

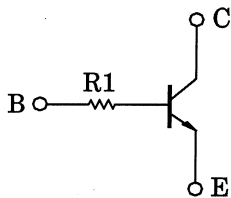
TOSHIBA Transistor Silicon NPN Epitaxial Type (PCT process) (Bias Resistor built-in Transistor)

RN1112CT,RN1113CT

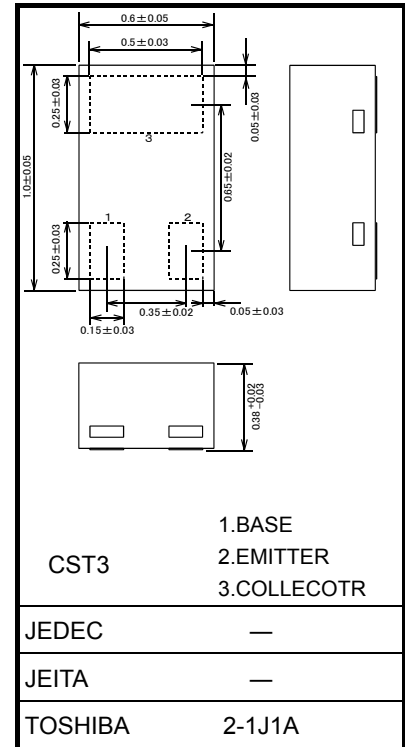
Switching Applications
 Inverter Circuit Applications
 Interface Circuit Applications
 Driver Circuit Applications

- 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 RN2112CT, RN2113CT

Equivalent Circuit



Unit: mm



Weight: 0.75 mg (typ.)

Absolute Maximum Ratings (Ta = 25°C)

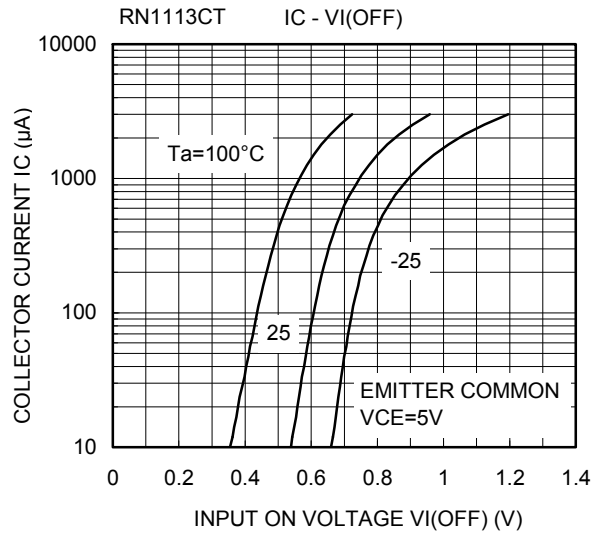
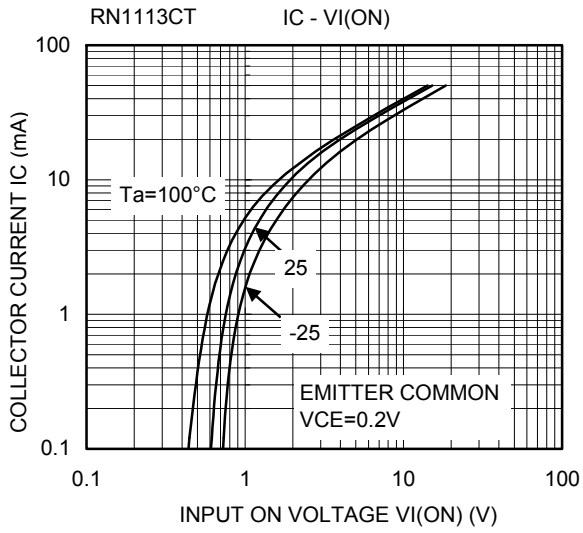
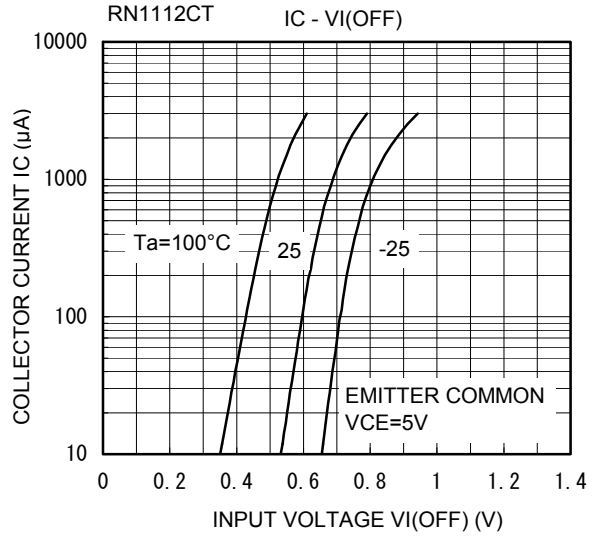
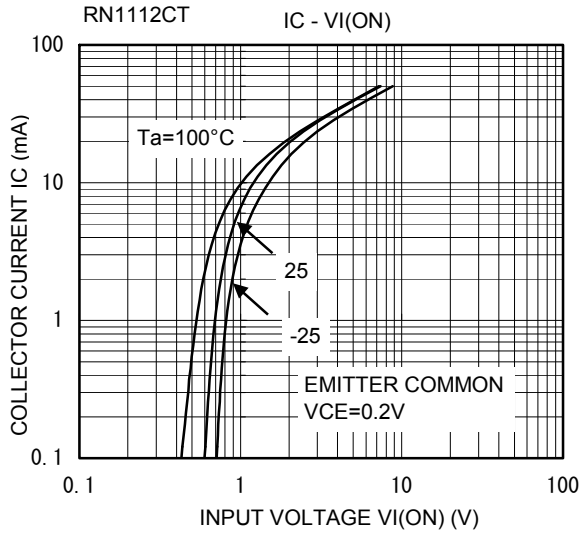
Characteristics	Symbol	Rating	Unit
Collector-base voltage	V _{CBO}	20	V
Collector-emitter voltage	V _{CEO}	20	V
Emitter-base voltage	V _{EBO}	5	V
Collector current	I _C	50	mA
Collector power dissipation	P _C	50	mW
Junction temperature	T _j	150	°C
Storage temperature range	T _{stg}	-55 to 150	°C

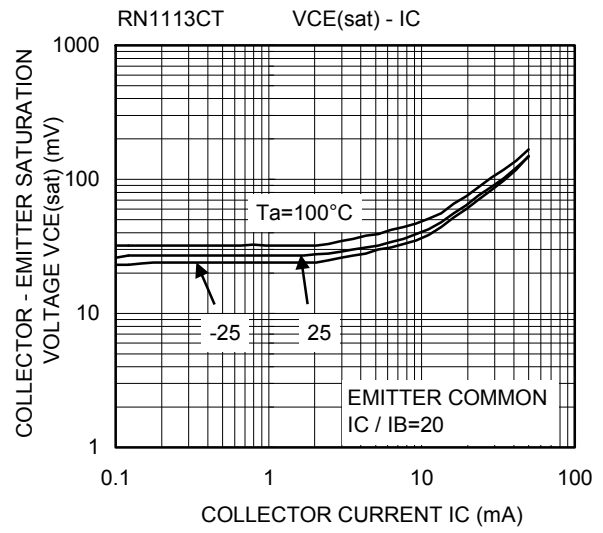
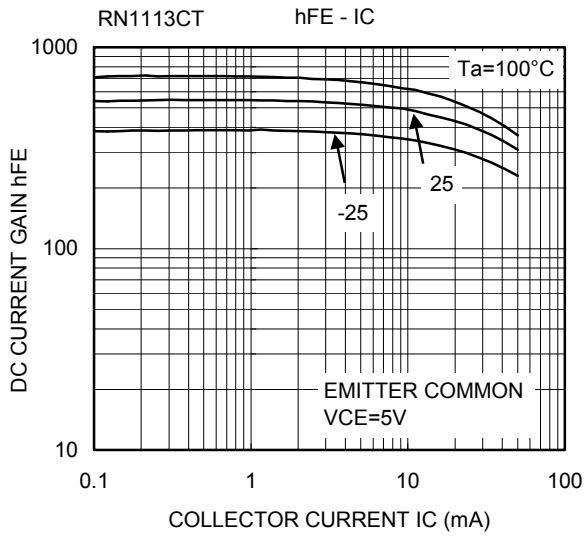
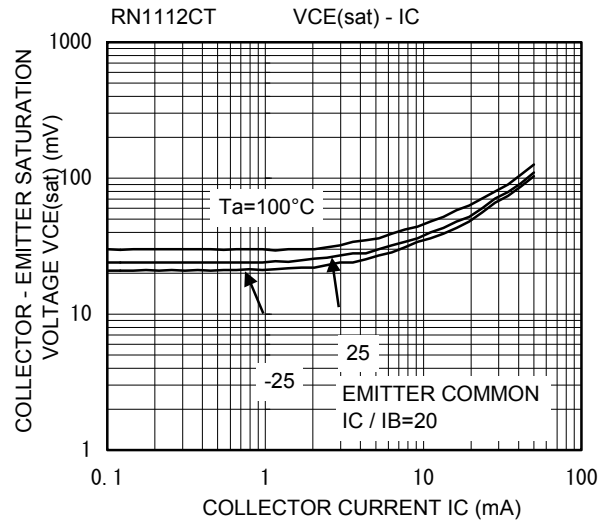
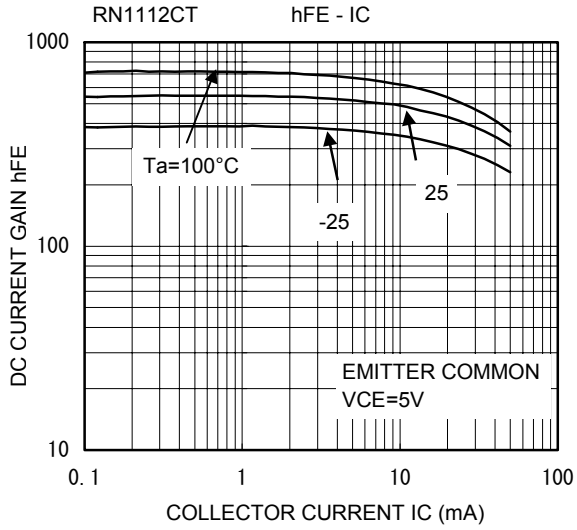
Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.)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

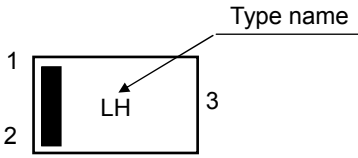
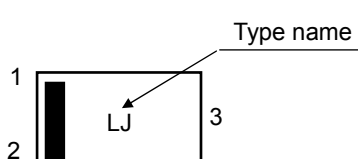
Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/"Derating Concept and Methods") and individual reliability data (i.e. reliability test report and estimated failure rate, etc.).

Electrical Characteristics (Ta = 25°C)

Characteristics		Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current		I_{CBO}	$V_{CB} = 20\text{ V}, I_E = 0$	—	—	100	nA
Emitter cut-off current		I_{EBO}	$V_{EB} = 5\text{ V}, I_C = 0$	—	—	100	nA
DC current gain		h_{FE}	$V_{CE} = 5\text{ V}, I_C = 1\text{ mA}$	300	—	—	
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}	$V_{CB} = 10\text{ V}, I_E = 0, f = 1\text{ MHz}$	—	1.2	—	pF
Input resistor	RN1112CT	R1	—	17.6	22	26.4	kΩ
	RN1113CT			37.6	47	56.4	





Type Name	Marking
RN1112CT	 <p>The diagram shows a rectangular marking area with a vertical bar on the left side. The bar is divided into two sections labeled '1' (top) and '2' (bottom). The top section contains the letters 'LH'. An arrow labeled 'Type name' points to the 'LH' text. The number '3' is located to the right of the bar.</p>
RN1113CT	 <p>The diagram shows a rectangular marking area with a vertical bar on the left side. The bar is divided into two sections labeled '1' (top) and '2' (bottom). The top section contains the letters 'LJ'. An arrow labeled 'Type name' points to the 'LJ' text. The number '3' is located to the right of the bar.</p>

Handling Precaution

When handling individual devices (which are not yet mounted on a circuit board), be sure that the environment is protected against electrostatic electricity. Operators should wear anti-static clothing, and containers and other objects that come into direct contact with devices should be made of anti-static materials.

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