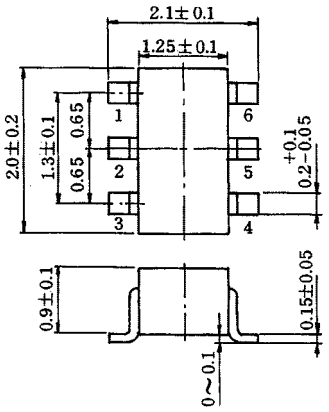
TOSHIBA Transistor Silicon NPN Epitaxial Type (PCT Process)

RN1910,RN1911

Switching, Inverter Circuit, Interface Circuit
And Driver Circuit Applications

- Including two devices in US6 (ultra super mini type 6 leads)
- With built-in bias resistors
- Simplify circuit design
- Reduce a quantity of parts and manufacturing process
- Complementary to RN2910, RN2911

Unit: mm



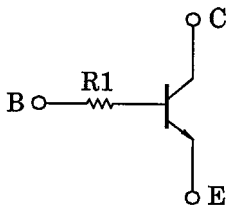
1. EMITTER 1 (E1)
2. BASE 1 (B1)
3. COLLECTOR 2 (C2)
4. EMITTER 2 (E2)
5. BASE 2 (B2)
6. COLLECTOR 1 (C1)

US6

JEDEC	—
EIAJ	—
TOSHIBA	2-2J1A

Weight: 6.8mg

Equivalent Circuit

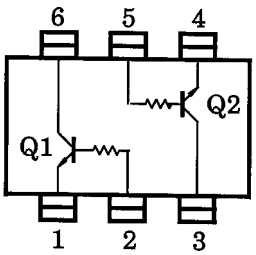


Maximum Ratings (Ta = 25°C) (Q1, Q2 Common)

Characterisstic	Symbol	Rating	Unit
Collector-base voltage	V_{CBO}	50	V
Collector-emitter voltage	V_{CEO}	50	V
Emitter-base voltage	V_{EBO}	5	V
Collector current	I_C	100	mA
Collector power dissipation	P_C*	200	mW
Junction temperature	J_j	150	°C
Storage temperature range	T_{stg}	−55~150	°C

*: Total rating

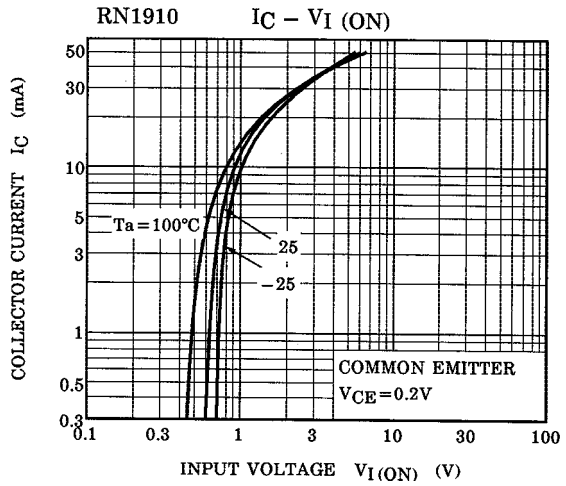
Equivalent Circuit (Top View)

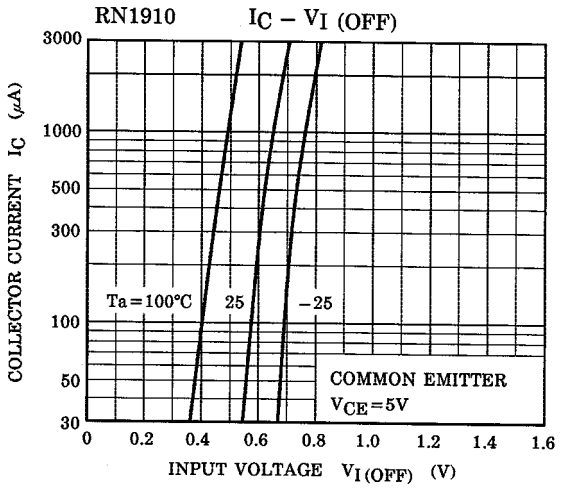


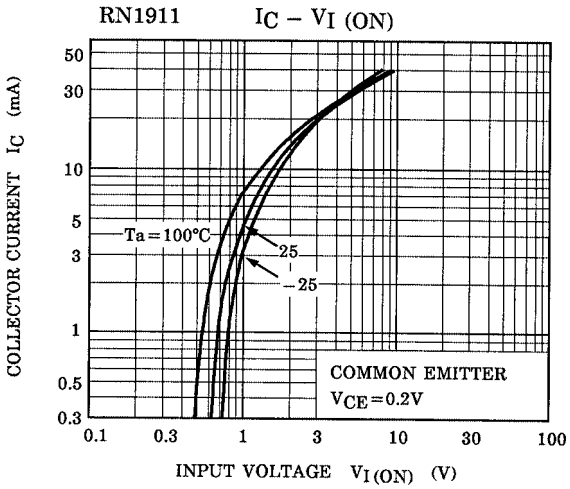
Electrical Characteristics (Ta = 25°C) (Q1, Q2 Common)

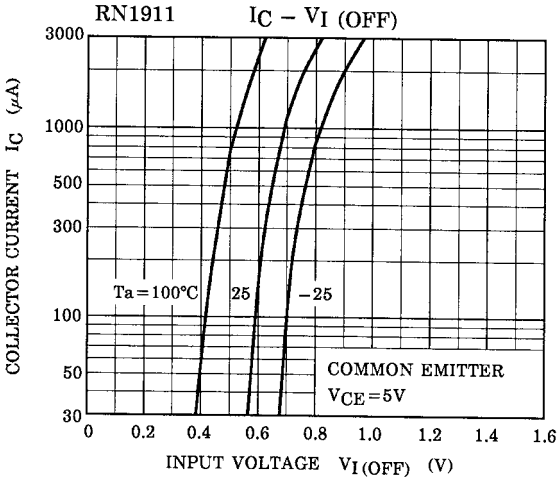
Characteristic		Symbol	Test Circuit	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current		I_{CBO}	—	V_{CB} = 50V, I_E = 0	—	—	100	nA
Emitter cut-off current		I_{EBO}	—	V_{EB} = 5V, I_C = 0	—	—	100	nA
DC current gain		h_{FE}	—	V_{CE} = 5V, I_C = 1mA	120	—	700	—
Collector-emitter saturation voltage		$V_{CE\ (sat)}$	—	I_C = 5mA, I_B = 0.25mA	—	0.1	0.3	V
Translation frequency		f_T	—	V_{CE} = 10V, I_C = 5mA	—	250	—	MHz
Collector output capacitance		C_{ob}	—	V_{CB} = 10V, I_E = 0V, f = 1MHz	—	3	6	pF
Input resistor	RN1910	R1	—	—	3.29	4.7	6.11	kΩ
	RN1911				7	10	13	

(Q1, Q2 Common)

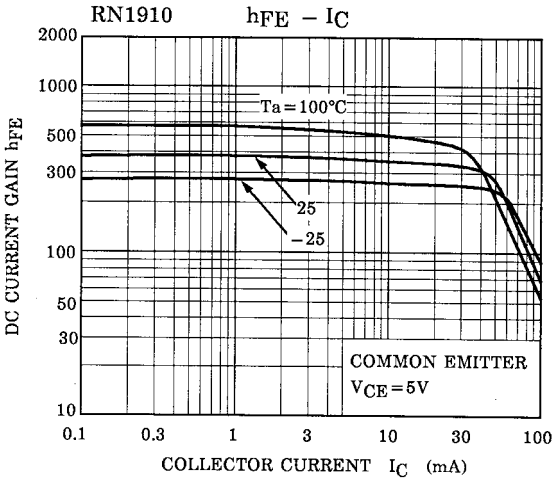


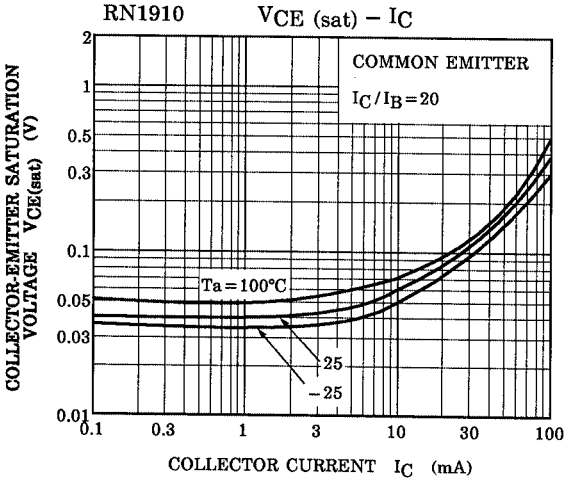


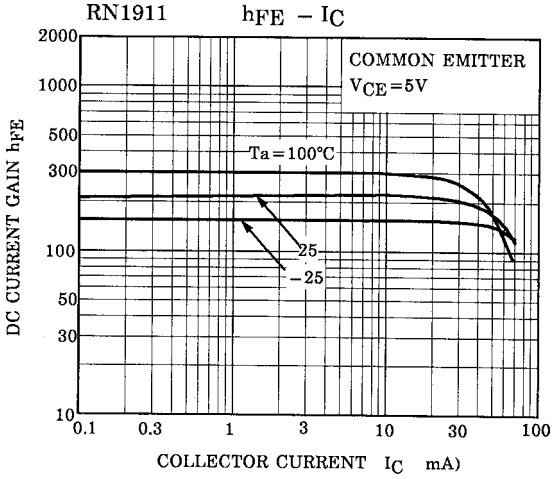


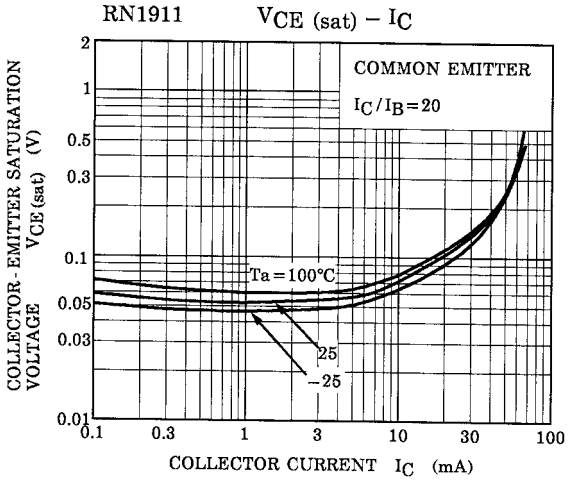


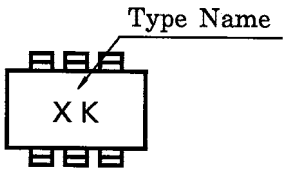
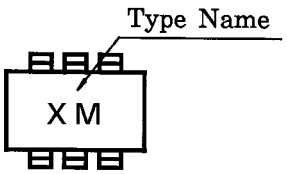
(Q1, Q2 Common)


RN1910 hFE – IC
DC CURRENT GAIN hFE
2000
1000
500
300
100
50
30
10
Ta = 100°C
25
−25
COMMON EMITTER
VCE = 5V
0.1
0.3
1
3
10
30
100
COLLECTOR CURRENT IC (mA)


RN1910 VCE (sat) – IC
COLLECTOR-EMITTER SATURATION VOLTAGE VCE(sat) (V)
2
1
0.5
0.3
0.1
0.05
0.03
0.01
COMMON EMITTER
IC / IB = 20
Ta = 100°C
25
−25
0.1
0.3
1
3
10
30
100
COLLECTOR CURRENT IC (mA)


RN1911 hFE – IC
DC CURRENT GAIN hFE
2000
1000
500
300
100
50
30
10
COMMON EMITTER
VCE = 5V
Ta = 100°C
25
−25
0.1
0.3
1
3
10
30
100
COLLECTOR CURRENT IC mA)


RN1911 VCE (sat) – IC
COLLECTOR - EMITTER SATURATION VOLTAGE VCE (sat) (V)
2
1
0.5
0.3
0.1
0.05
0.03
0.01
COMMON EMITTER
IC / IB = 20
Ta = 100°C
25
−25
0.1
0.3
1
3
10
30
100
COLLECTOR CURRENT IC (mA)

Type Name	Marking
RN1910	
RN1911	

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