

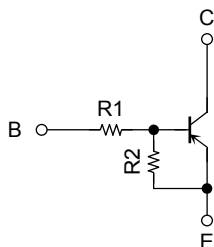
TOSHIBA Transistor Silicon PNP Epitaxial Type (PCT Process) (Transistor with Built-in Bias Resistor)

RN2907AFS, RN2908AFS, RN2909AFS

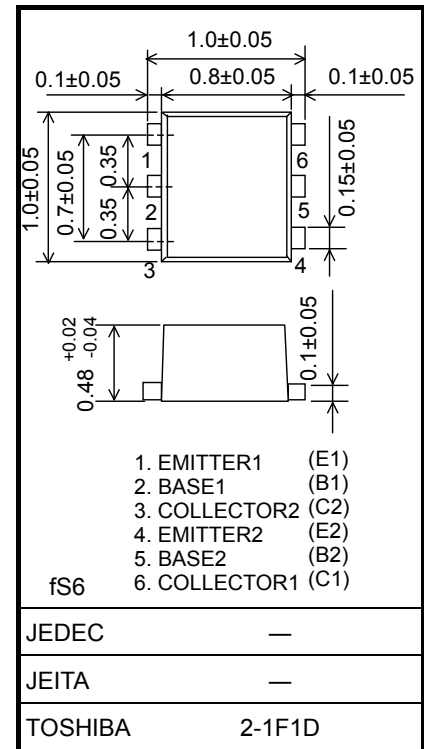
Switching, Inverter Circuit, Interface Circuit and
Driver Circuit Applications

- Two devices are incorporated into a fine-pitch, small-mold (6-pin) package.
- Incorporating a bias resistor into a transistor reduces the parts count.
Reducing the parts count enables the manufacture of ever more compact equipment and lowers assembly costs.
- Complementary to the RN1907AFS to RN1909AFS

Equivalent Circuit and Bias Resistor Values



Type No.	R1 (kΩ)	R2 (kΩ)
RN2907AFS	10	47
RN2908AFS	22	47
RN2909AFS	47	22

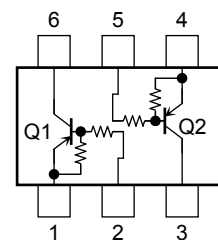


Weight: 1 mg (typ.)

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

Characteristic		Symbol	Rating	Unit
Collector-base voltage	RN2907AFS to RN2909AFS	V _{CBO}	-50	V
Collector-emitter voltage		V _{CEO}	-50	V
Emitter-base voltage	RN2907AFS	V _{EBO}	-6	V
	RN2908AFS		-7	
	RN2909AFS		-15	
Collector current	RN2907AFS to RN2909AFS	I _C	-80	mA
Collector power dissipation		P _C (Note 1)	50	mW
Junction temperature		T _j	150	°C
Storage temperature range		T _{stg}	-55 to 150	°C

Equivalent Circuit (top view)



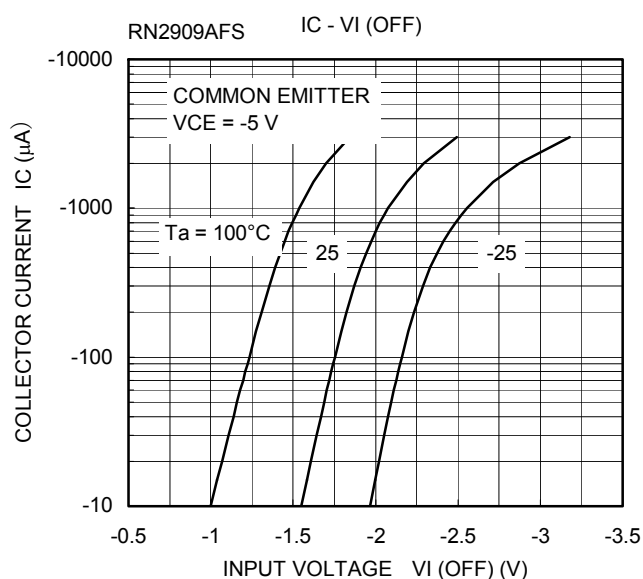
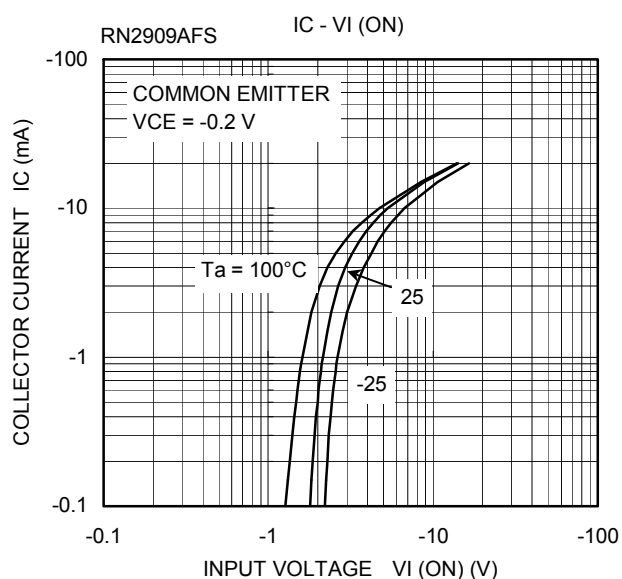
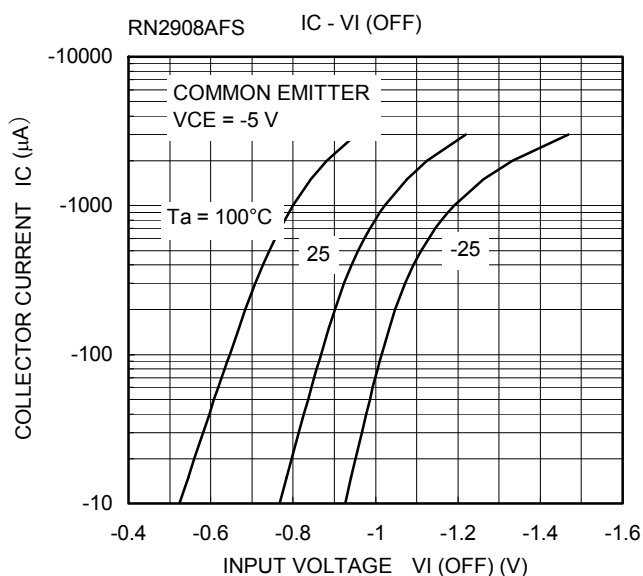
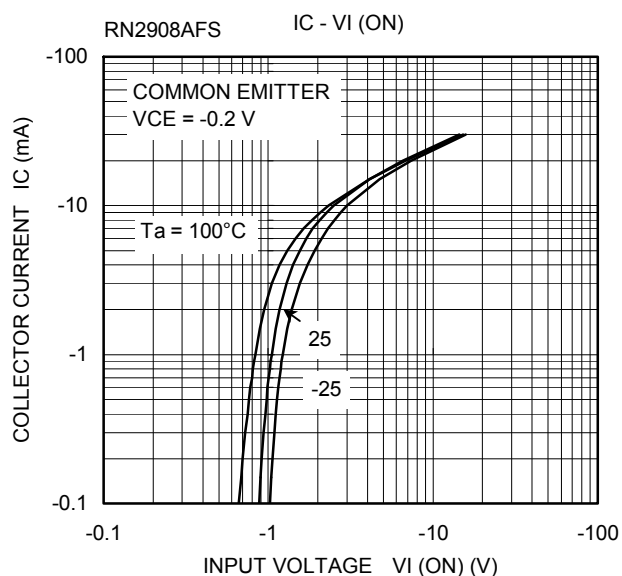
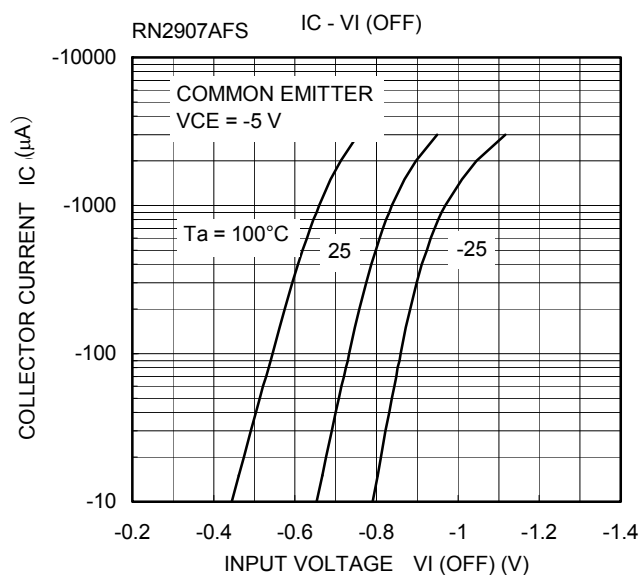
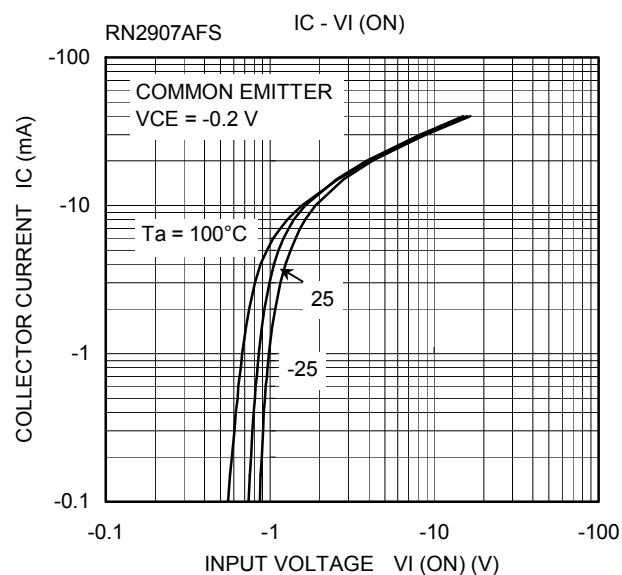
Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) are within the absolute maximum ratings.

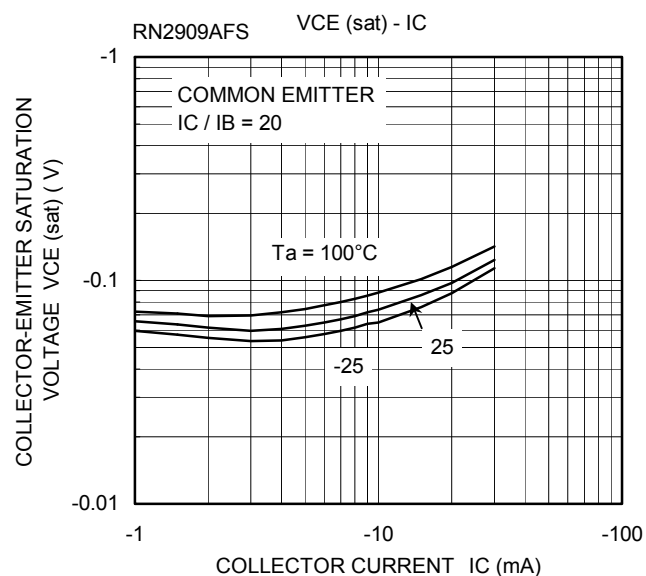
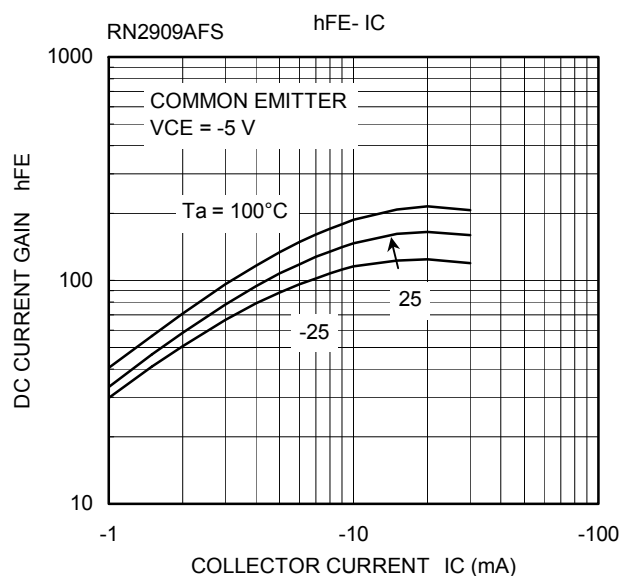
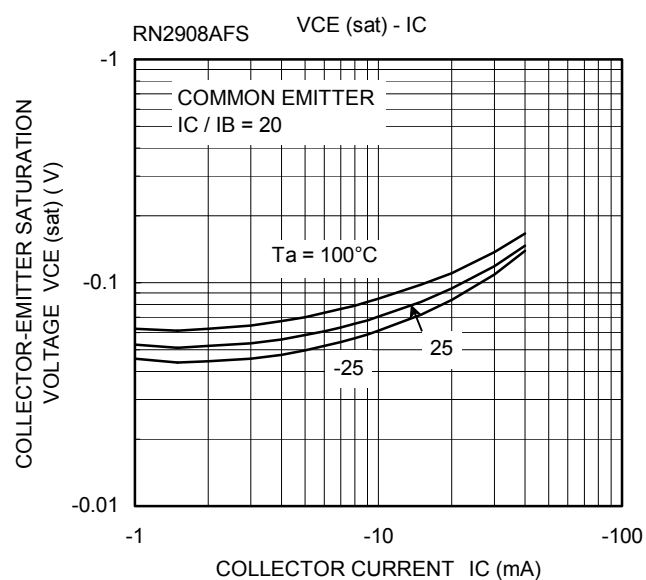
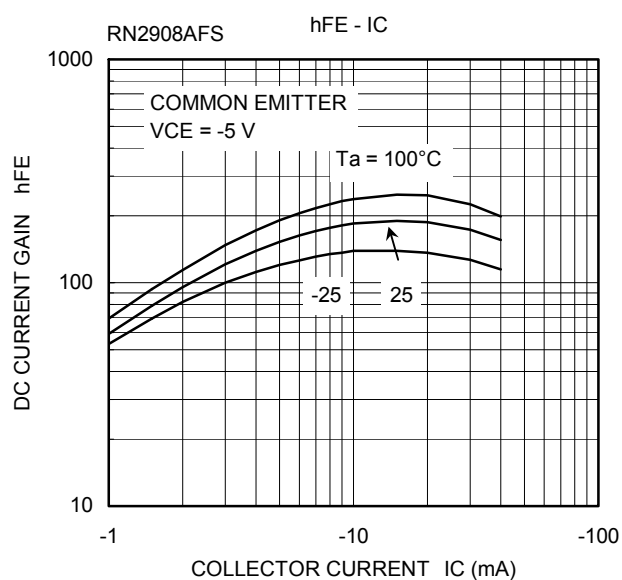
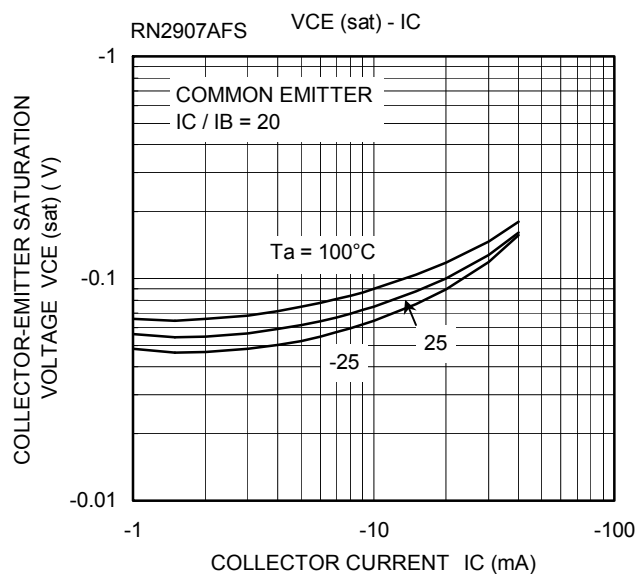
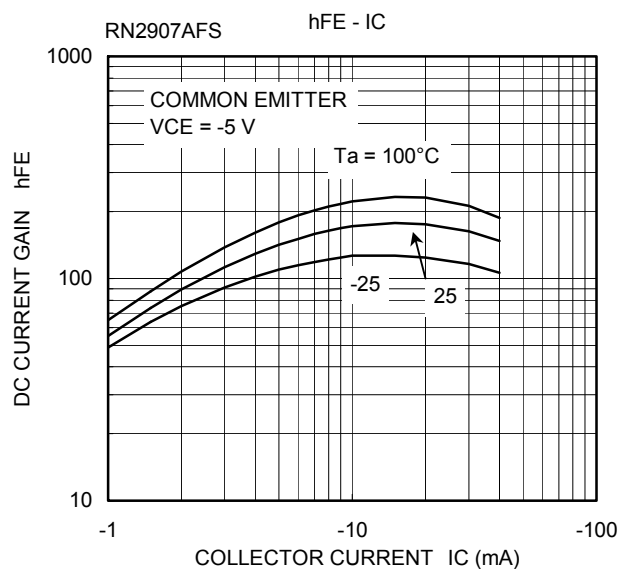
Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/"Derating Concept and Methods") and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

Note 1: Total rating

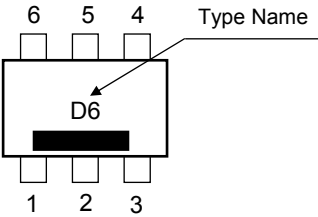
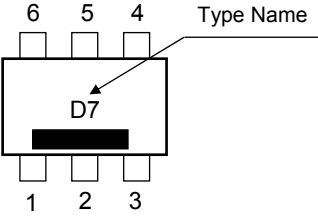
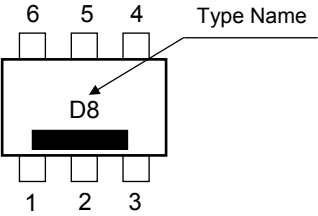
Electrical Characteristics (Ta = 25°C) (Q1, Q2 common)

Characteristic		Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cutoff current	RN2907AFS to 2909AFS	I_{CBO}	$V_{CB} = -50\text{ V}, I_E = 0$	—	—	-100	nA
		I_{CEO}	$V_{CE} = -50\text{ V}, I_B = 0$	—	—	-500	
Emitter cutoff current	RN2907AFS	I_{EBO}	$V_{EB} = -6\text{ V}, I_C = 0$	-0.088	—	-0.131	mA
	RN2908AFS		$V_{EB} = -7\text{ V}, I_C = 0$	-0.085	—	-0.126	
	RN2909AFS		$V_{EB} = -15\text{ V}, I_C = 0$	-0.182	—	-0.271	
DC current gain	RN2907AFS	h_{FE}	$V_{CE} = -5\text{ V}, I_C = -10\text{ mA}$	80	—	—	—
	RN2908AFS			80	—	—	
	RN2909AFS			70	—	—	
Collector-emitter saturation voltage	RN2907AFS to 2909AFS	$V_{CE(sat)}$	$I_C = -5\text{ mA}, I_B = -0.25\text{ mA}$	—	—	-0.15	V
Input voltage (ON)	RN2907AFS	$V_I(\text{ON})$	$V_{CE} = -0.2\text{ V}, I_C = -5\text{ mA}$	-0.8	—	-1.8	V
	RN2908AFS			-1.0	—	-3.0	
	RN2909AFS			-2.0	—	-6.4	
Input voltage (OFF)	RN2907AFS	$V_I(\text{OFF})$	$V_{CE} = -5\text{ V}, I_C = -0.1\text{ mA}$	-0.6	—	-0.9	V
	RN2908AFS			-0.7	—	-1.2	
	RN2909AFS			-1.5	—	-2.6	
Collector output capacitance	RN2907AFS to 2909AFS	C_{ob}	$V_{CB} = -10\text{ V}, I_E = 0, f = 1\text{ MHz}$	—	0.9	—	pF
Input resistor	RN2907AFS	R1	—	8	10	12	k Ω
	RN2908AFS			17.6	22	26.4	
	RN2909AFS			37.6	47	56.4	
Resistor ratio	RN2907AFS	R1/R2	—	0.17	0.213	0.255	—
	RN2908AFS			0.374	0.468	0.562	
	RN2909AFS			1.71	2.14	2.56	





Marking

Type Name	Marking
RN2907AFS	 The diagram shows a rectangular component with six pins. Pins 1, 2, and 3 are at the bottom, and pins 6, 5, and 4 are at the top. A label 'D6' is positioned above a black rectangular marking on the component. An arrow points from the text 'Type Name' to the top right corner of the component.
RN2908AFS	 The diagram shows a rectangular component with six pins. Pins 1, 2, and 3 are at the bottom, and pins 6, 5, and 4 are at the top. A label 'D7' is positioned above a black rectangular marking on the component. An arrow points from the text 'Type Name' to the top right corner of the component.
RN2909AFS	 The diagram shows a rectangular component with six pins. Pins 1, 2, and 3 are at the bottom, and pins 6, 5, and 4 are at the top. A label 'D8' is positioned above a black rectangular marking on the component. An arrow points from the text 'Type Name' to the top right corner of the component.

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