

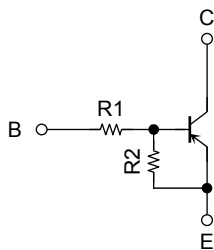
TOSHIBA Transistor Silicon PNP Epitaxial Type (PCT process) (Bias Resistor built-in Transistor)

RN2907FS, RN2908FS, RN2909FS

Switching, Inverter Circuit, Interface Circuit and Driver Circuit Applications.

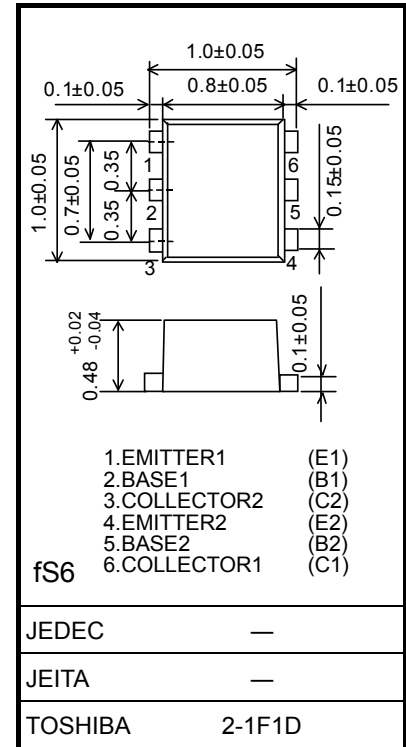
- Two devices are incorporated into a fine pitch small mold (6-pin) package.
- Incorporating a bias resistor into a transistor reduces parts count. Reducing the parts count enables the manufacture of ever more compact equipment and lowers assembly cost.
- Complementary to RN1907FS to RN1909FS

Equivalent Circuit and Bias Resistor Values



Type No.	R1 (kΩ)	R2 (kΩ)
RN2907FS	10	47
RN2908FS	22	47
RN2909FS	47	22

Unit: mm

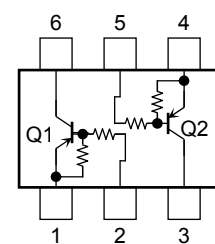


Weight: 1 mg (typ.)

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

Characteristics		Symbol	Rating	Unit
Collector-base voltage	RN2907FS to RN2909FS	V _{CB0}	-20	V
Collector-emitter voltage		V _{CEO}	-20	V
Emitter-base voltage	RN2907FS	V _{EBO}	-6	V
	RN2908FS		-7	
	RN2909FS		-15	
Collector current	RN2907FS to RN2909FS	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

Equivalent Circuit (top view)



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.

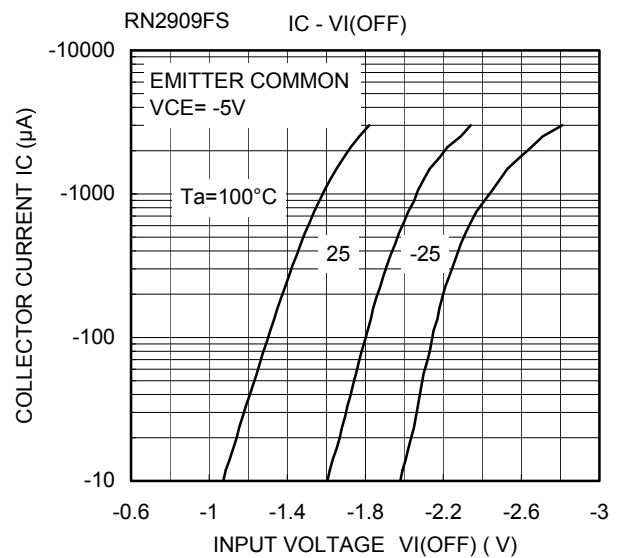
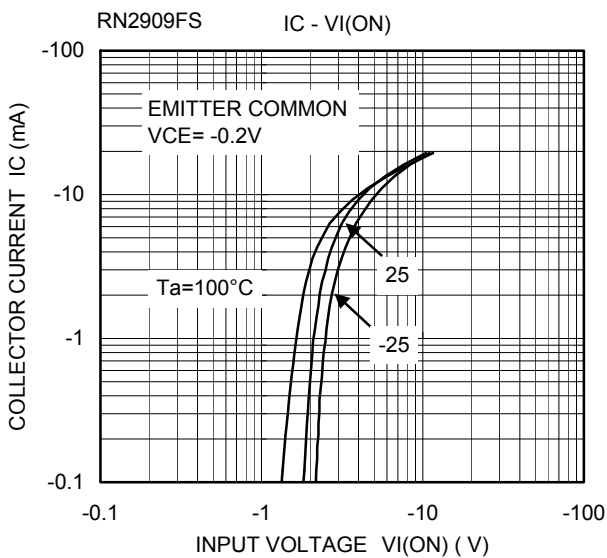
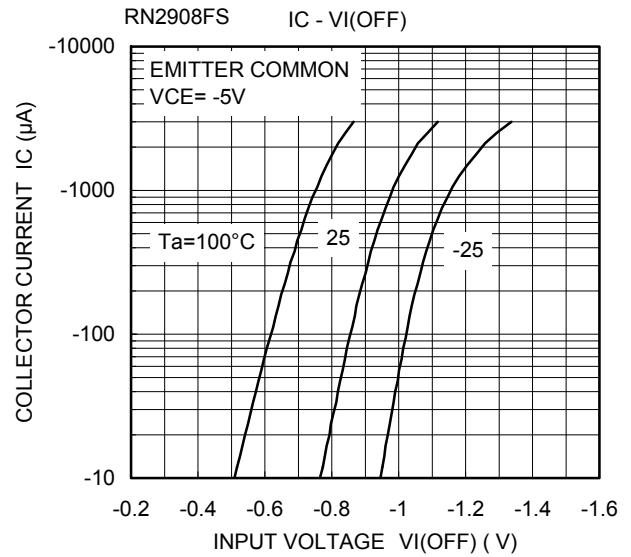
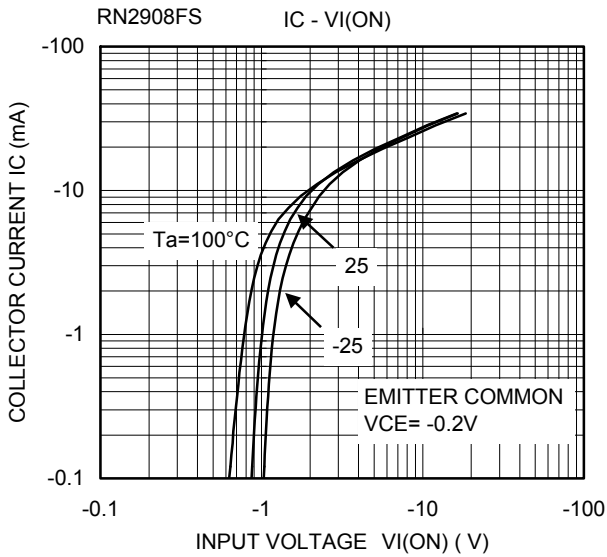
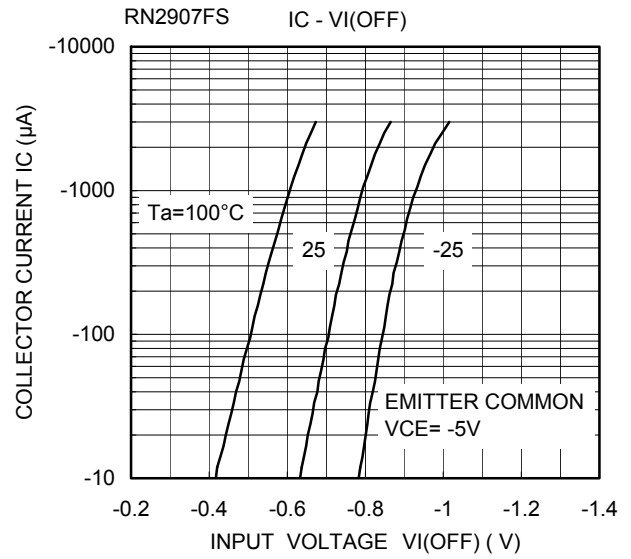
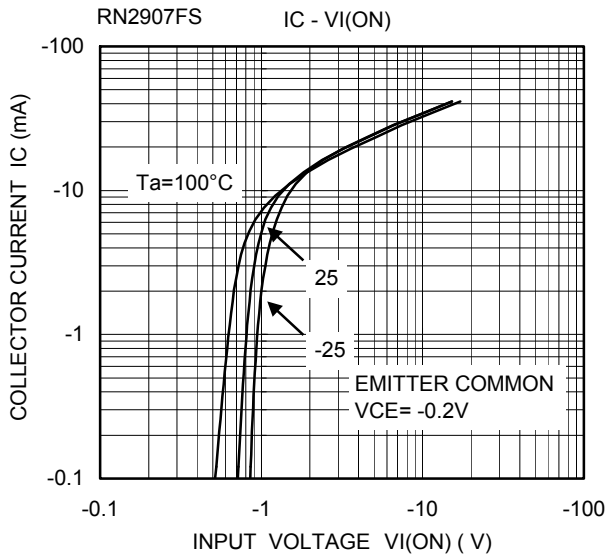
Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/"Derating Concept and Methods") and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

*: Total rating

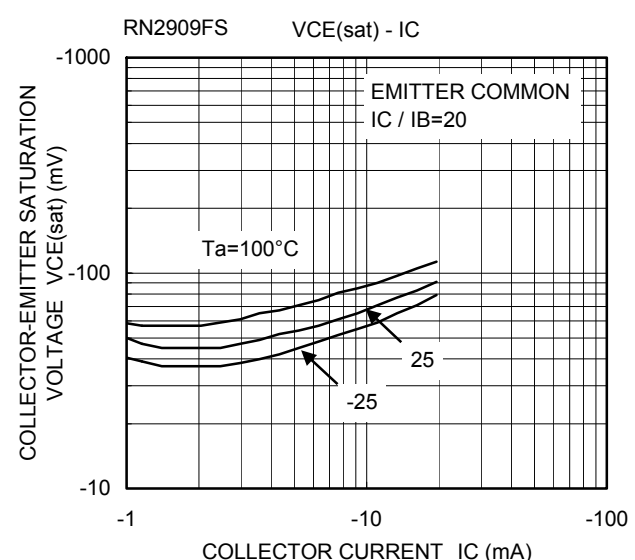
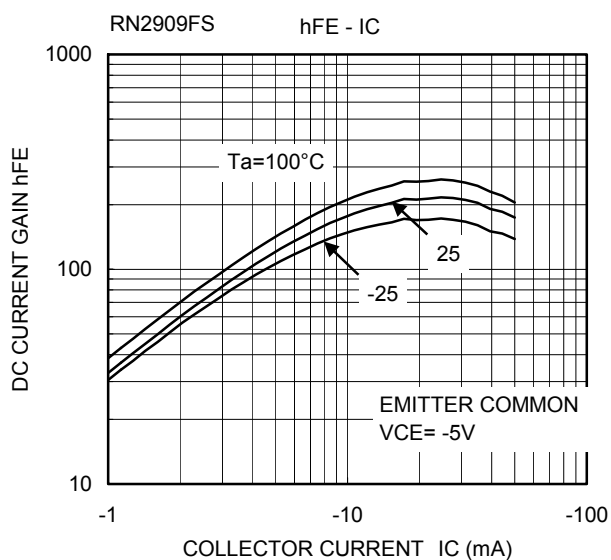
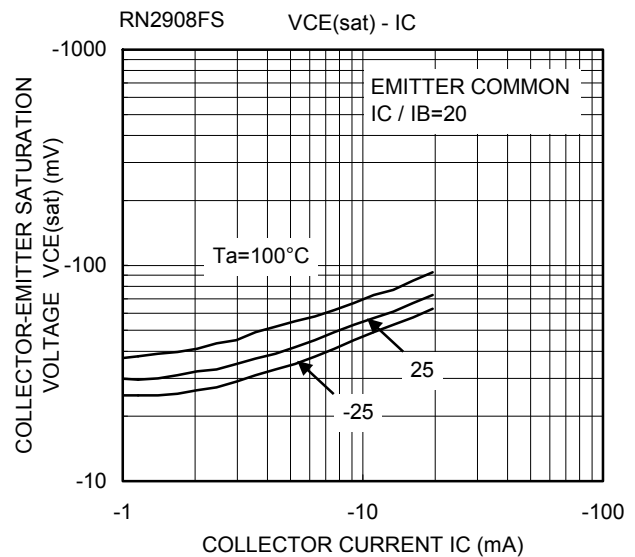
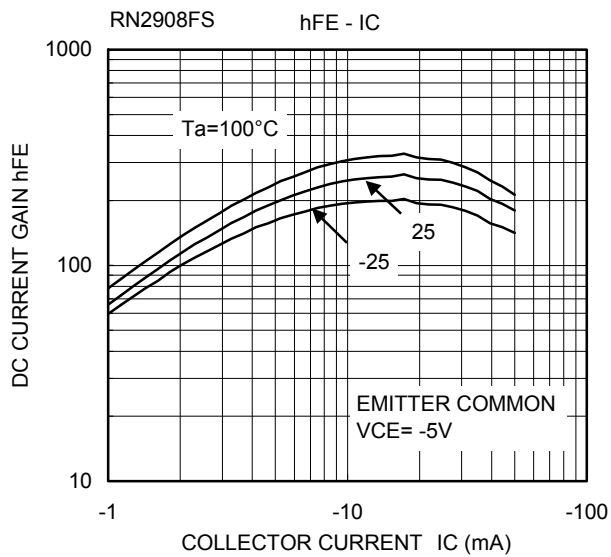
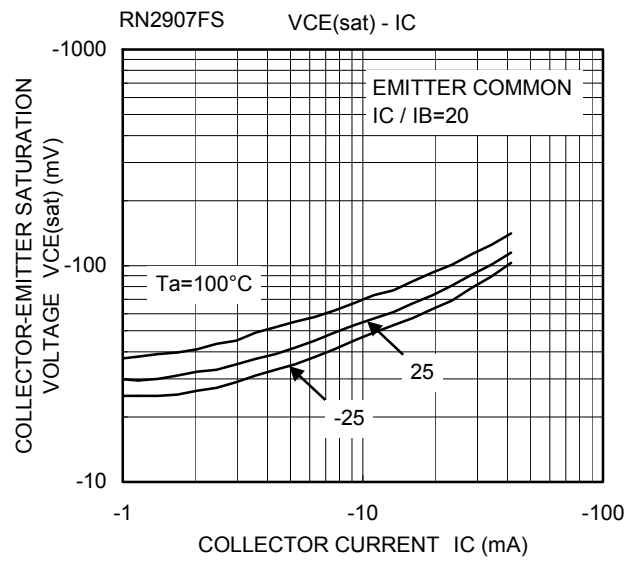
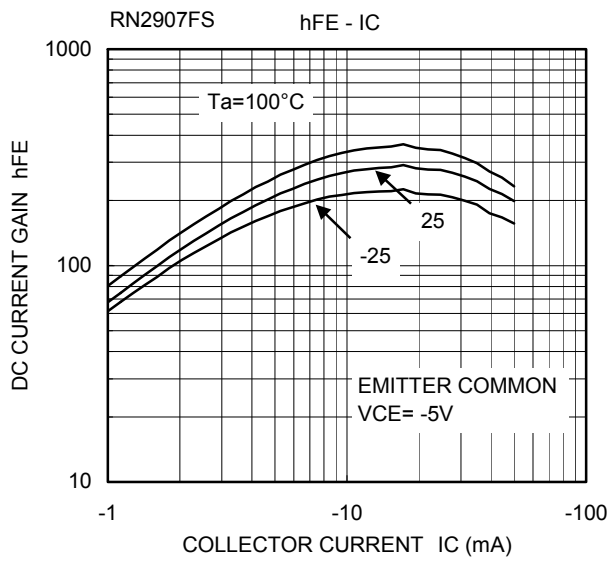
Electrical Characteristics (Ta = 25°C) (Q1, Q2 common)

Characteristics		Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current	RN2907FS to 2909FS	I_{CBO}	$V_{CB} = -20\text{ V}, I_E = 0$	—	—	-100	nA
		I_{CEO}	$V_{CE} = -20\text{ V}, I_B = 0$	—	—	-500	
Emitter cut-off current	RN2907FS	I_{EBO}	$V_{EB} = -6\text{ V}, I_C = 0$	-0.088	—	-0.131	mA
	RN2908FS		$V_{EB} = -7\text{ V}, I_C = 0$	-0.085	—	-0.126	
	RN2909FS		$V_{EB} = -15\text{ V}, I_C = 0$	-0.182	—	-0.271	
DC current gain	RN2907FS	h_{FE}	$V_{CE} = -5\text{ V},$ $I_C = -10\text{ mA}$	120	—	—	
	RN2908FS			120	—	—	
	RN2909FS			100	—	—	
Collector-emitter saturation voltage	RN2907FS to 2909FS	$V_{CE(sat)}$	$I_C = -5\text{ mA},$ $I_B = -0.25\text{ mA}$	—	—	-0.15	V
Input voltage (ON)	RN2907FS	$V_{I(ON)}$	$V_{CE} = -0.2\text{ V},$ $I_C = -5\text{ mA}$	-0.7	—	-1.5	V
	RN2908FS			-0.8	—	-2.2	
	RN2909FS			-1.6	—	-5.0	
Input voltage (OFF)	RN2907FS	$V_{I(OFF)}$	$V_{CE} = -5\text{ V},$ $I_C = -0.1\text{ mA},$	-0.5	—	-1.0	V
	RN2908FS			-0.6	—	-1.1	
	RN2909FS			-1.3	—	-2.6	
Collector output capacitance	RN2907FS to 2909FS	C_{ob}	$V_{CB} = -10\text{ V}, I_E = 0,$ $f = 1\text{ MHz}$	—	1.2	—	pF
Input resistor	RN2907FS	R1	—	8	10	12	kΩ
	RN2908FS			17.6	22	26.4	
	RN2909FS			37.6	47	56.4	
Resistor ratio	RN2907FS	R1/R2	—	0.17	0.213	0.255	
	RN2908FS			0.374	0.468	0.562	
	RN2909FS			1.71	2.14	2.56	

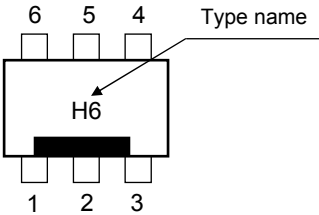
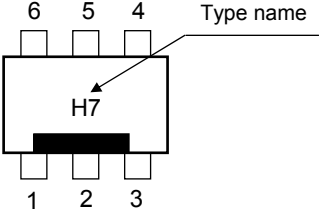
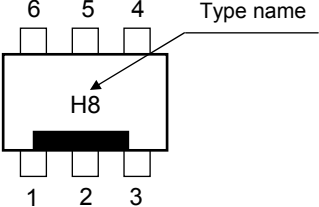
Q1, Q2 Common



Q1, Q2 Common



Marking

Type Name	Marking
RN2907FS	 <p>Diagram showing the marking on the RN2907FS device. The top pins are labeled 6, 5, and 4. The bottom pins are labeled 1, 2, and 3. A black bar is located between pins 1 and 2. The marking 'H6' is printed on the device, with an arrow pointing to it from the label 'Type name'.</p>
RN2908FS	 <p>Diagram showing the marking on the RN2908FS device. The top pins are labeled 6, 5, and 4. The bottom pins are labeled 1, 2, and 3. A black bar is located between pins 1 and 2. The marking 'H7' is printed on the device, with an arrow pointing to it from the label 'Type name'.</p>
RN2909FS	 <p>Diagram showing the marking on the RN2909FS device. The top pins are labeled 6, 5, and 4. The bottom pins are labeled 1, 2, and 3. A black bar is located between pins 1 and 2. The marking 'H8' is printed on the device, with an arrow pointing to it from the label 'Type name'.</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 discharge. 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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