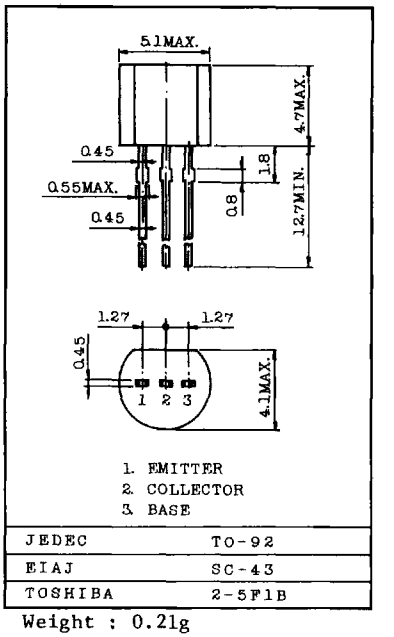
RN1007, 1008, 1009

SWITCHING, INVERTER CIRCUIT, INTERFACE CIRCUIT
AND DRIVER CIRCUIT APPLICATIONS.

FEATURES:

- With Built-in Bias Resistors
- Simplify Circuit Design
- Reduce a Quantity of Parts and Manufacturing Process
- Complementary to RN2007~2009

Unit in mm

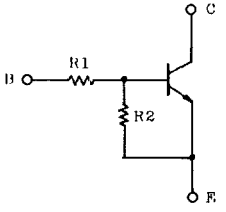


1. EMITTER
2. COLLECTOR
3. BASE

JEDEC	TO-92
EIAJ	SC-43
TOSHIBA	2-5F1B

Weight : 0.21g

EQUIVALENT CIRCUIT



BIAS RESISTOR VALUES

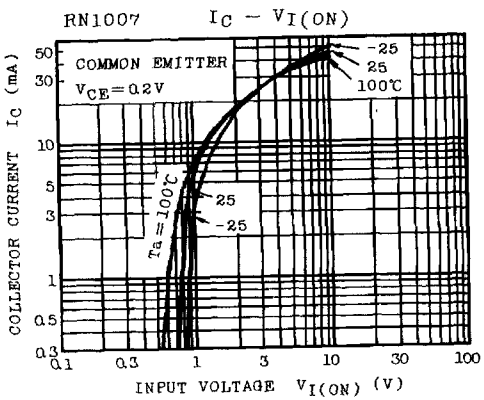
TYPE No.	R1 (kΩ)	R2 (kΩ)
RN1007	10	47
RN1008	22	47
RN1009	47	22

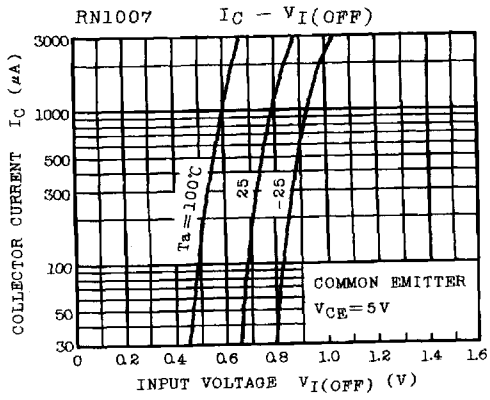
MAXIMUM RATINGS (Ta=25°C)

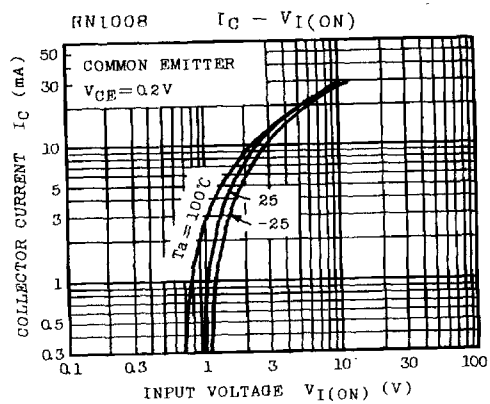
CHARACTERISTIC		SYMBOL	RATING	UNIT
Collector-Base Voltage		V_{CBO}	50	V
Collector-Emitter Voltage		V_{CEO}	50	V
Emitter-Base Voltage	RN1007	V_{EBO}	6	V
	RN1008		7	
	RN1009		15	
Collector Current		I_C	100	mA
Collector Power Dissipation		P_C	400	mW
Junction Temperature		Tj	150	°C
Storage Temperature Range		Tstg	-55~150	°C

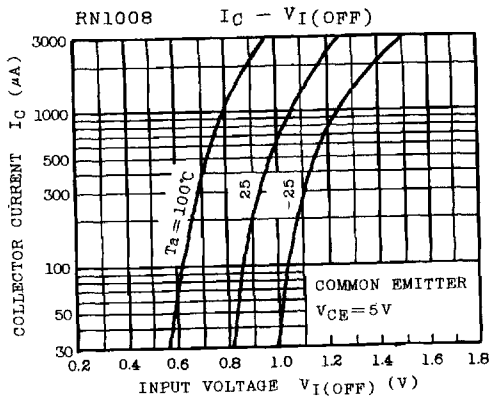
ELECTRICAL CHARACTERISTICS (Ta=25°C)

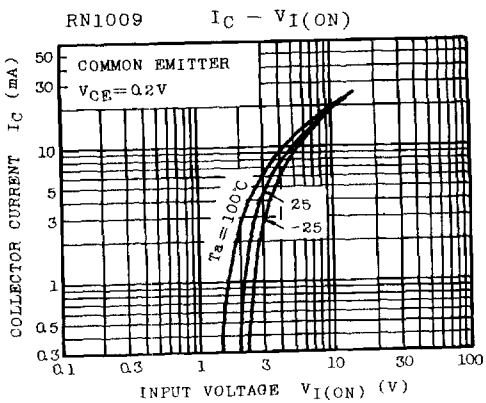
CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current		I_{CBO}	V_{CB}=50V, I_E=0	-	-	100	nA
		I_{CEO}	V_{CE}=50V, I_B=0	-	-	500	nA
Emitter Cut-off Current	RN1007	I_{EBO}	V_{EB}=6V, I_C=0	0.081	-	0.15	mA
	RN1008		V_{EB}=7V, I_C=0	0.078	-	0.145	
	RN1009		V_{EB}=15V, I_C=0	0.167	-	0.311	
DC Current Gain	RN1007	h_{FE}	V_{CE}=5V, I_C=10mA	80	-	-	-
	RN1008			80	-	-	
	RN1009			70	-	-	
Collector-Emitter Saturation Voltage		$V_{CE(sat)}$	I_C=5mA, I_B=0.25mA	-	0.1	0.3	V
Input Voltage (ON)	RN1007	$V_{I(ON)}$	V_{CE}=0.2V, I_C=5mA	0.7	-	1.8	V
	RN1008			1.0	-	2.6	
	RN1009			2.2	-	5.8	
Input Voltage (OFF)	RN1007	$V_{I(OFF)}$	V_{CE}=5V, I_C=0.1mA	0.5	-	1.0	V
	RN1008			0.6	-	1.16	
	RN1009			1.5	-	2.6	
Transition Frequency		f_T	V_{CE}=10V, I_C=5mA	-	250	-	MHz
Collector Output Capacitance		C_{ob}	V_{CB}=10V, I_E=0 f=1MHz	-	3	6	pF
Input Resistor	RN1007	R1		7	10	13	kΩ
	RN1008			15.4	22	28.6	
	RN1009			32.9	47	61.1	
Resistor Ratio	RN1007	R1/R2		0.191	0.213	0.232	-
	RN1008			0.421	0.468	0.515	
	RN1009			1.92	2.14	2.35	

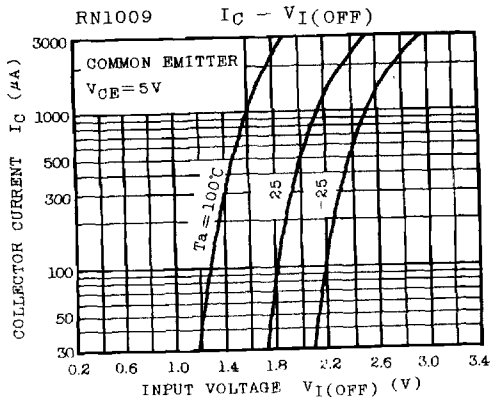

RN1007 $I_C - V_{I(ON)}$
COMMON EMITTER
V_{CE}=0.2V
-25
25
100℃
Ta=100℃
25
-25
COLLECTOR CURRENT I_C (mA)
INPUT VOLTAGE $V_{I(ON)}$ (V)

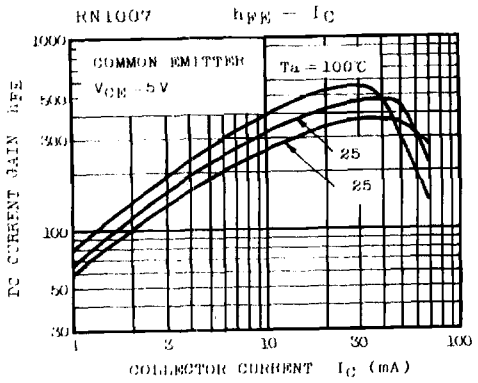

RN1007 $I_C - V_{I(OFF)}$
Ta=100℃
25
-25
COMMON EMITTER
V_{CE}=5V
COLLECTOR CURRENT I_C (μA)
INPUT VOLTAGE $V_{I(OFF)}$ (V)

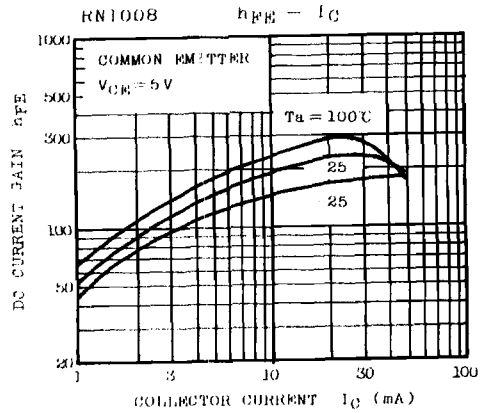

RN1008 $I_C - V_{I(ON)}$
COMMON EMITTER
V_{CE}=0.2V
Ta=100℃
25
-25
COLLECTOR CURRENT I_C (mA)
INPUT VOLTAGE $V_{I(ON)}$ (V)

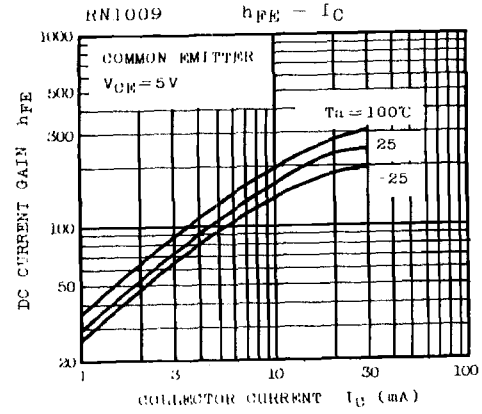

RN1008 $I_C - V_{I(OFF)}$
Ta=100℃
25
-25
COMMON EMITTER
V_{CE}=5V
COLLECTOR CURRENT I_C (μA)
INPUT VOLTAGE $V_{I(OFF)}$ (V)


RN1009 $I_C - V_{I(ON)}$
COMMON EMITTER
V_{CE}=0.2V
Ta=100℃
25
-25
COLLECTOR CURRENT I_C (mA)
INPUT VOLTAGE $V_{I(ON)}$ (V)


RN1009 $I_C - V_{I(OFF)}$
COMMON EMITTER
V_{CE}=5V
Ta=100℃
25
-25
COLLECTOR CURRENT I_C (μA)
INPUT VOLTAGE $V_{I(OFF)}$ (V)


RN1007 h_{FE} – I_C
COMMON EMITTER
V_{CE} = 5 V
Ta = 100°C
25
-25
DC CURRENT GAIN hFE
1000
500
300
100
50
30
1
3
10
30
100
COLLECTOR CURRENT I_C (mA)


RN1008 h_{FE} – I_C
COMMON EMITTER
V_{CE} = 5 V
Ta = 100°C
25
-25
DC CURRENT GAIN hFE
1000
500
300
100
50
20
1
3
10
30
100
COLLECTOR CURRENT I_C (mA)


RN1009 h_{FE} – I_C
COMMON EMITTER
V_{CE} = 5 V
Ta = 100°C
25
-25
DC CURRENT GAIN hFE
1000
500
300
100
50
20
1
3
10
30
100
COLLECTOR CURRENT I_C (mA)