

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

RN2507

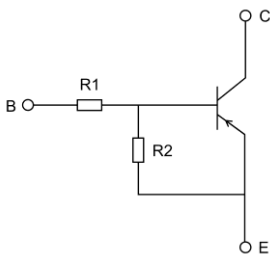
1. Applications

- Switching
- Inverter Circuit
- Interface Circuit
- Driver Circuit Applications

2. Features

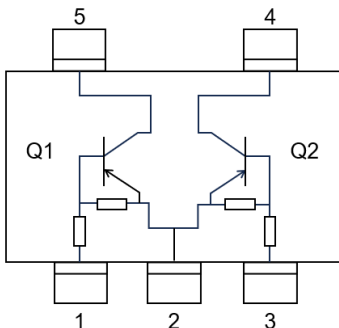
- Including two devices in SMV (super mini type with 5 leads)
- With built-in bias resistors
- Simplify circuit design
- Reduce a quantity of parts and manufacturing process
- Complementary to RN1507

3. Equivalent Circuit and Bias Resistor Values

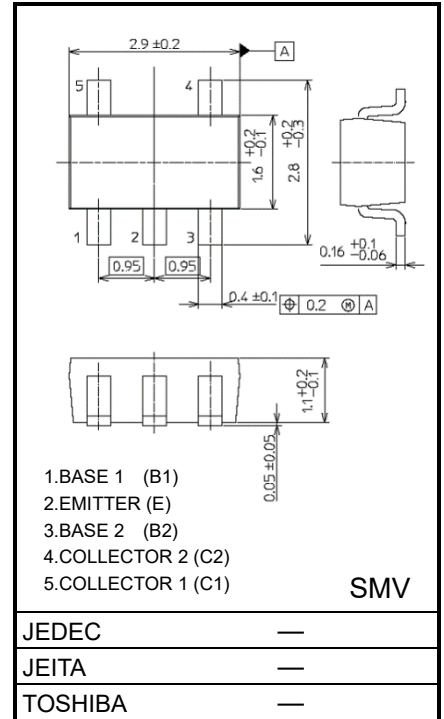


Part No.	R1 (kΩ)	R2 (kΩ)
RN2507	10	47

4. Equivalent Circuit (Top View)



Unit: mm



- 1.BASE 1 (B1)
 - 2.EMITTER (E)
 - 3.BASE 2 (B2)
 - 4.COLLECTOR 2 (C2)
 - 5.COLLECTOR 1 (C1)
- SMV

JEDEC	—
JEITA	—
TOSHIBA	—

Weight: 14mg (typ.)

Start of commercial production
1988-10

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

Characteristics	Symbol	Rating	Unit
Collector-base voltage	V _{CB0}	-50	V
Collector-emitter voltage	V _{CEO}	-50	V
Emitter-base voltage	V _{EBO}	-6	V
Collector current	I _C	-100	mA
Collector power dissipation	P _C (Note 1)	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).

Note 1: Total rating.

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

Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current	I _{CB0}	V _{CB} = -50 V, I _E = 0 mA	—	—	-100	nA
	I _{CEO}	V _{CE} = -50 V, I _B = 0 mA	—	—	-500	
Emitter cut-off current	I _{EBO}	V _{EB} = -6 V, I _C = 0 mA	-0.081	—	-0.15	mA
DC current gain	h _{FE}	V _{CE} = -5 V, I _C = -10 mA	80	—	—	—
Collector-emitter saturation voltage	V _{CE(sat)}	I _C = -5 mA, I _B = -0.25 mA	—	-0.1	-0.3	V
Input voltage (ON)	V _{I(ON)}	V _{CE} = -0.2 V, I _C = -5 mA	-0.7	—	-1.8	V
Input voltage (OFF)	V _{I(OFF)}	V _{CE} = -5 V, I _C = -0.1 mA	-0.5	—	-1.0	V
Transition frequency	f _T	V _{CE} = -10 V, I _C = -5 mA	—	200	—	MHz
Collector output capacitance	C _{ob}	V _{CB} = -10 V, I _E = 0 mA f = 1 MHz	—	3	6	pF
Input resistor	R1	—	7	10	13	kΩ
Resistor ratio	R1 / R2	—	0.191	0.213	0.232	—

7. Characteristics Curves (Note) (Q1, Q2 Common)

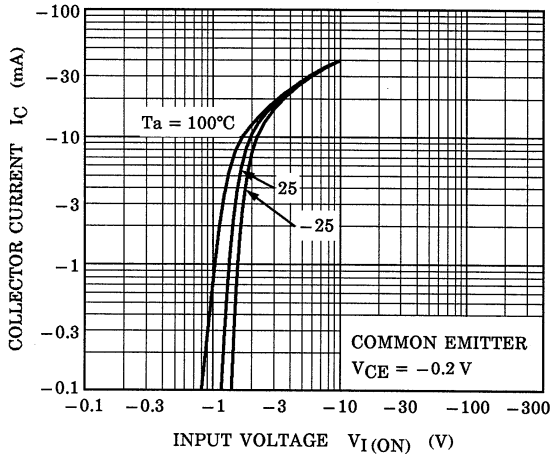


Fig. 7.1 $I_C - V_{I(ON)}$

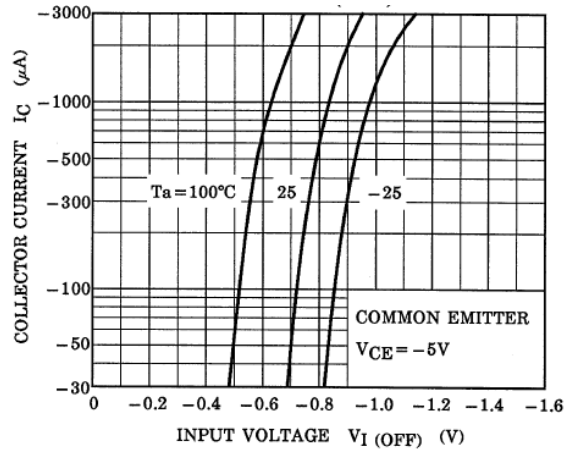


Fig. 7.2 $I_C - V_{I(OFF)}$

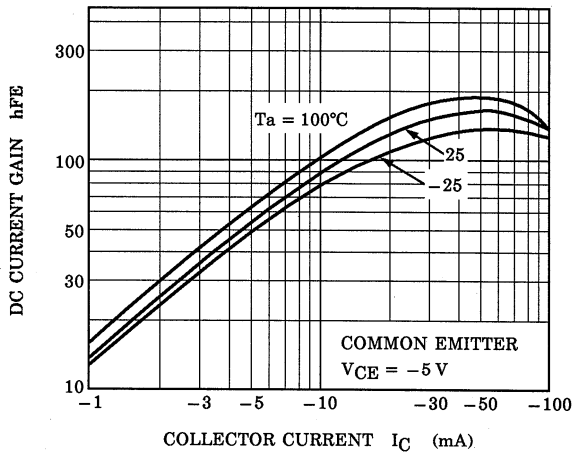


Fig. 7.3 $h_{FE} - I_C$

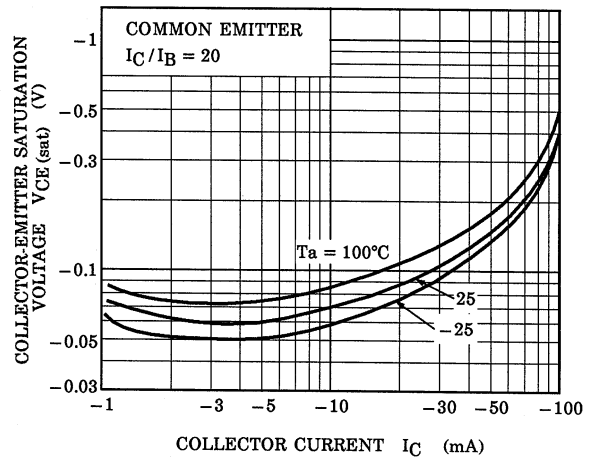
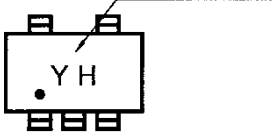


Fig. 7.4 $V_{CE(sat)} - I_C$

Note: The above characteristics curves are presented for reference only and not guaranteed by production test, unless otherwise noted.

8. Marking

Part No.	Marking
RN2507	<p data-bbox="560 376 831 405">Part No. (abbreviation code)</p> 

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