

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

RN1112ACT, RN1113ACT

Switching Applications

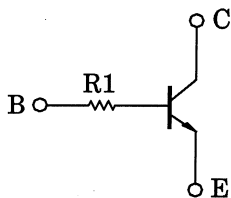
Inverter Circuit Applications

Interface Circuit Applications

Driver Circuit Applications

- Incorporating a bias resistor into a transistor reduces the number of parts, which enables the manufacture of ever more compact equipment and saves assembly cost.
- Complementary to RN2112ACT, RN2113ACT

Equivalent Circuit and Bias Resistor Values



Absolute Maximum Ratings (Ta = 25°C)

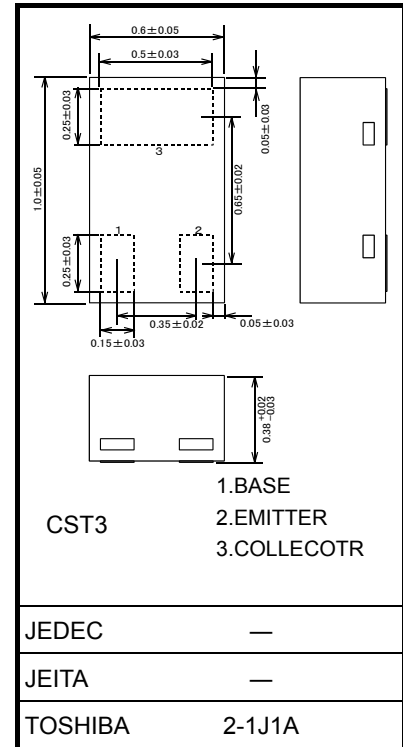
Characteristics	Symbol	Rating	Unit
Collector-base voltage	V_{CBO}	50	V
Collector-emitter voltage	V_{CEO}	50	V
Emitter-base voltage	V_{EBO}	5	V
Collector current	I_C	80	mA
Collector power dissipation	P_C (Note1)	100	mW
Junction temperature	T_j	150	°C
Storage temperature range	T_{stg}	-55 to 150	°C

Note1: Mounted on FR4 board (10 mm × 10 mm × 1 mm)

Note2: 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. operating temperature/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).

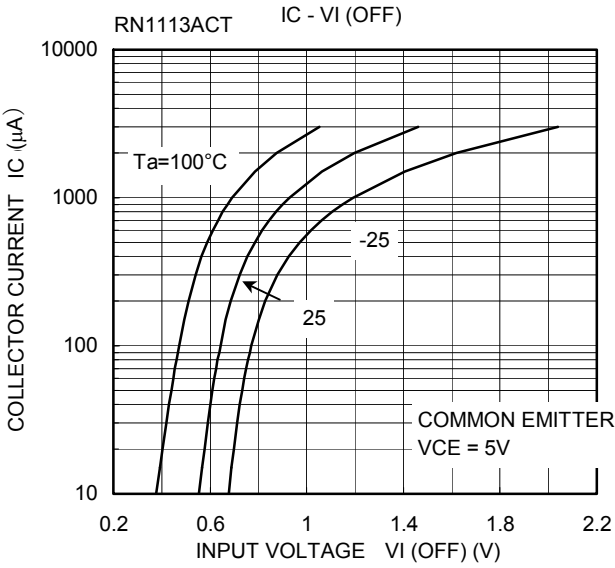
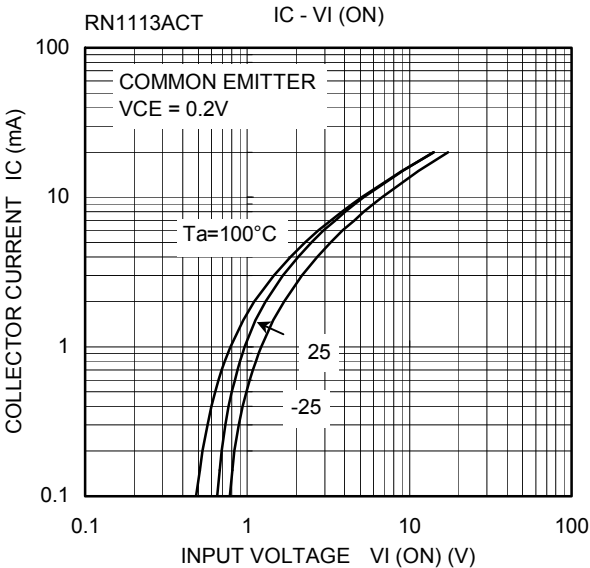
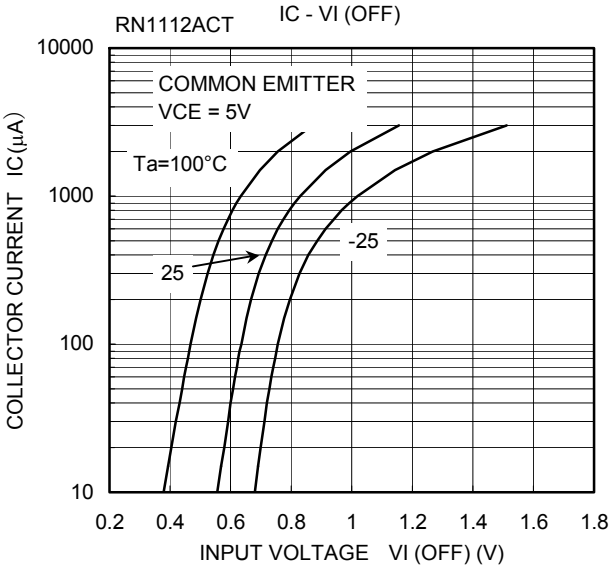
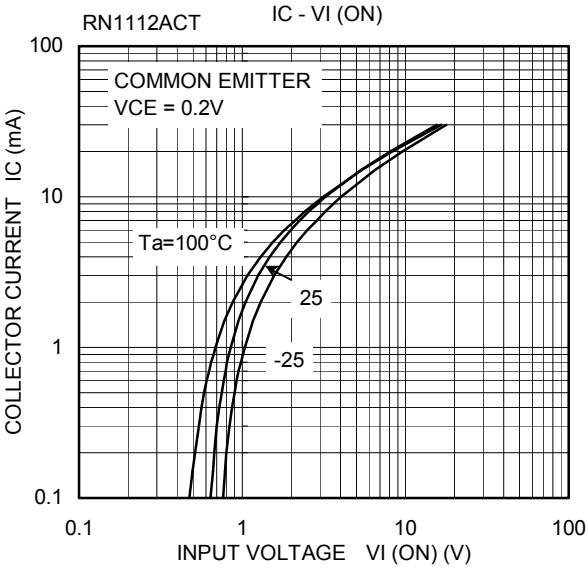
• Unit: mm

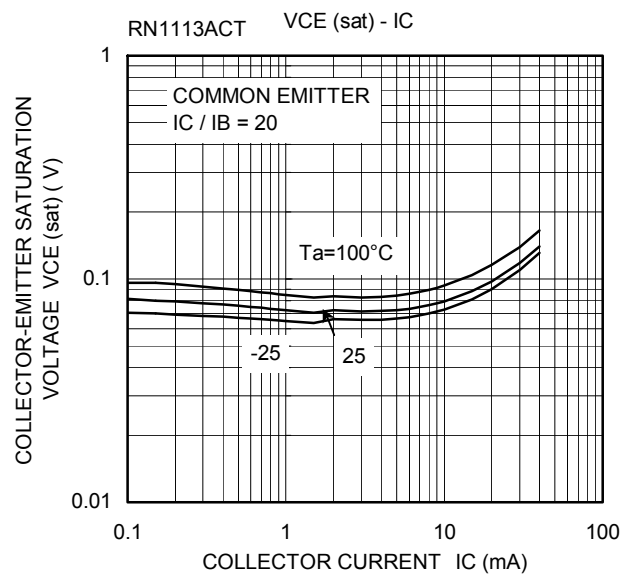
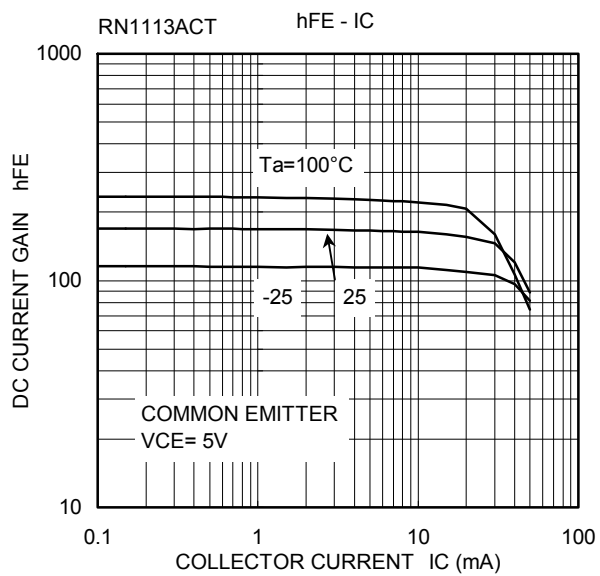
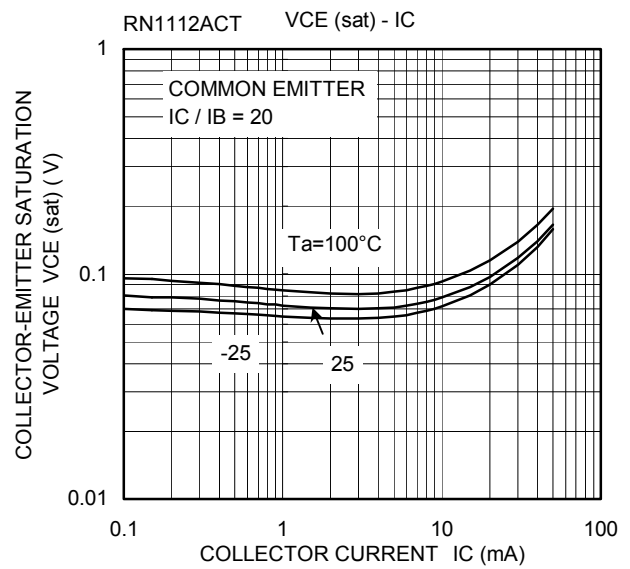
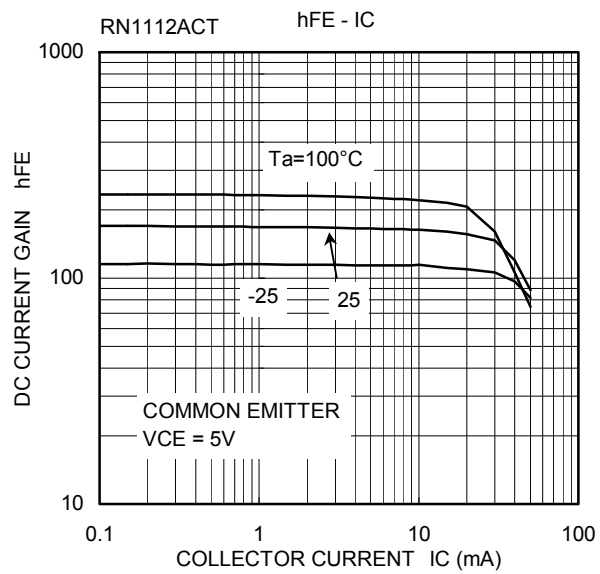


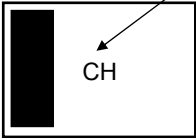
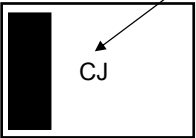
Weight: 0.75 mg (typ.)

Electrical Characteristics (Ta = 25°C)

Characteristics		Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current		I_{CBO}	$V_{CB} = 50\text{ V}, I_E = 0$	—	—	100	nA
Emitter cut-off current		I_{EBO}	$V_{EB} = 5\text{ V}, I_C = 0$	—	—	100	nA
DC current gain		h_{FE}	$V_{CE} = 5\text{ V}, I_C = 1\text{ mA}$	120	—	700	
Collector-emitter saturation voltage		$V_{CE(sat)}$	$I_C = 5\text{ mA}, I_B = 0.25\text{ mA}$	—	—	0.15	V
Collector output capacitance		C_{ob}	$V_{CB} = 10\text{ V}, I_E = 0, f = 1\text{ MHz}$	—	0.7	—	pF
Input resistor	RN1112ACT	R1	—	17.6	22	26.4	kΩ
	RN1113ACT			37.6	47	56.4	





Type Name	Marking
RN1112ACT	 The diagram shows a rectangular marking area. On the left is a solid black vertical bar. To its right is the text 'CH'. An arrow points from the label 'Type Name' to the 'CH' text.
RN1113ACT	 The diagram shows a rectangular marking area. On the left is a solid black vertical bar. To its right is the text 'CJ'. An arrow points from the label 'Type Name' to the 'CJ' text.

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