

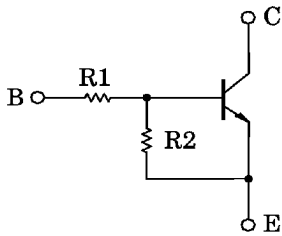
TOSHIBA TRANSISTOR SILOCON NPN EPITAXIAL TYPE (PCT PROCESS)

**RN1401, RN1402, RN1403
RN1404, RN1405, RN1406**

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 RN2401~RN2406

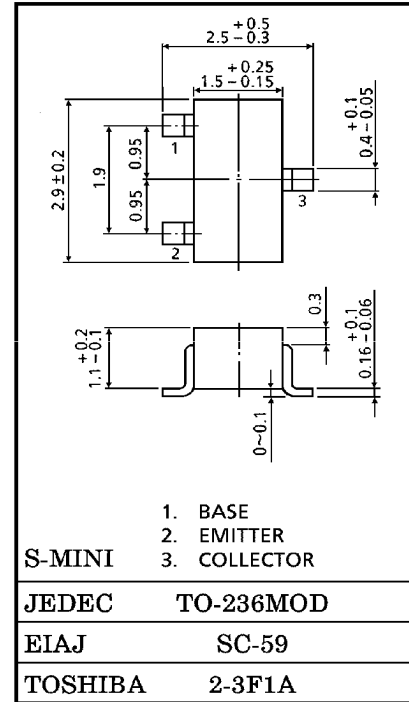
EQUIVALENT CIRCUIT



BIAS RESISTOR VALUES

TYPE No.	R1 (kΩ)	R2 (kΩ)
RN1401	4.7	4.7
RN1402	10	10
RN1403	22	22
RN1404	47	47
RN1405	2.2	47
RN1406	4.7	47

Unit in mm



Weight : 0.012g

MAXIMUM RATINGS (Ta = 25°C)

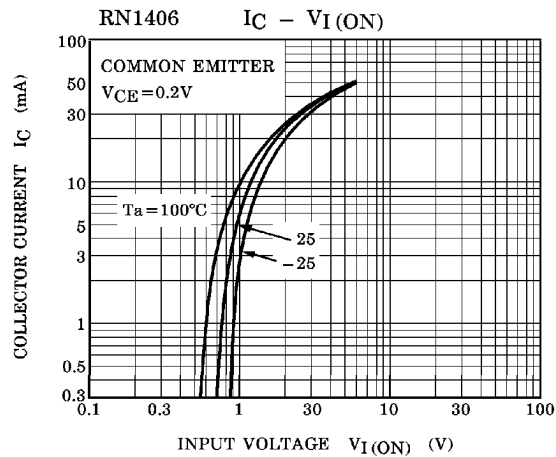
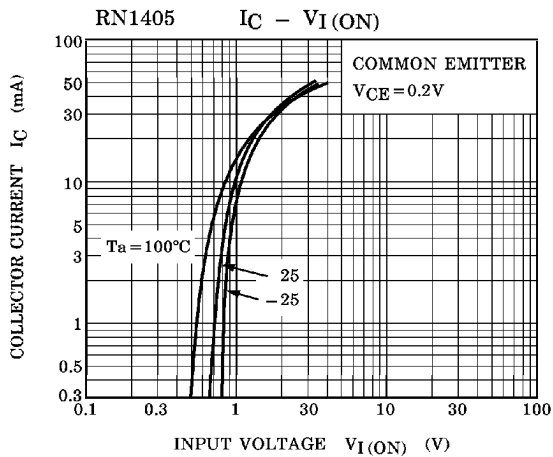
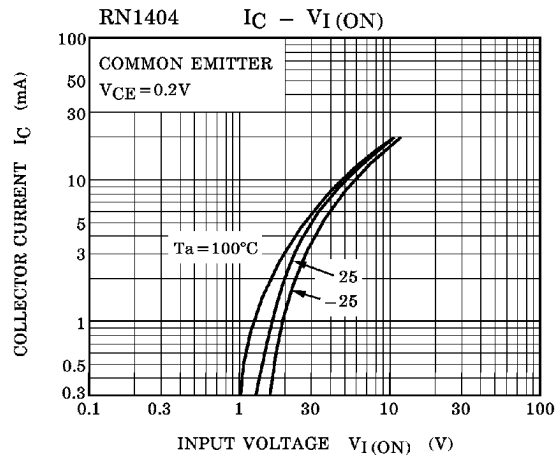
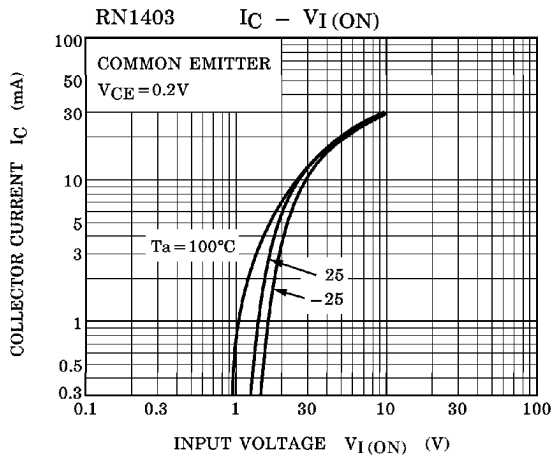
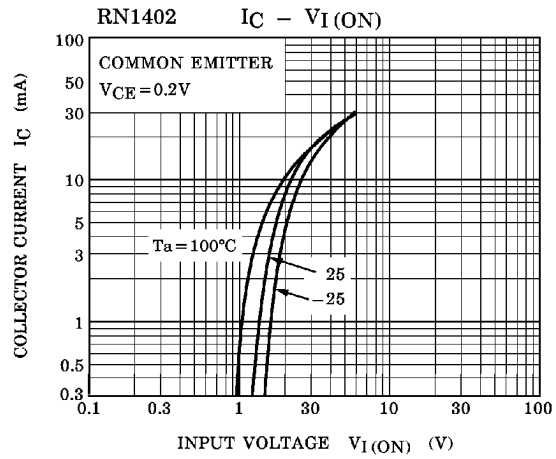
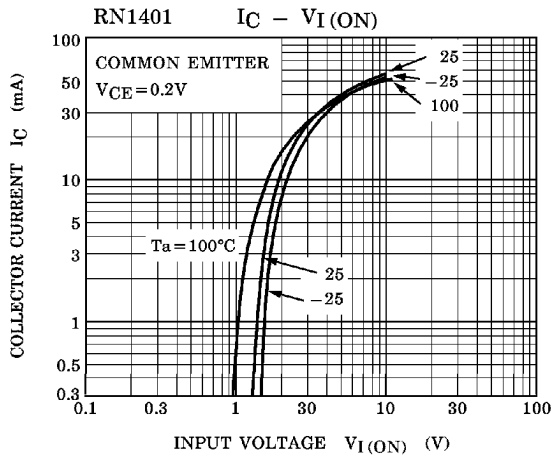
CHARACTERISTIC		SYMBOL	RATING	UNIT
Collector-Base Voltage	RN1401~1406	V _{CBO}	50	V
Collector-Emitter Voltage		V _{CEO}	50	V
Emitter-Base Voltage	RN1401~1404	V _{EBO}	10	V
	RN1405, 1406		5	V
Collector Current	RN1401~1406	I _C	100	mA
Collector Power Dissipation		P _C	200	mW
Junction Temperature		T _j	150	°C
Storage Temperature Range		T _{stg}	-55~150	°C

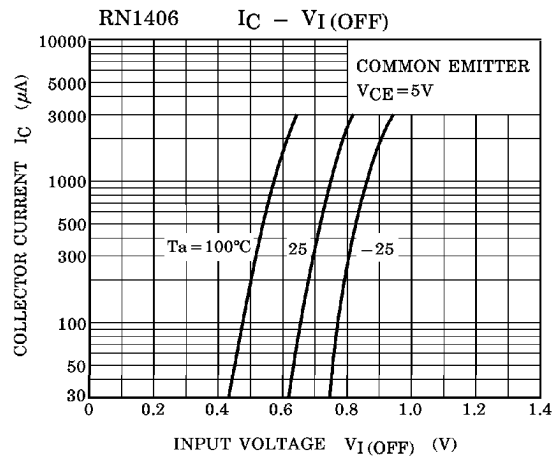
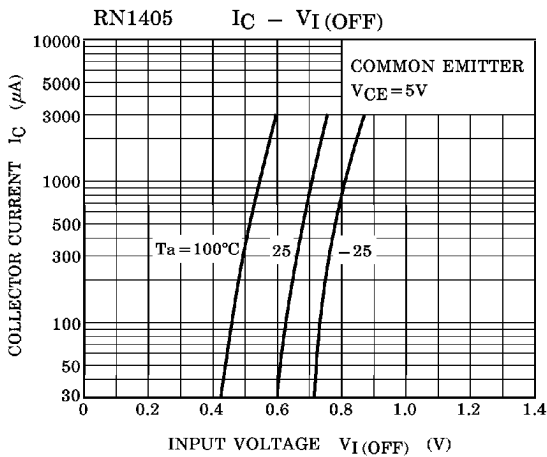
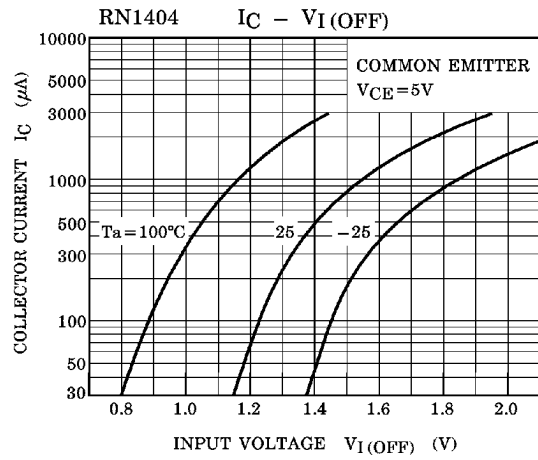
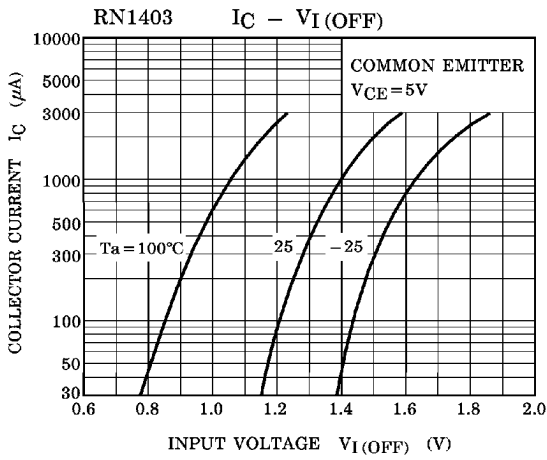
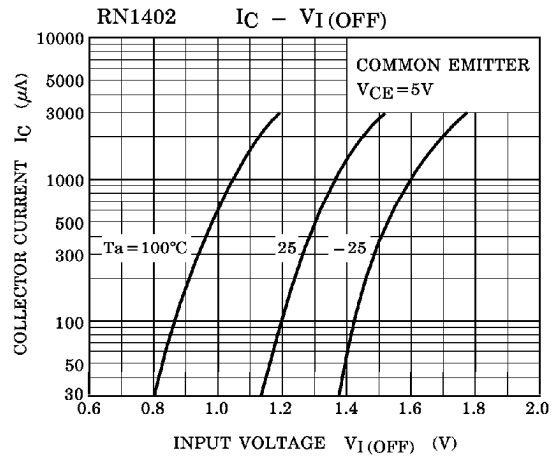
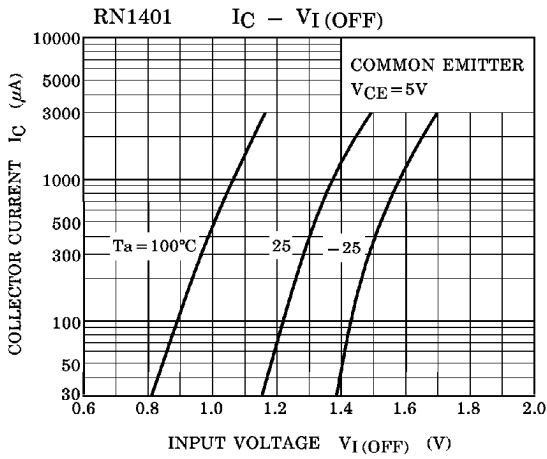
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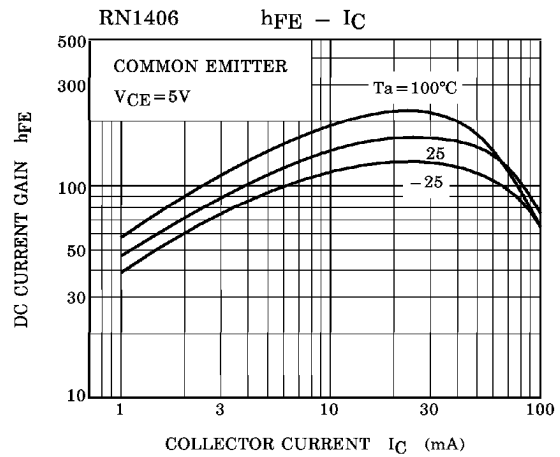
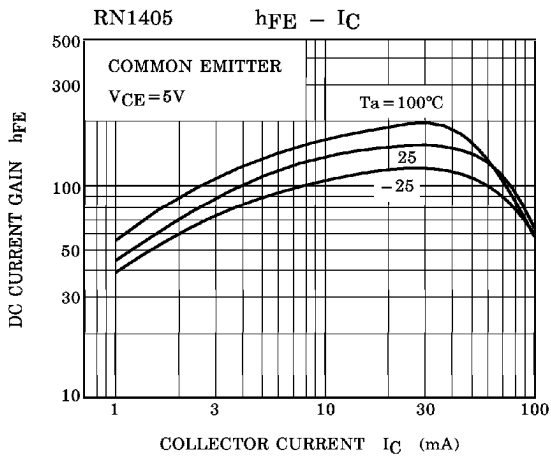
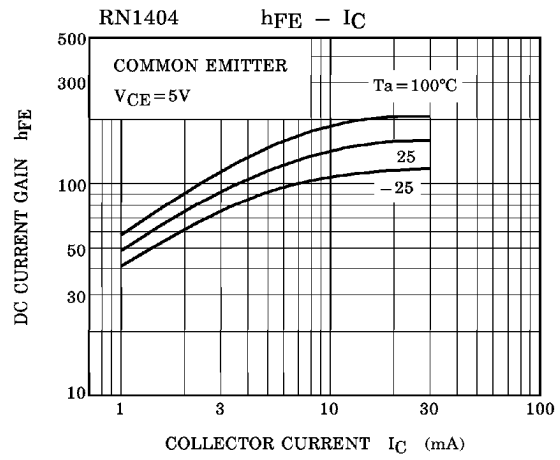
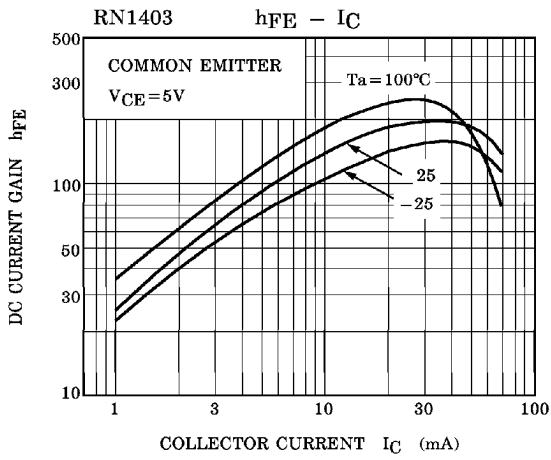
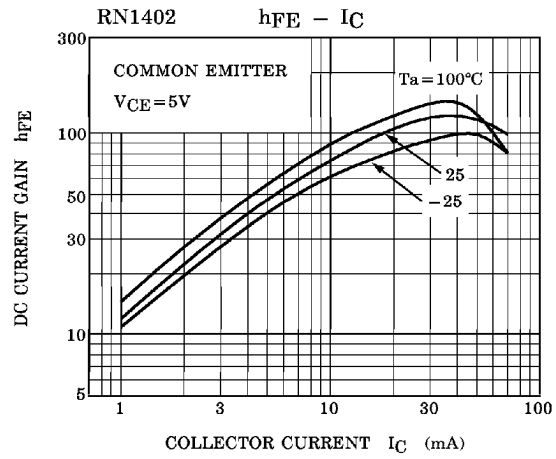
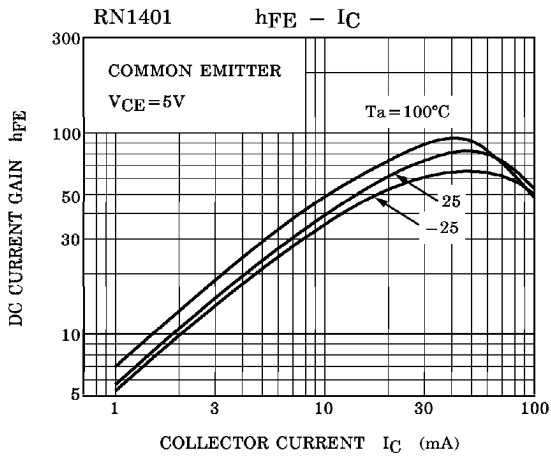
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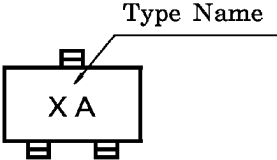
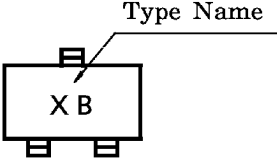
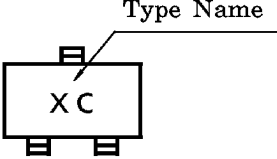
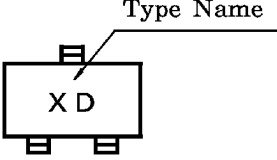
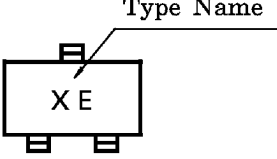
ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current	RN1401~1406	ICBO	V _{CB} = 50V, I _E = 0	—	—	100	nA
		ICEO	V _{CE} = 50V, I _B = 0	—	—	500	
Emitter Cut-off Current	RN1401	I _{EBO}	V _{EB} = 10V, I _C = 0	0.82	—	1.52	mA
	RN1402			0.38	—	0.71	
	RN1403			0.17	—	0.33	
	RN1404		0.082	—	0.15		
	RN1405		V _{EB} = 5V, I _C = 0	0.078	—	0.145	
	RN1406			0.074	—	0.138	
DC Current Gain	RN1401	h _{FE}	V _{CE} = 5V, I _C = 10mA	30	—	—	—
	RN1402			50	—	—	
	RN1403			70	—	—	
	RN1404			80	—	—	
	RN1405			80	—	—	
	RN1406			80	—	—	
Collector-Emitter Saturation Voltage	RN1401~1406	V _{CE(sat)}	I _C = 5mA, I _B = 0.25mA	—	0.1	0.3	V
Input Voltage (ON)	RN1401	V _{I(ON)}	V _{CE} = 0.2V, I _C = 5mA	1.1	—	2.0	V
	RN1402			1.2	—	2.4	
	RN1403			1.3	—	3.0	
	RN1404			1.5	—	5.0	
	RN1405			0.6	—	1.1	
	RN1406			0.7	—	1.3	
Input Voltage (OFF)	RN1401~1404	V _{I(OFF)}	V _{CE} = 5V, I _C = 0.1mA	1.0	—	1.5	V
	RN1405, 1406			0.5	—	0.8	
Transition Frequency	RN1401~1406	f _T	V _{CE} = 10V, I _C = 5mA	—	250	—	MHz
Collector Output Capacitance	RN1401~1406	C _{ob}	V _{CB} = 10V, I _E = 0, f = 1MHz	—	3	6	pF
Input Resistor	RN1401	R _I	—	3.29	4.7	6.11	kΩ
	RN1402			7	10	13	
	RN1403			15.4	22	28.6	
	RN1404			32.9	47	61.1	
	RN1405			1.54	2.2	2.86	
	RN1406			3.29	4.7	6.11	
Resistor Ratio	RN1401~1404	R ₁ / R ₂	—	0.9	1.0	1.1	—
	RN1405			0.0421	0.0468	0.0515	
	RN1406			0.09	0.1	0.11	







TYPE NAME	MARKING
RN1401	
RN1402	
RN1403	
RN1404	
RN1405	
RN1406	