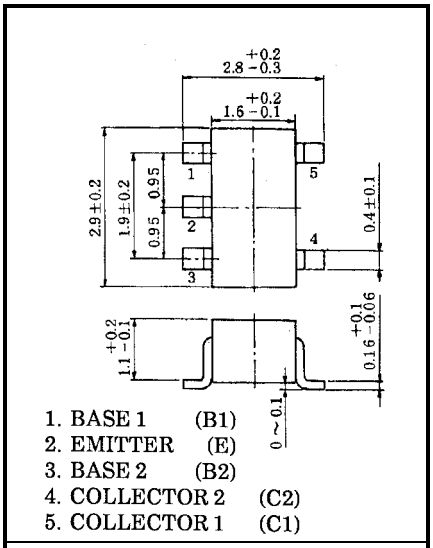
TOSHIBA Transistor Silicon PNP Epitaxial Type (PCT Process)

RN2501,RN2502,RN2503
RN2504,RN2505,RN2506

Switching, Inverter Circuit, Interface Circuit
And Driver Circuit Applications

- Including two devices in SMV (super mini type with 5 leads)
- With built-in bias resistors
- Simplify circuit design
- Reduce a quantity of parts and manufacturing process
- Complementary to RN1501~RN1506

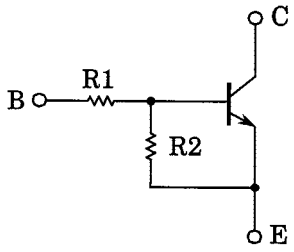
Unit: mm



JEDEC	—
EIAJ	—
TOSHIBA	2-3L1A

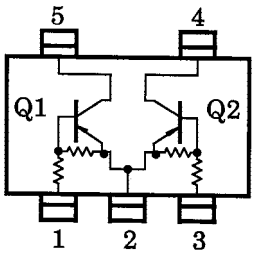
Weight: 0.014g

Equivalent Circuit and Bias Resistor Values



Type No.	R1 (kΩ)	R2 (kΩ)
RN2501	4.7	4.7
RN2502	10	10
RN2503	22	22
RN2504	47	47
RN2505	2.2	47
RN2506	4.7	47

Equivalent Circuit (Top View)



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

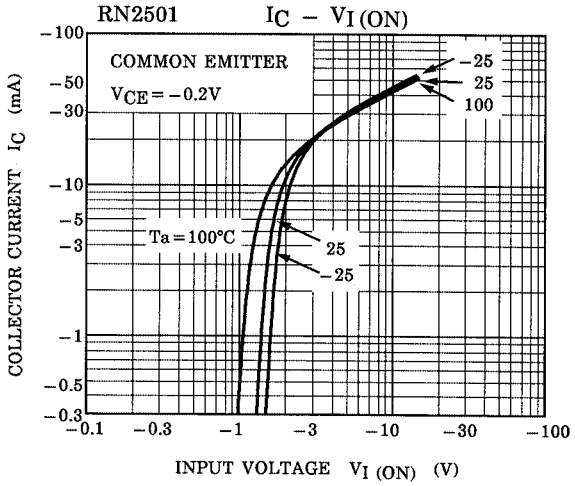
Characteristic		Symbol	Rating	Unit
Collector-base voltage	RN2501~2506	V_{CBO}	−50	V
Collector-emitter voltage		V_{CEO}	−50	V
Emitter base voltage	RN2501~2504	V_{EBO}	−10	V
	RN2505, 2506		−5	
Collector current	RN2501~2506	I_C	−100	mA
Collector power dissipation		P_C*	300	mW
Junction temperature		Tj	150	°C
Storage temperature range		Tstg	−55~150	°C

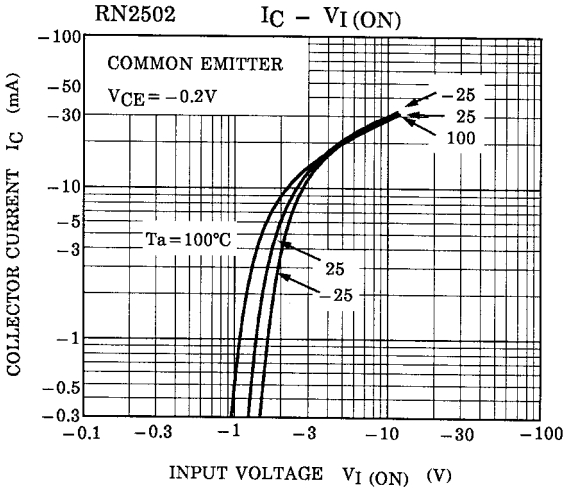
* Total rating

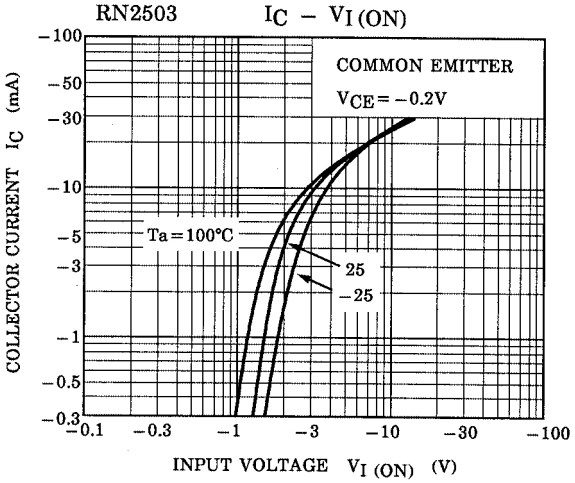
Electrical Characteristics (Ta = 25°C) (Q1, Q2 Common)

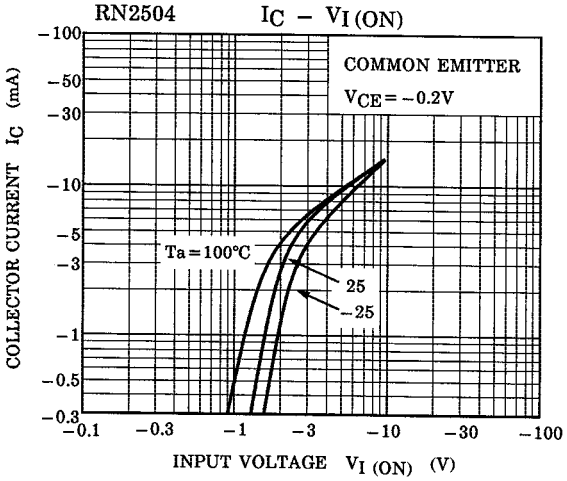
Characteristic		Symbol	Test Circuit	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current	RN2501~2506	I_{CBO}	—	V_{CB} = −50V, I_E = 0	—	—	−100	nA
		I_{CEO}	—	V_{CE} = −50V, I_B = 0	—	—	−500	
Emitter cut-off current	RN2501	I_{EBO}	—	V_{EB} = −10V, I_C = 0	−0.82	—	−1.52	mA
	RN2502		—		−0.38	—	−0.71	
	RN2503		—		−0.17	—	−0.33	
	RN2504		—		−0.082	—	−0.15	
	RN2505		—	V_{EB} = −5V, I_C = 0	−0.078	—	−0.145	
	RN2506		—		−0.074	—	−0.138	
DC current gain	RN2501	h_{FE}	—	V_{CE} = −5V I_C = −10mA	30	—	—	—
	RN2502		—		50	—	—	
	RN2503		—		70	—	—	
	RN2504		—		80	—	—	
	RN2505		—		80	—	—	
	RN2506		—		80	—	—	
Collector-emitter saturation voltage	RN2501~2506	$V_{CE\ (sat)}$	—	I_C = −5mA I_B = −0.25mA	—	−0.1	−0.3	V
Input voltage (ON)	RN2501	$V_{I\ (ON)}$	—	V_{CE} = −0.2V I_C = −5mA	−1.1	—	−2.0	V
	RN2502		—		−1.2	—	−2.4	
	RN2503		—		−1.3	—	−3.0	
	RN2504		—		−1.5	—	−5.0	
	RN2505		—		−0.6	—	−1.1	
	RN2506		—		−0.7	—	−1.3	
Input voltage (OFF)	RN2501~2504	$V_{I\ (OFF)}$	—	V_{CE} = −5V I_C = −0.1mA	−1.0	—	−1.5	V
	RN2505, 2506		—		−0.5	—	−0.8	
Translation frequency	RN2501~2506	f_T	—	V_{CE} = −10V I_C = −5mA	—	200	—	MHz
Collector output capacitance	RN2501~2506	C_{ob}	—	V_{CB} = −10V, I_E = 0 f = 1MHz	—	3	6	pF
Input resistor	RN2501	R1	—	—	3.29	4.7	6.11	kΩ
	RN2502		—		7	10	13	
	RN2503		—		15.4	22	28.6	
	RN2504		—		32.9	47	61.1	
	RN2505		—		1.54	2.2	2.86	
	RN2506		—		3.29	4.7	6.11	
Resistor ratio	RN2501~2504	R1/R2	—	—	0.9	1.0	1.1	—
	RN2505		—		0.0421	0.0468	0.0515	
	RN2506		—		0.09	0.1	0.11	

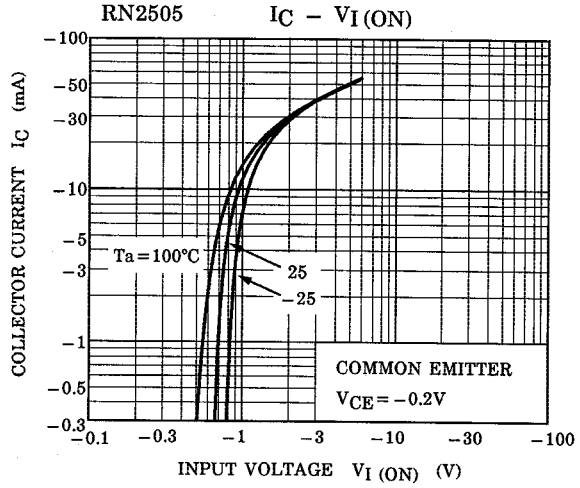
(Q1, Q2 Common)

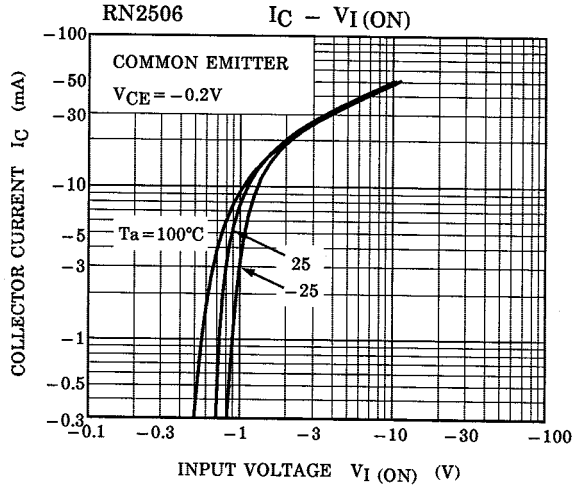

RN2501 IC – VI (ON)
COMMON EMITTER
VCE = −0.2V
Ta = 100°C
25
−25
−25
25
100
COLLECTOR CURRENT IC (mA)
INPUT VOLTAGE VI (ON) (V)
−100
−50
−30
−10
−5
−3
−1
−0.5
−0.3
−0.1
−0.3
−1
−3
−10
−30
−100


RN2502 IC – VI (ON)
COMMON EMITTER
VCE = −0.2V
Ta = 100°C
25
−25
−25
25
100
COLLECTOR CURRENT IC (mA)
INPUT VOLTAGE VI (ON) (V)
−100
−50
−30
−10
−5
−3
−1
−0.5
−0.3
−0.1
−0.3
−1
−3
−10
−30
−100


RN2503 IC – VI (ON)
COMMON EMITTER
VCE = −0.2V
Ta = 100°C
25
−25
COLLECTOR CURRENT IC (mA)
INPUT VOLTAGE VI (ON) (V)
−100
−50
−30
−10
−5
−3
−1
−0.5
−0.3
−0.1
−0.3
−1
−3
−10
−30
−100

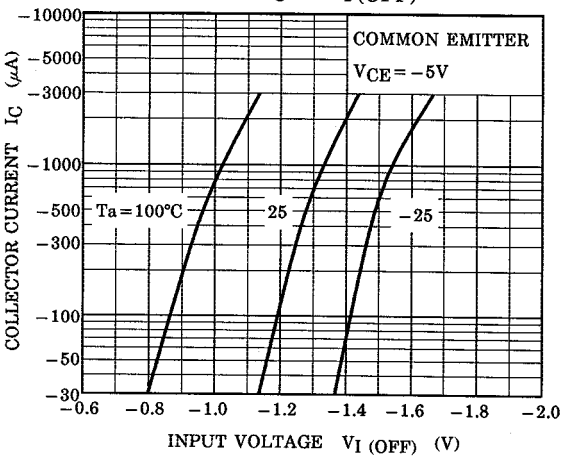

RN2504 IC – VI (ON)
COMMON EMITTER
VCE = −0.2V
Ta = 100°C
25
−25
COLLECTOR CURRENT IC (mA)
INPUT VOLTAGE VI (ON) (V)
−100
−50
−30
−10
−5
−3
−1
−0.5
−0.3
−0.1
−0.3
−1
−3
−10
−30
−100


RN2505 IC – VI (ON)
Ta = 100°C
25
−25
COMMON EMITTER
VCE = −0.2V
COLLECTOR CURRENT IC (mA)
INPUT VOLTAGE VI (ON) (V)
−100
−50
−30
−10
−5
−3
−1
−0.5
−0.3
−0.1
−0.3
−1
−3
−10
−30
−100

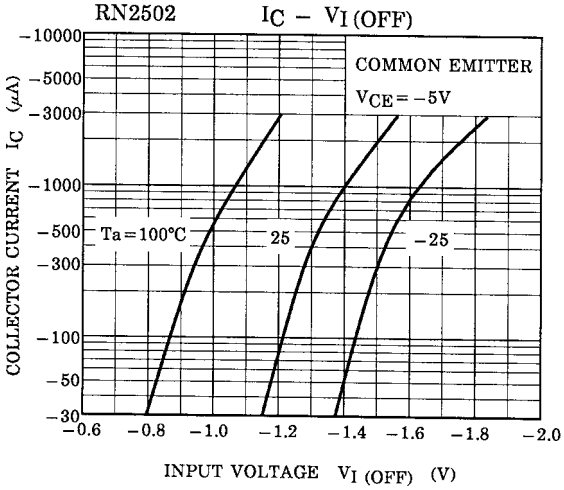

RN2506 IC – VI (ON)
COMMON EMITTER
VCE = −0.2V
Ta = 100°C
25
−25
COLLECTOR CURRENT IC (mA)
INPUT VOLTAGE VI (ON) (V)
−100
−50
−30
−10
−5
−3
−1
−0.5
−0.3
−0.1
−0.3
−1
−3
−10
−30
−100

(Q1, Q2 Common)

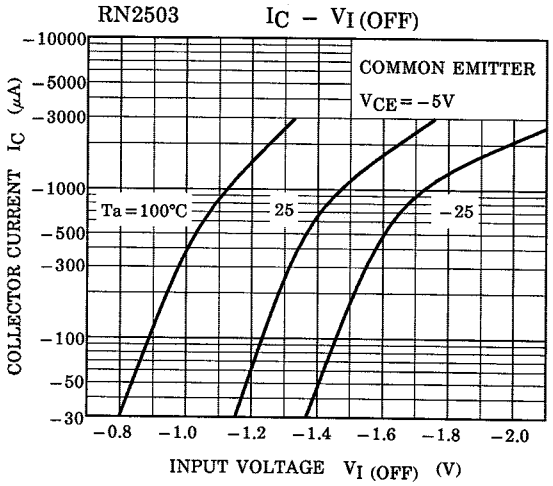
RN2501 I_C – $V_{I\,(OFF)}$



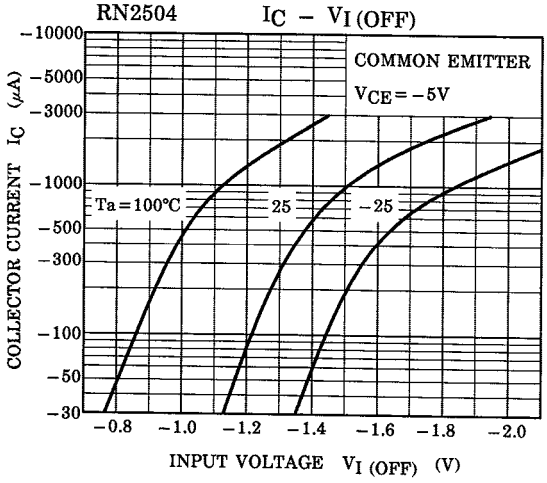
RN2502 I_C – $V_{I\,(OFF)}$



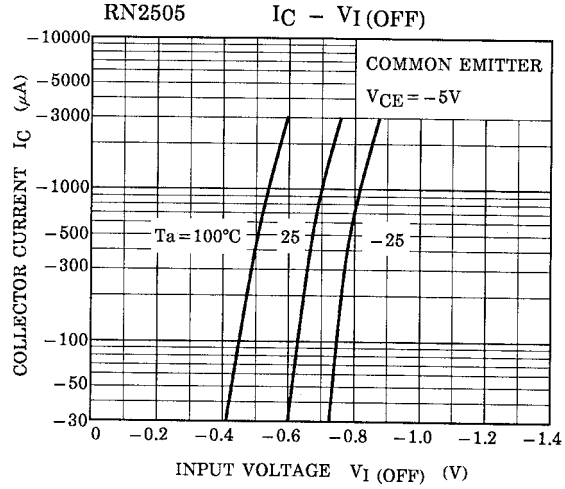
RN2503 I_C – $V_{I\,(OFF)}$



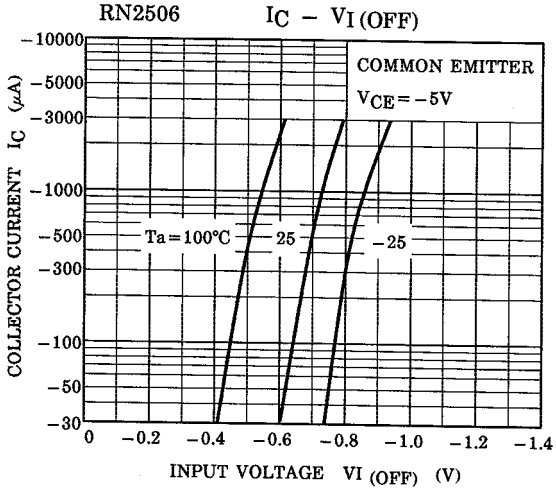
RN2504 I_C – $V_{I\,(OFF)}$



RN2505 I_C – $V_{I\,(OFF)}$

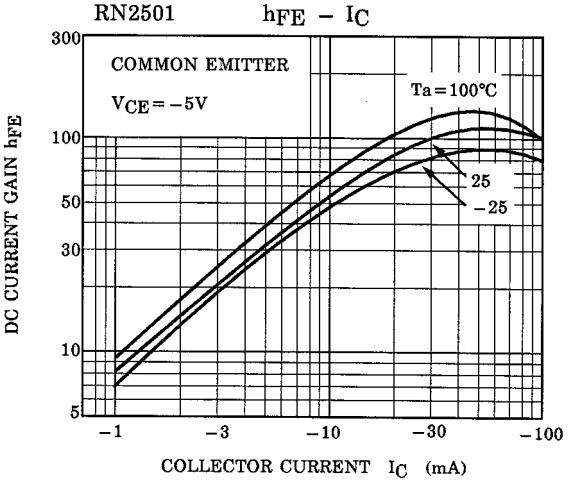


RN2506 I_C – $V_{I\,(OFF)}$

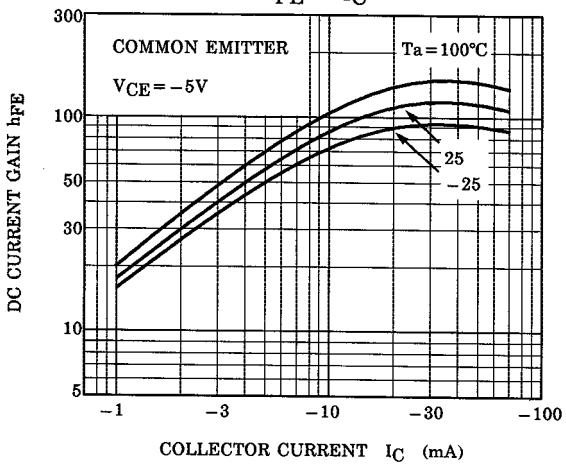


(Q1, Q2 Common)

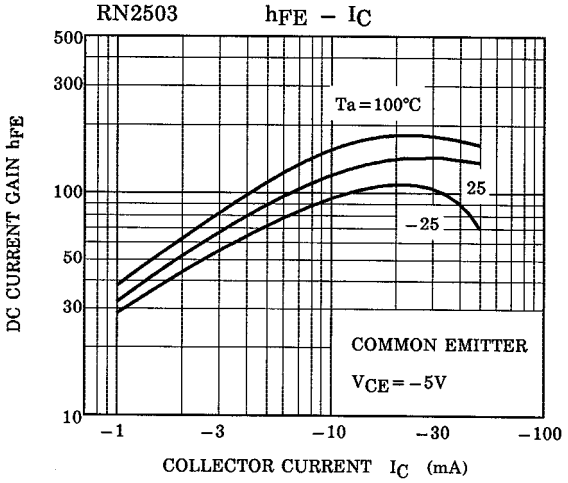
RN2501 h_{FE} – I_C



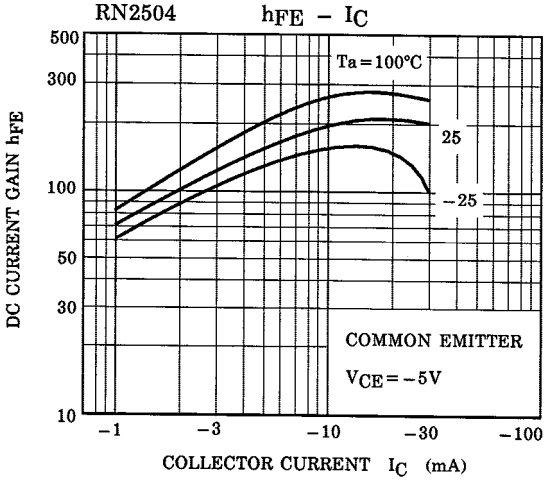
RN2502 h_{FE} – I_C



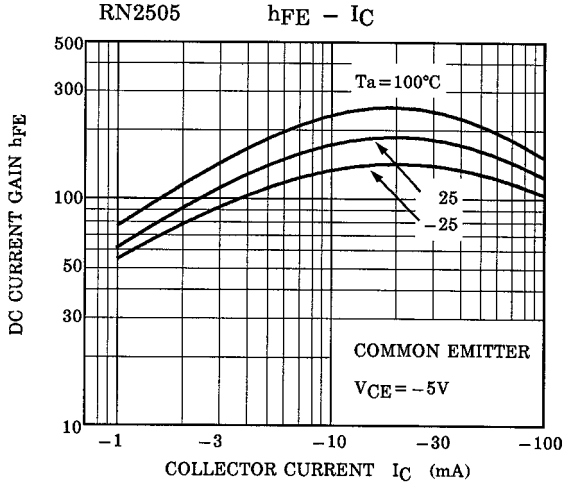
RN2503 h_{FE} – I_C



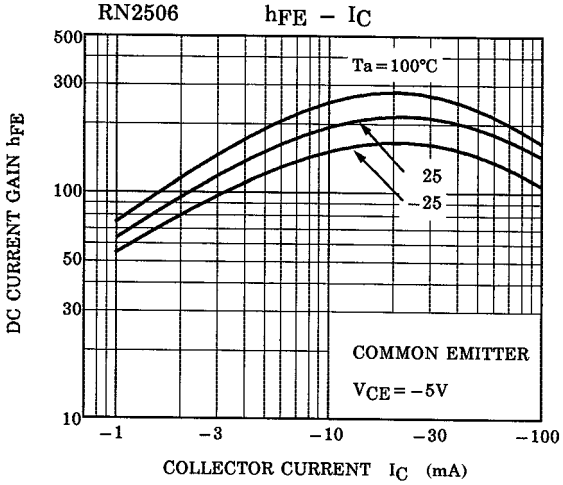
RN2504 h_{FE} – I_C

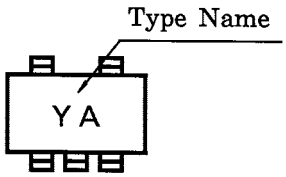
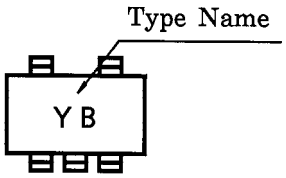
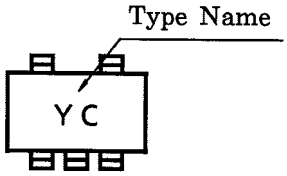
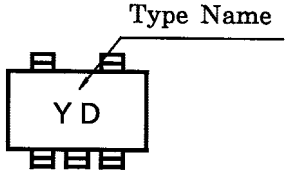
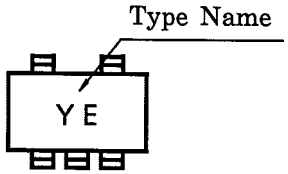
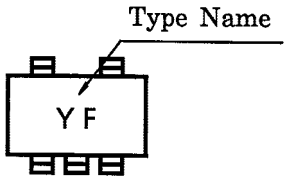


RN2505 h_{FE} – I_C



RN2506 h_{FE} – I_C



Type Name	Marking
RN2501	
RN2502	
RN2503	
RN2504	
RN2505	
RN2506	

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000707EAA

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