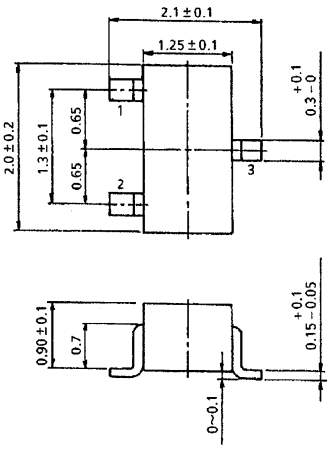
TOSHIBA Transistor Silicon PNP Epitaxial Type (PCT Process)

RN2321A,RN2322A,RN2323A,RN2324A RN2325A,RN2326A,RN2327A

Switching, Inverter Circuit, Interface Circuit
And Driver Circuit Applications

- High current driving is possible.
- Since bias resisters are built in the transistor, the miniaturization of the apparatus by curtailment of the number of parts and laborsaving of an assembly are possible.
- Many kinds of resistance value are lined up in order to support various kinds of circuit design.
- Complementary to RN1321A~RN1327A
- Low $V_{CE(sat)}$ enable to be low power dissipation on high current driving.

Unit in mm



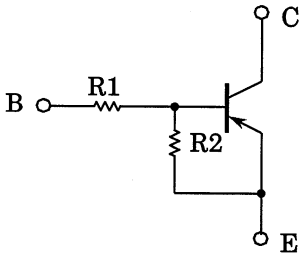
1.BASE
2.EMITTER
3.COLLECTOR

USM

JEDEC	—
JEITA	SC-70SCSC
TOSHIBA	2-2E1A

Weight: 0.006 g (typ.)

Equivalent Circuit And Bias Resistance Values



Type No.	R1 (kΩ)	R2 (kΩ)
RN2321A	1	1
RN2322A	2.2	2.2
RN2323A	4.7	4.7
RN2324A	10	10
RN2325A	0.47	10
RN2326A	1	10
RN2327A	2.2	10

Absolute Maximum Ratings (Ta = 25°C)

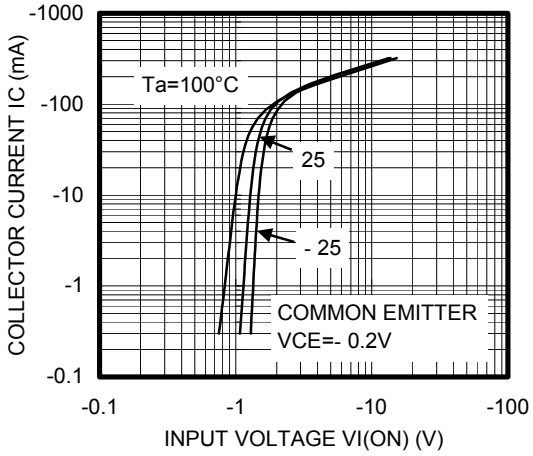
Characteristics		Symbol	Rating	Unit
Collector-base voltage	RN2321A~2327A	V_{CBO}	−15	V
Collector-emitter voltage		V_{CEO}	−12	V
Emitter-base voltage	RN2321A~2324A	V_{EBO}	−10	V
	RN2325A, 2326A		−5	
	RN2327A		−6	
Collector current	RN2321A~2327A	I_C	−500	mA
Collector power dissipation		P_C	100	mW
Junction 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).

Electrical Characteristics (Ta = 25°C)

Characteristics		Symbol	Test Circuit	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current	RN2321A~2327A	I_{CBO}	—	V_{CB} = −15V, I_E = 0	—	—	−100	nA
		I_{CEO}		V_{CE} = −12V, I_B = 0	—	—	−500	
Emitter cut-off current	RN2321A	I_{EBO}	—	V_{EB} =−10V, I_C = 0	−3.85	—	−7.14	mA
	RN2322A				−1.75	—	−3.25	
	RN2323A				−0.82	—	−1.52	
	RN2324A				−0.38	—	−0.71	
	RN2325A			V_{EB} = −5V, I_C = 0	−0.365	—	−0.682	
	RN2326A				−0.35	—	−0.65	
	RN2327A			V_{EB} = −6V, I_C = 0	−0.378		−0.703	
DC current gain	RN2321A	h_{FE}	—	V_{CE} = −1V, I_C =−50mA	35	—	—	
	RN2322A				65	—	—	
	RN2323A				100	—	—	
	RN2324A				140	—	—	
	RN2325A				140	—	—	
	RN2326A				140	—	—	
	RN2327A				140	—	—	
Collector-emitter saturation voltage	RN2321A	$V_{CE\ (sat)}$	—	I_C = −50mA, I_B =−2mA	—	—	−0.25	V
	RN2322A~2327A			I_C = −50mA, I_B =−1mA				
Input voltage (ON)	RN2321A	$V_{I\ (ON)}$	—	V_{CE} =−0.2V, I_C =−50mA	−1.0	—	−2.4	V
	RN2322A				−1.1	—	−2.7	
	RN2323A				−1.3	—	−3.5	
	RN2324A				−1.5	—	−5.2	
	RN2325A				−0.5	—	−1.2	
	RN2326A				−0.6	—	−1.4	
	RN2327A				−0.7	—	−1.9	
Input voltage (OFF)	RN2321A~2324A	$V_{I\ (OFF)}$	—	V_{CE} = −5V, I_C = −0.1mA	−0.8	—	−1.4	V
	RN2325A, 2326A				−0.4	—	−0.8	
	RN2327A				−0.5	—	−1.0	
Transition frequency	RN2321A~2327A	f_T	—	V_{CE} =−5V, I_C =−20mA	—	200	—	MH_z
Collector Output capacitance	RN2321A~2327A	C_{ob}	—	V_{CB} = 10V, I_E = 0, f = 1MH_z	—	5	—	pF
Input resistor	RN2321A	R1	—	—	0.7	1	1.3	kΩ
	RN2322A				1.54	2.2	2.86	
	RN2323A				3.29	4.7	6.11	
	RN2324A				7	10	13	
	RN2325A				0.329	0.47	0.611	
	RN2326A				0.7	1	1.3	
	RN2327A				1.54	2.2	2.86	
Resistor ratio	RN2321A~2324A	R1/R2	—	—	0.85	1.0	1.15	
	RN2325A				0.040	0.047	0.054	
	RN2326A				0.085	0.1	0.115	
	RN2327A				0.187	0.220	0.253	

RN2321A IC - VI(ON)



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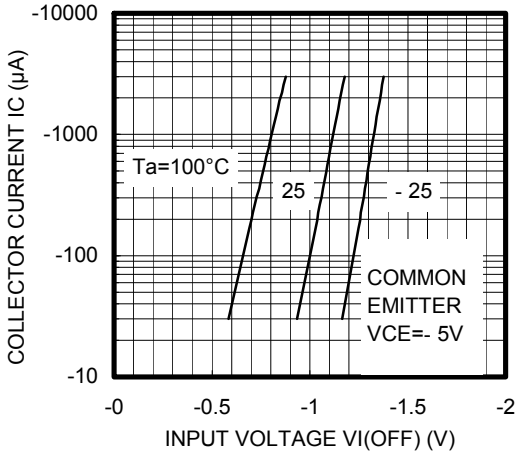

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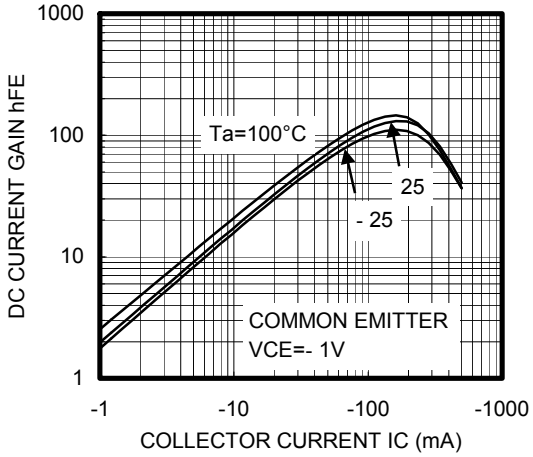

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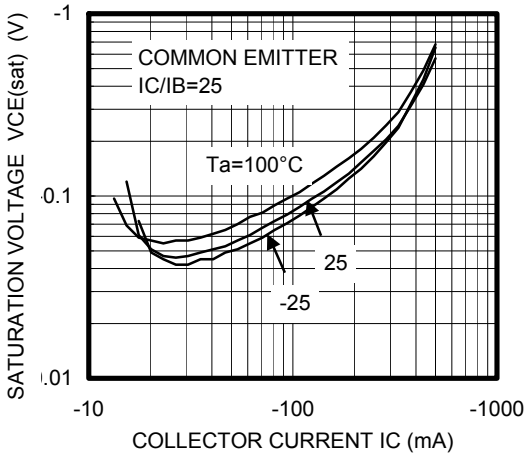

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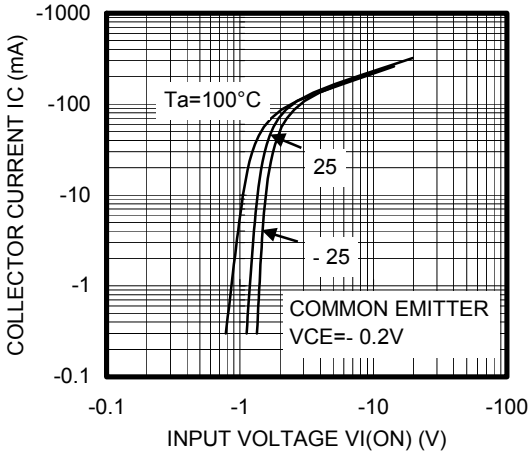

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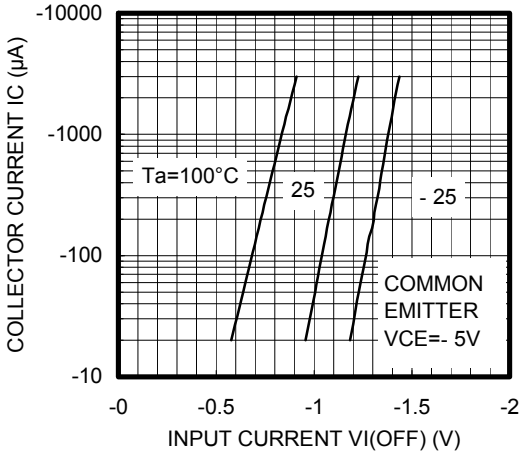

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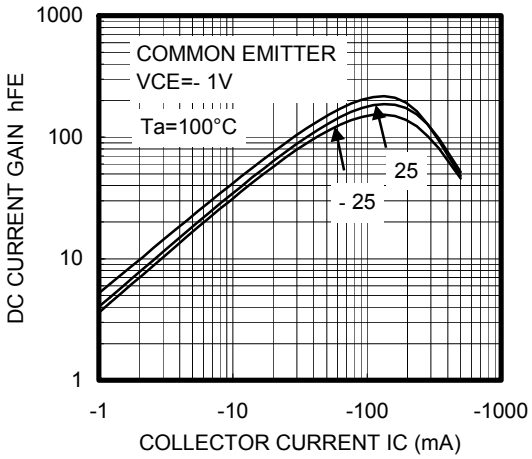

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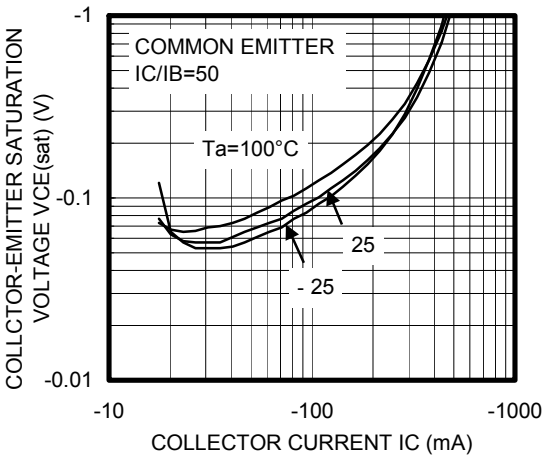

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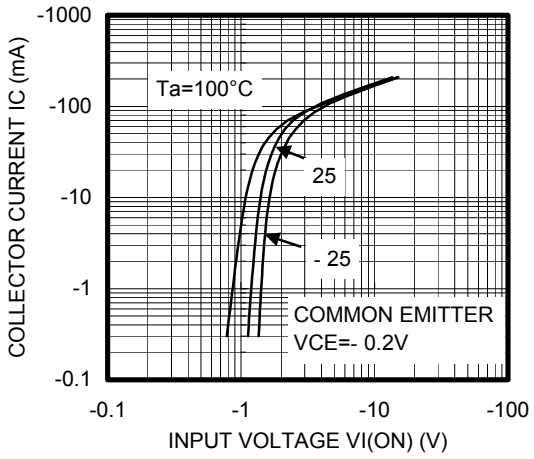

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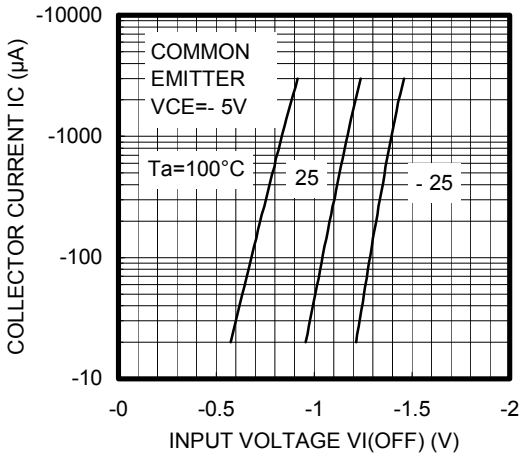

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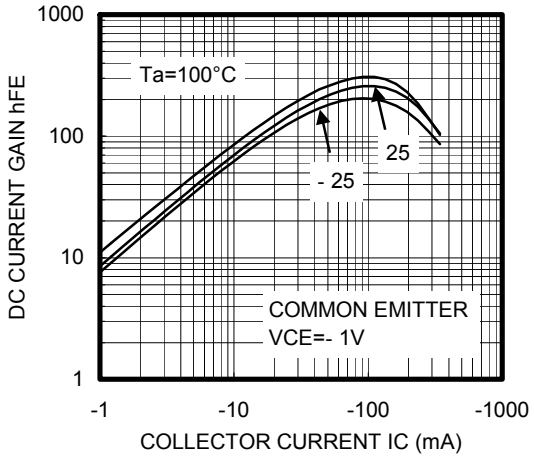

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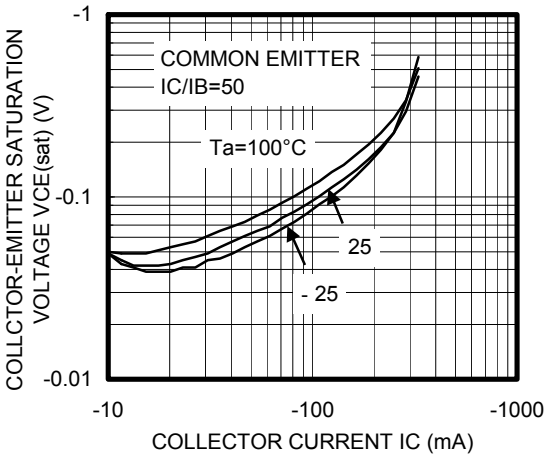

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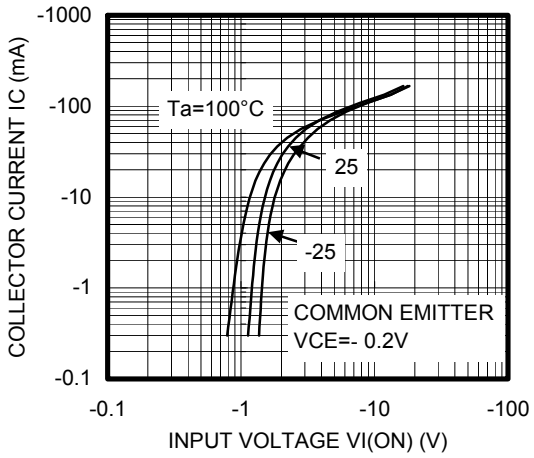

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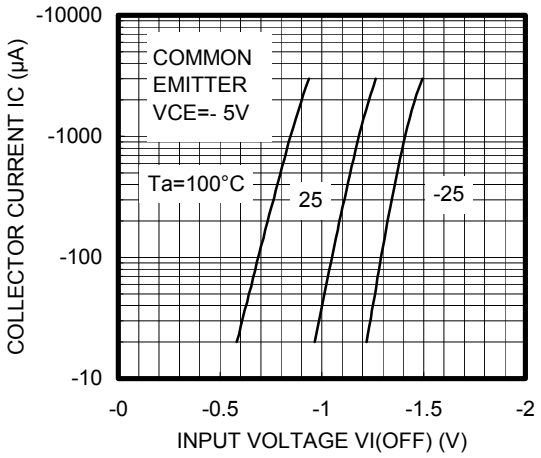

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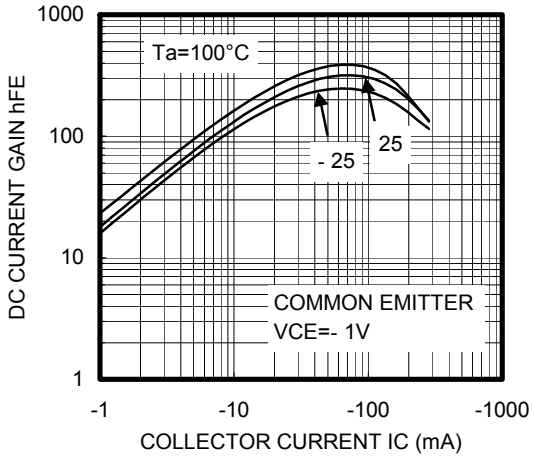

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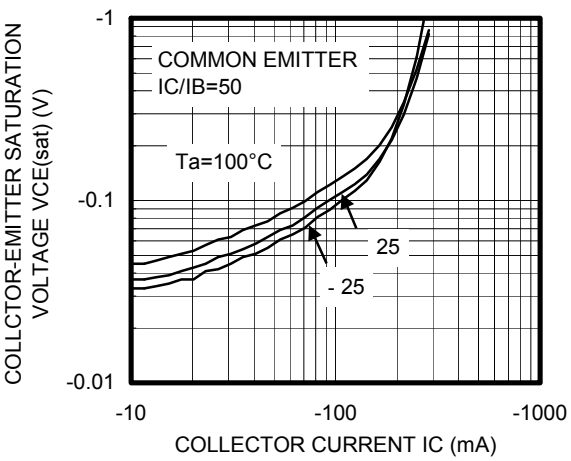

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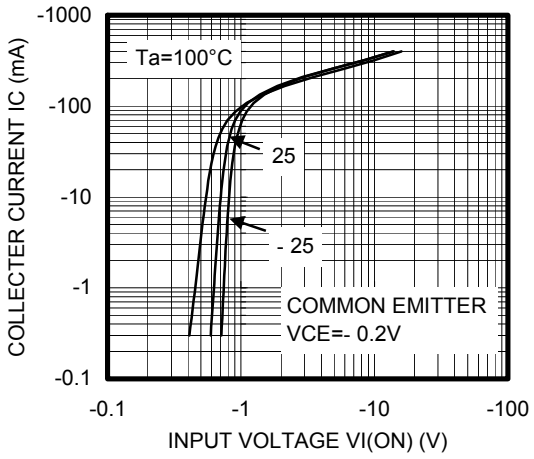

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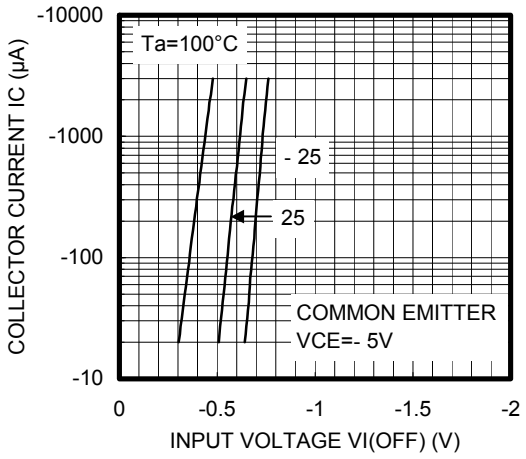

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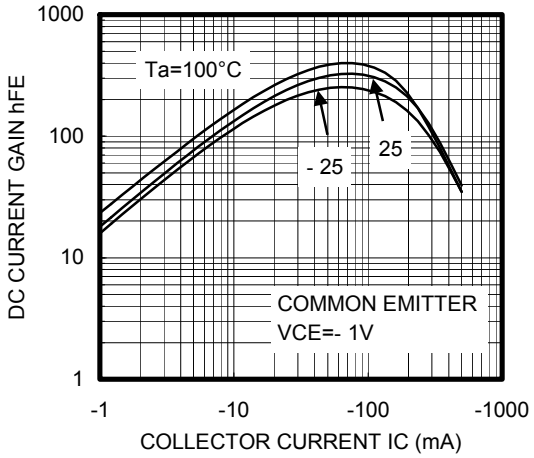

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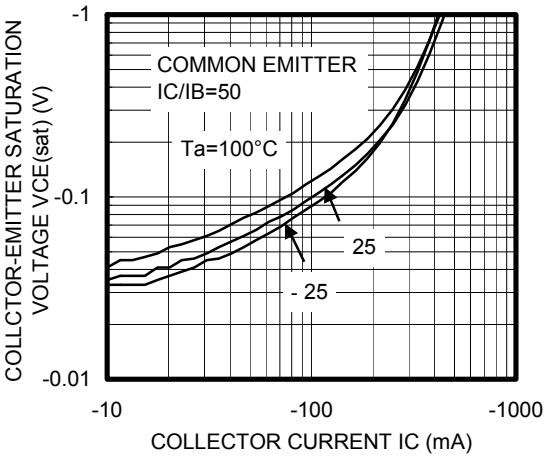

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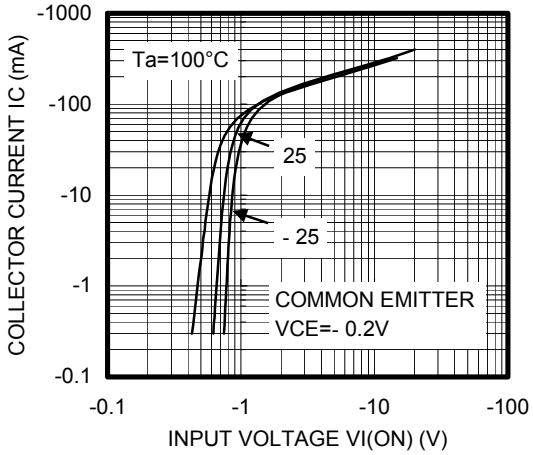

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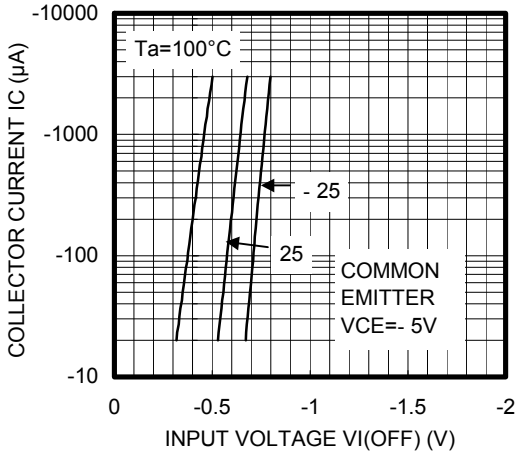

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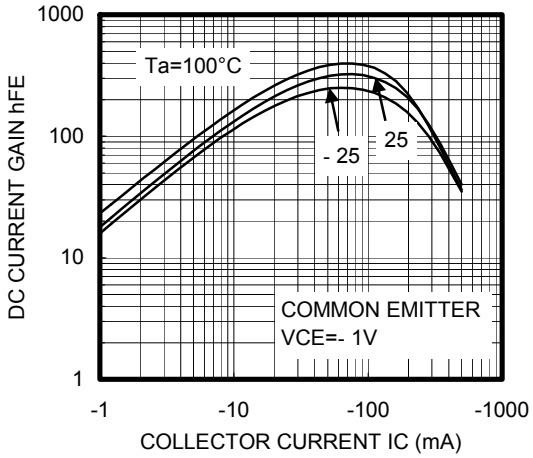

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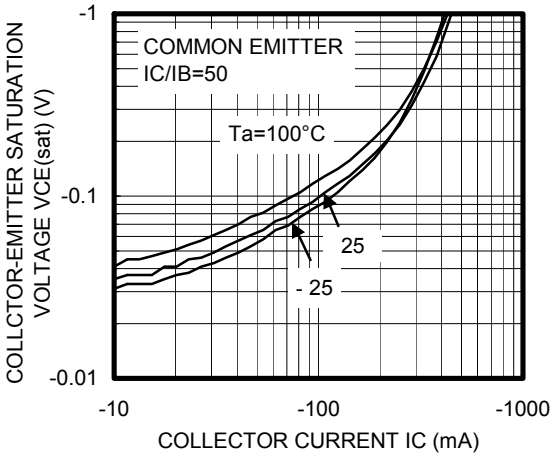

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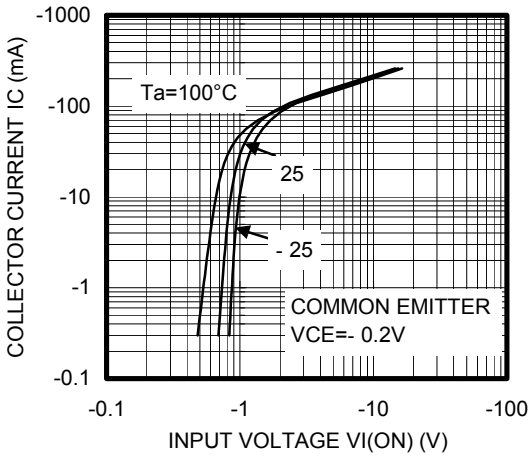

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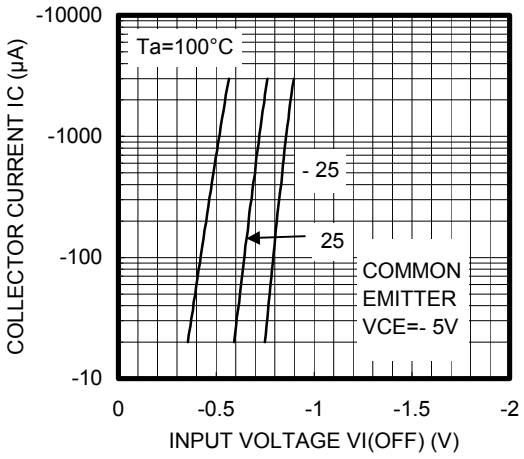

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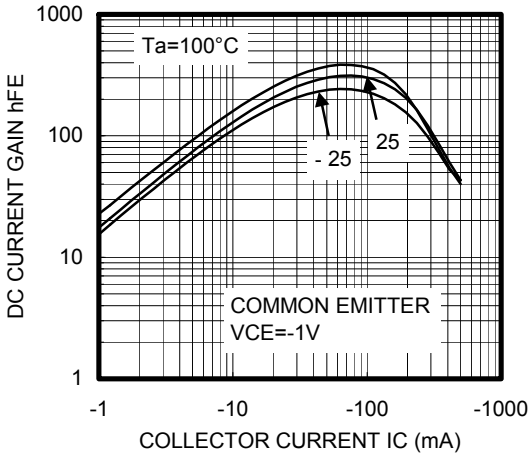

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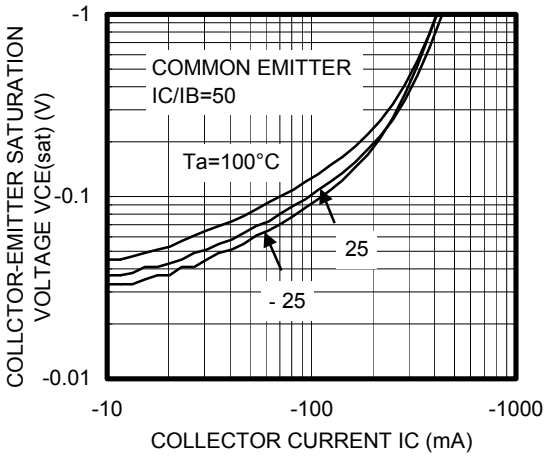

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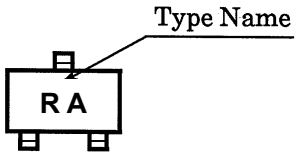
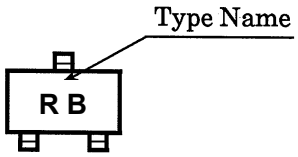
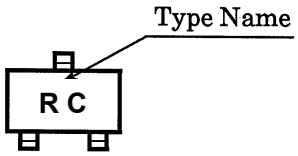
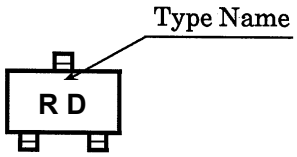
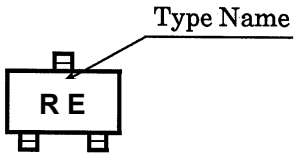
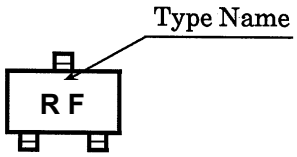
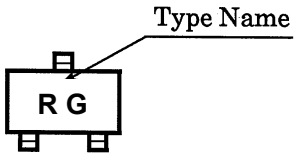
RN2321A	
RN2322A	
RN2323A	
RN2324A	
RN2325A	
RN2326A	
RN2327A	

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