

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

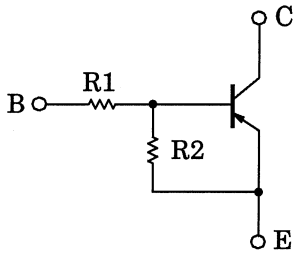
RN2901, RN2902, RN2903 RN2904, RN2905, RN2906

Switching, Inverter Circuit, Interface Circuit and Driver Circuit

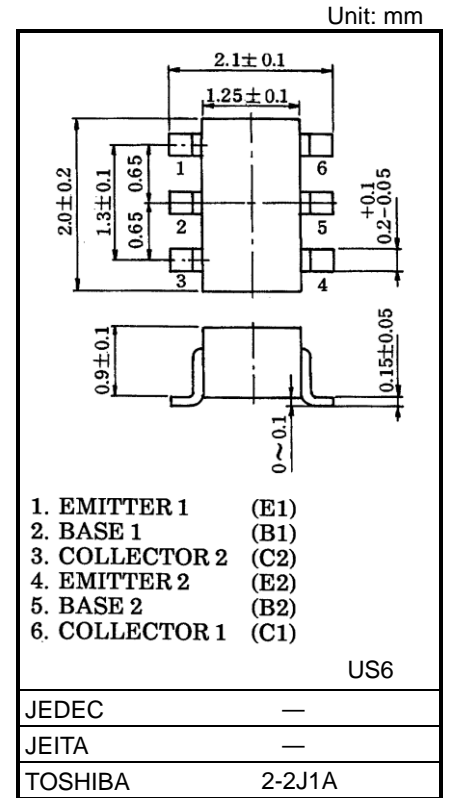
- AEC-Q101 Qualified (Note1)
- Including two devices in US6 (ultra super mini type with 6 leads)
- With built-in bias resistors
- Simplify circuit design
- Reduce a quantity of parts and manufacturing process and miniaturize equipment.
- Various resistance values are available to suit various circuit designs.
- Complementary to RN1901 to RN1906

Note1: For detail information, please contact to our sales.

Equivalent Circuit and Bias Resistor Values



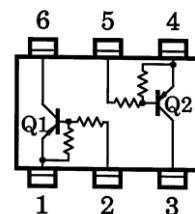
Part No.	R1 (kΩ)	R2 (kΩ)
RN2901	4.7	4.7
RN2902	10	10
RN2903	22	22
RN2904	47	47
RN2905	2.2	47
RN2906	4.7	47



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

Characteristic	Symbol	Rating	Unit	
Collector-base voltage	RN2901 to 2906	V _{CB0}	-50	V
Collector-emitter voltage				
Emitter-base voltage	RN2901 to 2904	V _{EB0}	-10	V
	RN2905, 2906		-5	
Collector current	RN2901 to 2906	I _C	-100	mA
Collector power dissipation		P _{C*}	200	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).

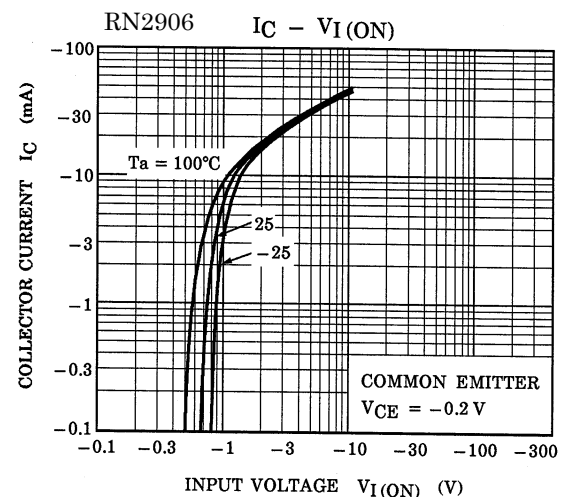
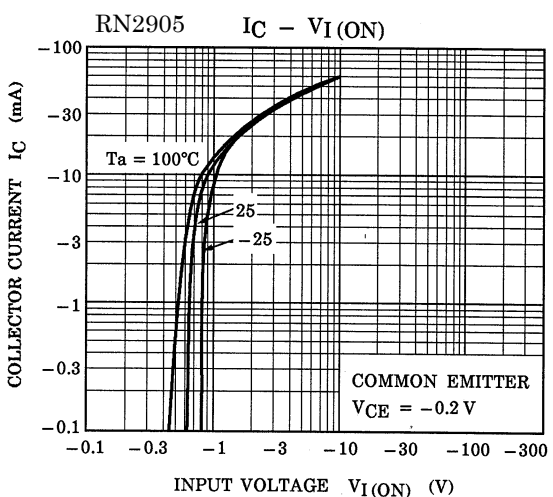
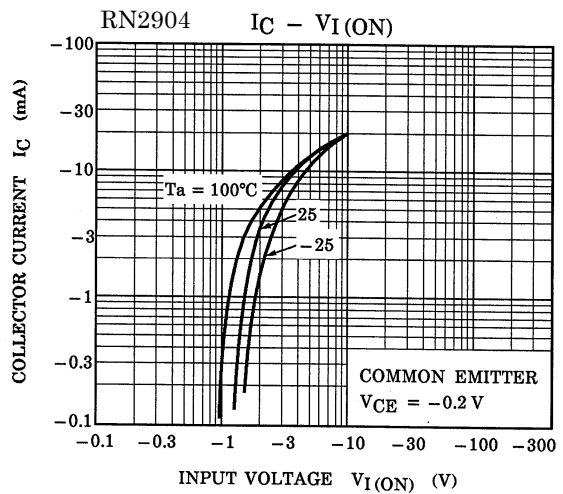
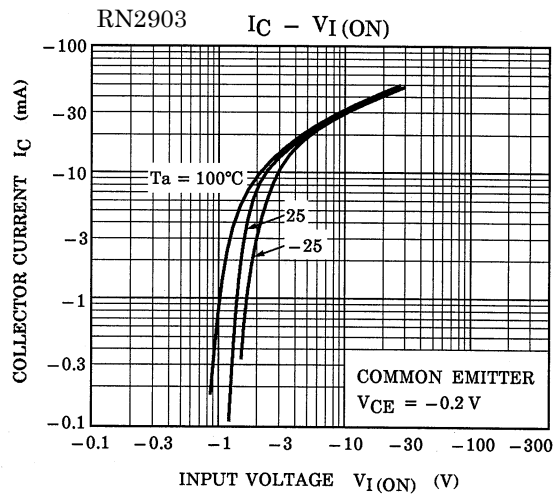
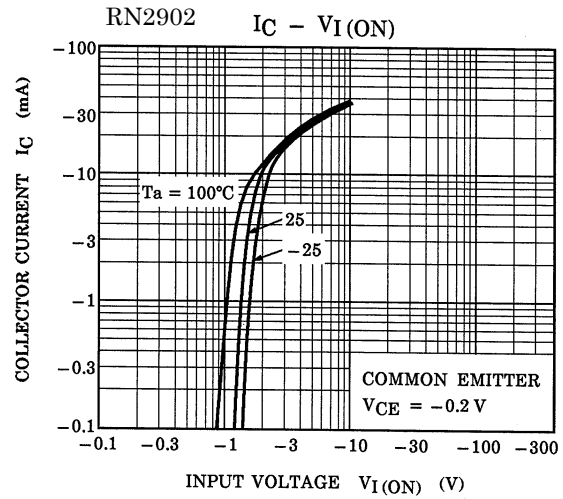
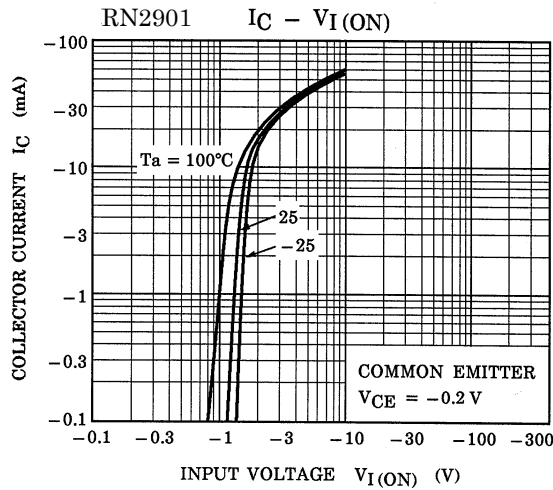
*: Total rating

Start of commercial production
1990-12

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

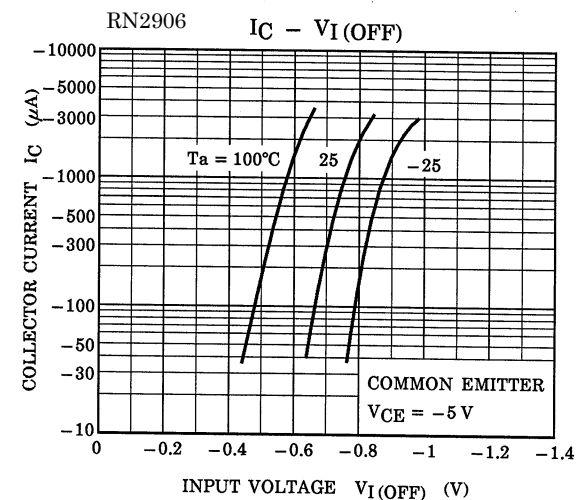
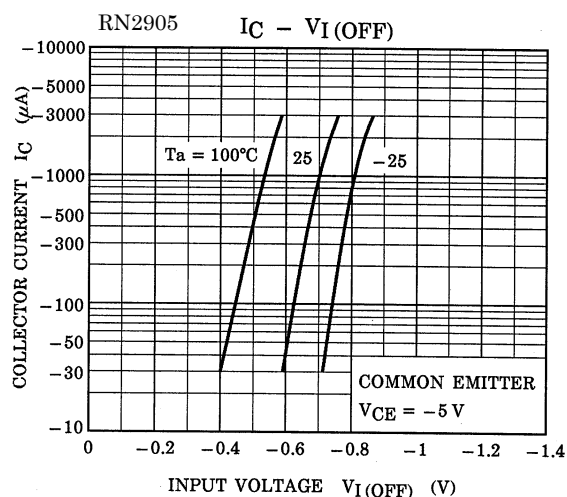
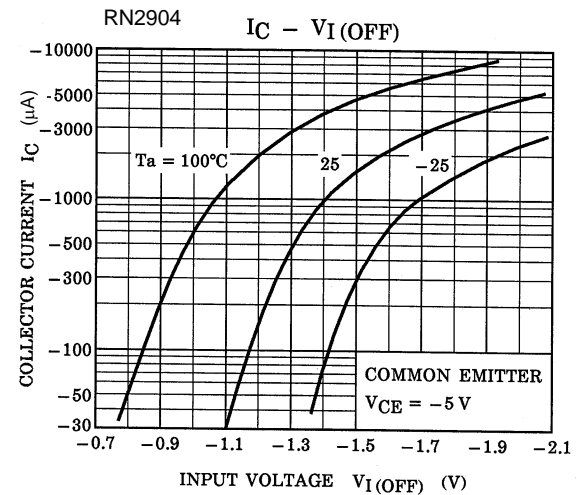
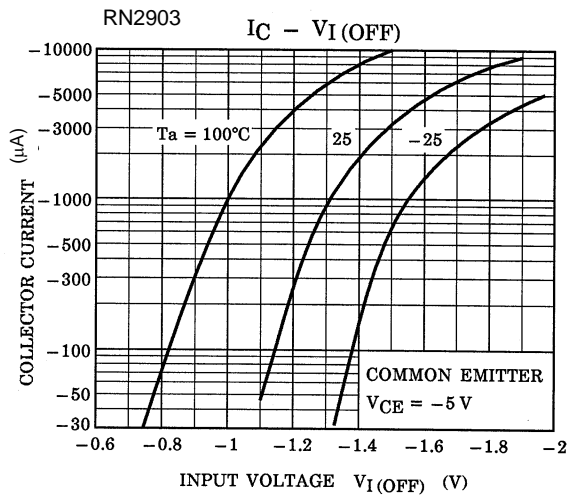
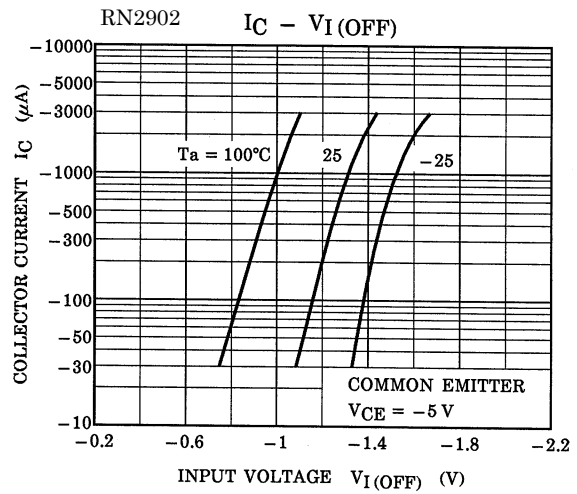
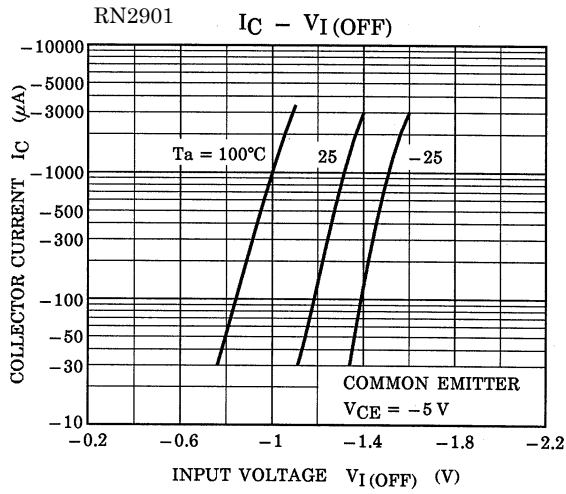
Characteristic		Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current	RN2901 to 2906	ICBO	V _{CB} = -50 V, I _E = 0 mA	—	—	-100	nA
		ICEO	V _{CE} = -50 V, I _B = 0 mA	—	—	-500	
Emitter cut-off current	RN2901	I _{EBO}	V _{EB} = -10 V, I _C = 0 mA	-0.82	—	-1.52	mA
	RN2902			-0.38	—	-0.71	
	RN2903			-0.17	—	-0.33	
	RN2904			-0.082	—	-0.15	
	RN2905		V _{EB} = -5 V, I _C = 0 mA	-0.078	—	-0.145	
	RN2906			-0.074	—	-0.138	
DC current gain	RN2901	h _{FE}	V _{CE} = -5 V I _C = -10 mA	30	—	—	—
	RN2902			50	—	—	
	RN2903			70	—	—	
	RN2904			80	—	—	
	RN2905			80	—	—	
	RN2906			80	—	—	
Collector-emitter saturation voltage	RN2901 to 2906	V _{CE (sat)}	I _C = -5 mA I _B = -0.25 mA	—	-0.1	-0.3	V
Input voltage (ON)	RN2901	V _{I (ON)}	V _{CE} = -0.2 V I _C = -5 mA	-1.1	—	-2.0	V
	RN2902			-1.2	—	-2.4	
	RN2903			-1.3	—	-3.0	
	RN2904			-1.5	—	-5.0	
	RN2905			-0.6	—	-1.1	
	RN2906			-0.7	—	-1.3	
Input voltage (OFF)	RN2901 to 2904	V _{I (OFF)}	V _{CE} = -5 V, I _C = -0.1 mA	-1.0	—	-1.5	V
	RN2905, 2906			-0.5	—	-0.8	
Transition frequency	RN2901 to 2906	f _T	V _{CE} = -10 V, I _C = -5 mA	—	200	—	MHz
Collector output capacitance	RN2901 to 2906	C _{ob}	V _{CB} = -10 V, I _E = 0 mA f = 1 MHz	—	3	6	pF
Input resistor	RN2901	R ₁	—	3.29	4.7	6.11	kΩ
	RN2902			7	10	13	
	RN2903			15.4	22	28.6	
	RN2904			32.9	47	61.1	
	RN2905			1.54	2.2	2.86	
	RN2906			3.29	4.7	6.11	
Resistor ratio	RN2901 to 2904	R ₁ /R ₂	—	0.9	1.0	1.1	—
	RN2905			0.0421	0.0468	0.0515	
	RN2906			0.09	0.1	0.11	

Characteristics Curves (Q1, Q2 Common)



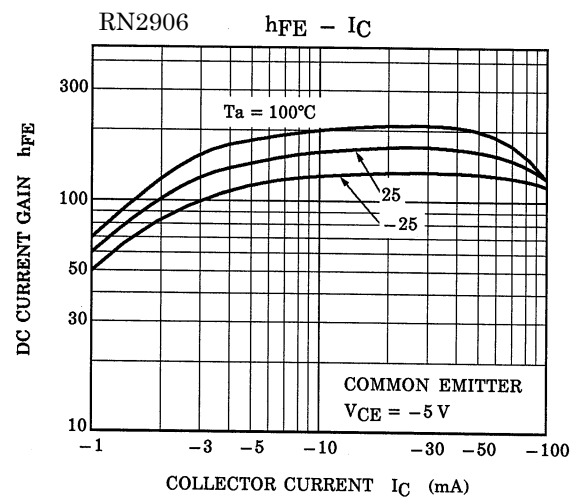
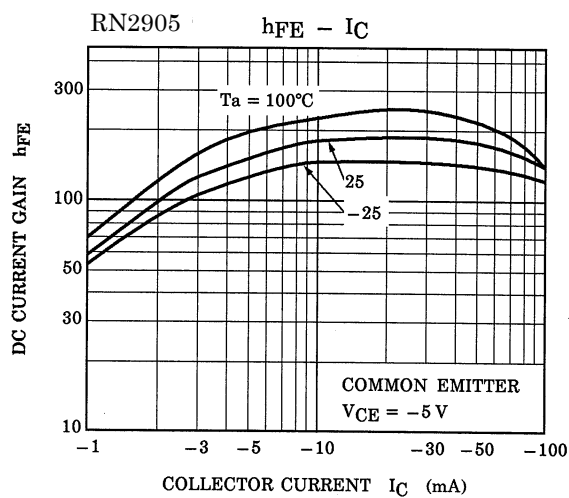
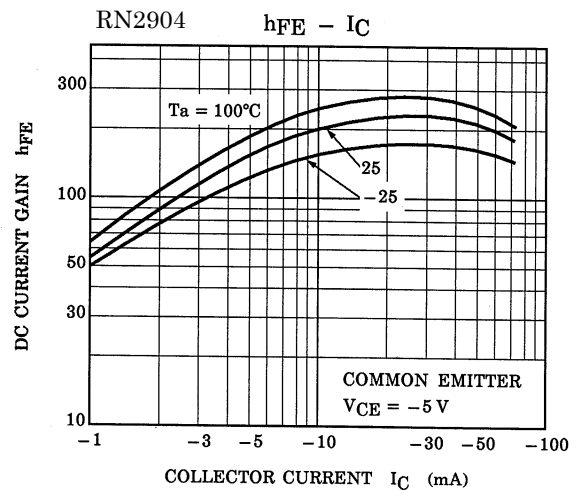
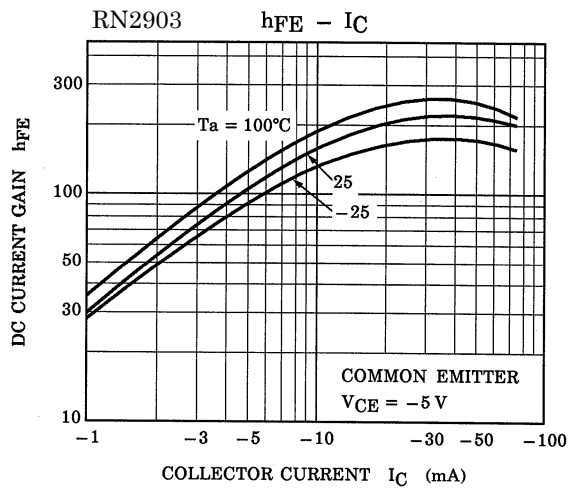
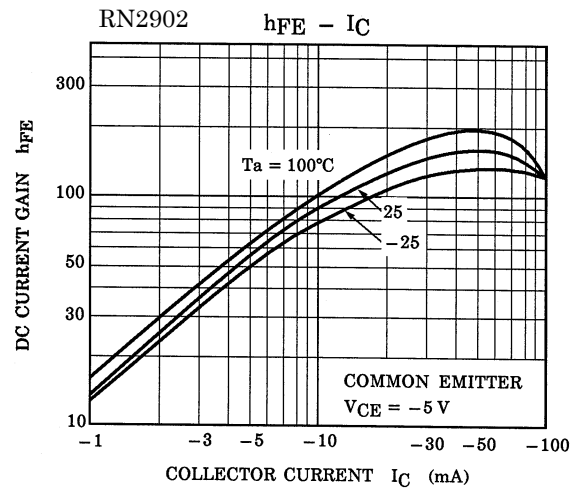
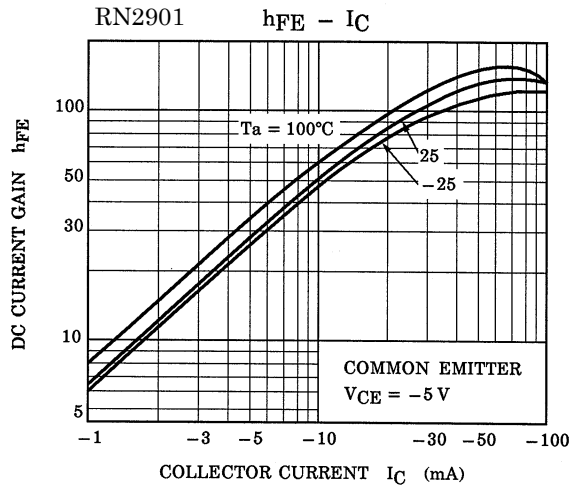
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Characteristics Curves (Q1, Q2 Common)



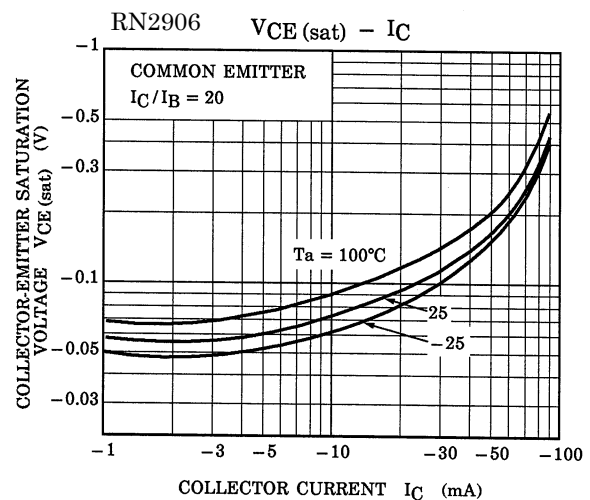
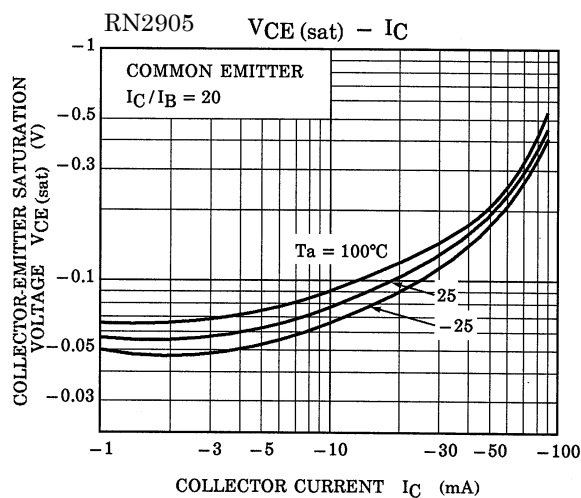
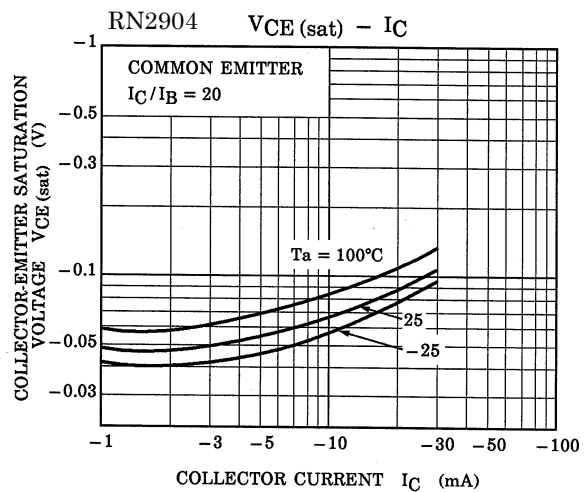
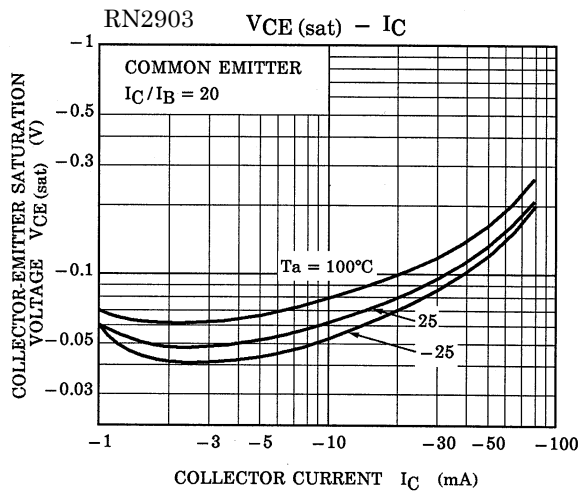
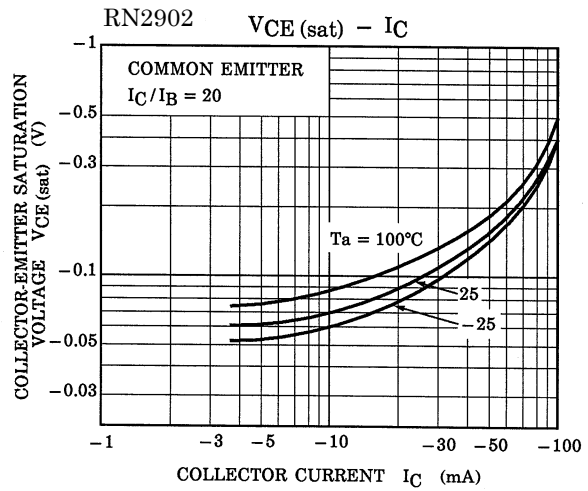
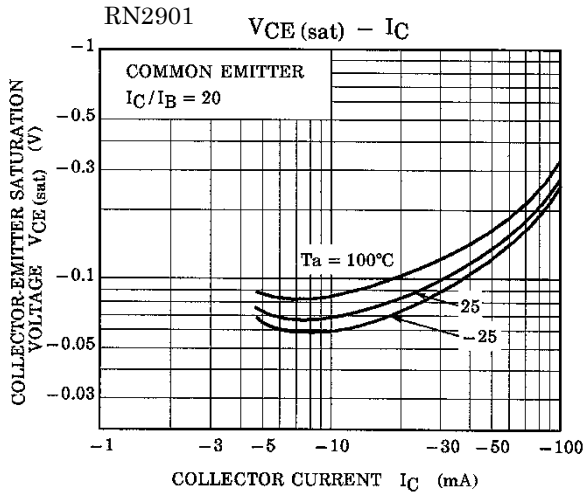
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Characteristics Curves (Q1, Q2 Common)



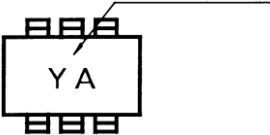
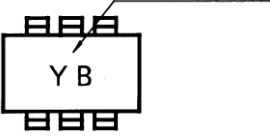
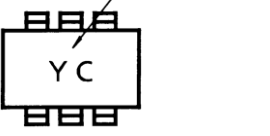
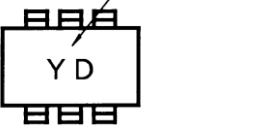


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Characteristics Curves (Q1, Q2 Common)



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Marking

Part No.	Marking
RN2901	<p data-bbox="564 342 826 365">Part No.(abbreviation code)</p> 
RN2902	<p data-bbox="564 573 826 595">Part No.(abbreviation code)</p> 
RN2903	<p data-bbox="564 804 826 826">Part No.(abbreviation code)</p> 
RN2904	<p data-bbox="564 1034 826 1057">Part No.(abbreviation code)</p> 
RN2905	<p data-bbox="564 1265 826 1288">Part No.(abbreviation code)</p> 
RN2906	<p data-bbox="564 1496 826 1518">Part No.(abbreviation code)</p> 

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