

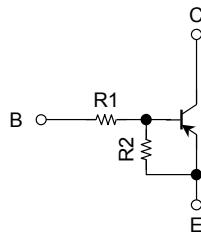
TOSHIBA Transistor Silicon PNP Epitaxial Type (PCT process) (Bias Resistor built-in Transistor)

**RN2901FS, RN2902FS, RN2903FS
RN2904FS, RN2905FS, RN2906FS**

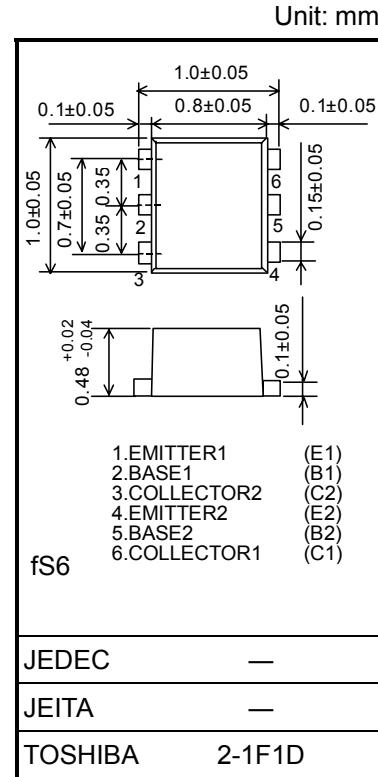
Switching, Inverter Circuit, Interface Circuit and
Driver Circuit Applications

- 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 RN1901FS~RN1906FS

Equivalent Circuit and Bias Resistor Values



Type No.	R1 (kΩ)	R2 (kΩ)
RN2901FS	4.7	4.7
RN2902FS	10	10
RN2903FS	22	22
RN2904FS	47	47
RN2905FS	2.2	47
RN2906FS	4.7	47



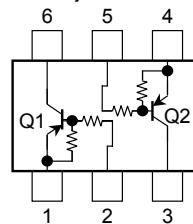
Weight: 0.001g (typ.)

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

Characteristics		Symbol	Rating	Unit
Collector-base voltage	RN2901FS~2906FS	V _{CBO}	-20	V
Collector-emitter voltage		V _{CEO}	-20	V
Emitter-base voltage	RN2901FS~2904FS	V _{EBO}	-10	V
			-5	
Collector current	RN2901FS~2906FS	I _C	-50	mA
Collector power dissipation		P _C (Note)	50	mW
Junction temperature		T _j	150	°C
Storage temperature range		T _{stg}	-55~150	°C

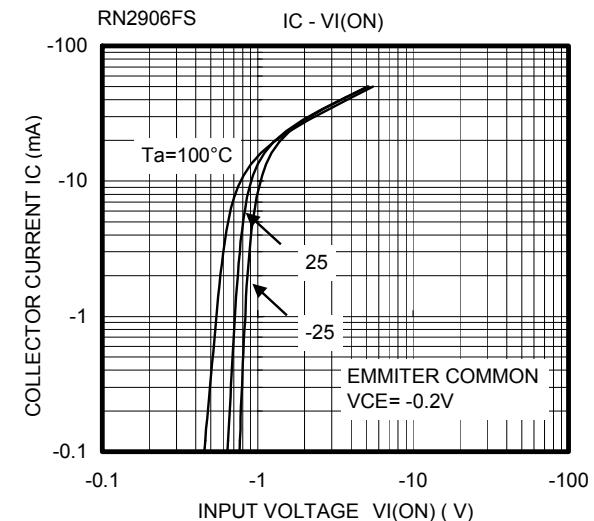
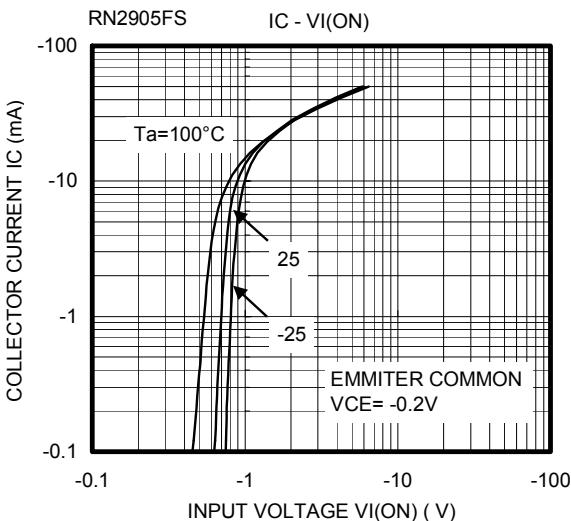
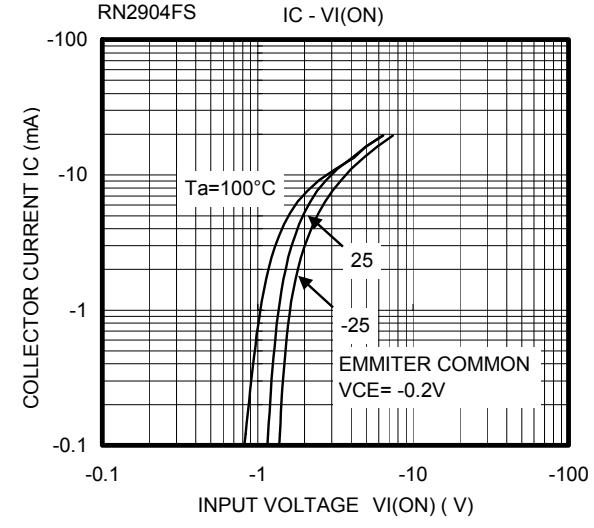
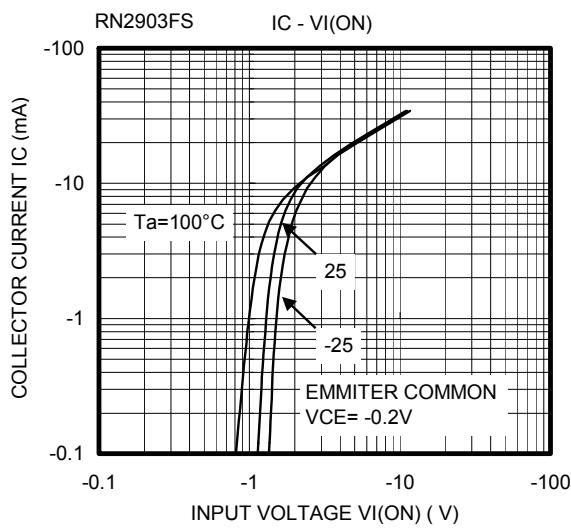
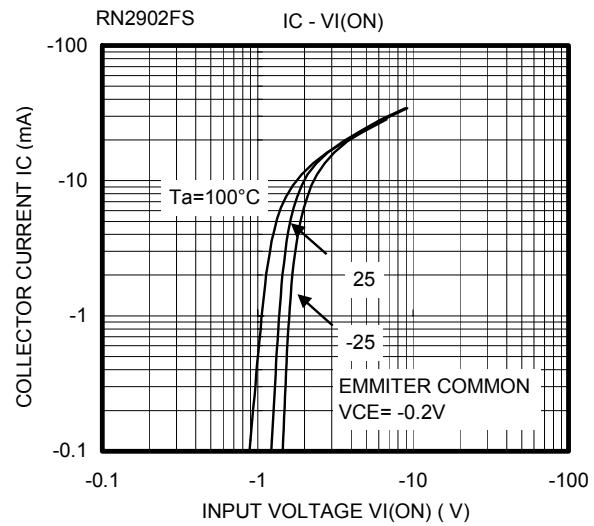
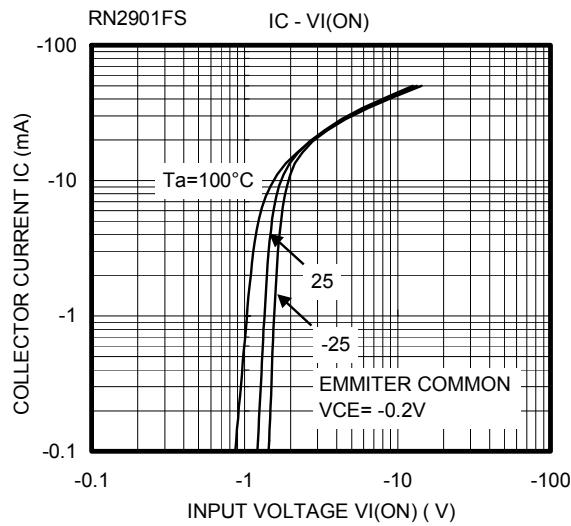
Note: Total rating

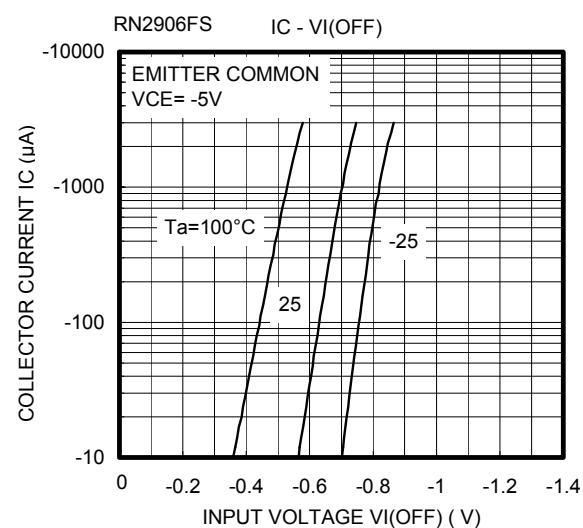
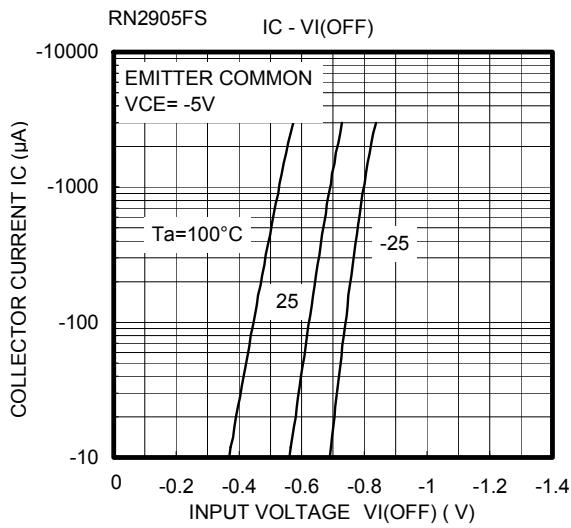
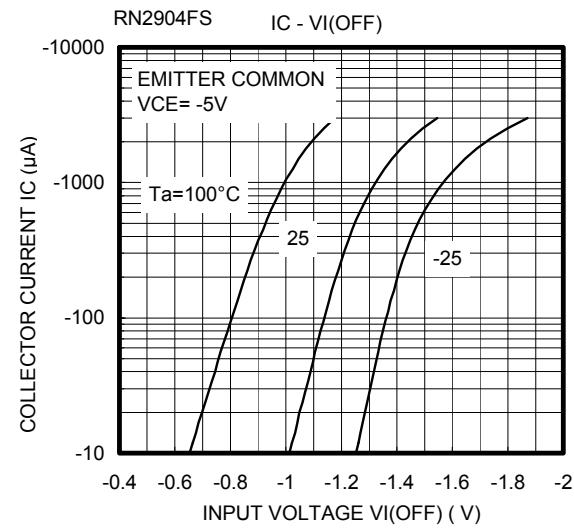
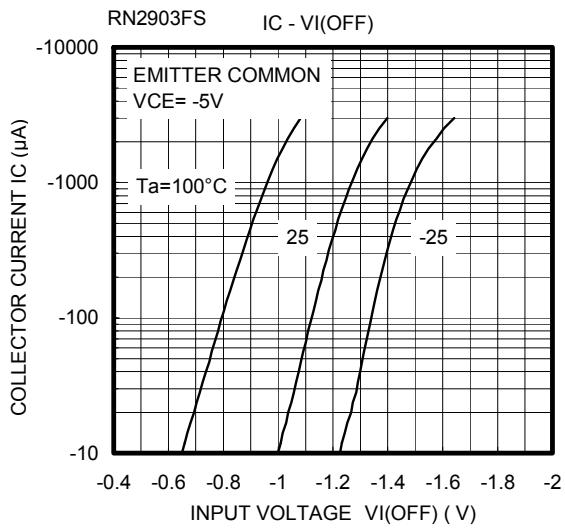
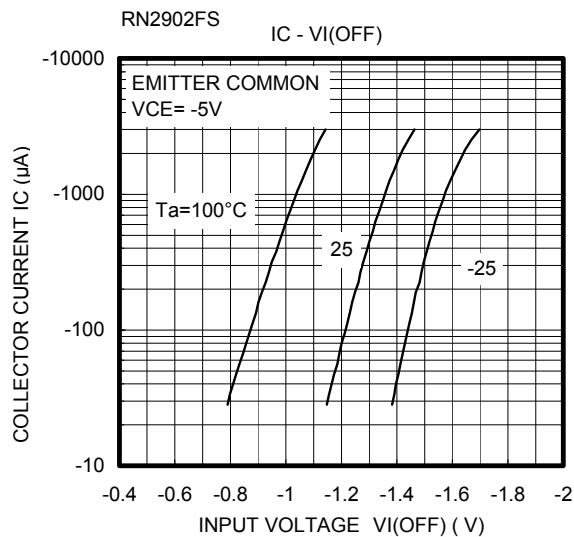
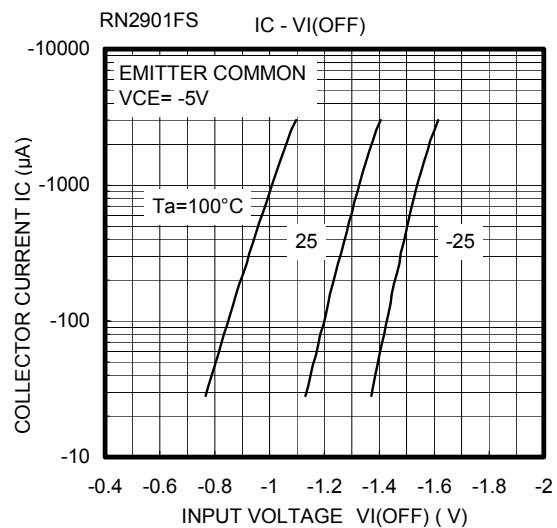
Equivalent Circuit (top view)

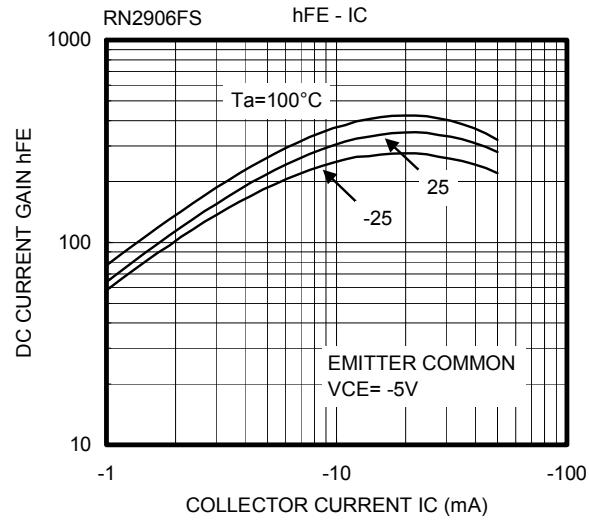
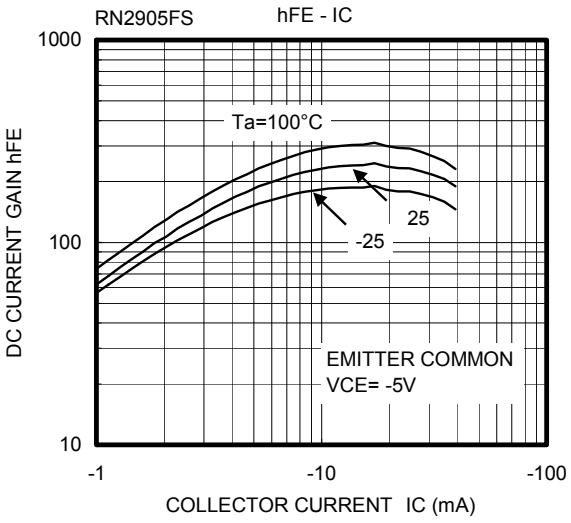
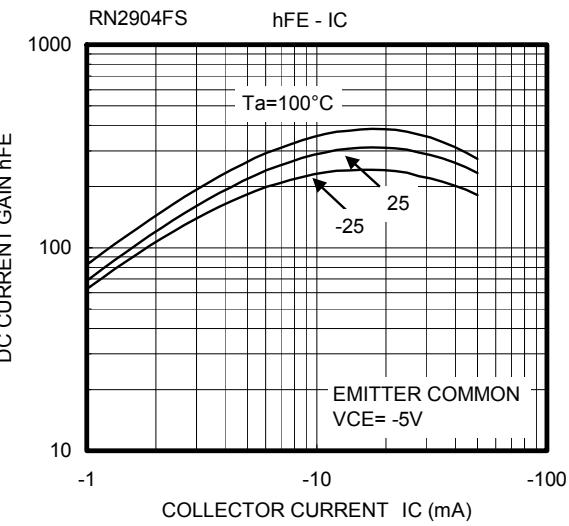
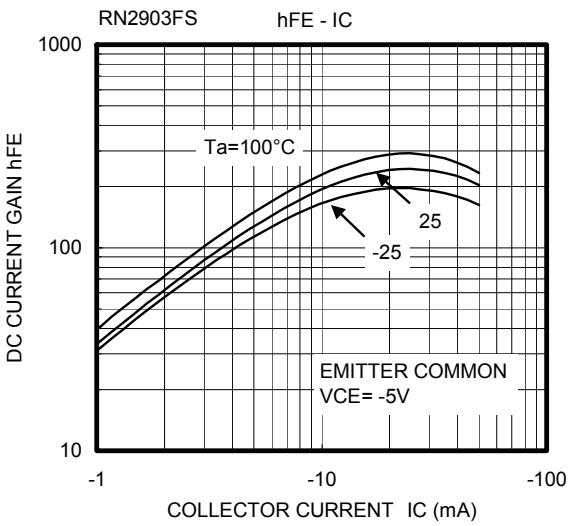
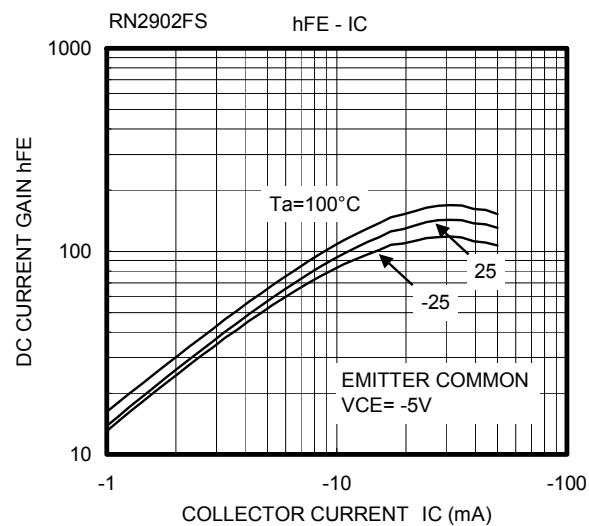
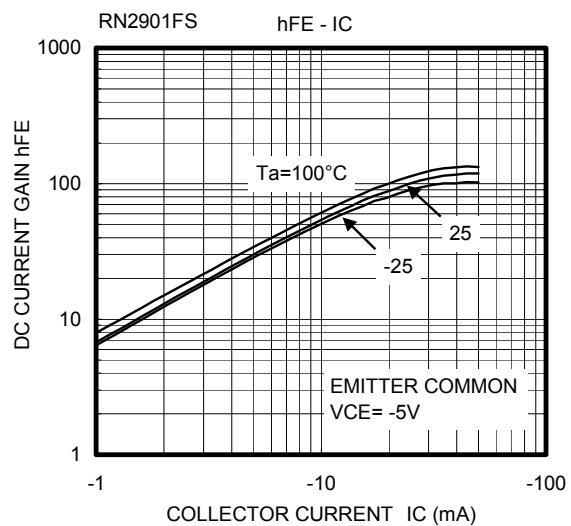


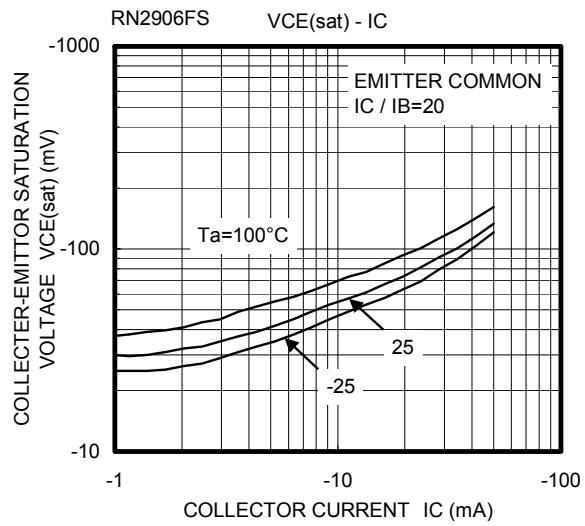
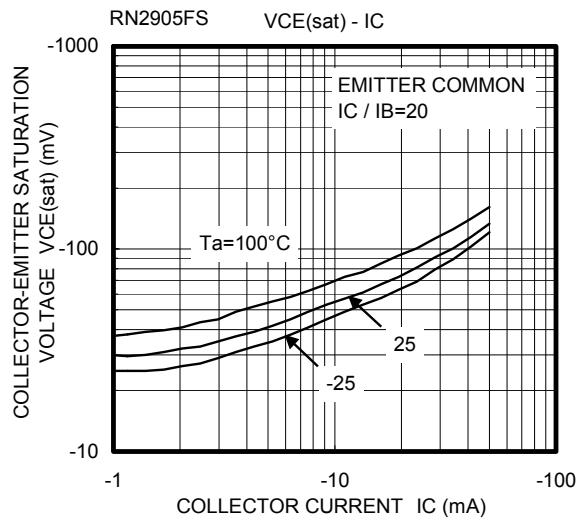
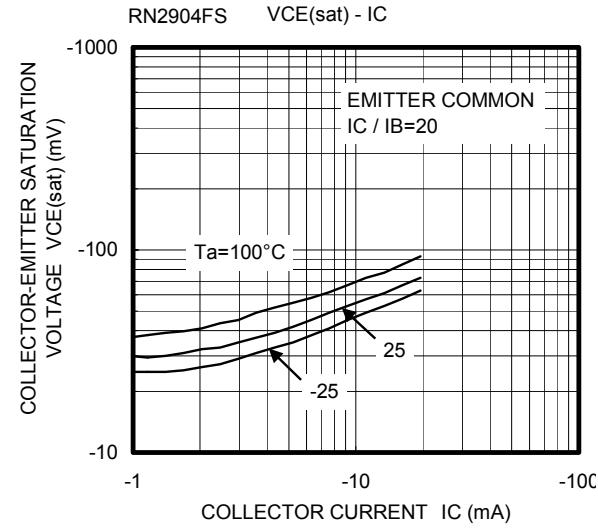
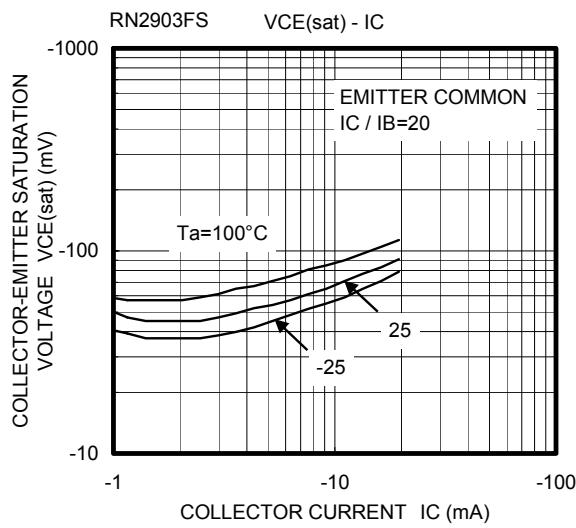
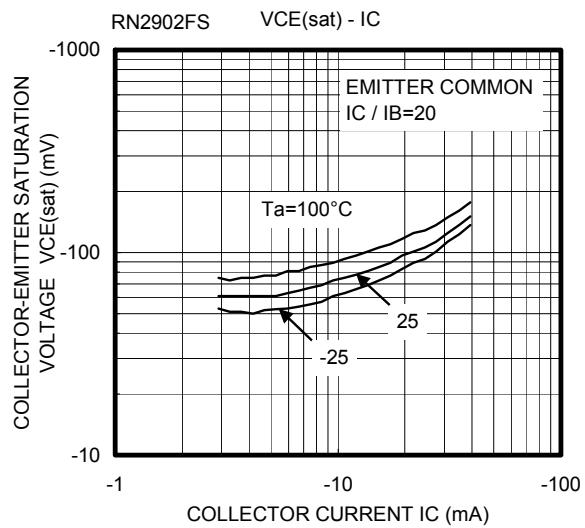
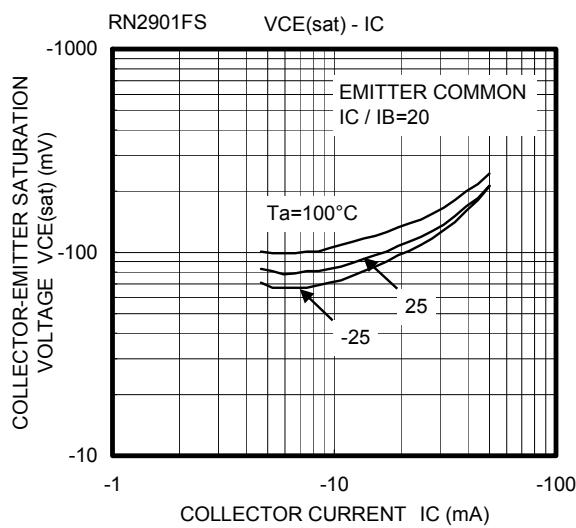
Electrical Characteristics (Ta =25°C) (Q1, Q2 common)

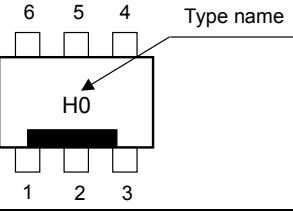
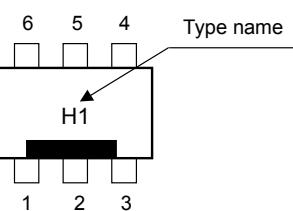
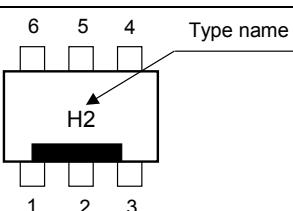
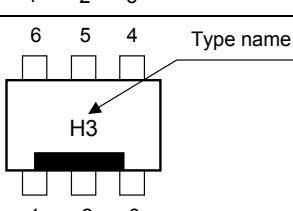
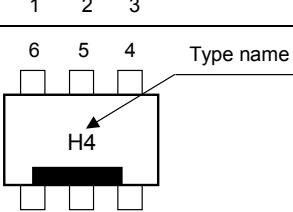
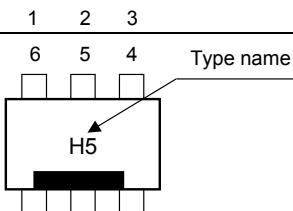
Characteristics		Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current	RN2901FS~2906FS	I_{CBO}	$V_{CB} = -20\text{ V}, I_E = 0$	—	—	-100	nA
		I_{CEO}	$V_{CE} = -20\text{ V}, I_B = 0$	—	—	-500	
Emitter cut-off current	RN2901FS	I_{EBO}	$V_{EB} = -10\text{ V}, I_C = 0$	-0.89	—	-1.33	mA
	RN2902FS			-0.41	—	-0.63	
	RN2903FS			-0.18	—	-0.29	
	RN2904FS			-0.088	—	-0.133	
	RN2905FS		$V_{EB} = -5\text{ V}, I_C = 0$	-0.085	—	-0.127	
	RN2906FS			-0.08	—	-0.121	
DC current gain	RN2901FS	h_{FE}	$V_{CE} = -5\text{ V}, I_C = -10\text{ mA}$	30	—	—	
	RN2902FS			60	—	—	
	RN2903FS			100	—	—	
	RN2904FS			120	—	—	
	RN2905FS			120	—	—	
	RN2906FS			120	—	—	
Collector-emitter saturation voltage	RN2901FS~2906FS	$V_{CE}(\text{sat})$	$I_C = -5\text{ mA}, I_B = -0.25\text{ mA}$	—	—	-0.15	V
Input voltage (ON)	RN2901FS	$V_I(\text{ON})$	$V_{CE} = -0.2\text{ V}, I_C = -5\text{ mA}$	-1.0	—	-2.0	V
	RN2902FS			-1.0	—	-2.2	
	RN2903FS			-1.1	—	-2.7	
	RN2904FS			-1.2	—	-3.6	
	RN2905FS			-0.6	—	-1.1	
	RN2906FS			-0.6	—	-1.2	
Input voltage (OFF)	RN2901FS~2904FS	$V_I(\text{OFF})$	$V_{CE} = -5\text{ V}, I_C = -0.1\text{ mA}$	-0.8	—	-1.5	V
	RN2905FS, 2906FS			-0.4	—	-0.8	
Collector output capacitance	RN2901FS~2906FS	C_{ob}	$V_{CB} = -10\text{ V}, I_E = 0, f = 1\text{ MHz}$	—	1.2	—	pF
Input resistor	RN2901FS	R1	—	3.76	4.7	5.64	k Ω
	RN2902FS			8	10	12	
	RN2903FS			17.6	22	26.4	
	RN2904FS			37.6	47	56.4	
	RN2905FS			1.76	2.2	2.64	
	RN2906FS			3.76	4.7	5.64	
Resistor ratio	RN2901FS~2904FS	R1/R2	—	0.8	1.0	1.2	
	RN2905FS			0.0376	0.0468	0.0562	
	RN2906FS			0.08	0.1	0.12	









Type Name	Marking
RN2901FS	
RN2902FS	
RN2903FS	
RN2904FS	
RN2905FS	
RN2906FS	

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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