.
- Reducing the parts count enable the manufacture of ever more compact equipment and save assembly cost.
- Complementary to RN1107ACT to RN1109ACT

## Equivalent Circuit and Bias Resistor Values



Type No.	R1 (kΩ)	R2 (kΩ)
RN2107ACT	10	47
RN2108ACT	22	47
RN2109ACT	47	22



Weight: 0.75 mg (typ.)

## Absolute Maximum Ratings (Ta = 25°C)

Characteristics	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	
		-15	
Collector current	$I_C$	-80	mA
Collector power dissipation	$P_C$	100*	mW
Junction temperature	$T_j$	150	°C
Storage temperature range	$T_{stg}$	-55 to 150	°C

\* : Mounted on FR4 board (10 mm × 10 mm × 1 mm)

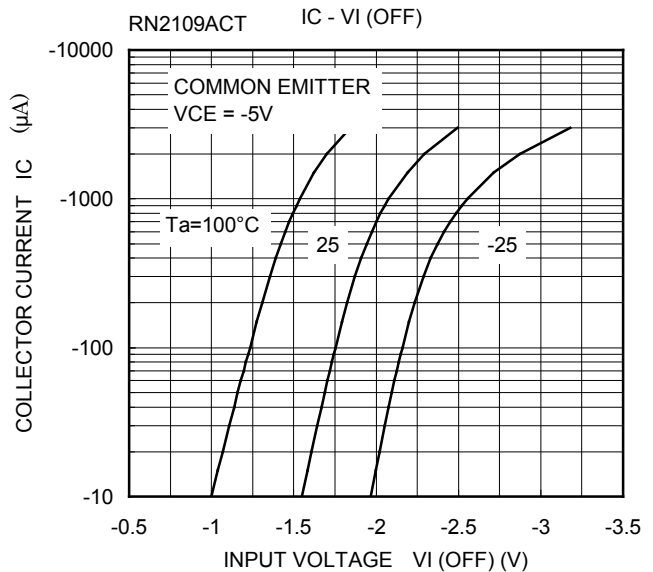
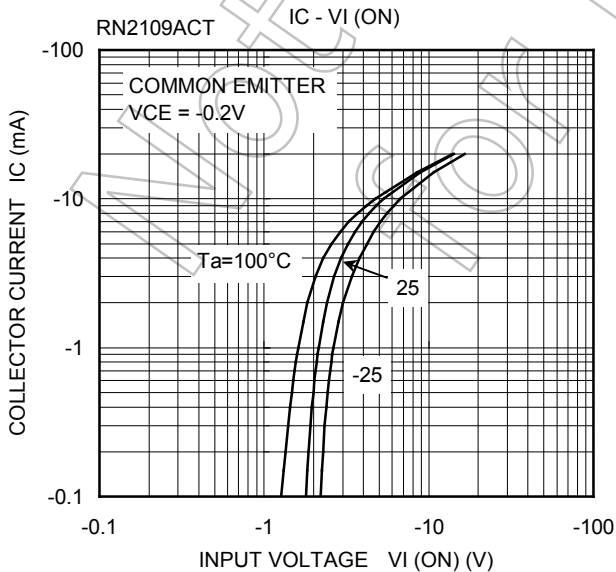
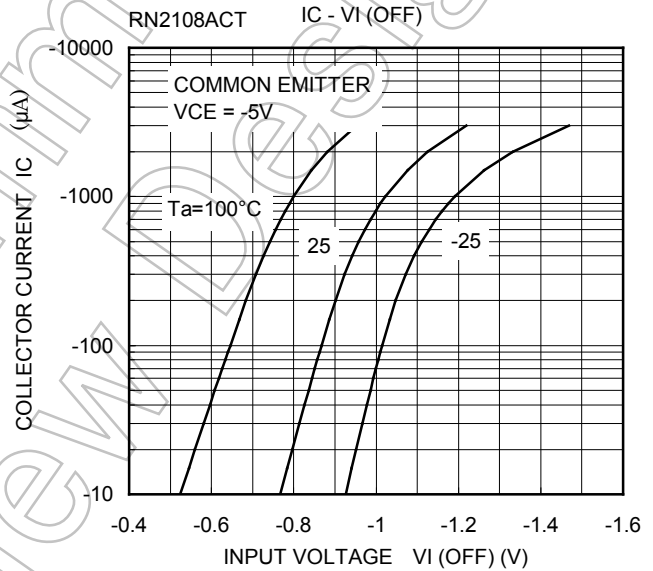
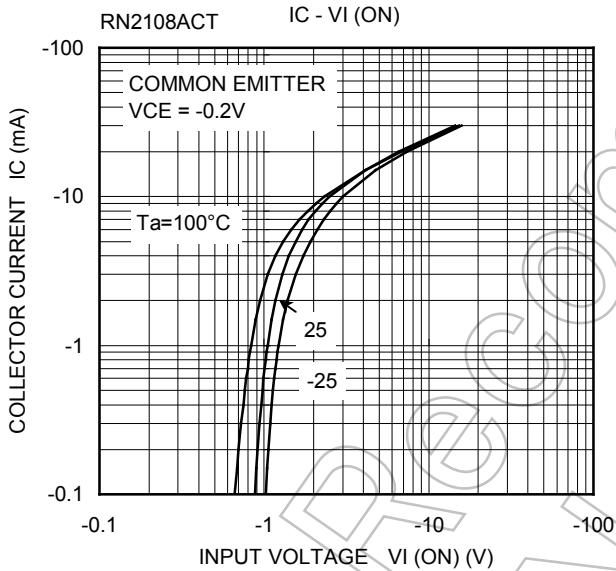
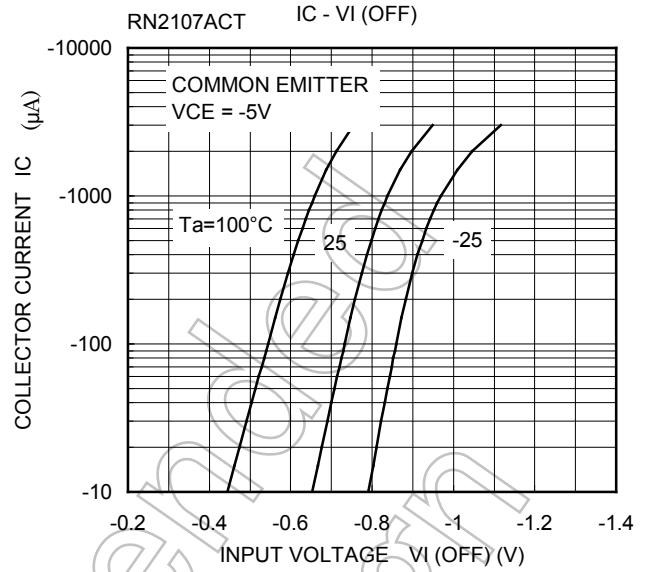
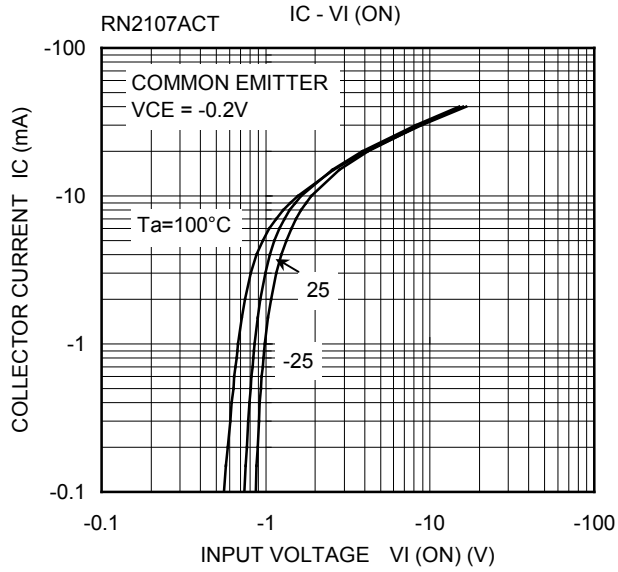
Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e.operatingtemperature/current/voltage, etc.) are within the absolute maximum ratings.

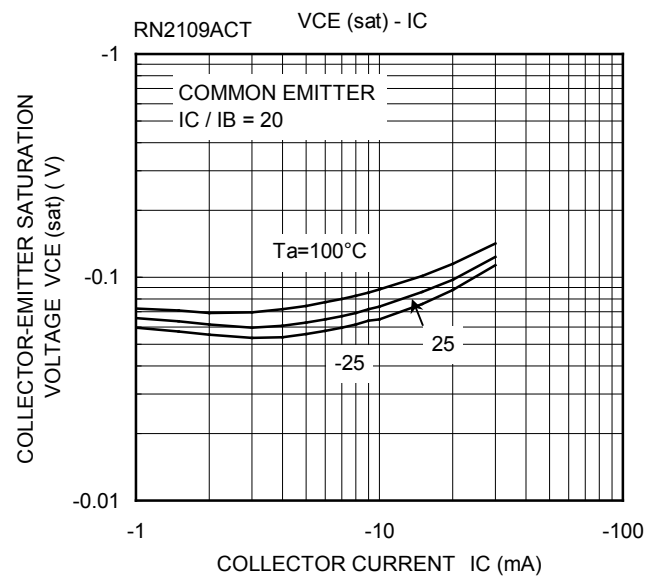
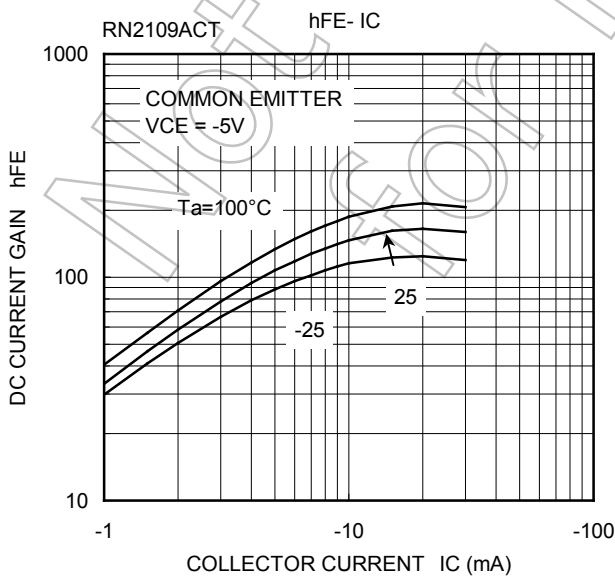
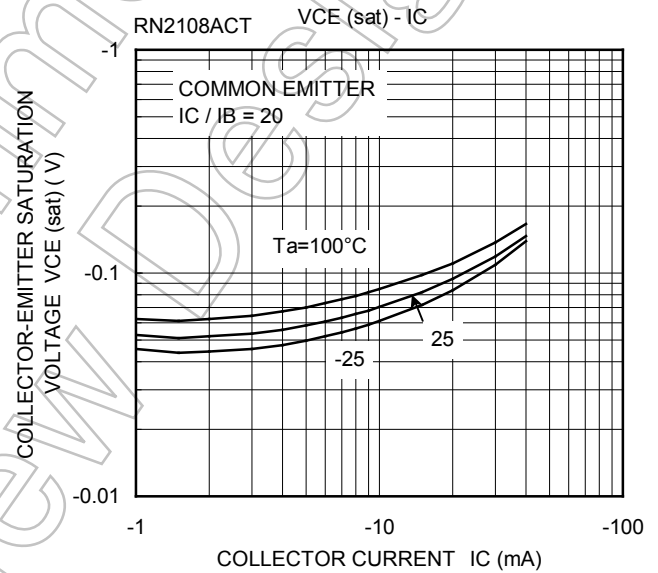
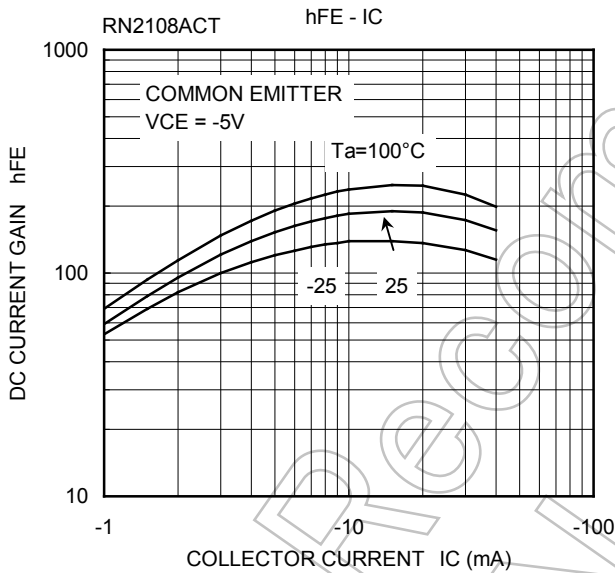
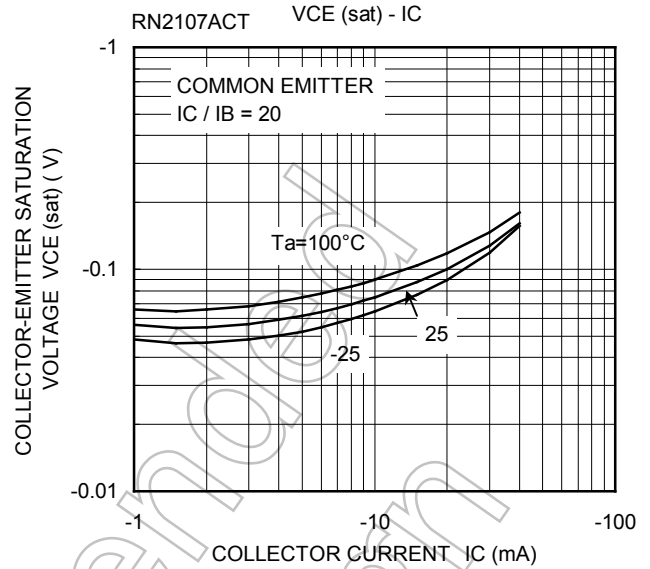
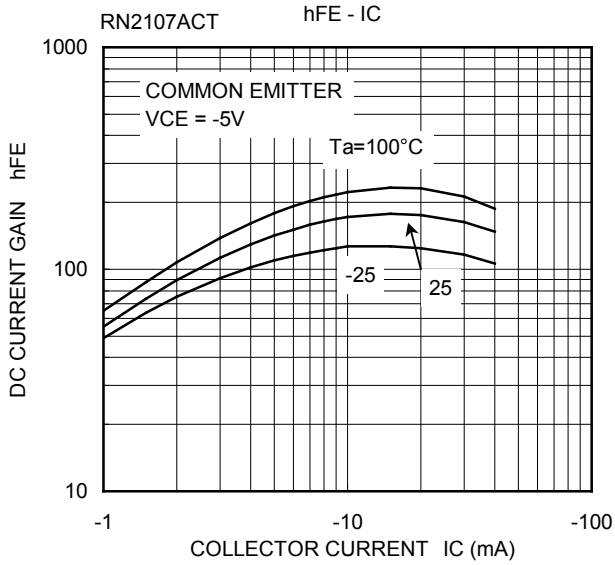
Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/"Derating Concept and Methods") and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

Start of commercial production  
2004-08

## Electrical Characteristics (Ta = 25°C)

Characteristics		Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current	RN2107ACT to 2109ACT	$I_{CBO}$	$V_{CB} = -50\text{ V}, I_E = 0$	—	—	-100	nA
		$I_{CEO}$	$V_{CE} = -50\text{ V}, I_B = 0$	—	—	-500	
Emitter cut-off current	RN2107ACT	$I_{EBO}$	$V_{EB} = -6\text{ V}, I_C = 0$	-0.088	—	-0.131	mA
	RN2108ACT			-0.085	—	-0.126	
	RN2109ACT			-0.182	—	-0.271	
DC current gain	RN2107ACT	$h_{FE}$	$V_{CE} = -5\text{ V},$ $I_C = -10\text{ mA}$	80	—	—	—
	RN2108ACT			80	—	—	
	RN2109ACT			70	—	—	
Collector-emitter saturation voltage	RN2107ACT to 2109ACT	$V_{CE(sat)}$	$I_C = -5\text{ mA},$ $I_B = -0.25\text{ mA}$	—	—	-0.15	V
Input voltage (ON)	RN2107ACT	$V_{I(ON)}$	$V_{CE} = -0.2\text{ V},$ $I_C = -5\text{ mA}$	-0.8	—	-1.8	V
	RN2108ACT			-1.0	—	-3.0	
	RN2109ACT			-2.0	—	-6.4	
Input voltage (OFF)	RN2107ACT	$V_{I(OFF)}$	$V_{CE} = -5\text{ V},$ $I_C = -0.1\text{ mA}$	-0.6	—	-0.9	V
	RN2108ACT			-0.7	—	-1.2	
	RN2109ACT			-1.5	—	-2.6	
Collector output capacitance	RN2107ACT to 2109ACT	$C_{ob}$	$V_{CB} = -10\text{ V}, I_E = 0,$ $f = 1\text{ MHz}$	—	0.9	—	pF
Input resistor	RN2107ACT	R1	—	8	10	12	k $\Omega$
	RN2108ACT			17.6	22	26.4	
	RN2109ACT			37.6	47	56.4	
Resistor ratio	RN2107ACT	R1/R2	—	0.17	0.213	0.255	—
	RN2108ACT			0.374	0.468	0.562	
	RN2109ACT			1.71	2.14	2.56	





Type Name	Marking
RN2107ACT	
RN2108ACT	
RN2109ACT	

Not Recommended for New Design

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