

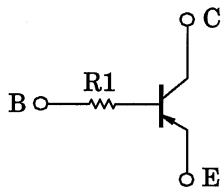
TOSHIBA Transistor Silicon PNP Epitaxial Type (PCT Process) (Bias Resistor built-in Transistor)

## RN2112, RN2113

Switching, Inverter Circuit, Interface Circuit  
and Driver Circuit Applications

- Built-in bias resistors
- Simplified circuit design
- Fewer parts and simplified manufacturing process
- Complementary to RN1112, RN1113

### Equivalent Circuit



### Absolute 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	$V_{EBO}$	-5	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 to 150	°C

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. operating temperature/current/voltage, etc.) are within the absolute maximum ratings.

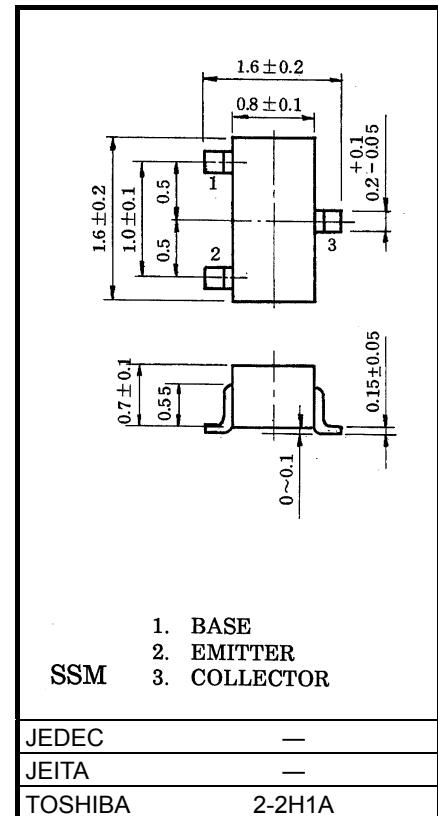
Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/"Derating Concept and Methods") and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

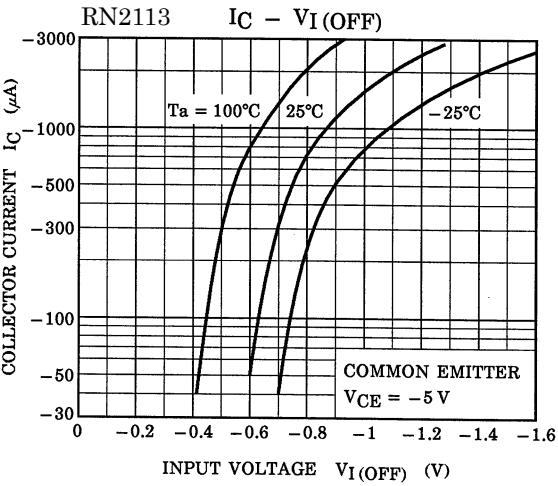
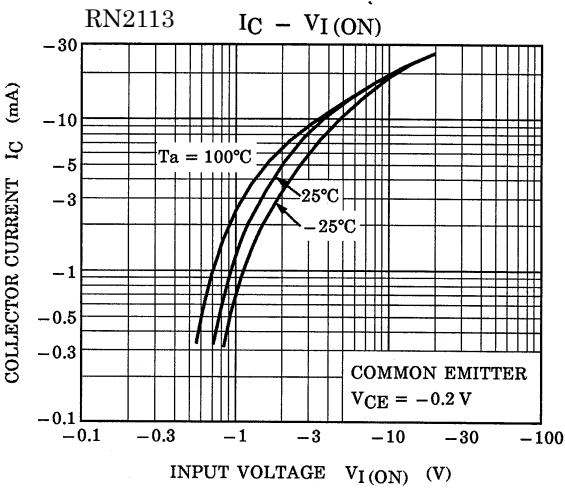
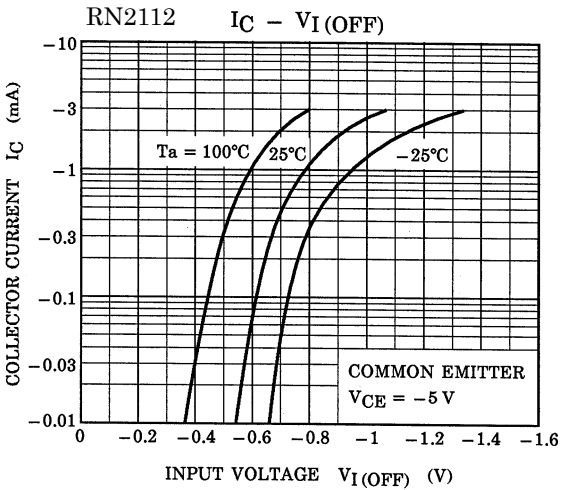
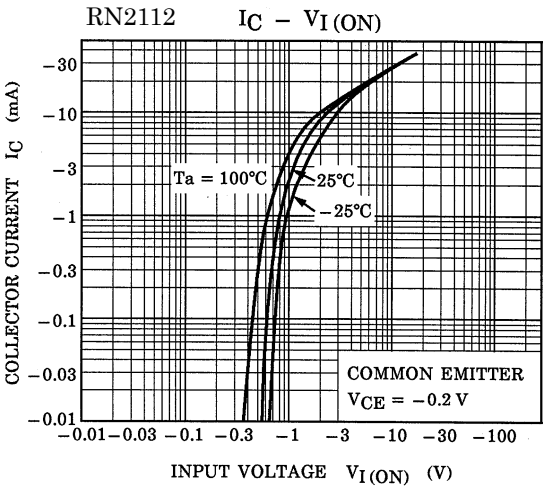
### Electrical Characteristics (Ta = 25°C)

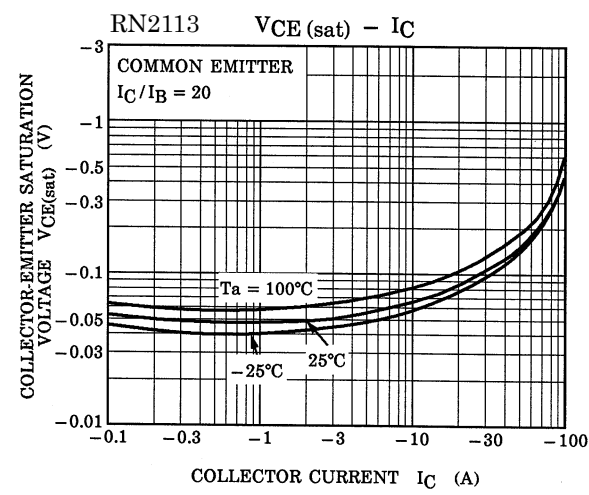
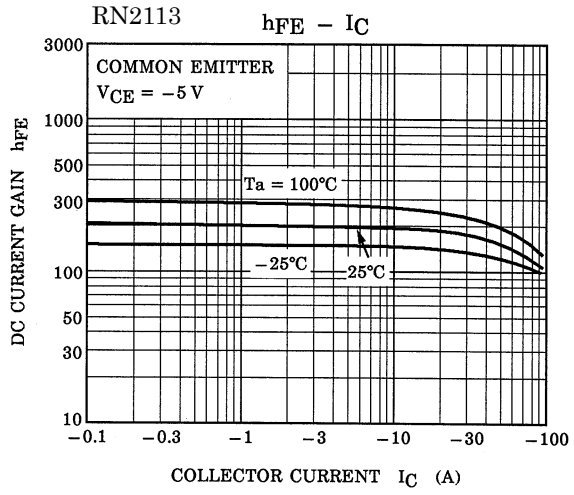
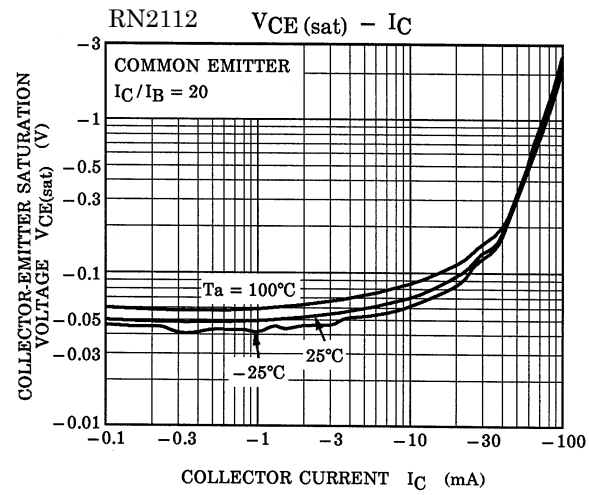
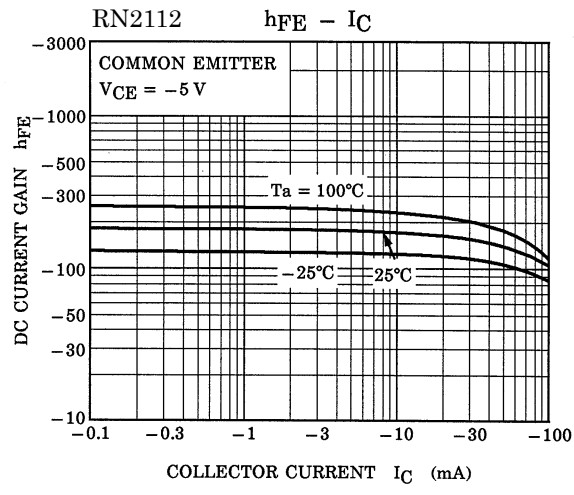
Characteristic	Symbol	Test Circuit	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current	$I_{CBO}$	—	$V_{CB} = -50\text{ V}, I_E = 0$	—	—	-100	nA
Emitter cut-off current	$I_{EBO}$	—	$V_{EB} = -5\text{ V}, I_C = 0$	—	—	-100	nA
DC current gain	$h_{FE}$	—	$V_{CE} = -5\text{ V}, I_C = -1\text{ mA}$	120	—	400	—
Collector-emitter saturation voltage	$V_{CE(sat)}$	—	$I_C = -5\text{ mA}, I_B = -0.25\text{ mA}$	—	-0.1	-0.3	V
Transition frequency	$f_T$	—	$V_{CE} = -10\text{ V}, I_C = -5\text{ mA}$	—	200	—	MHz
Collector output capacitance	$C_{ob}$	—	$V_{CB} = -10\text{ V}, I_E = 0, f = 1\text{ MHz}$	—	3	6	pF
Input resistor	RN2112	R1	—	15.4	22	28.6	kΩ
	RN2113			32.9	47	61.1	

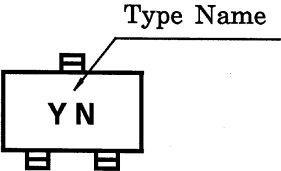
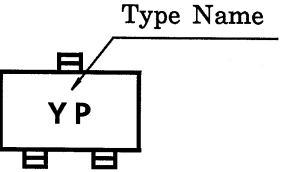
Start of commercial production  
1990-12

Unit: mm







Type Name	Marking
RN2112	 <p>The diagram shows a rectangular component with the letters 'Y N' inside. A leader line points from the text 'Type Name' to the 'Y' character. There are four small rectangular mounting tabs: one at the top center, one at the bottom left, one at the bottom right, and one at the bottom center.</p>
RN2113	 <p>The diagram shows a rectangular component with the letters 'Y P' inside. A leader line points from the text 'Type Name' to the 'Y' character. There are four small rectangular mounting tabs: one at the top center, one at the bottom left, one at the bottom right, and one at the bottom center.</p>

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### Офис по работе с юридическими лицами:

105318, г.Москва, ул.Щербаковская д.3, офис 1107, 1118, ДЦ «Щербаковский»

Телефон: +7 495 668-12-70 (многоканальный)

Факс: +7 495 668-12-70 (доб.304)

E-mail: [info@moschip.ru](mailto:info@moschip.ru)

Skype отдела продаж:

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