

TOSHIBA Transistor Silicon NPN Epitaxial Type (PCT Process)

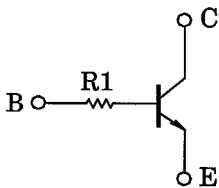
# RN1412,RN1413

Switching, Inverter Circuit, Interface Circuit  
And Driver Circuit Applications

Unit: mm

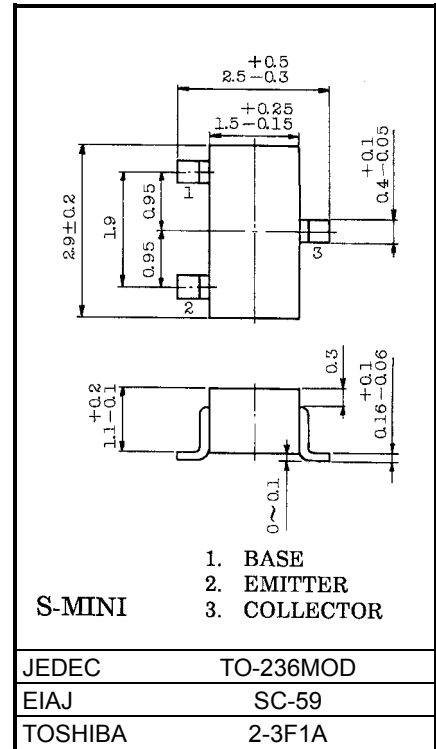
- With built-in bias resistors
- Simplify circuit design
- Reduce a quantity of parts and manufacturing process
- Complementary to RN2412, RN2413

## Equivalent Circuit



## Maximum Ratings (Ta = 25°C)

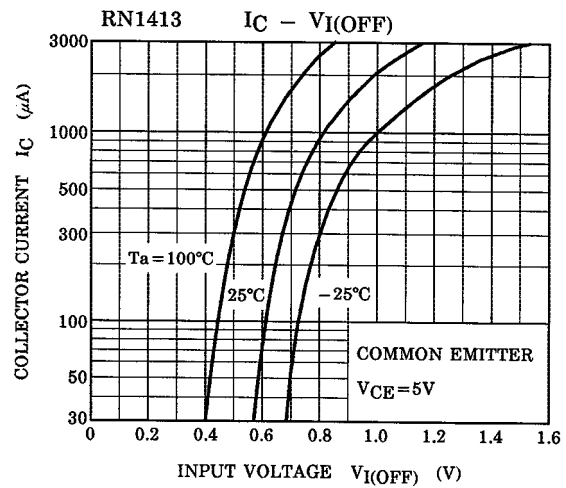
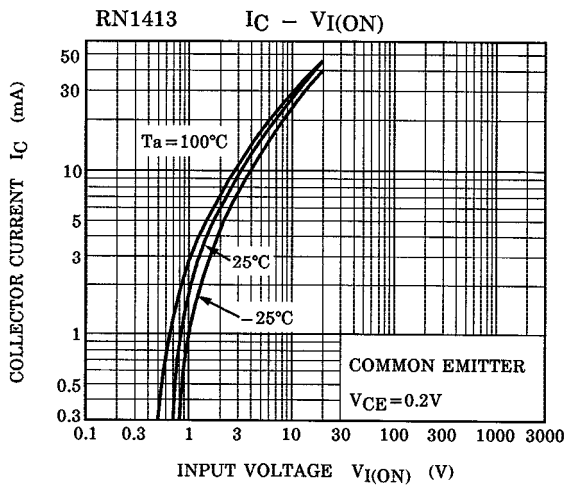
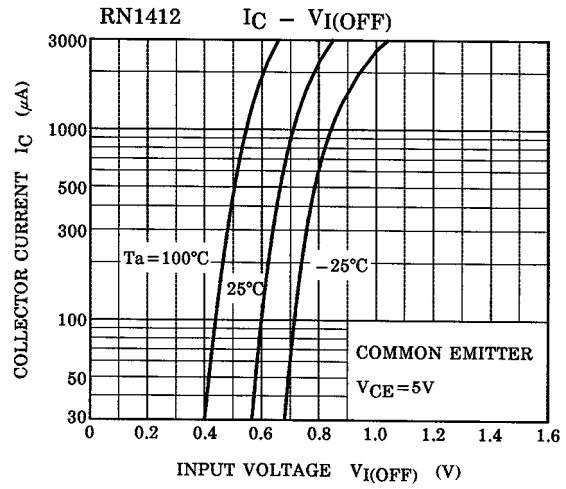
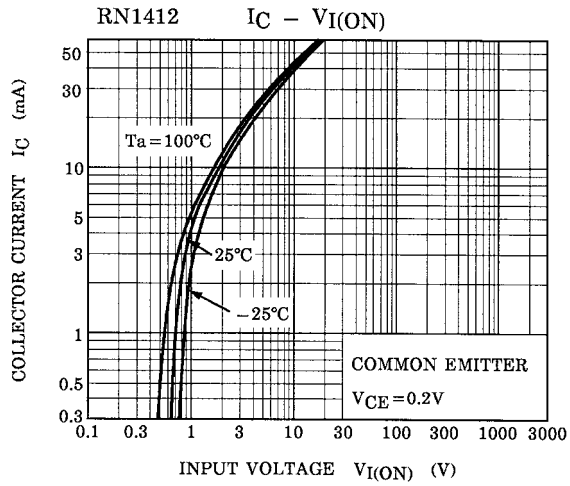
Characteristic	Symbol	Rating	Unit
Collector-base voltage	$V_{CBO}$	50	V
Collector-emitter voltage	$V_{CEO}$	50	V
Emitter-base voltage	$V_{EBO}$	5	V
Collector current	$I_C$	100	mA
Collector power dissipation	$P_C$	200	mW
Junction temperature	$T_j$	150	°C
Storage temperature range	$T_{stg}$	-55~125	°C

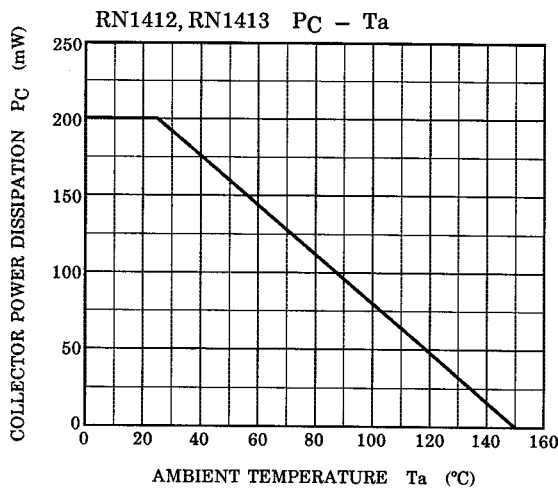
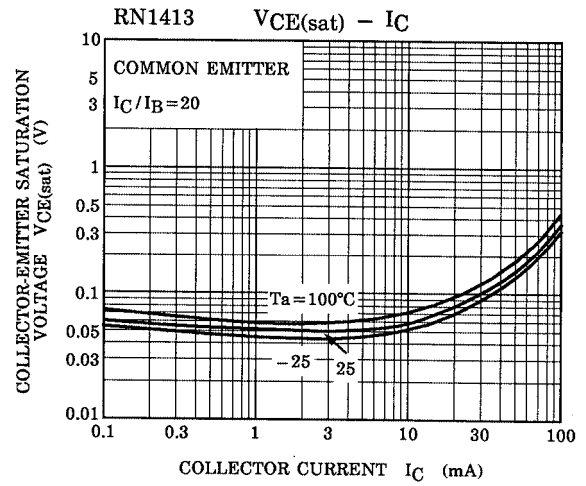
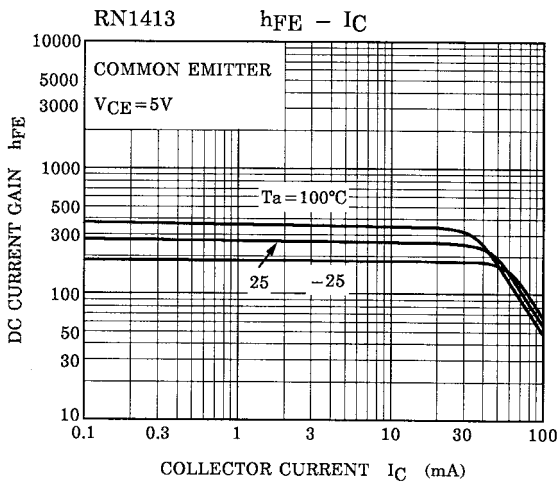
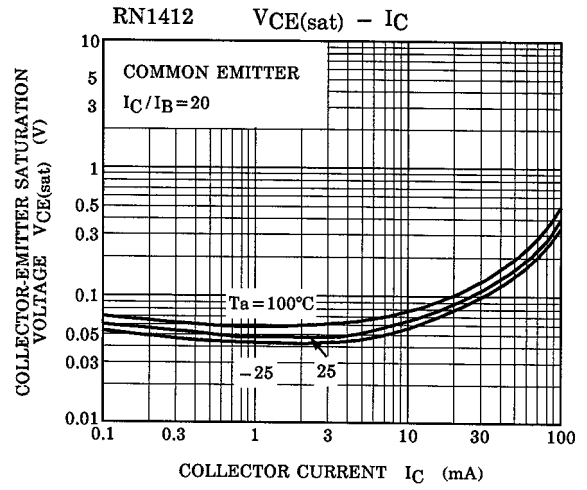
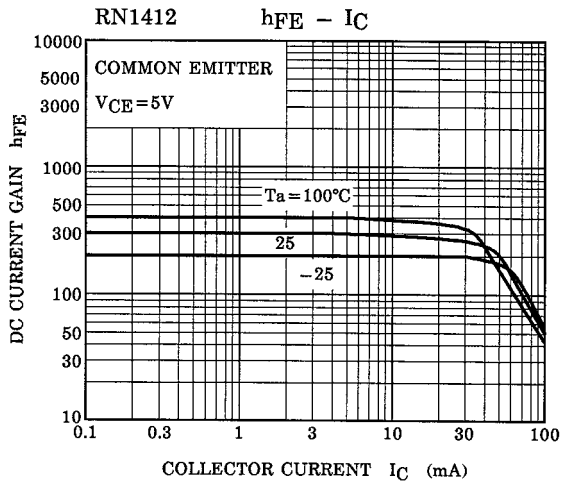


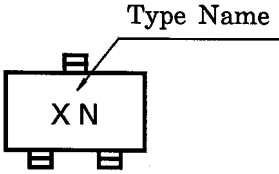
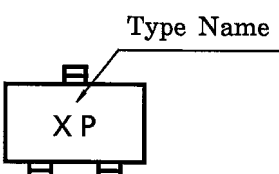
Weight: 0.012g

## Electrical Characteristics (Ta = 25°C)

Characteristic	Symbol	Test Circuit	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current	$I_{CBO}$	—	$V_{CB} = 50V, I_E = 0$	—	—	100	nA
Emitter cut-off current	$I_{EBO}$	—	$V_{EB} = 5V, I_C = 0$	—	—	100	nA
DC current gain	$h_{FE}$ (note)	—	$V_{CE} = 5V, I_C = 1mA$	120	—	700	
Collector-emitter saturation voltage	$V_{CE(sat)}$	—	$I_C = 5mA, I_B = 0.25mA$	—	0.1	0.3	V
Transition frequency	$f_T$	—	$V_{CE} = 10V, I_C = 5mA$	—	250	—	MHz
Collector output capacitance	$C_{ob}$	—	$V_{CB} = 10V, I_E = 0, f = 1MHz$	—	3	6	pF
Input resistor	RN1412	R1	—	15.4	22	28.6	kΩ
	RN1413			32.9	47	61.1	





Type Name	Marking
RN1412	 <p>The diagram shows a rectangular component with a small square protrusion on top and two small rectangular protrusions on the bottom. The letters 'X N' are printed inside the rectangle. A line points from the text 'Type Name' to the top protrusion.</p>
RN1413	 <p>The diagram shows a rectangular component with a small square protrusion on top and two small rectangular protrusions on the bottom. The letters 'X P' are printed inside the rectangle. A line points from the text 'Type Name' to the top protrusion.</p>

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