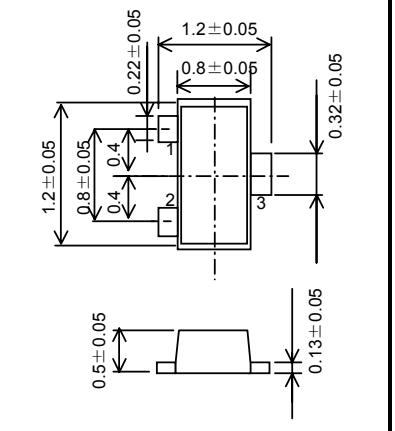
TOSHIBA Transistor Silicon PNP Epitaxial Type (PCT Process)

RN2101FV, RN2102FV, RN2103FV
RN2104FV, RN2105FV, RN2106FV

Switching, Inverter Circuit, Interface Circuit
and Driver Circuit Applications

- Built-in bias resistors
- Simplified circuit design
- Reduced quantity of parts and manufacturing process
- Complementary to RN1101FV~RN1106FV

Unit: mm



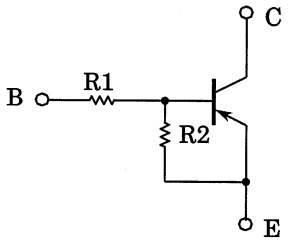
VESM

1.BASE
2.EMITTER
3.COLLECTOR

JEDEC	—
JEITA	—
TOSHIBA	2-1L1A

Weight: 0.0015g (typ.)

Equivalent Circuit and Bias Resister Values

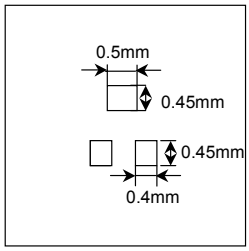


Type No.	R1 (kΩ)	R2 (kΩ)
RN2101FV	4.7	4.7
RN2102FV	10	10
RN2103FV	22	22
RN2104FV	47	47
RN2105FV	2.2	47
RN2106FV	4.7	47

Maximum Ratings (Ta = 25°C)

Characteristic		Symbol	Rating	Unit
Collector-base voltage	RN2101FV~2106FV	V_{CBO}	−50	V
Collector-emitter voltage		V_{CEO}	−50	V
Emitter-base voltage	RN2101FV~2104FV	V_{EBO}	−10	V
	RN2105FV, 2106FV		−5	
Collector current	RN2101FV~2106FV	I_C	−100	mA
Collector power dissipation		P_C(Note)	150	mW
Junction temperature		T_j	150	°C
Storage temperature range		T_{stg}	−55~150	°C

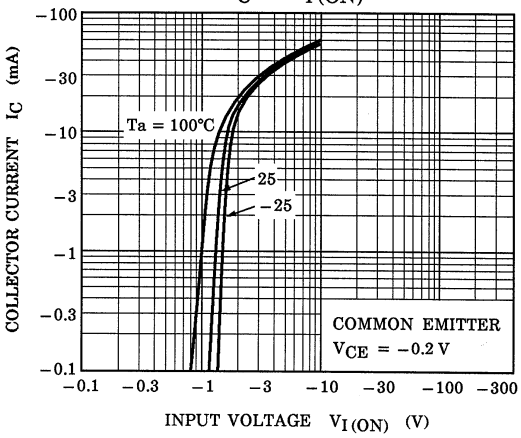
Note: Mounted on FR4 board (25.4 mm × 25.4 mm × 1.6 mmt)



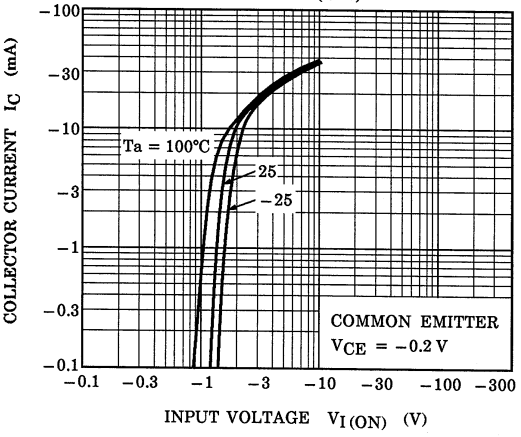
Electrical Characteristics (Ta = 25°C)

Characteristic		Symbol	Test Circuit	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current	RN2101FV~2106FV	I_{CBO}	—	V_{CB} = −50V, I_E = 0	—	—	−100	nA
		I_{CEO}		V_{CE} = −50V, I_B = 0	—	—	−500	
Emitter cut-off current	RN2101FV	I_{EBO}	—	V_{EB} = −10V, I_C = 0	−0.82	—	−1.52	mA
	RN2102FV				−0.38	—	−0.71	
	RN2103FV				−0.17	—	−0.33	
	RN2104FV				−0.082	—	−0.15	
	RN2105FV			V_{EB} = −5V, I_C = 0	−0.078	—	−0.145	
	RN2106FV				−0.074	—	−0.138	
DC current gain	RN2101FV	h_{FE}	—	V_{CE} = −5V, I_C = −10mA	30	—	—	
	RN2102FV				50	—	—	
	RN2103FV				70	—	—	
	RN2104FV				80	—	—	
	RN2105FV				80	—	—	
	RN2106FV				80	—	—	
Collector-emitter saturation voltage	RN2101FV~2106FV	$V_{CE\ (sat)}$	—	I_C = −5mA, I_B = −0.25mA	—	−0.1	−0.3	V
Input voltage (ON)	RN2101FV	$V_{I\ (ON)}$	—	V_{CE} = −0.2V, I_C = −5mA	−1.1	—	−2.0	V
	RN2102FV				−1.2	—	−2.4	
	RN2103FV				−1.3	—	−3.0	
	RN2104FV				−1.5	—	−5.0	
	RN2105FV				−0.6	—	−1.1	
	RN2106FV				−0.7	—	−1.3	
Input voltage (OFF)	RN2101FV~2104FV	$V_{I\ (OFF)}$	—	V_{CE} = −5V, I_C = −0.1mA	−1.0	—	−1.5	V
	RN2105FV, 2106FV				−0.5	—	−0.8	
Transition frequency	RN2101FV~2106FV	f_T	—	V_{CE} = −10V, I_C = −5mA	—	200	—	MHz
Collector output capacitance	RN2101FV~2106FV	C_{ob}	—	V_{CB} = −10V, I_E = 0, f = 1MHz	—	3	—	pF
Input resistor	RN2101FV	R1	—		3.29	4.7	6.11	kΩ
	RN2102FV				7	10	13	
	RN2103FV				15.4	22	28.6	
	RN2104FV				32.9	47	61.1	
	RN2105FV				1.54	2.2	2.86	
	RN2106FV				3.29	4.7	6.11	
Resistor ratio	RN2101FV~2104FV	R1/R2	—		0.9	1.0	1.1	
	RN2105FV				0.0421	0.0468	0.0515	
	RN2106FV				0.09	0.1	0.11	

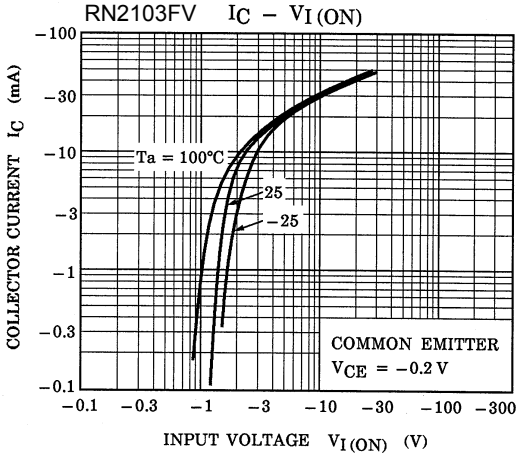
RN2101FV I_C – $V_{I(ON)}$



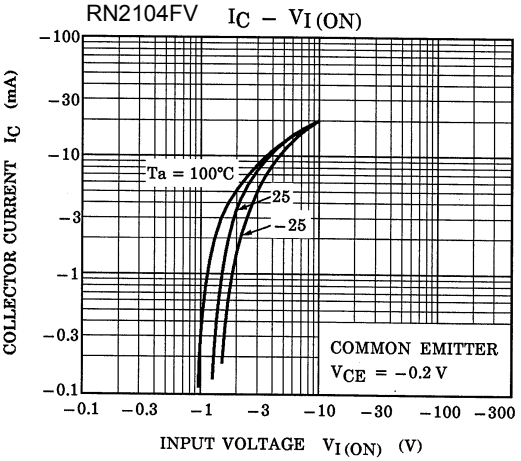
RN2102FV I_C – $V_{I(ON)}$



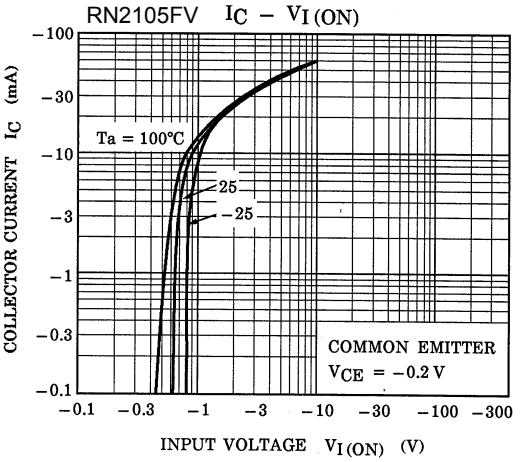
RN2103FV I_C – $V_{I(ON)}$



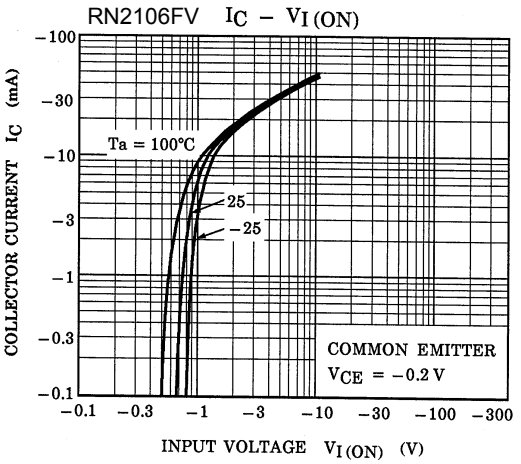
RN2104FV I_C – $V_{I(ON)}$



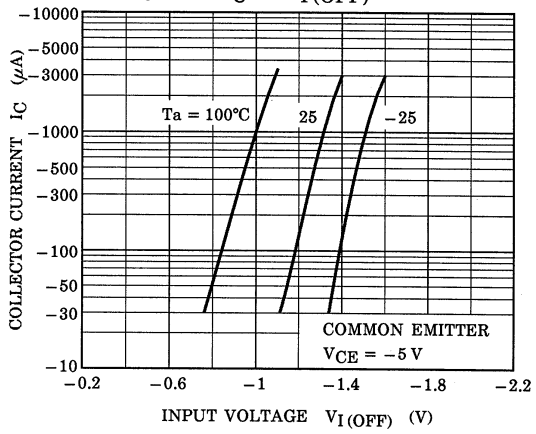
RN2105FV I_C – $V_{I(ON)}$



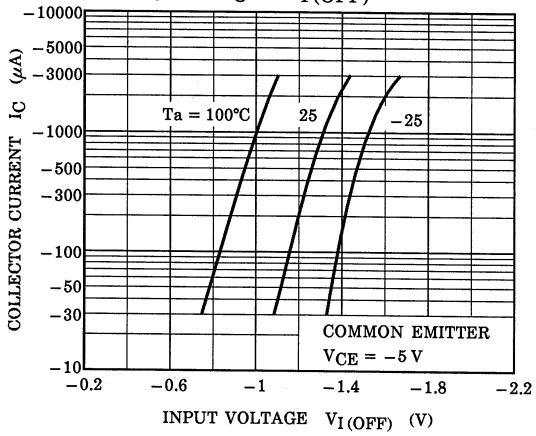
RN2106FV I_C – $V_{I(ON)}$



RN2101FV I_C – $V_{I(OFF)}$



RN2102FV I_C – $V_{I(OFF)}$



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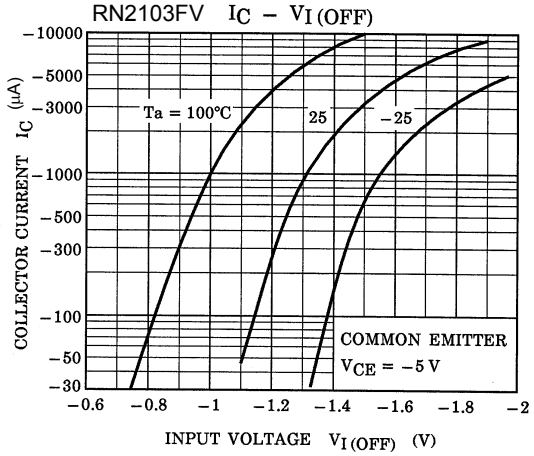

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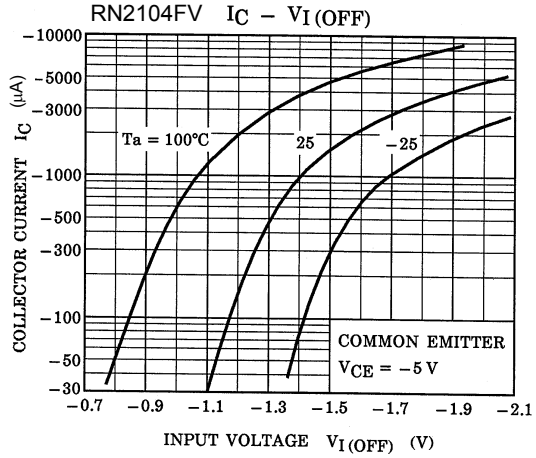

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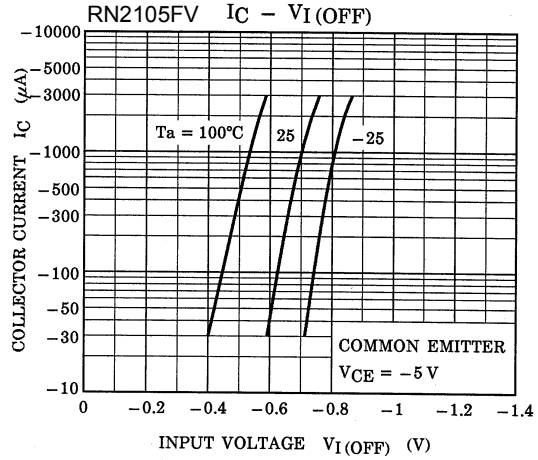

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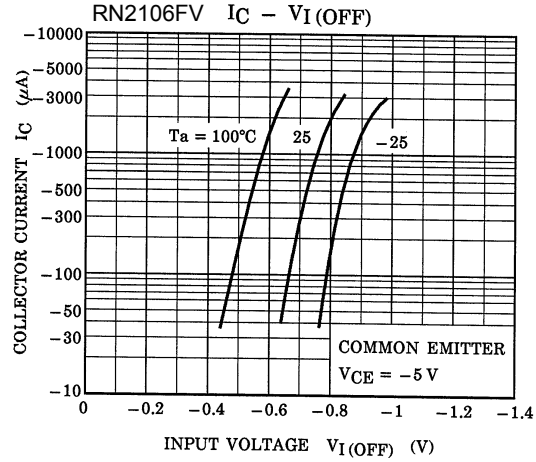
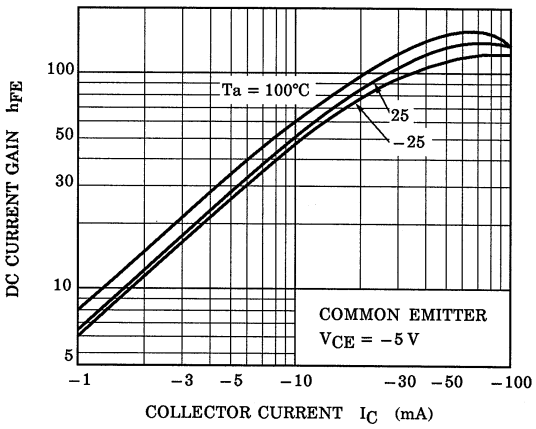


RN2101FV h_{FE} – I_C



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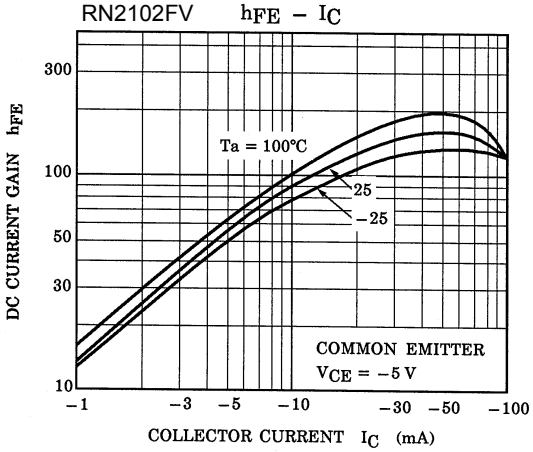

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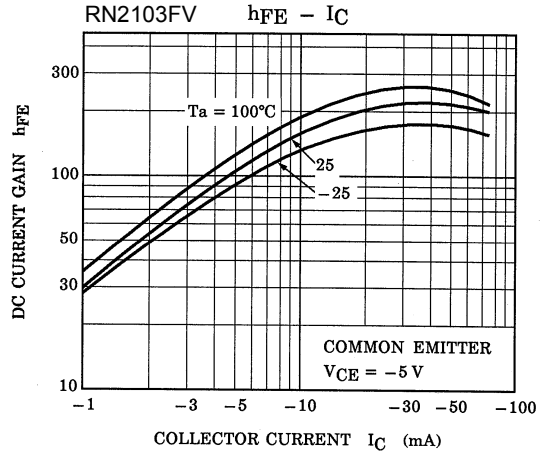

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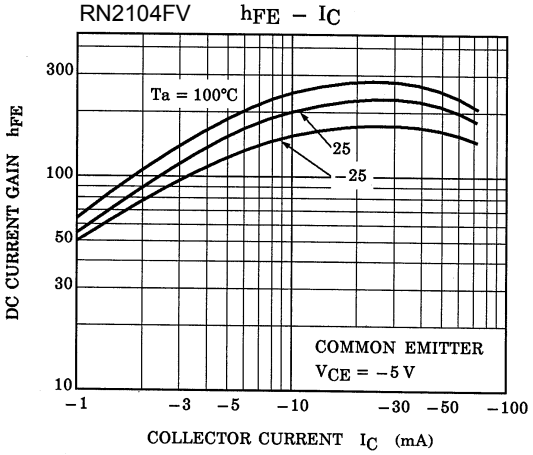

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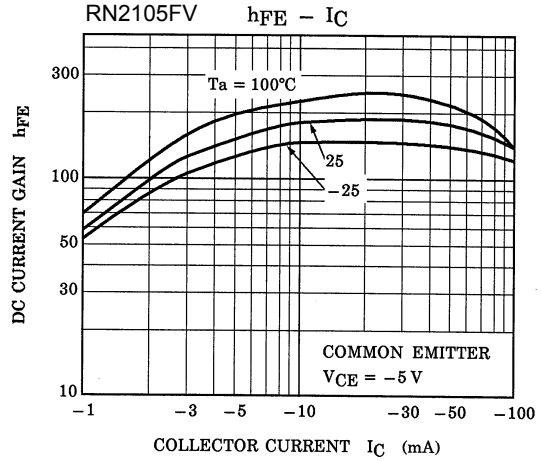
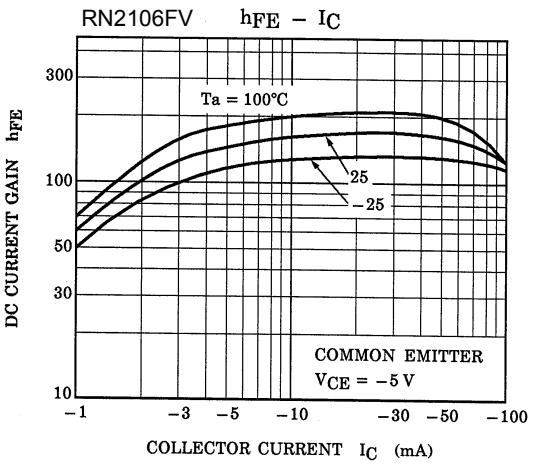
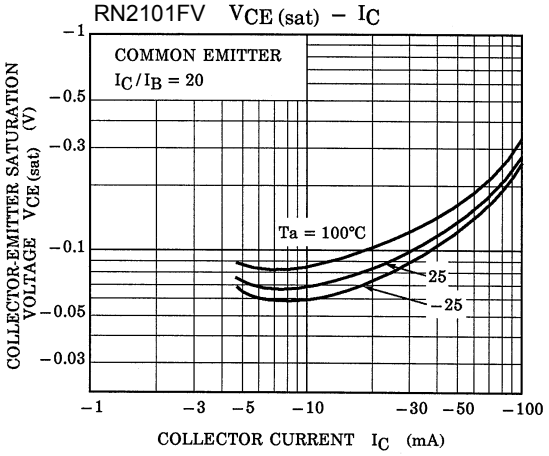


RN2106FV h_{FE} – I_C



RN2101FV $V_{CE\,(sat)}$ – I_C



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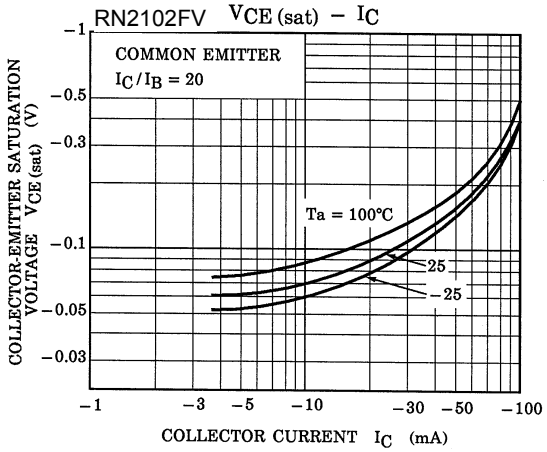

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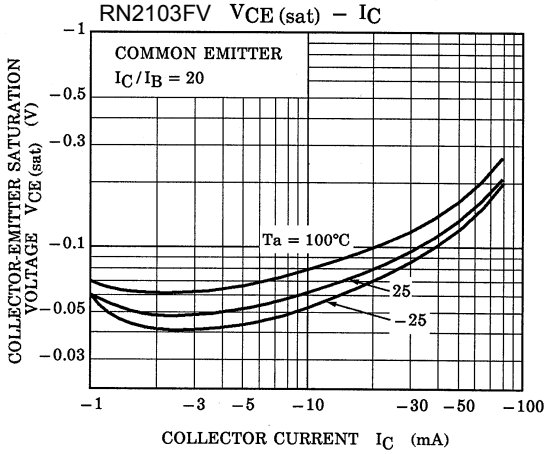
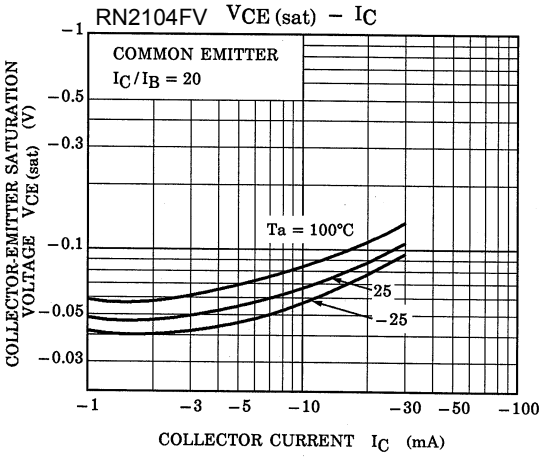
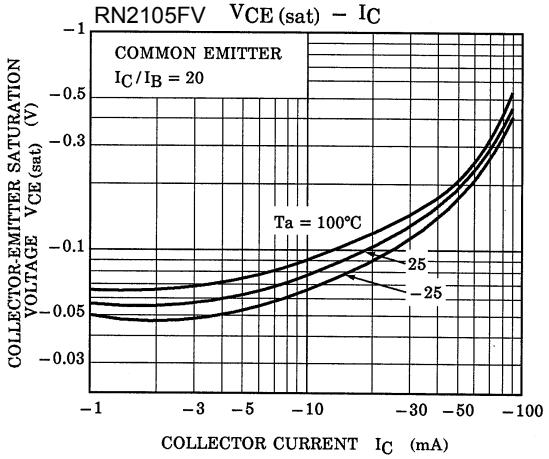


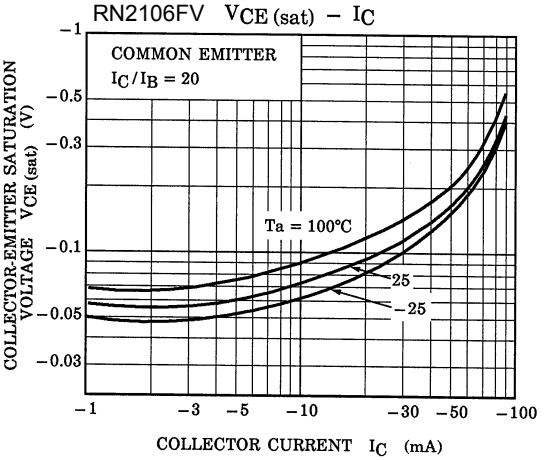
RN2104FV $V_{CE\,(sat)}$ – I_C



RN2105FV $V_{CE\,(sat)}$ – I_C



RN2106FV $V_{CE\,(sat)}$ – I_C



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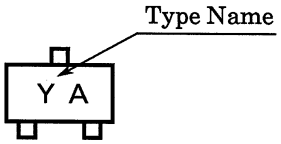
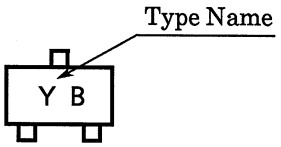
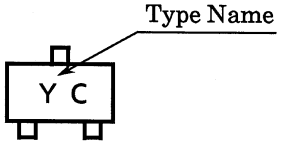
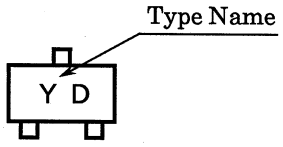
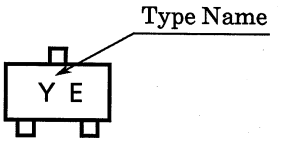
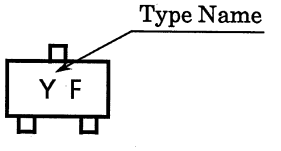
RN2101FV	
RN2102FV	
RN2103FV	
RN2104FV	
RN2105FV	
RN2106FV	

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