

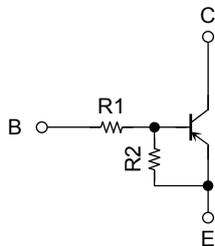
TOSHIBA Transistor Silicon PNP Epitaxial Type (PCT Process) (Transistor with Built-in Bias Resistor)

RN2907AFS, RN2908AFS, RN2909AFS

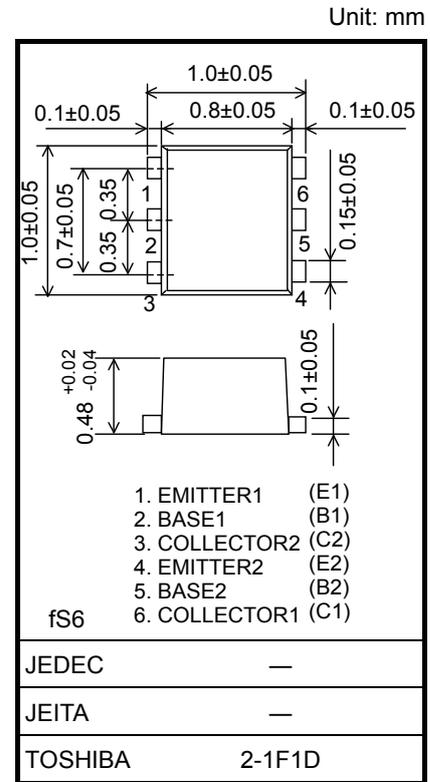
Switching, Inverter Circuit, Interface Circuit and Driver Circuit Applications

- 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



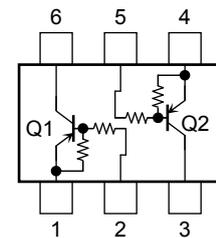
Type No.	R1 (kΩ)	R2 (kΩ)
RN2907AFS	10	47
RN2908AFS	22	47
RN2909AFS	47	22



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)



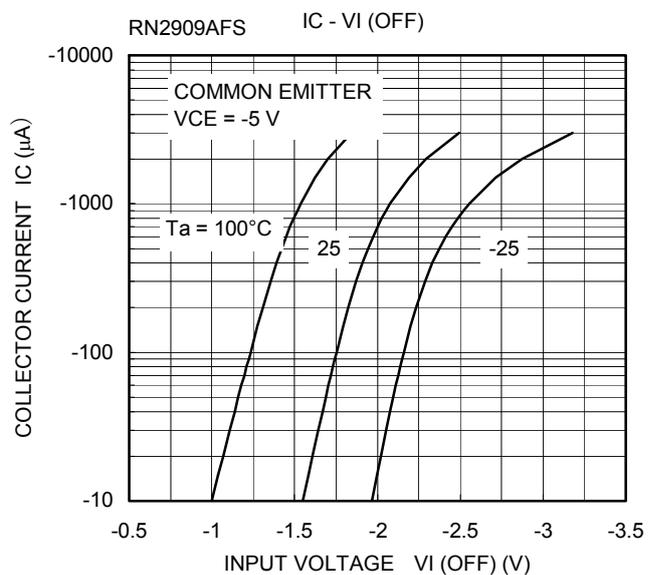
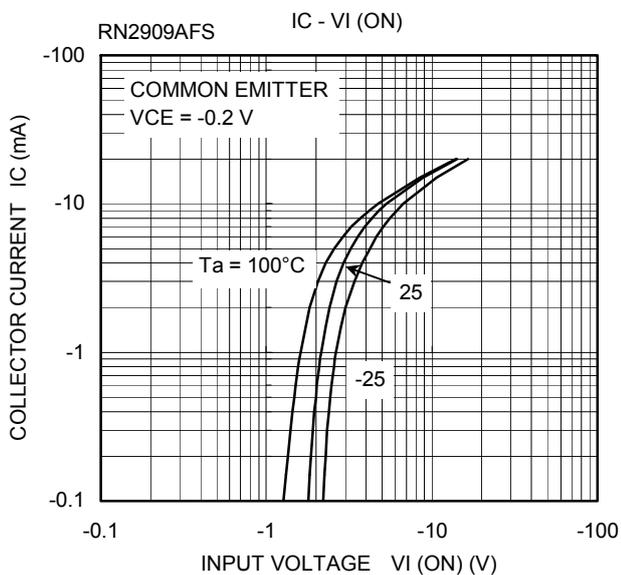
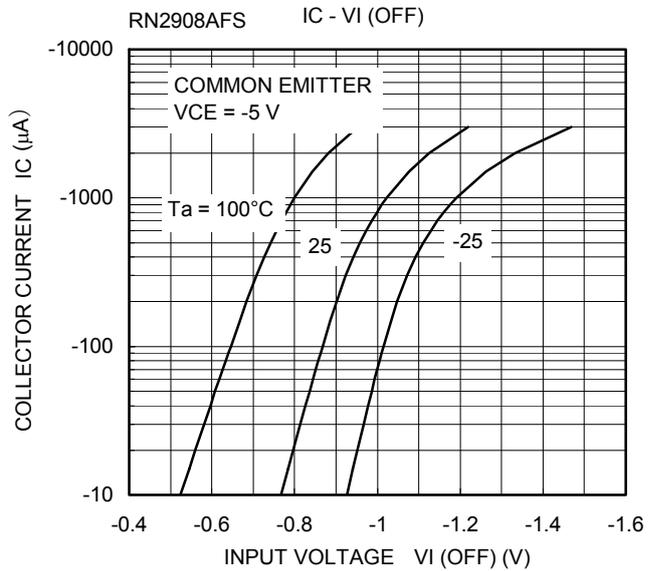
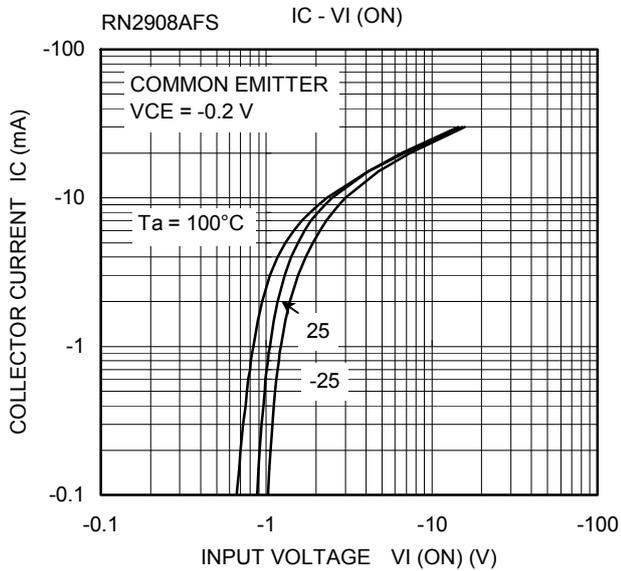
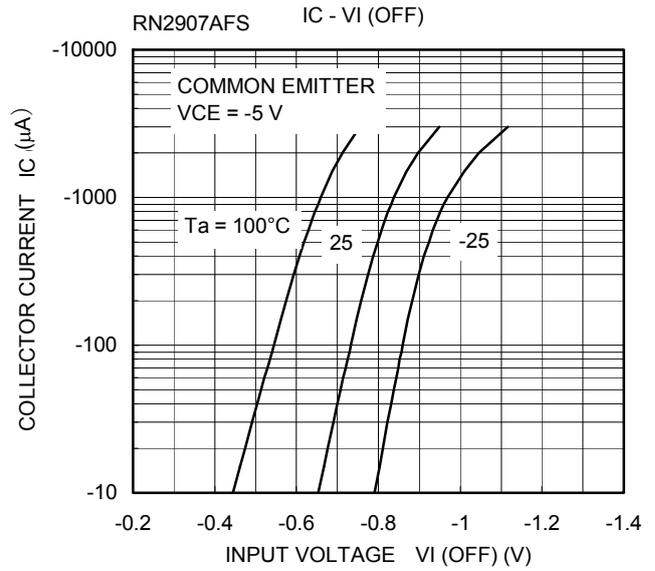
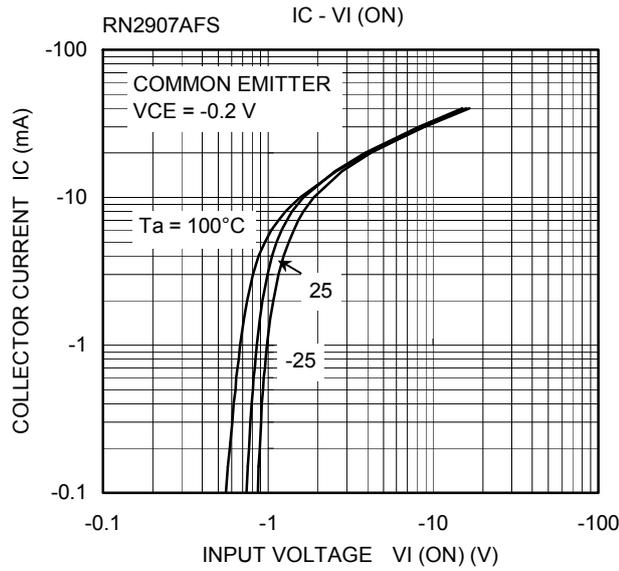
Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.)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

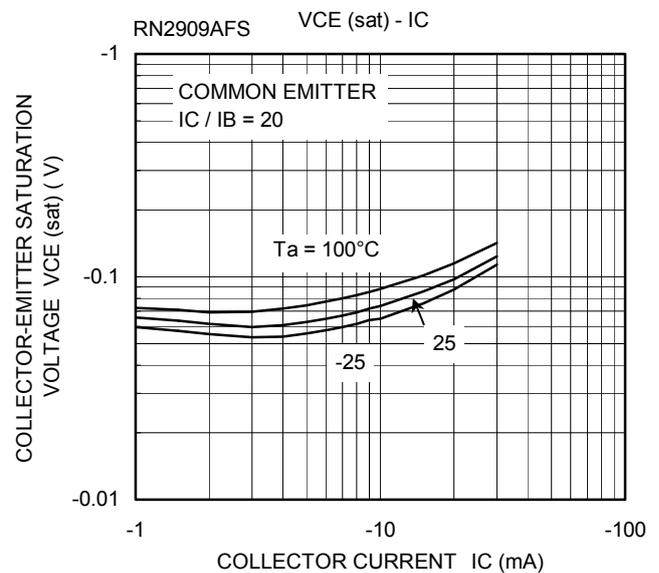
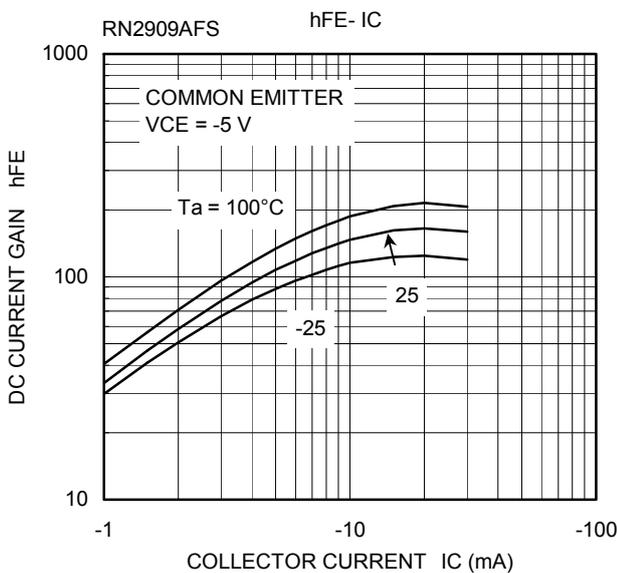
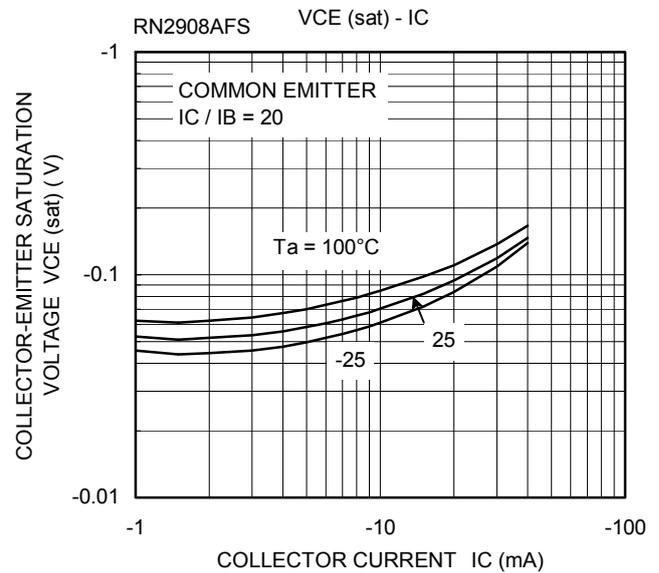
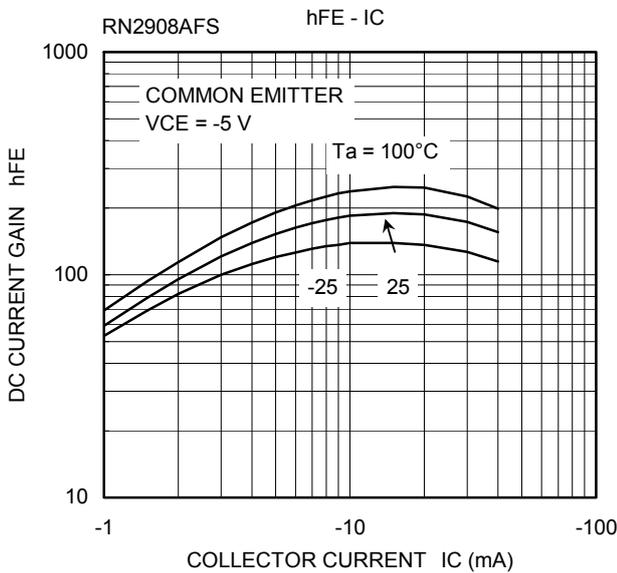
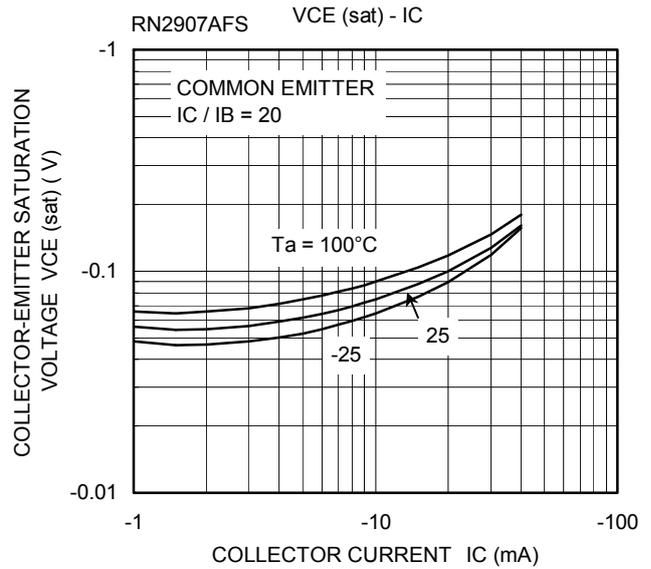
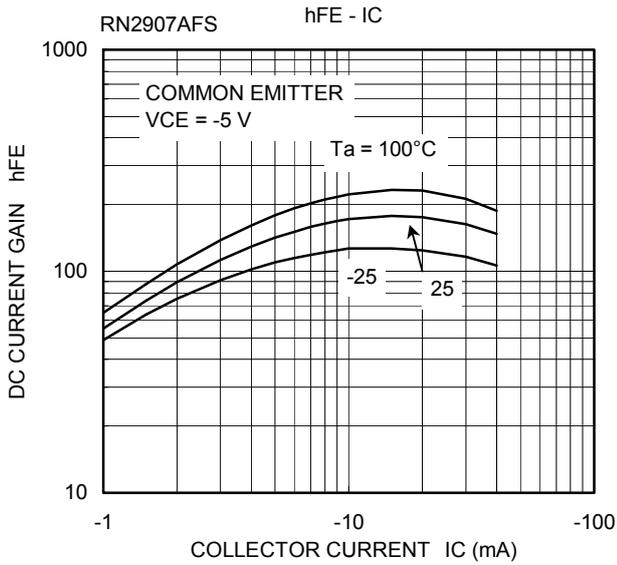
Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/"Derating Concept and Methods") and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

Note 1: Total rating

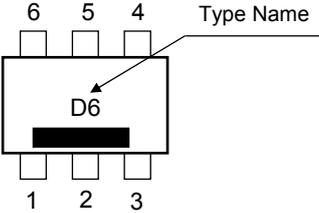
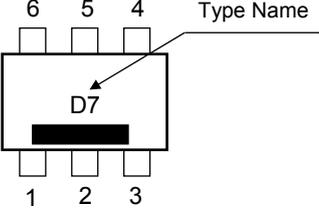
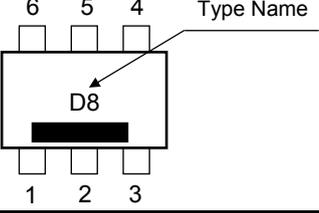
Electrical Characteristics (Ta = 25°C) (Q1, Q2 common)

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			-0.085	—	-0.126	
	RN2909AFS			-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	$V_I(ON)$	$V_{CE} = -0.2\text{ V}, I_C = -5\text{ mA}$	-0.8	—	-1.8	V
	RN2908AFS			-1.0	—	-3.0	
	RN2909AFS			-2.0	—	-6.4	
Input voltage (OFF)	RN2907AFS	$V_I(OFF)$	$V_{CE} = -5\text{ V}, I_C = -0.1\text{ mA}$	-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	kΩ
	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	
RN2908AFS	
RN2909AFS	

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