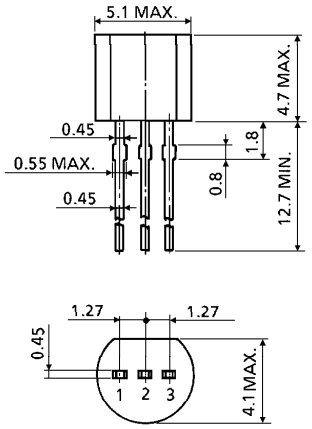
TOSHIBA TRANSISTOR SILICON NPN EPITAXIAL TYPE (PCT PROCESS)

RN1001, RN1002, RN1003
RN1004, RN1005, RN1006

SWITCHING, INVERTER CIRCUIT, INTERFACE CIRCUIT AND DRIVER CIRCUIT APPLICATIONS

- With Built-in Bias Resistors
- Simplify Circuit Design
- Reduce a Quantity of Parts and Manufacturing Process
- Complementary to RN2001~RN2006

Unit in mm

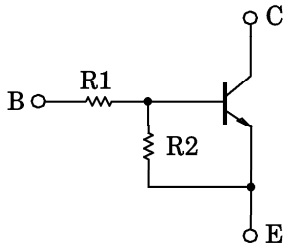


1. EMITTER
2. COLLECTOR
3. BASE

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

Weight : 0.21g

EQUIVALENT CIRCUIT AND BIAS RESISTOR VALUES



TYPE No.	R1 (kΩ)	R2 (kΩ)
RN1001	4.7	4.7
RN1002	10	10
RN1003	22	22
RN1004	47	47
RN1005	2.2	47
RN1006	4.7	47

MAXIMUM RATINGS (Ta = 25°C)

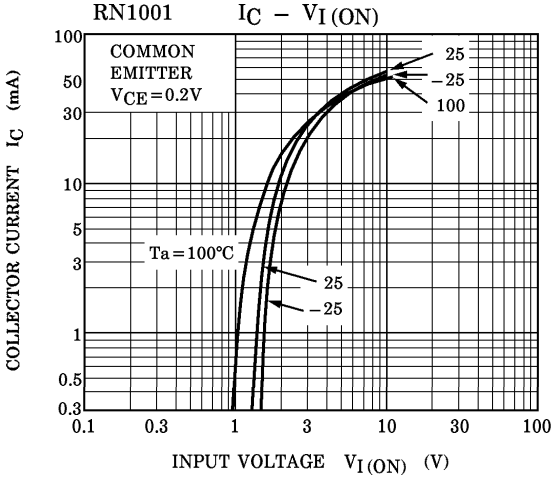
CHARACTERISTIC		SYMBOL	RATING	UNIT
Collector-Base Voltage	RN1001~1006	V_{CBO}	50	V
Collector-Emitter Voltage	RN1001~1006	V_{CEO}	50	V
Emitter-Base Voltage	RN1001~1004	V_{EBO}	10	V
	RN1005, 1006		5	
Collector Current	RN1001~1006	I_C	100	mA
Collector Power Dissipation		P_C	400	mW
Junction Temperature		T_j	150	°C
Storage Temperature Range		T_{stg}	−55~150	°C

961001EAA1

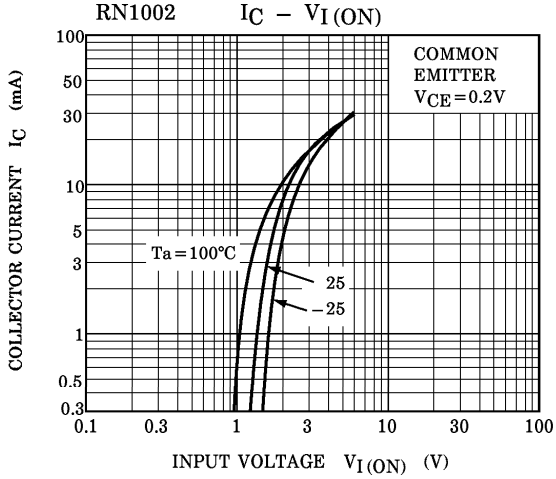
ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current	RN1001~1006	I_{CBO}	V_{CB} = 50V, I_E = 0	—	—	100	nA
		I_{CEO}	V_{CE} = 50V, I_B = 0	—	—	500	
Emitter Cut-off Current	RN1001	I_{EBO}	V_{EB} = 10V, I_C = 0	0.82	—	1.52	mA
	RN1002			0.38	—	0.71	
	RN1003			0.17	—	0.33	
	RN1004			0.082	—	0.15	
	RN1005		V_{EB} = 5V, I_C = 0	0.078	—	0.145	
	RN1006			0.074	—	0.138	
DC Current Gain	RN1001	h_{FE}	V_{CE} = 5V, I_C = 10mA	30	—	—	—
	RN1002			50	—	—	
	RN1003			70	—	—	
	RN1004			80	—	—	
	RN1005			80	—	—	
	RN1006			80	—	—	
Collector-Emitter Saturation Voltage	RN1001~1006	$V_{CE\ (sat)}$	I_C = 5mA, I_B = 0.25mA	—	0.1	0.3	V
Input Voltage (ON)	RN1001	$V_{I\ (ON)}$	V_{CE} = 0.2V, I_C = 5mA	1.1	—	2.0	V
	RN1002			1.2	—	2.4	
	RN1003			1.3	—	3.0	
	RN1004			1.5	—	5.0	
	RN1005			0.6	—	1.1	
	RN1006			0.7	—	1.3	
Input Voltage (OFF)	RN1001~1004	$V_{I\ (OFF)}$	V_{CE} = 5V, I_C = 0.1mA	1.0	—	1.5	V
	RN1005, 1006			0.5	—	0.8	
Transition Frequency	RN1001~1006	f_T	V_{CE} = 10V, I_C = 5mA	—	250	—	MHz
Collector Output Capacitance	RN1001~1006	C_{ob}	V_{CB} = 10V, I_E = 0, f = 1MHz	—	3	6	pF
Input Resistor	RN1001	R1		3.29	4.7	6.11	kΩ
	RN1002			7	10	13	
	RN1003			15.4	22	28.6	
	RN1004			32.9	47	61.1	
	RN1005			1.54	2.2	2.86	
	RN1006			3.29	4.7	6.11	
Resistor Ratio	RN1001~1004	R1 / R2		0.9	1.0	1.1	—
	RN1005			0.0421	0.0468	0.0515	
	RN1006			0.09	0.1	0.11	

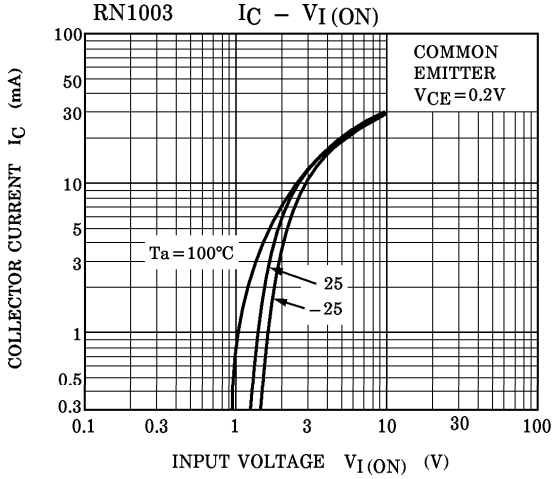
RN1001 $I_C - V_{I(ON)}$



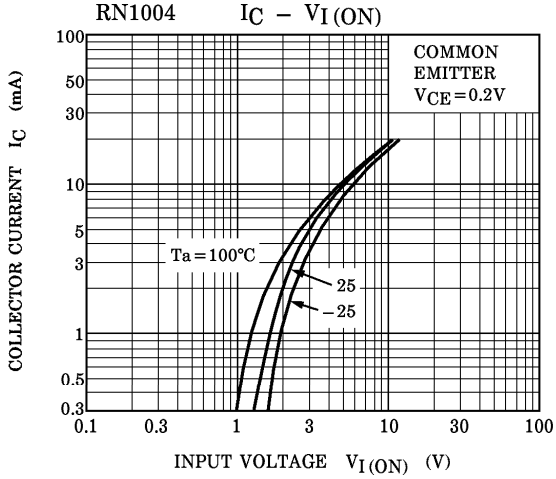
RN1002 $I_C - V_{I(ON)}$



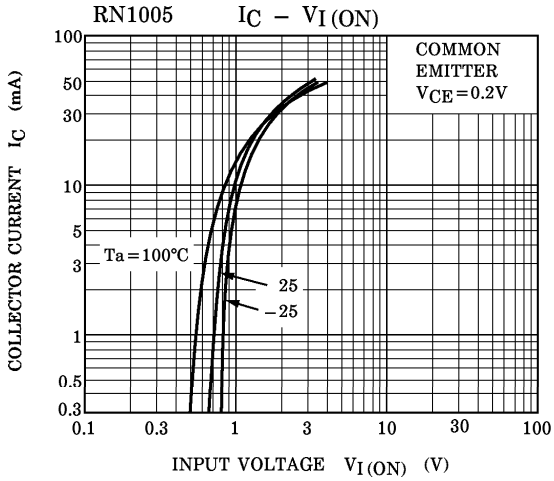
RN1003 $I_C - V_{I(ON)}$



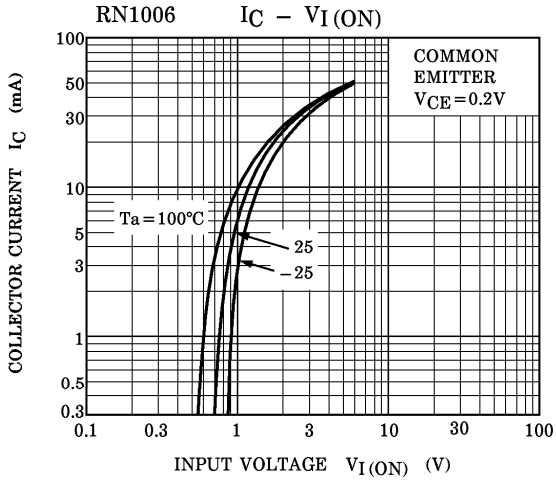
RN1004 $I_C - V_{I(ON)}$



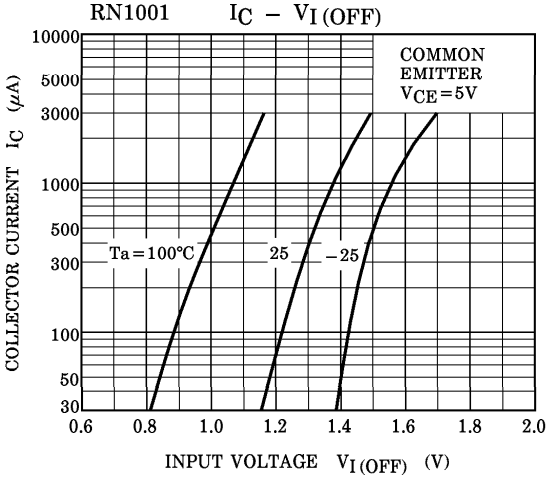
RN1005 $I_C - V_{I(ON)}$



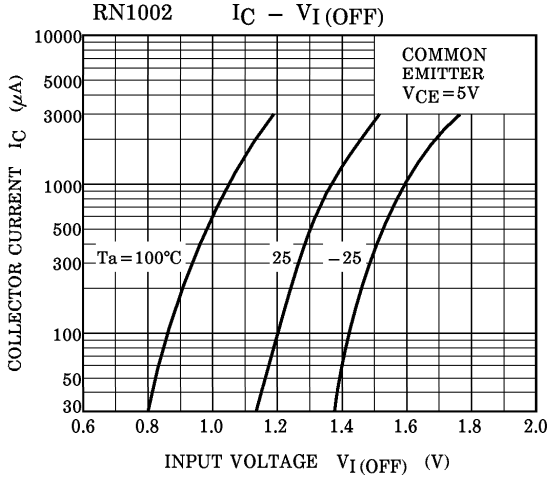
RN1006 $I_C - V_{I(ON)}$



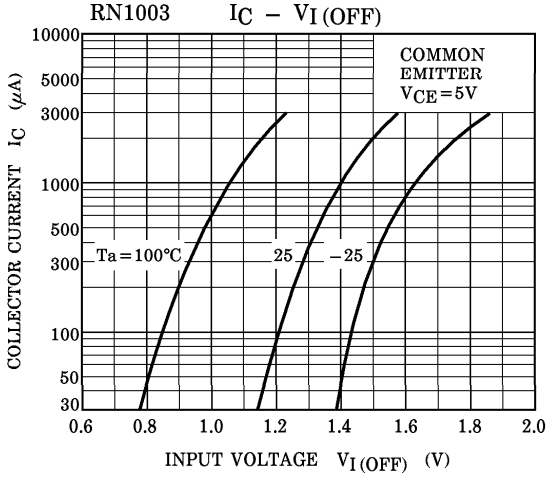
RN1001 $I_C - V_{I(OFF)}$



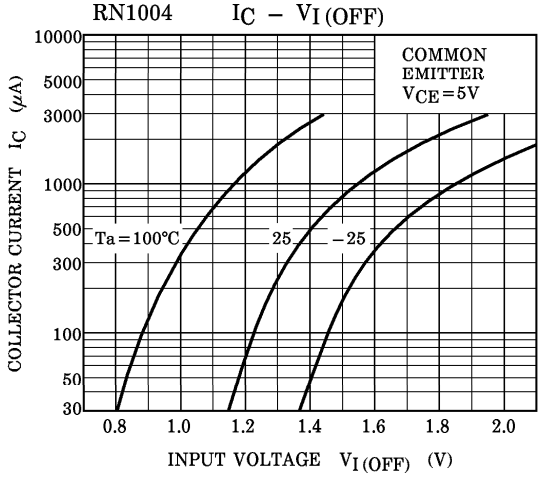
RN1002 $I_C - V_{I(OFF)}$



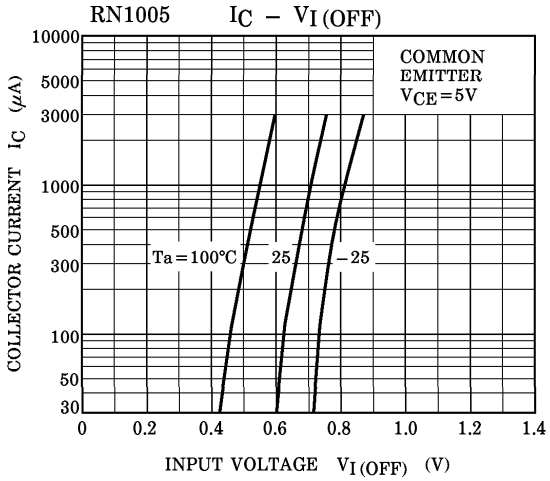
RN1003 $I_C - V_{I(OFF)}$



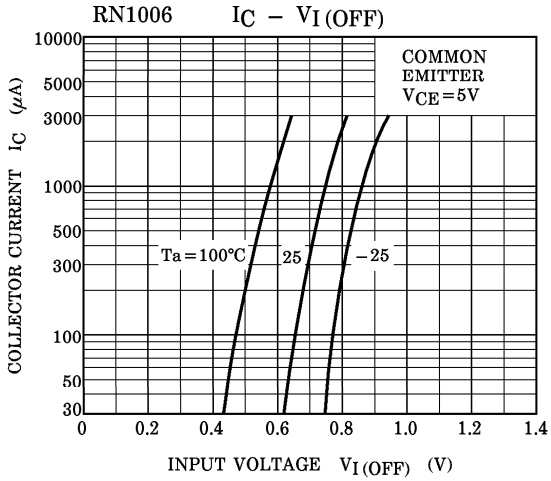
RN1004 $I_C - V_{I(OFF)}$



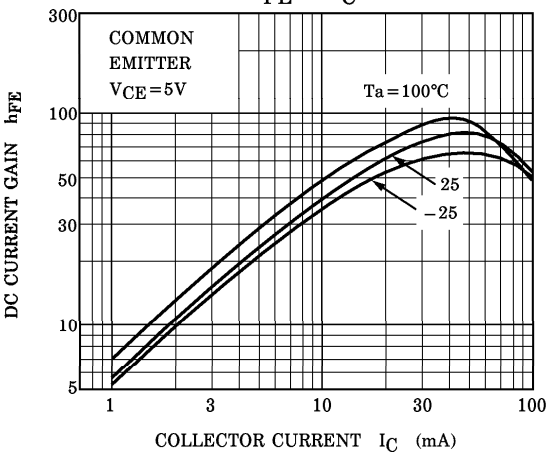
RN1005 $I_C - V_{I(OFF)}$



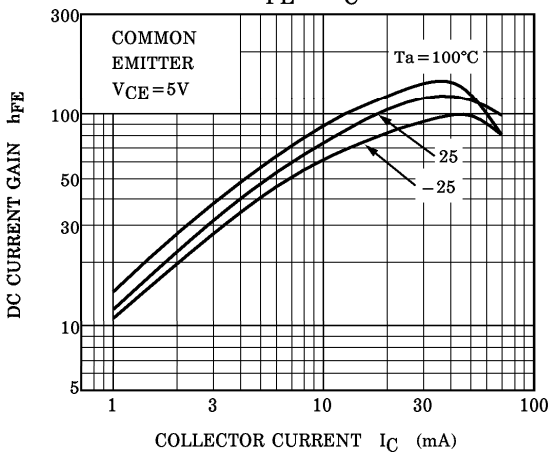
RN1006 $I_C - V_{I(OFF)}$



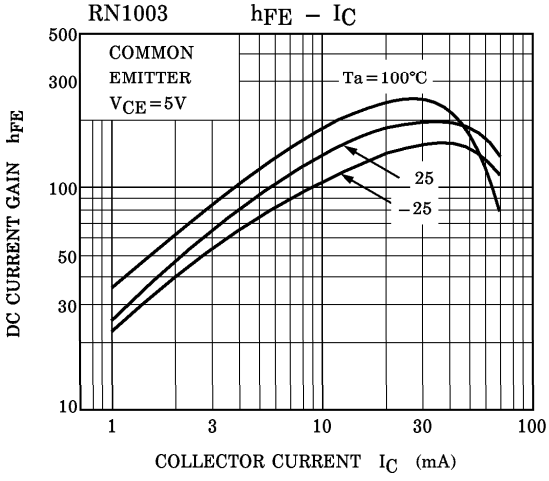
RN1001 h_{FE} – I_C



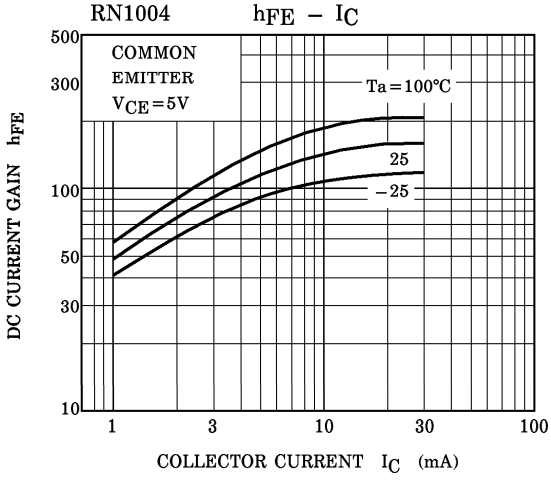
RN1002 h_{FE} – I_C



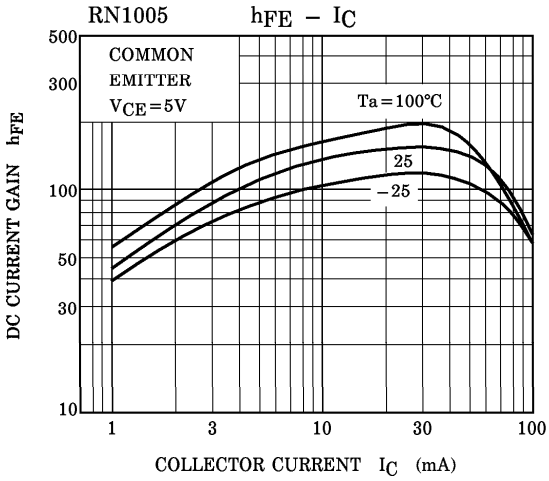
RN1003 h_{FE} – I_C



RN1004 h_{FE} – I_C



RN1005 h_{FE} – I_C



RN1006 h_{FE} – I_C