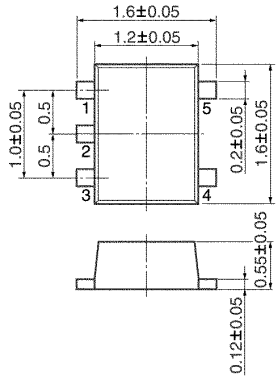
TOSHIBA Transistor Silicon PNP Epitaxial Type (PCT Process)

RN2712JE, RN2713JE

Switching, Inverter Circuit, Interface Circuit and
Driver Circuit Applications

- Two devices are incorporated into an Extreme-Super-Mini (5 pin) package.
- Incorporating a bias resistor into a transistor reduces parts count.
  Reducing the parts count enables the manufacture of ever more compact equipment and lowers assembly cost.
- A wide range of resistor values is available for use in various circuits.

Unit : mm

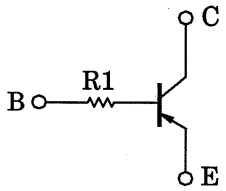


1.BASE1	(B1)
2.EMITTER	(E)
3.BASE2	(B2)
4.COLLECTOR2	(C2)
ESV 5.COLLECTOR1	(C1)

JEDEC	—
JEITA	—
TOSHIBA	2-2P1D

Weight: 0.003g(typ.)

Equivalent Circuit



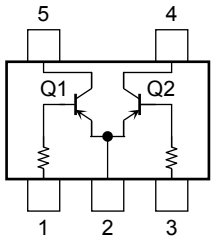
Absolute Maximum Ratings (Ta = 25°C)

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}	−55~150	°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

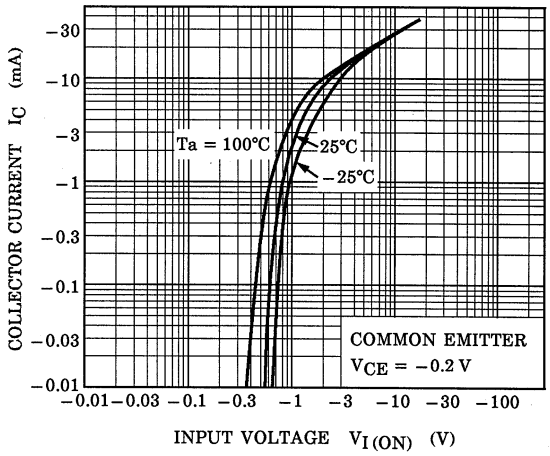
Equivalent Circuit (top view)



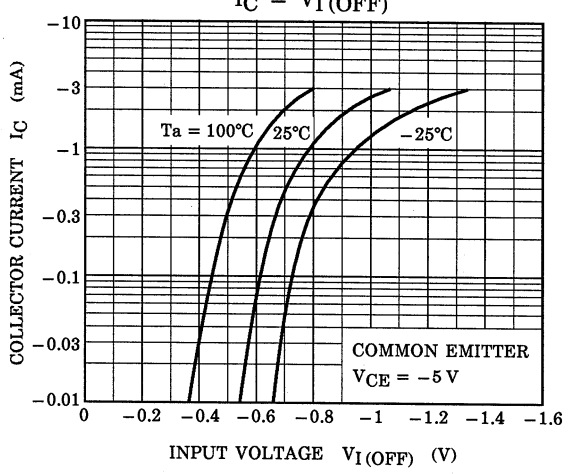
Electrical Characteristics (Ta = 25°C)

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}	—	V_{CE} = −5V, I_C = −1mA	120	—	400	—
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	—	200	—	MHz
Collector output capacitance		C_{ob}	—	V_{CB} = −10V, I_E = 0, f = 1MHz	—	3	6	pF
Input resistor	RN2712JE	R1	—	—	15.4	22	28.6	kΩ
	RN2713JE				32.9	47	61.1	

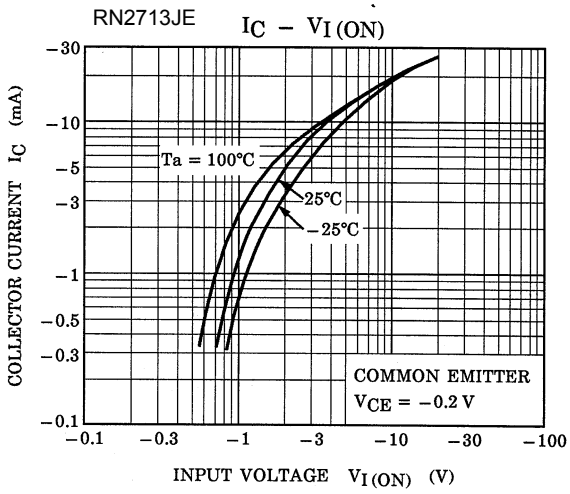
RN2712JE $I_C - V_{I(ON)}$



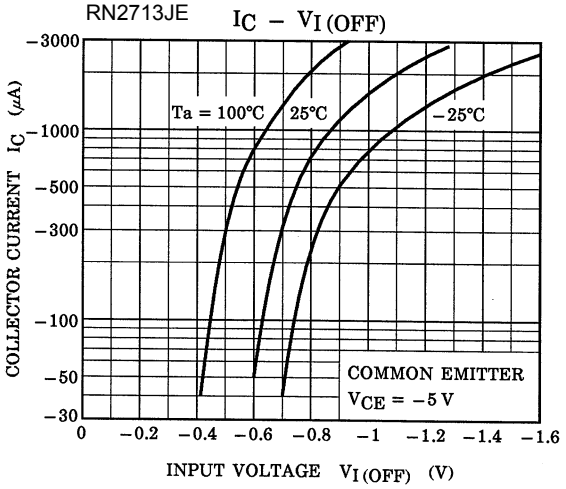
RN2712JE $I_C - V_{I(OFF)}$



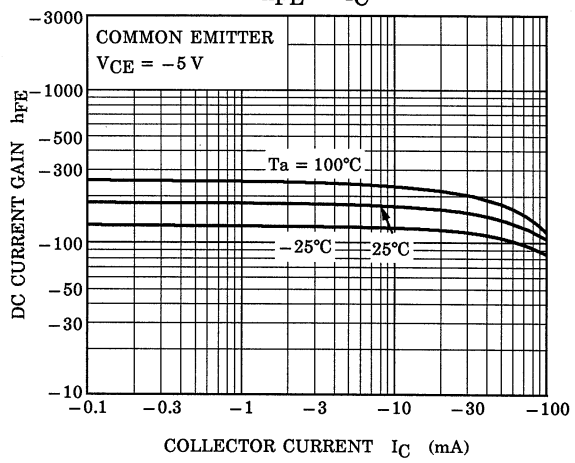
RN2713JE $I_C - V_{I(ON)}$



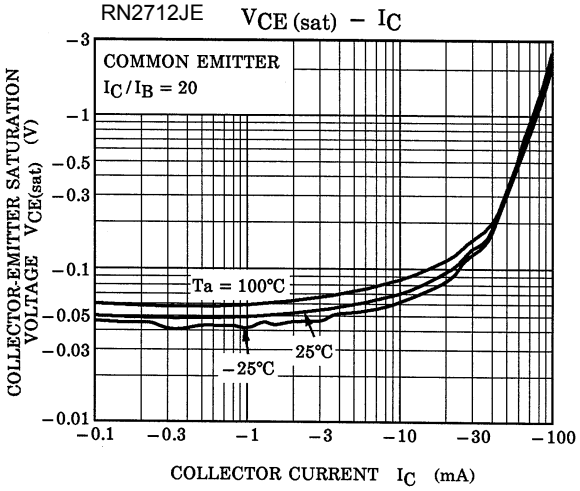
RN2713JE $I_C - V_{I(OFF)}$



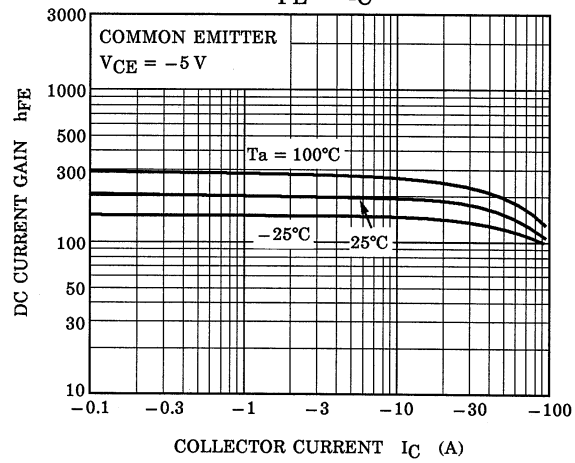
RN2712JE h_{FE} – I_C



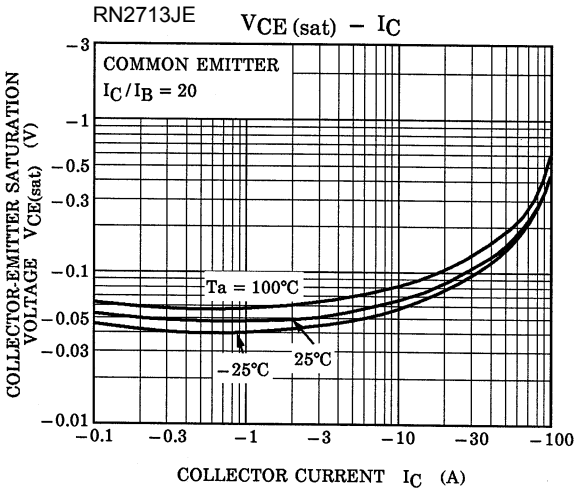
RN2712JE $V_{CE\,(sat)}$ – I_C

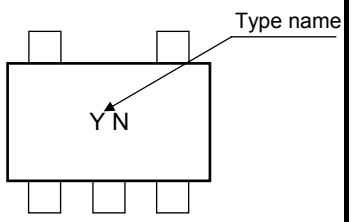
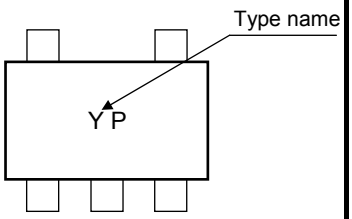


RN2713JE h_{FE} – I_C



RN2713JE $V_{CE\,(sat)}$ – I_C



Type Name	Marking
RN2712JE	
RN2713JE	

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