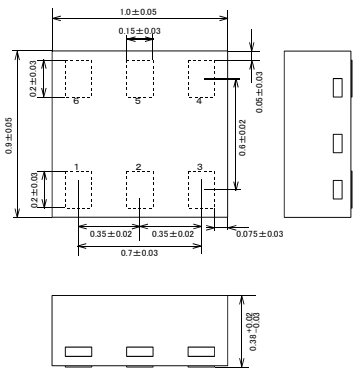
TOSHIBA Transistor Silicon PNP Epitaxial Type (PCT process) (Bias Resistor built-in Transistor)

RN2961CT,RN2962CT,RN2963CT RN2964CT,RN2965CT,RN2966CT

Switching Applications
Inverter Circuit Applications
Interface Circuit Applications
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, which enables the manufacture of ever more compact equipment and saves assembly cost.
- Complementary to RN1961CT to RN1966CT

Unit: mm

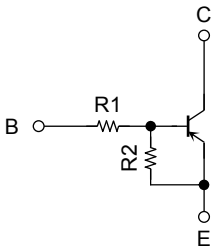


	1.EMIITTER1	(E1)
	2.EMITTER2	(E2)
	3.BASE2	(B2)
	4.COLLECTOR2	(C2)
	5.BASE1	(B1)
CST6	6.COLLECTOR1	(C1)

JEDEC	—
JEITA	—
TOSHIBA	2-1K1A

Weight: 1.0 mg (typ.)

Equivalent Circuit and Bias Resistor Values

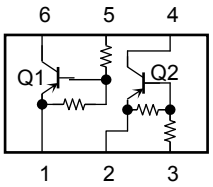


Type No.	R1 (kΩ)	R2 (kΩ)
RN2961CT	4.7	4.7
RN2962CT	10	10
RN2963CT	22	22
RN2964CT	47	47
RN2965CT	2.2	47
RN2966CT	4.7	47

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

Characteristics		Symbol	Rating	Unit
Collector-base voltage	RN2961CT to 2966CT	V_{CBO}	−20	V
Collector-emitter voltage		V_{CEO}	−20	V
Emitter-base voltage	RN2961CT to 2964CT	V_{EBO}	−10	V
	RN2965CT, 2966CT		−5	
Collector current	RN2961CT to 2966CT	I_C	−50	mA
Collector power dissipation		P_C (Note1)	140	mW
Junction temperature		T_j	150	°C
Storage temperature range		T_{stg}	−55 to 150	°C

Equivalent Circuit (top view)



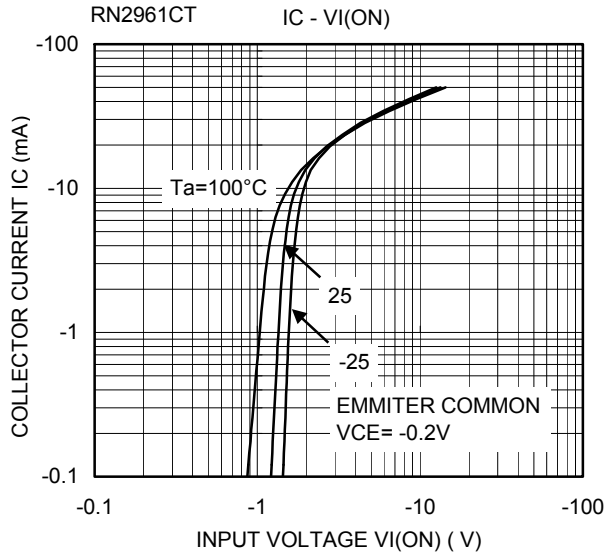
Note1: Total rating, mounted on glass-epoxy board of 10mm × 10mm × 1mmt.

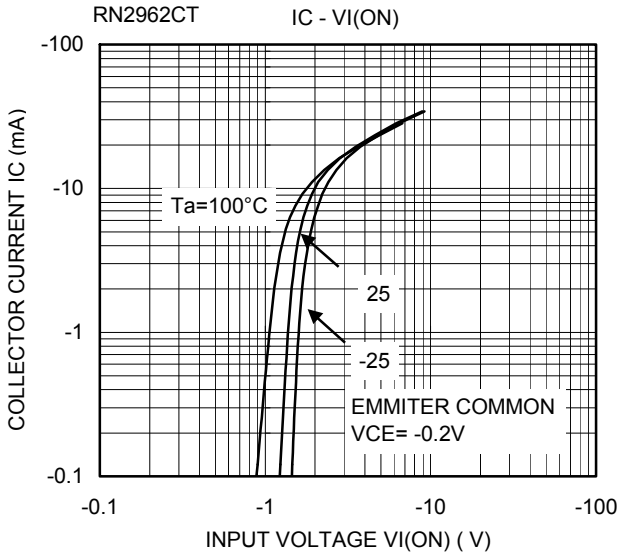
Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.)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

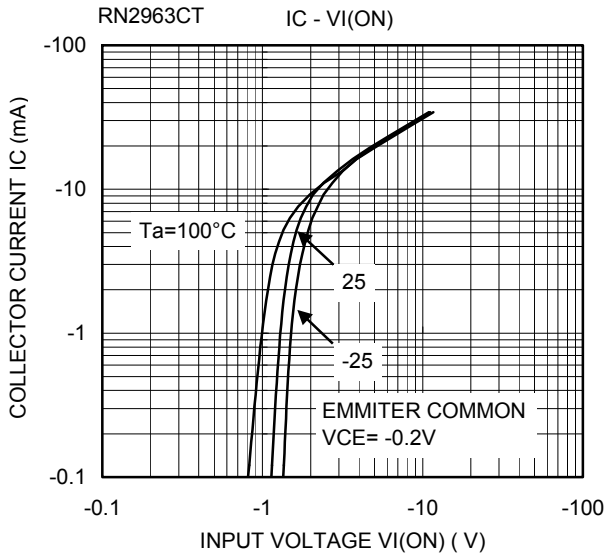
Electrical Characteristics (Ta = 25°C) (Q1, Q2 common)

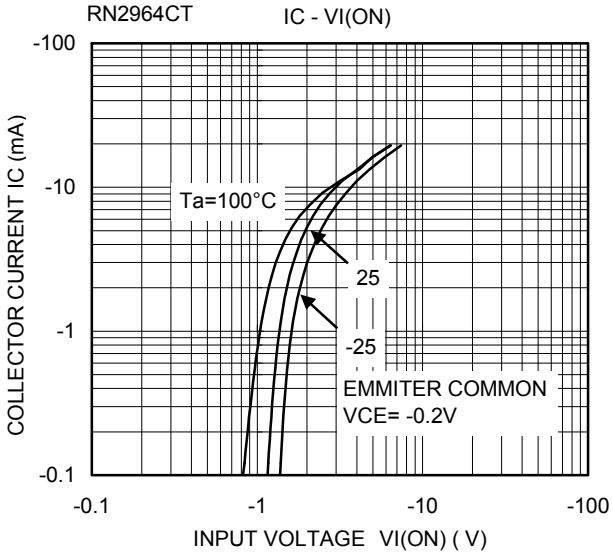
Characteristics		Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current	RN2961CT to 2966CT	I_{CBO}	V_{CB} = –20 V, I_E = 0	—	—	–100	nA
		I_{CEO}	V_{CE} = –20 V, I_B = 0	—	—	–500	
Emitter cut-off current	RN2961CT	I_{EBO}	V_{EB} = –10 V, I_C = 0	–0.89	—	–1.33	mA
	RN2962CT			–0.41	—	–0.63	
	RN2963CT			–0.18	—	–0.29	
	RN2964CT			–0.088	—	–0.133	
	RN2965CT		V_{EB} = –5 V, I_C = 0	–0.085	—	–0.127	
	RN2966CT			–0.08	—	–0.121	
DC current gain	RN2961CT	h_{FE}	V_{CE} = –5 V, I_C = –10 mA	30	—	—	
	RN2962CT			60	—	—	
	RN2963CT			100	—	—	
	RN2964CT			120	—	—	
	RN2965CT			120	—	—	
	RN2966CT			120	—	—	
Collector-emitter saturation voltage	RN2961CT~2966CT	$V_{CE\ (sat)}$	I_C = –5 mA, I_B = –0.25 mA	—	—	–0.15	V
Input voltage (ON)	RN2961CT	$V_{I\ (ON)}$	V_{CE} = –0.2 V, I_C = –5 mA	–1.0	—	–2.0	V
	RN2962CT			–1.0	—	–2.2	
	RN2963CT			–1.1	—	–2.7	
	RN2964CT			–1.2	—	–3.6	
	RN2965CT			–0.6	—	–1.1	
	RN2966CT			–0.6	—	–1.2	
Input voltage (OFF)	RN2961CT to 2964CT	$V_{I\ (OFF)}$	V_{CE} = –5 V, I_C = –0.1 mA	–0.8	—	–1.5	V
	RN2965CT, 2966CT			–0.4	—	–0.8	
Collector output capacitance	RN2961CT to 2966CT	C_{ob}	V_{CB} = –10 V, I_E = 0, f = 1 MHz	—	1.2	—	pF
Input resistor	RN2961CT	R1	—	3.76	4.7	5.64	kΩ
	RN2962CT			8	10	12	
	RN2963CT			17.6	22	26.4	
	RN2964CT			37.6	47	56.4	
	RN2965CT			1.76	2.2	2.64	
	RN2966CT			3.76	4.7	5.64	
Resistor ratio	RN2961CT to 2964CT	R1/R2	—	0.8	1.0	1.2	
	RN2965CT			0.0376	0.0468	0.0562	
	RN2966CT			0.08	0.1	0.12	

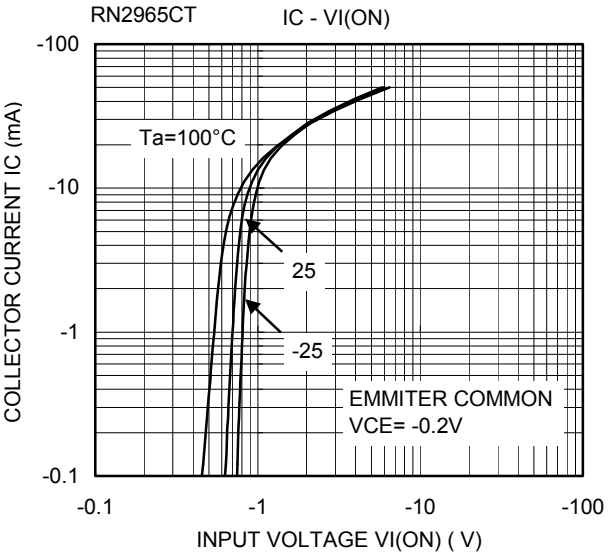
(Q1,Q2 common)

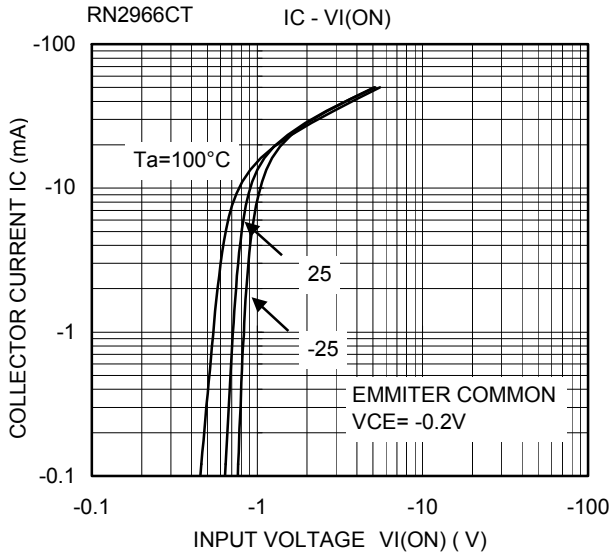




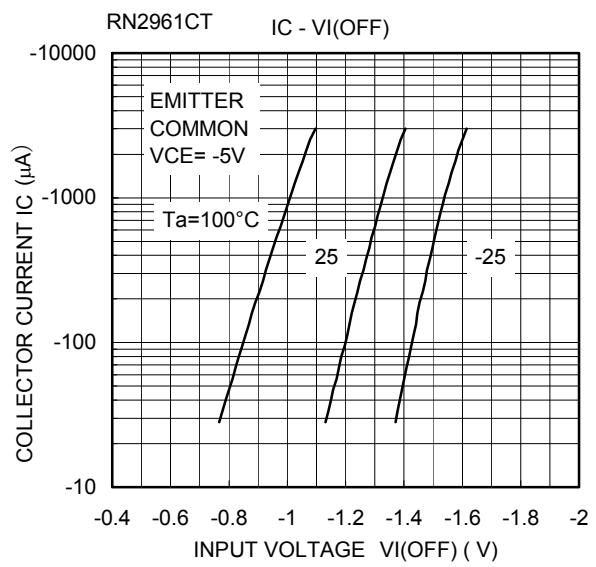


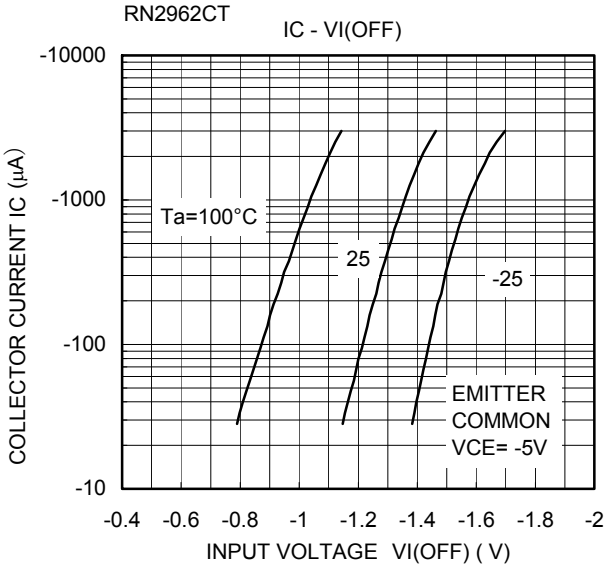


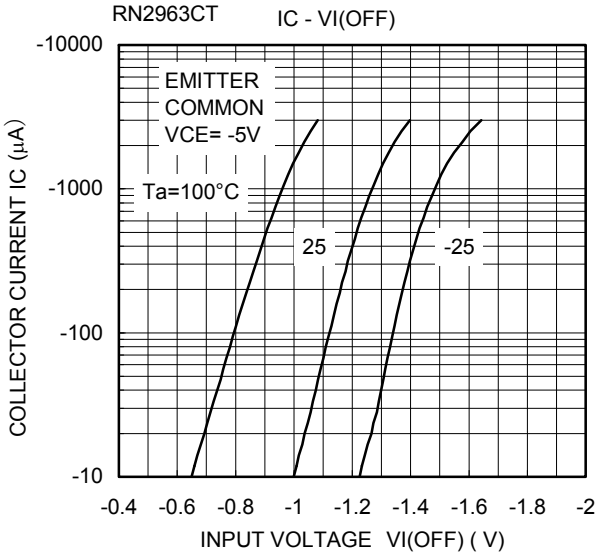


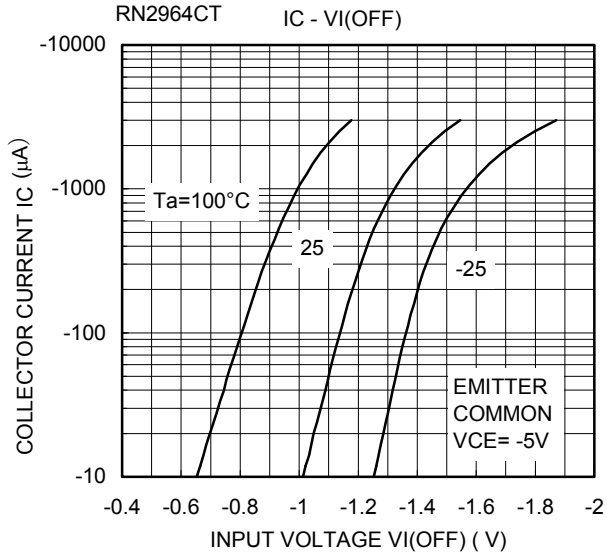


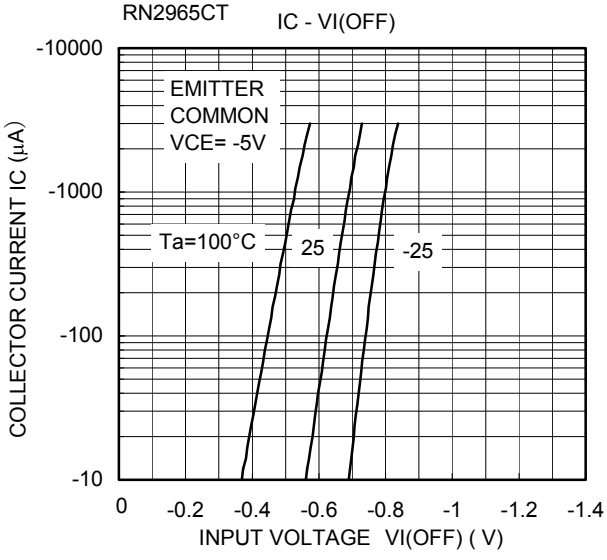
(Q1,Q2 common)

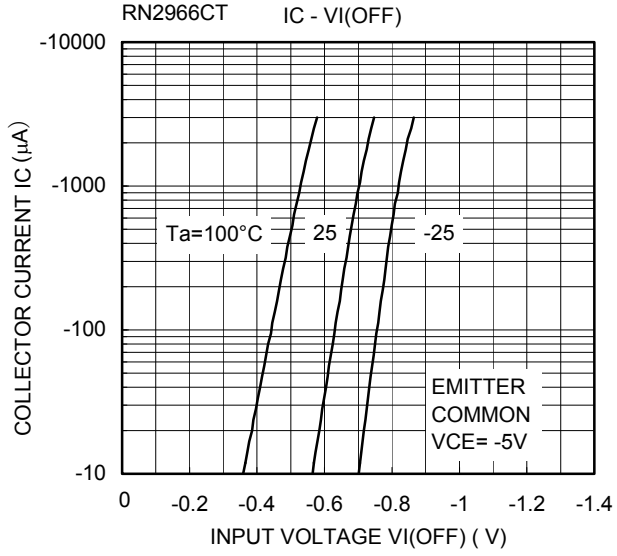






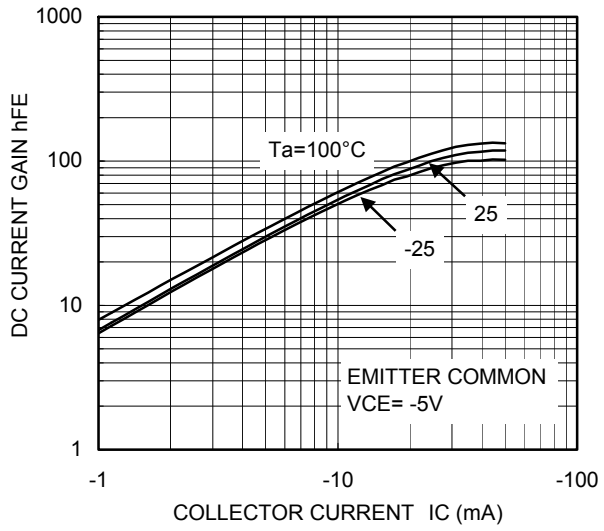






(Q1,Q2 common)

RN2961CT hFE - IC



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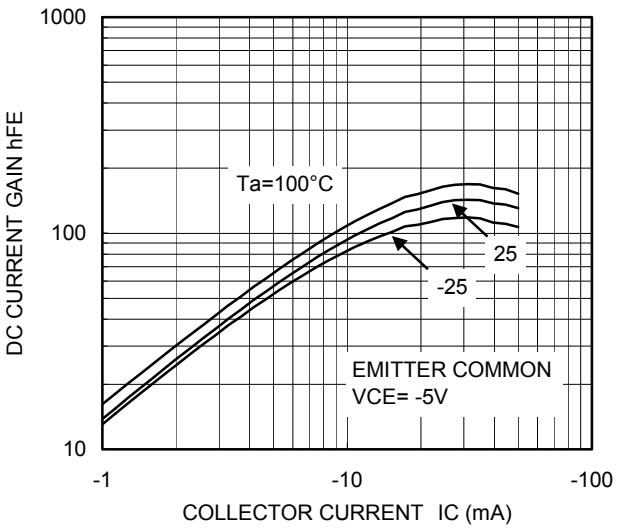

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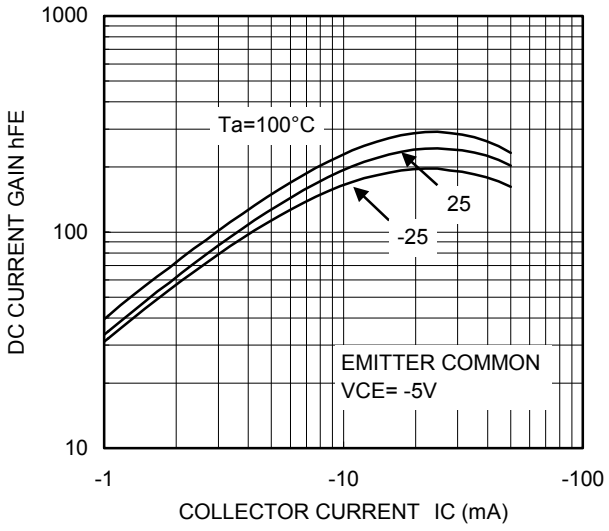

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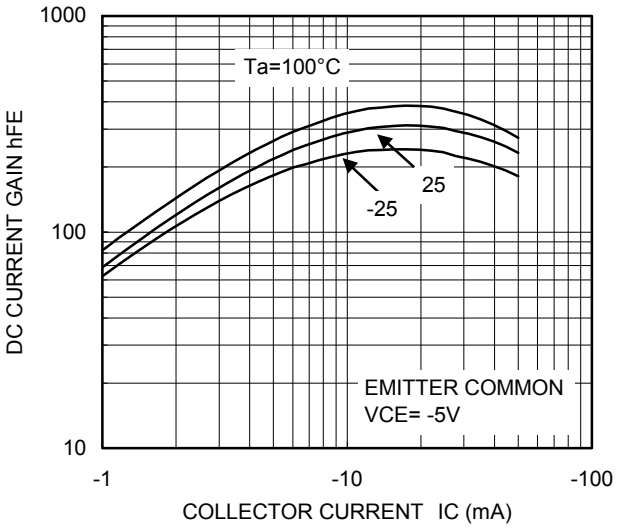

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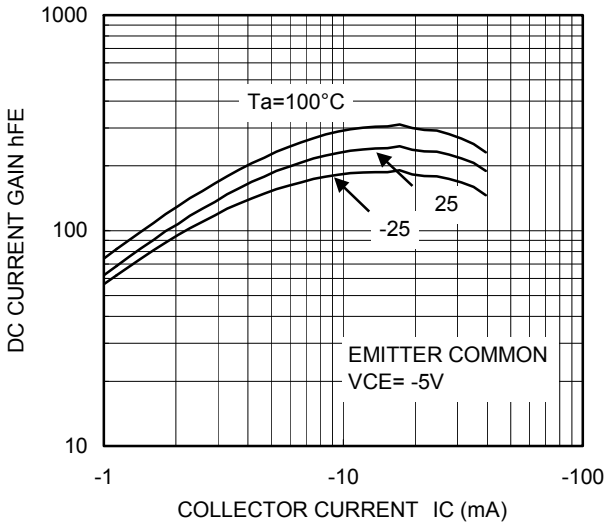
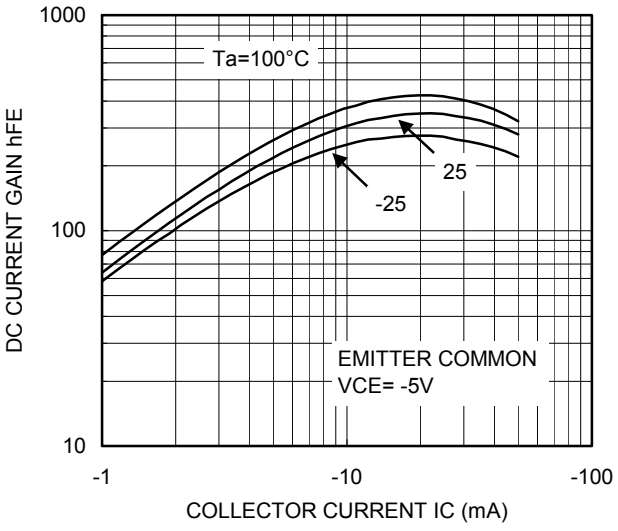
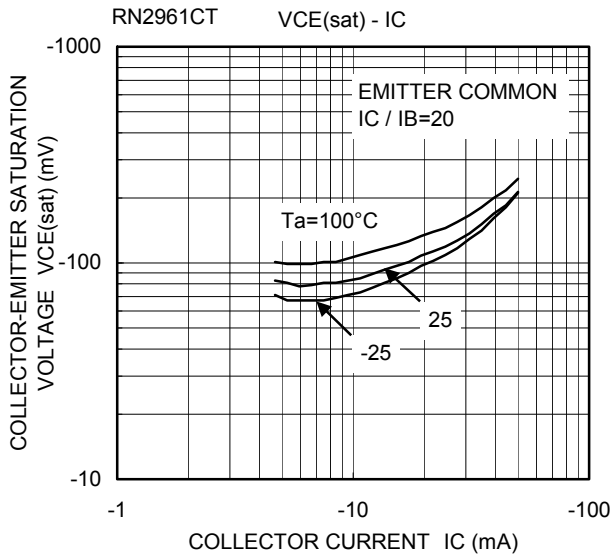
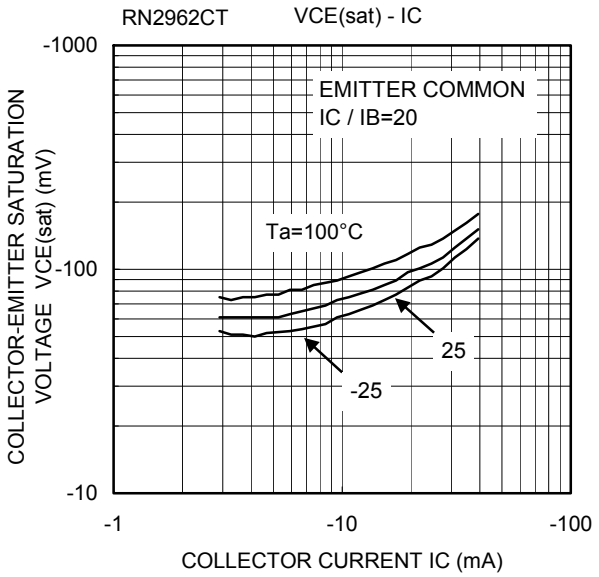


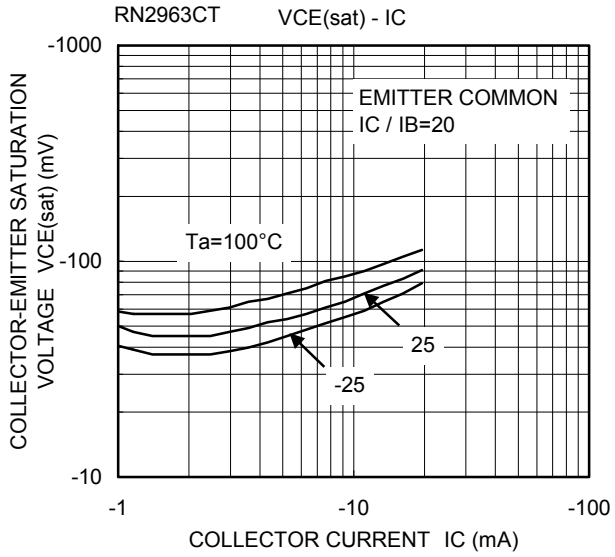
RN2966CT hFE - IC

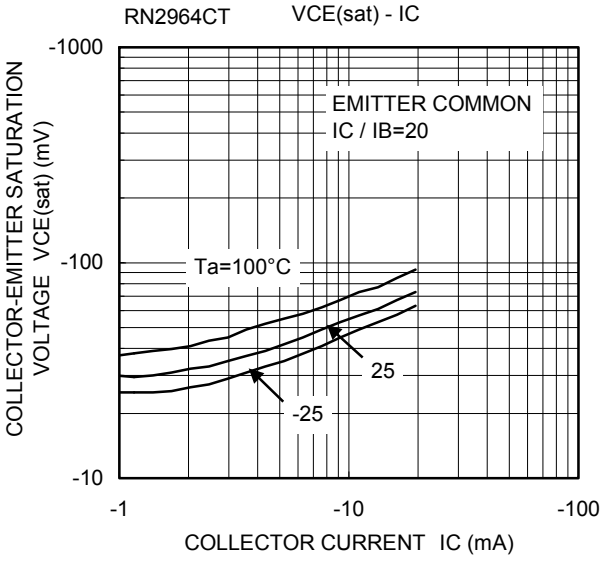


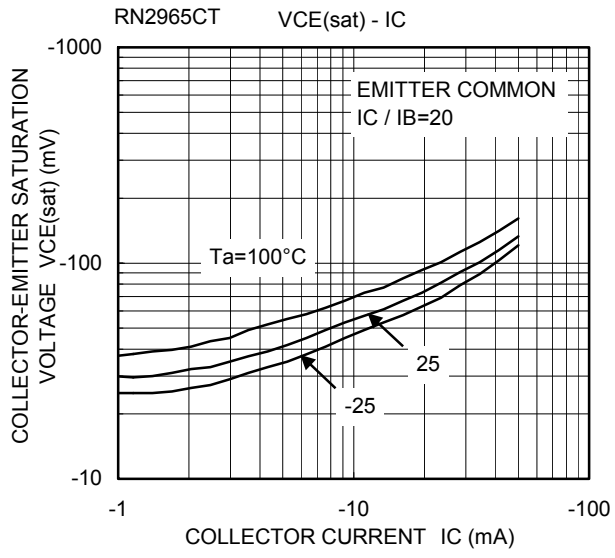
(Q1,Q2 common)

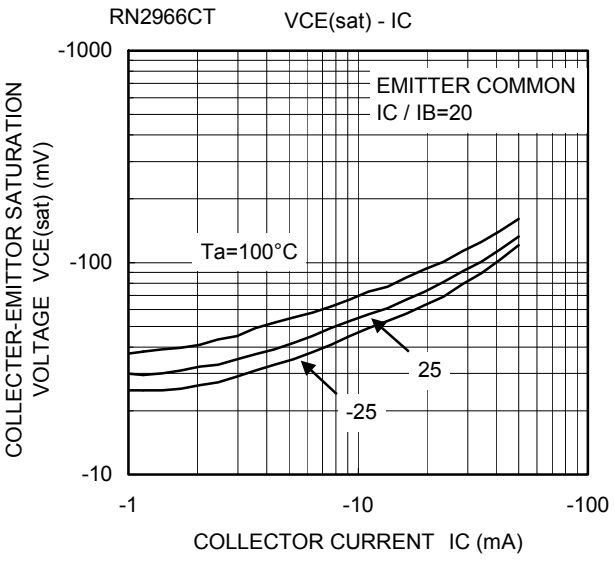


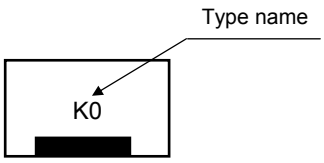
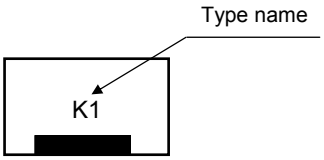
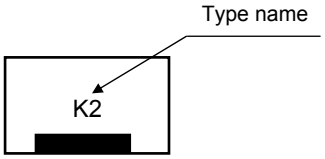
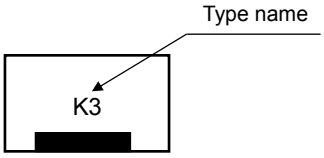
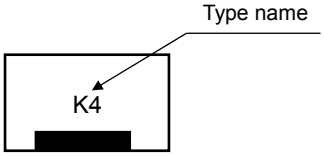
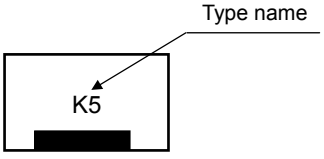










Type Name	Marking
RN2961CT	
RN2962CT	
RN2963CT	
RN2964CT	
RN2965CT	
RN2966CT	

Handling Precaution

When handling individual devices (which are not yet mounted on a circuit board), be sure that the environment is protected against electrostatic electricity. 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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