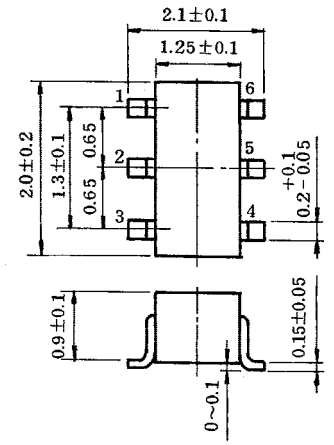
TOSHIBA Transistor Silicon PNP Epitaxial Type (PCT Process)

RN2967,RN2968,RN2969

Switching, Inverter Circuit, Interface Circuit
And Driver Circuit Applications

- 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
- Complementary to RN1967~RN1969

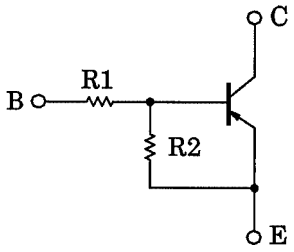
Unit in mm



JEDEC	—
EIAJ	—
TOSHIBA	2-2J1B

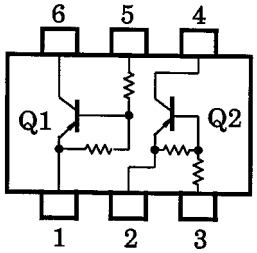
Weight: 6.8mg

Equivalent Circuit and Bias Resistor Values



Type No.	R1 (kΩ)	R2 (kΩ)
RN2967	10	47
RN2968	22	47
RN2969	47	22

Equivalent Circuit (Top View)



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

Characteristic		Symbol	Rating	Unit
Collector-base voltage	RN2967~2969	V_{CBO}	−50	V
Collector-emitter voltage		V_{CEO}	−50	V
Emitter-base voltage	RN2967	V_{EBO}	−6	V
	RN2968		−7	
	RN2969		−15	
Collector current	RN2967~2969	I_C	−100	mA
Collector power dissipation		P_C*	200	mW
Junction temperature		T_j	150	°C
Storage temperature range		T_{stg}	−55~150	°C

* : Total rating

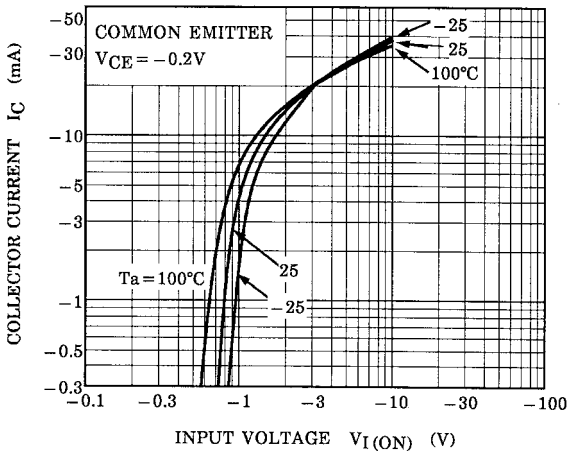
961001EAA2

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

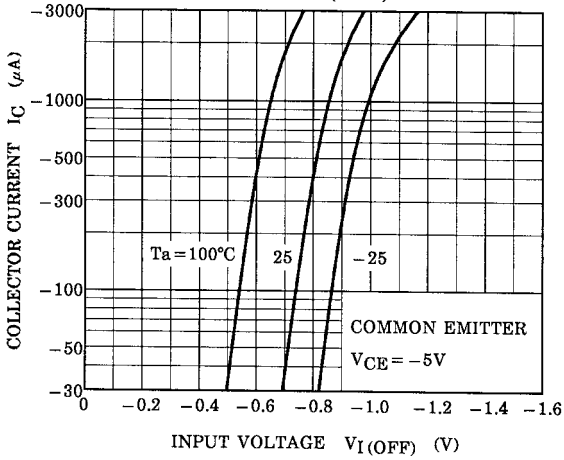
Characteristic		Symbol	Test Circuit	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current	RN2967~2969	I_{CBO}	—	V_{CB} = −50V, I_E = 0	—	—	−100	nA
		I_{CEO}	—	V_{CE} = −50V, I_B = 0	—	—	−500	
Emitter cut-off current	RN2967	I_{EBO}	—	V_{EB} = −6V, I_C = 0	−0.081	—	−0.15	mA
	RN2968		—	V_{EB} = −7V, I_C = 0	−0.078	—	−0.145	
	RN2969		—	V_{EB} = −15V, I_C = 0	−0.167	—	−0.311	
DC current gain	RN2967	h_{FE}	—	V_{CE} = −5V, I_C = −10mA	80	—	—	—
	RN2968		—		80	—	—	
	RN2969		—		70	—	—	
Collector-emitter saturation voltage	RN2967~2969	$V_{CE\ (sat)}$	—	I_C = −5mA I_B = −0.25mA	—	−0.1	−0.3	V
Input voltage (ON)	RN2967	$V_{I\ (ON)}$	—	V_{CE} = −0.2V I_C = −5mA	−0.7	—	−1.8	V
	RN2968		—		−1.0	—	−2.6	
	RN2969		—		−2.2	—	−5.8	
Input voltage (OFF)	RN2967	$V_{I\ (OFF)}$	—	V_{CE} = −5V I_C = −0.1mA	−0.5	—	−1.0	V
	RN2968		—		−0.6	—	−1.16	
	RN2969		—		−1.5	—	−2.6	
Translation frequency	RN2967~2969	f_T	—	V_{CE} = −10V I_C = −5mA	—	200	—	MHz
Collector output capacitance	RN2967~2969	C_{ob}	—	V_{CB} = −10V, I_E = 0, f = 1MHz	—	3	6	pF
Input resistor	RN2967	R1	—	—	7	10	13	kΩ
	RN2968		—		15.4	22	28.6	
	RN2969		—		32.9	47	61.1	
Resistor ratio	RN2967	R1/R2	—	—	0.191	0.213	0.232	—
	RN2968		—		0.421	0.468	0.515	
	RN2969		—		0.09	2.14	2.35	

(Q1, Q2 Common)

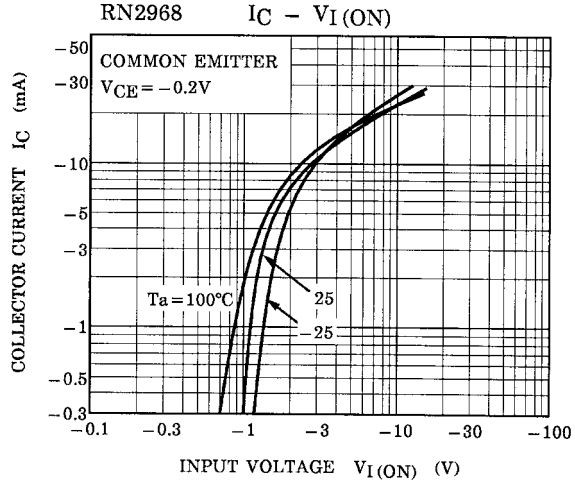
RN2967 $I_C - V_{I(ON)}$



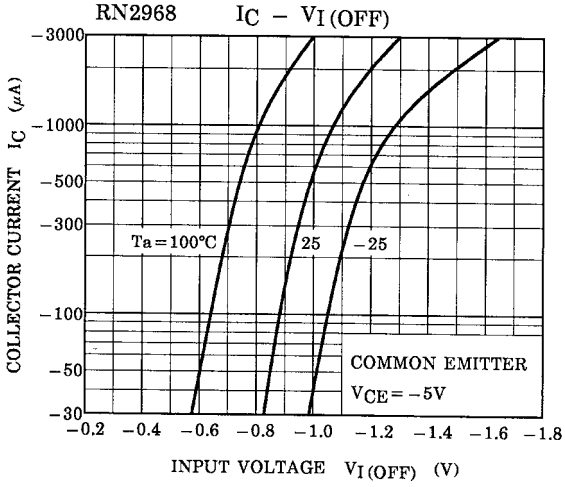
RN2967 $I_C - V_{I(OFF)}$



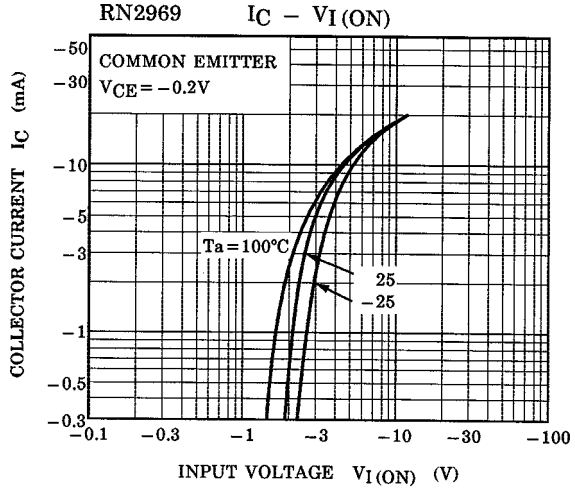
RN2968 $I_C - V_{I(ON)}$



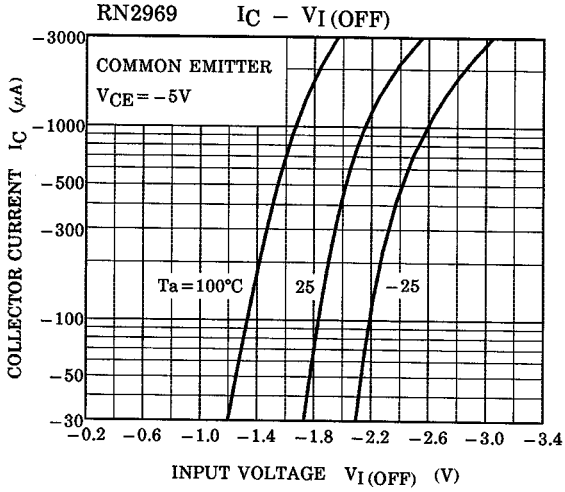
RN2968 $I_C - V_{I(OFF)}$



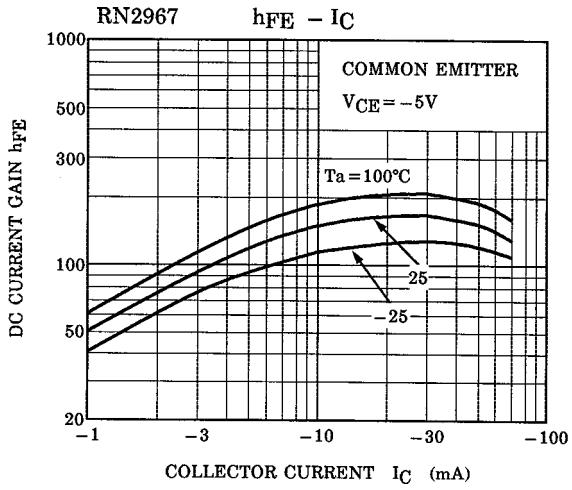
RN2969 $I_C - V_{I(ON)}$

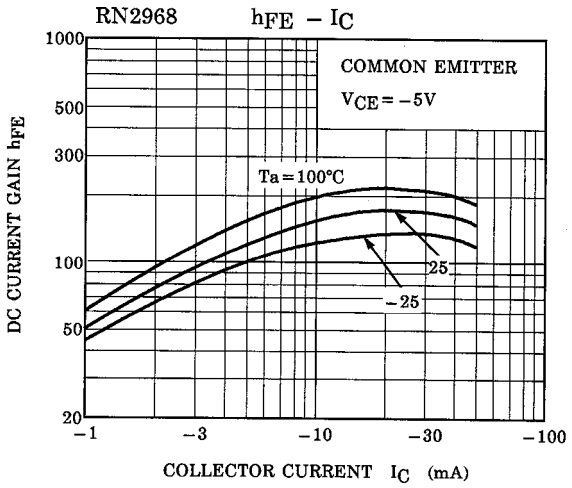


RN2969 $I_C - V_{I(OFF)}$



(Q1, Q2 Common)


RN2967 hFE – IC
COMMON EMITTER
VCE = –5V
Ta = 100°C
25
–25
DC CURRENT GAIN hFE
1000
500
300
100
50
20
–1
–3
–10
–30
–100
COLLECTOR CURRENT IC (mA)


RN2968 hFE – IC
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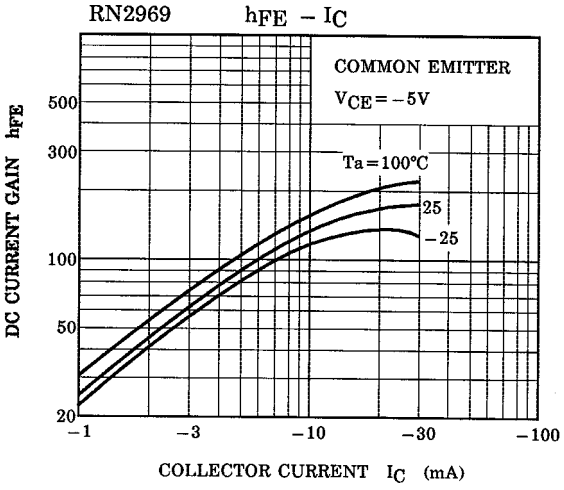
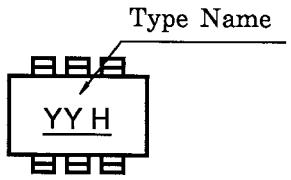
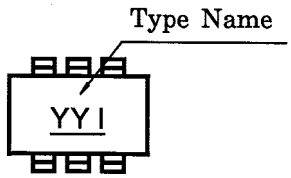
COLLECTOR CURRENT IC (mA)


RN2969 hFE – IC
COMMON EMITTER
VCE = –5V
Ta = 100°C
25
–25
DC CURRENT GAIN hFE
500
300
100
50
20
–1
–3
–10
–30
–100
COLLECTOR CURRENT IC (mA)

Type Name	Marking
RN2967	
RN2968	
RN2969