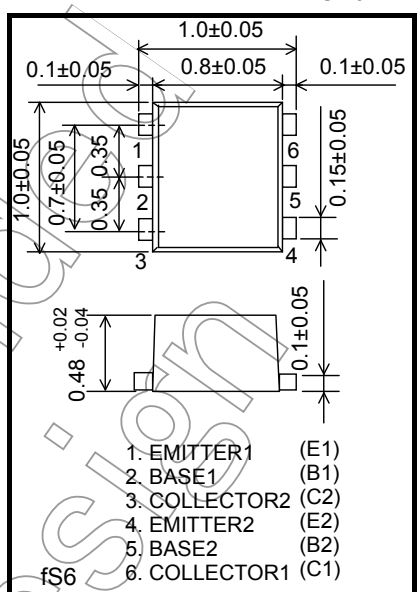
TOSHIBA Transistor Silicon NPN Epitaxial Type (PCT Process) (Transistor with Built-in Bias Resistor)

RN1910AFS, RN1911AFS

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 RN2910AFS/RN2911AFS

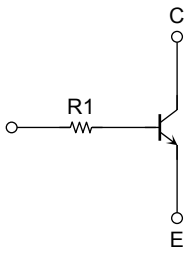
Unit: mm



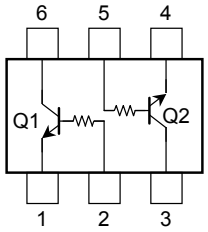
JEDEC	—
JEITA	—
TOSHIBA	2-1F1D

Weight: 0.001 g (typ.)

Equivalent Circuit and Bias Resistor Values



Equivalent Circuit (top view)



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

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	80	mA
Collector power dissipation	P_C (Note 1)	50	mW
Junction temperature	T_j	150	°C
Storage temperature range	T_{stg}	−55~150	°C

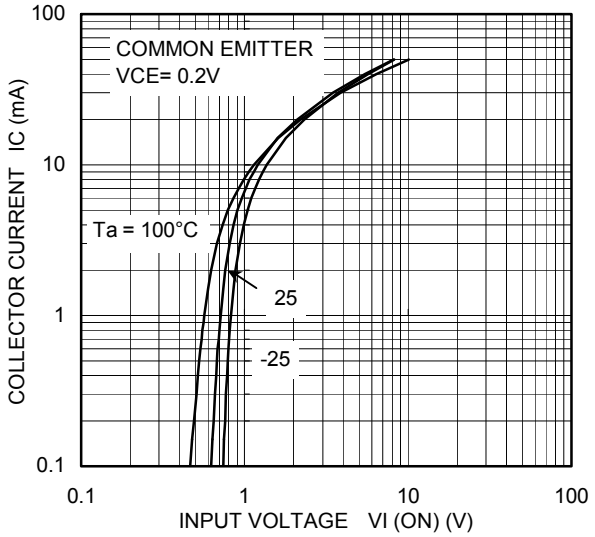
Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.)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

Note 1: Total rating

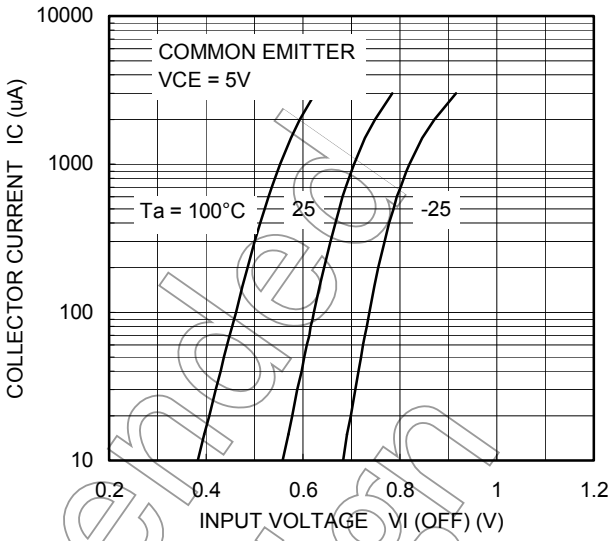
Electrical Characteristics (Ta = 25°C) (Q1, Q2 common)

Characteristic		Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cutoff current		I_{CBO}	V_{CB} = 50 V, I_E = 0	—	—	100	nA
Emitter cutoff current		I_{EBO}	V_{EB} = 5 V, I_C = 0	—	—	100	nA
DC current gain		h_{FE}	V_{CE} = 5 V, I_C = 1 mA	120	—	700	
Collector-emitter saturation voltage		$V_{CE\ (sat)}$	I_C = 5 mA, I_B = 0.25 mA	—	—	0.15	V
Collector output capacitance		C_{ob}	V_{CB} = 10 V, I_E = 0, f = 1 MHz	—	0.7	—	pF
Input resistor	RN1910AFS	R1	—	3.76	4.7	5.64	kΩ
	RN1911AFS			8	10	12	

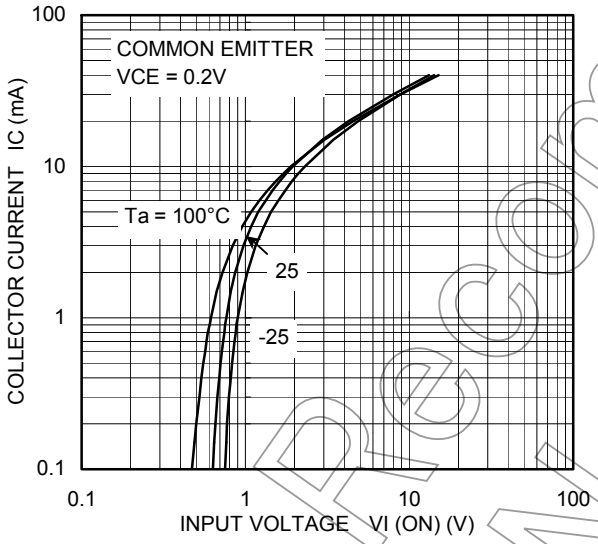
RN1910AFS IC - VI (ON)



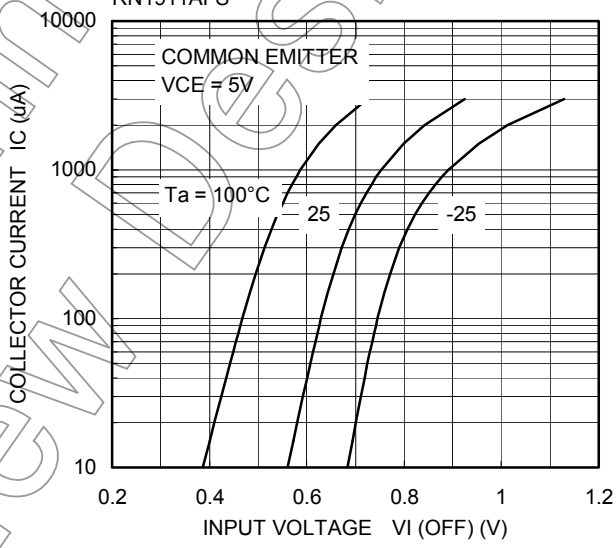
RN1910AFS IC - VI (OFF)



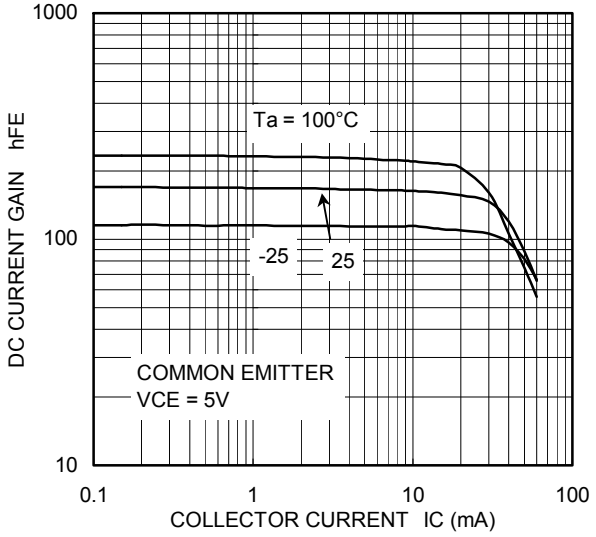
RN1911AFS IC - VI (ON)



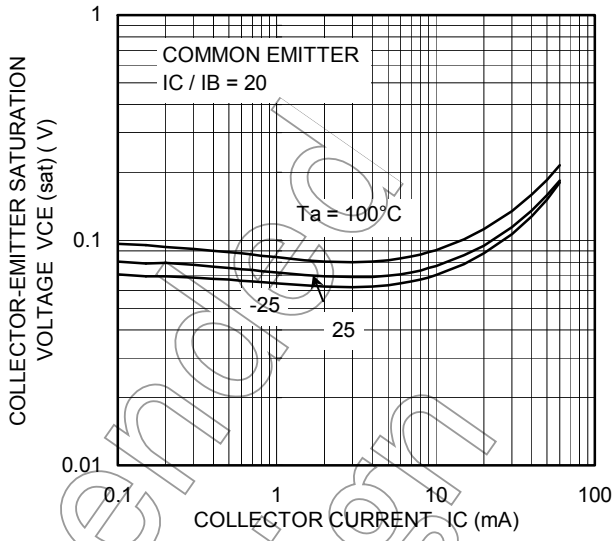
RN1911AFS IC - VI (OFF)



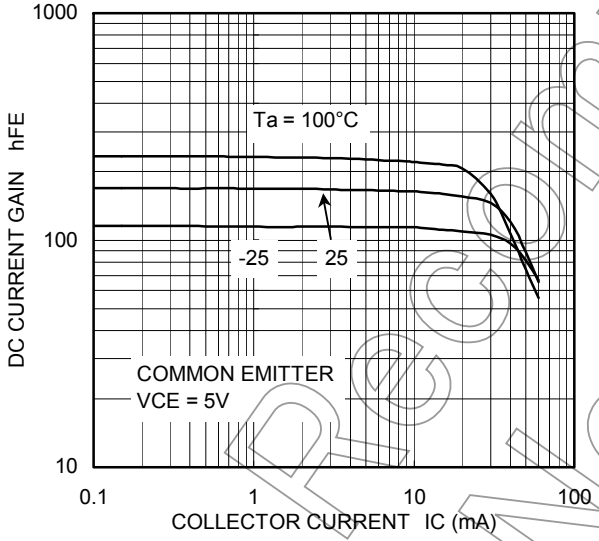
RN1910AFS hFE - IC



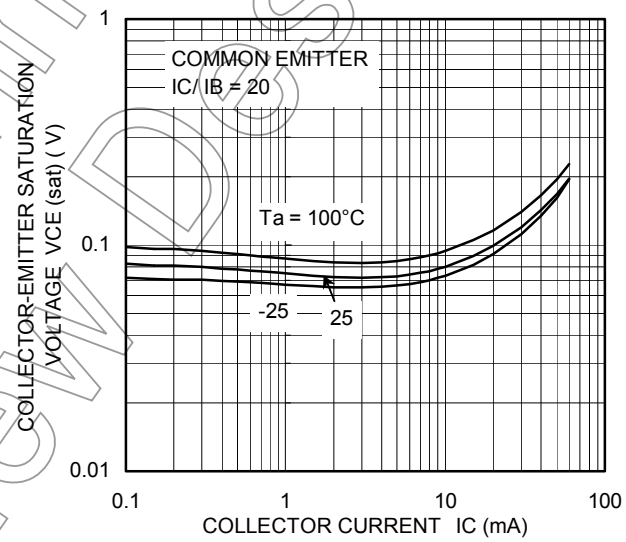
RN1910AFS VCE (sat) - IC

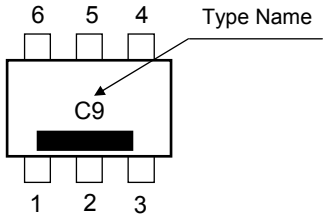
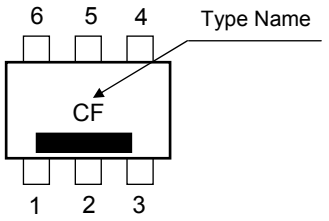


RN1911AFS hFE - IC



RN1911AFS VCE (sat) - IC



Type Name	Marking
RN1910AFS	
RN1911AFS	

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