

TOSHIBA Transistor Silicon NPN Epitaxial Type (PCT Process)

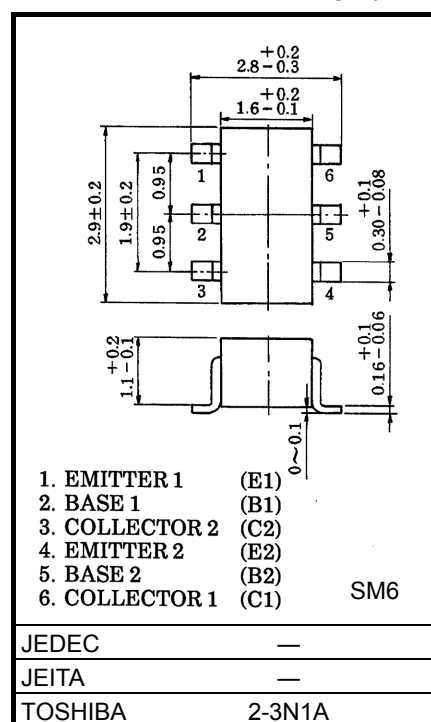
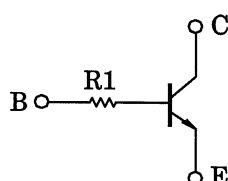
RN1610, RN1611

Switching, Inverter Circuit, Interface Circuit
and Driver Circuit Applications

Unit: mm

- Including two devices in SM6 (super-mini-type with six (6) leads)
- With built-in bias resistors
- Simplified circuit design
- Reduced number of parts and manufacturing process
- Complementary to RN2610 and RN2611

Equivalent Circuit



Absolute Maximum Ratings (Ta = 25°C) (Q1, Q2 Common)

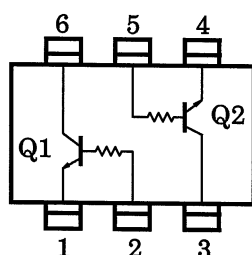
Characteristic	Symbol	Rating	Unit
Collector-base voltage	V_{CBO}	50	V
Collector-emitter voltage	V_{CEO}	50	V
Emitter-base voltage	V_{EBO}	5	V
Collector current	I_C	100	mA
Collector power dissipation	P_C^*	300	mW
Junction temperature	T_j	150	°C
Storage temperature range	T_{stg}	-55 to 150	°C

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).

* Total rating

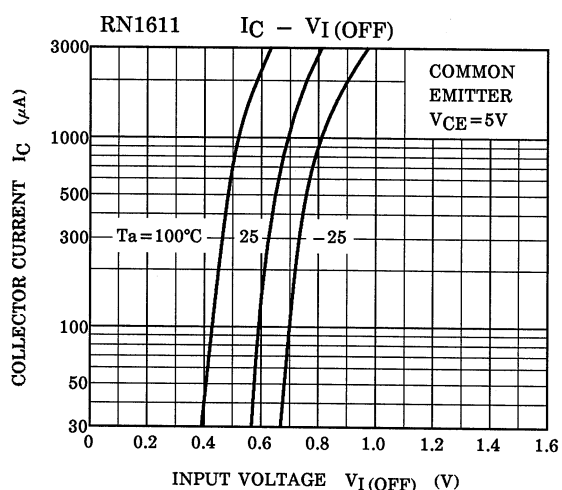
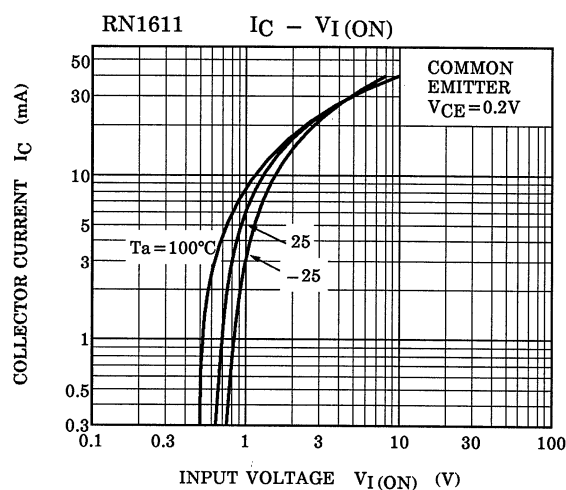
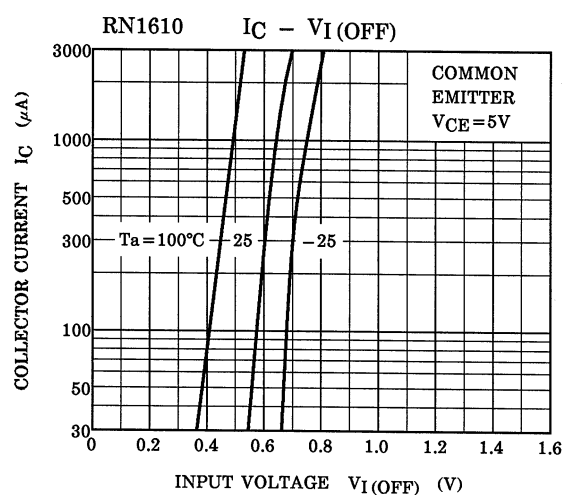
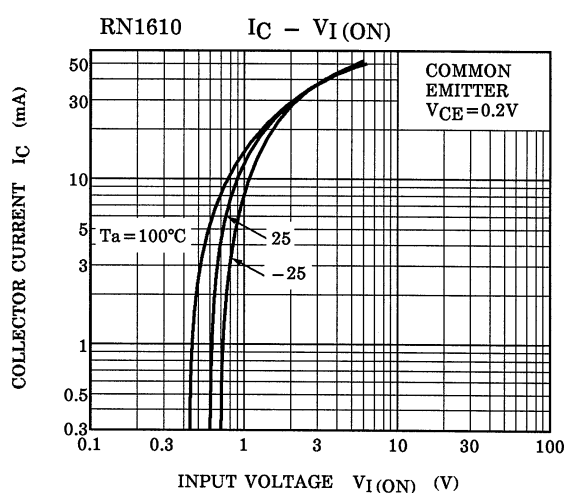
Equivalent Circuit (Top View)



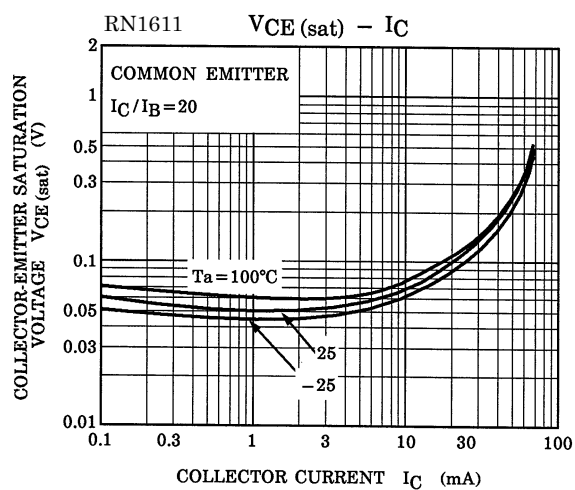
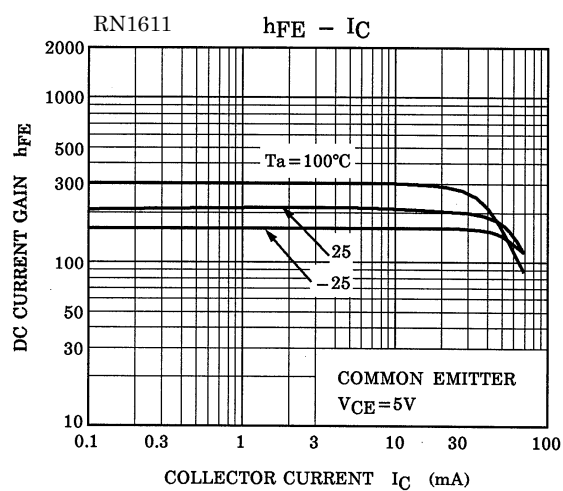
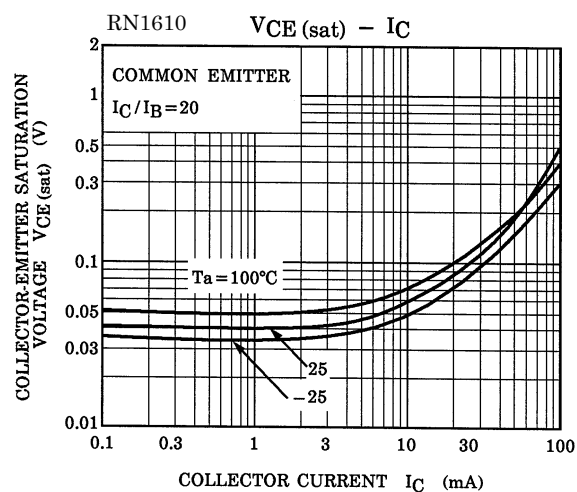
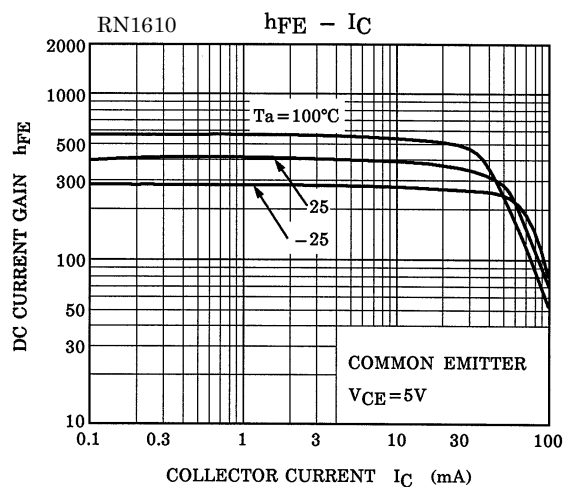
Electrical Characteristics (Ta = 25°C) (Q1, Q2 Common)

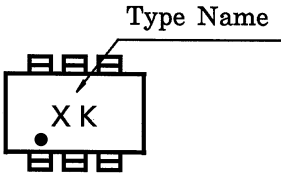
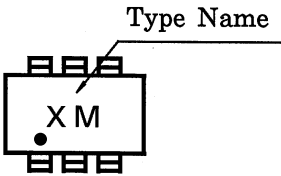
Characteristic		Symbol	Test Circuit	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current		I_{CBO}	—	$V_{CB} = 50\text{ V}, I_E = 0$	—	—	100	nA
Emitter cut-off current		I_{EBO}	—	$V_{EB} = 5\text{ V}, I_C = 0$	—	—	100	nA
DC current gain		h_{FE}	—	$V_{CE} = 5\text{ V}, I_C = 1\text{ mA}$	120	—	700	—
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	—	$V_{CE} = 10\text{ V}, I_C = 5\text{ mA}$	—	250	—	MHz
Collector output capacitance		C_{ob}	—	$V_{CB} = 10\text{ V}, I_E = 0, f = 1\text{ MHz}$	—	3	6	pF
Input resistor	RN1610	R1	—	—	3.29	4.7	6.11	kΩ
	RN1611				7	10	13	

(Q1, Q2 Common)



(Q1, Q2 Common)



Type Name	Marking
RN1610	 The diagram shows a rectangular marking area with a dot in the bottom-left corner. Inside the rectangle are the characters 'X K'. Above the rectangle, the text 'Type Name' is written with a line pointing to the top-right corner of the rectangle. The rectangle is surrounded by a grid of small squares: three on the top, three on the bottom, and three on each side.
RN1611	 The diagram shows a rectangular marking area with a dot in the bottom-left corner. Inside the rectangle are the characters 'X M'. Above the rectangle, the text 'Type Name' is written with a line pointing to the top-right corner of the rectangle. The rectangle is surrounded by a grid of small squares: three on the top, three on the bottom, and three on each side.

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