

TOSHIBA TRANSISTOR SILOCON NPN EPITAXIAL TYPE (PCT PROCESS)

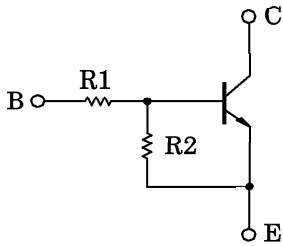
**RN1401, RN1402, RN1403
RN1404, RN1405, RN1406**

SWITCHING, INVERTER CIRCUIT, INTERFACE CIRCUIT AND DRIVER
CIRCUIT APPLICATIONS

Unit in mm

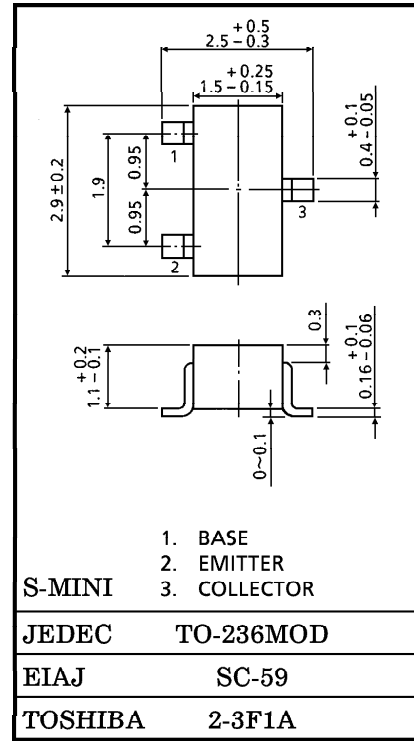
- With Built-in Bias Resistors
- Simplify Circuit Design
- Reduce a Quantity of Parts and Manufacturing Process
- Complementary to RN2401~RN2406

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



Weight : 0.012g

MAXIMUM RATINGS (Ta = 25°C)

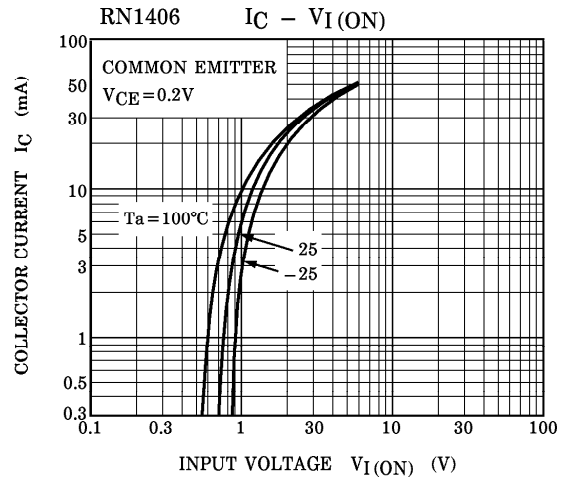
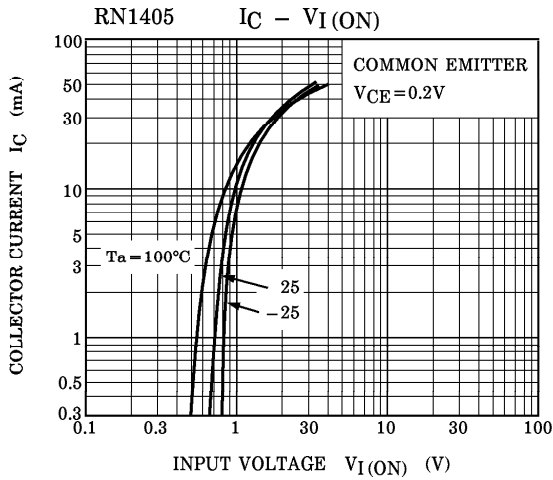
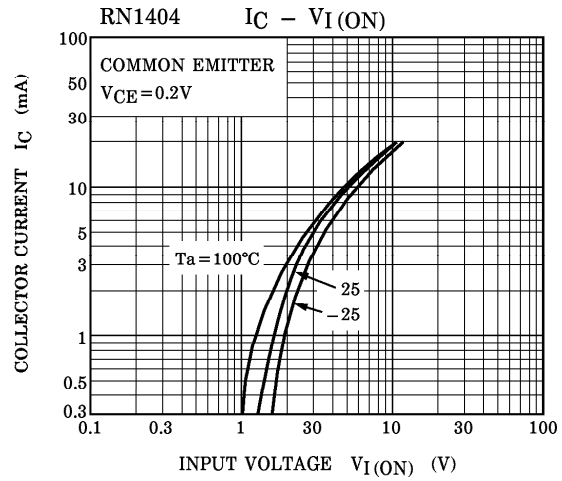
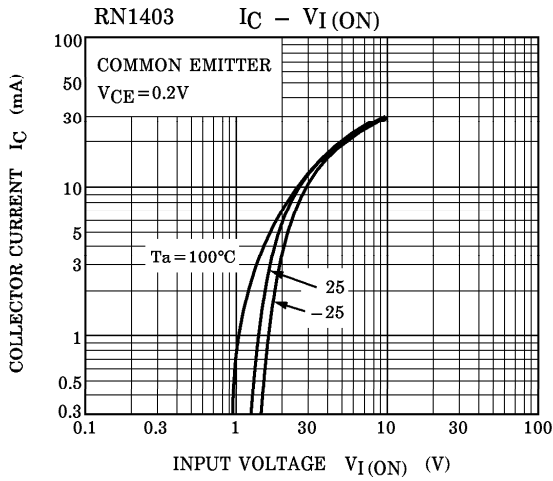
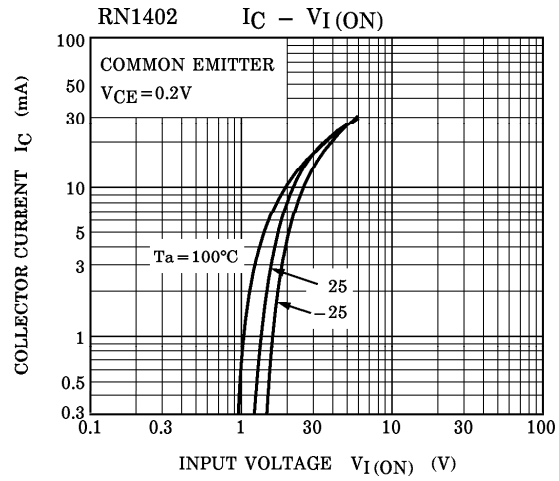
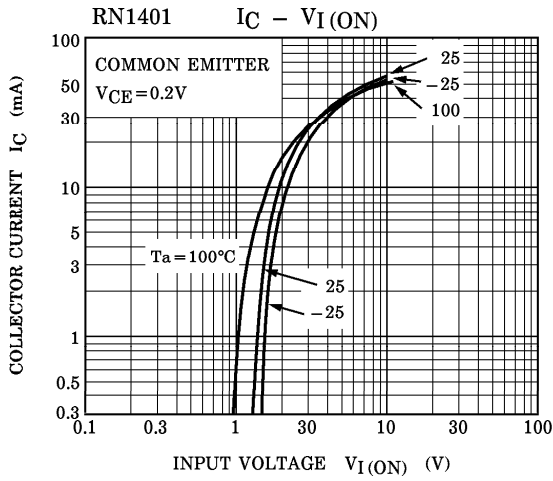
CHARACTERISTIC	SYMBOL	RATING	UNIT	
Collector-Base Voltage	RN1401~1406	V _{CBO}	50	V
Collector-Emitter Voltage		V _{CEO}	50	V
Emitter-Base Voltage	RN1401~1404	V _{EBO}	10	V
	RN1405, 1406		5	V
Collector Current	RN1401~1406	I _C	100	mA
Collector Power Dissipation		P _C	200	mW
Junction Temperature		T _j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

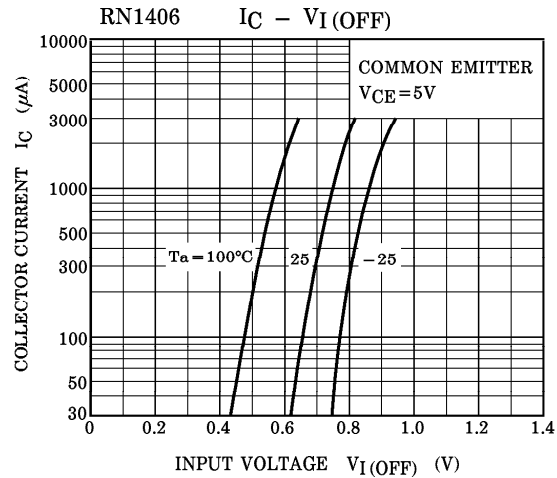
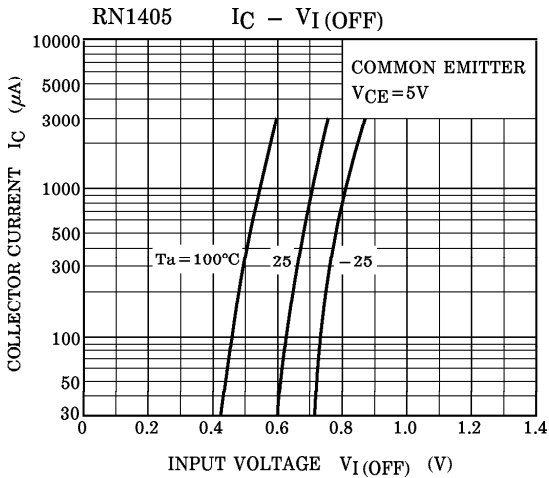
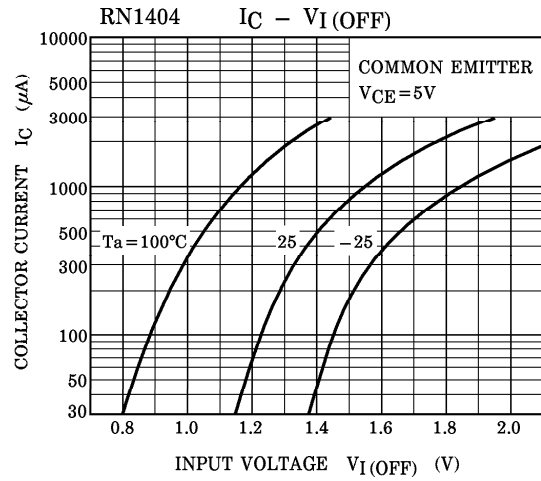
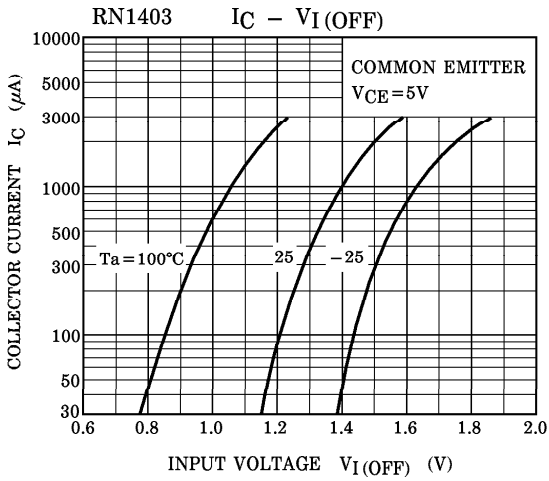
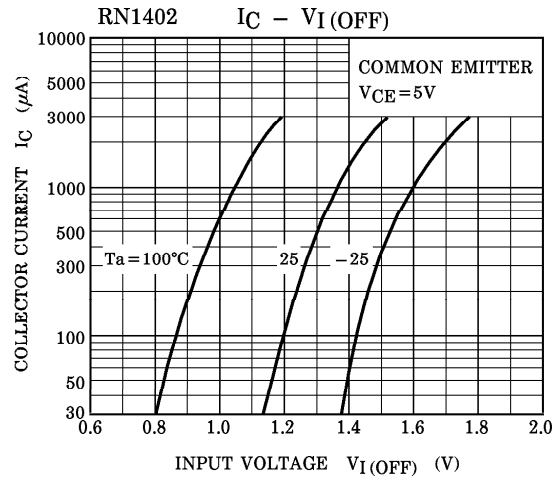
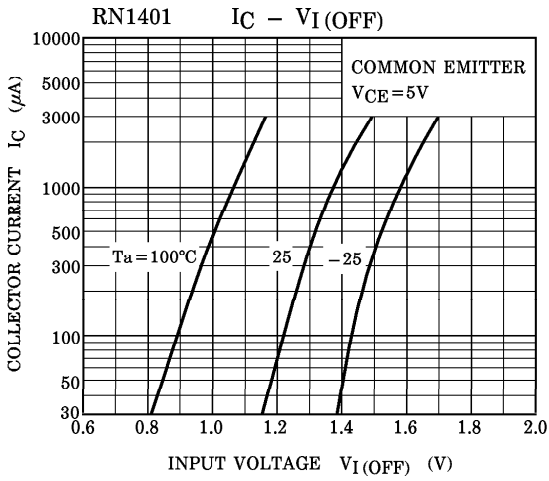
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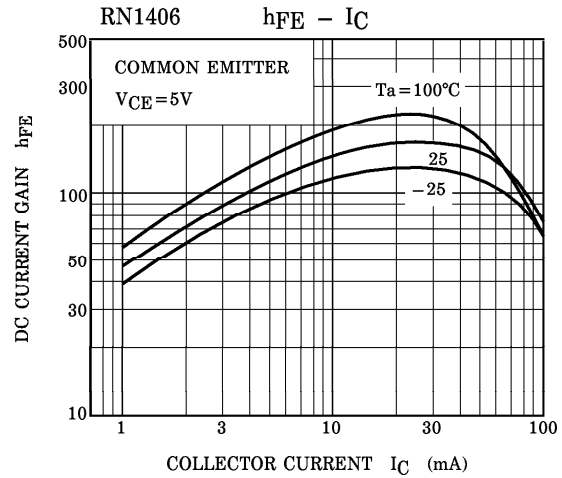
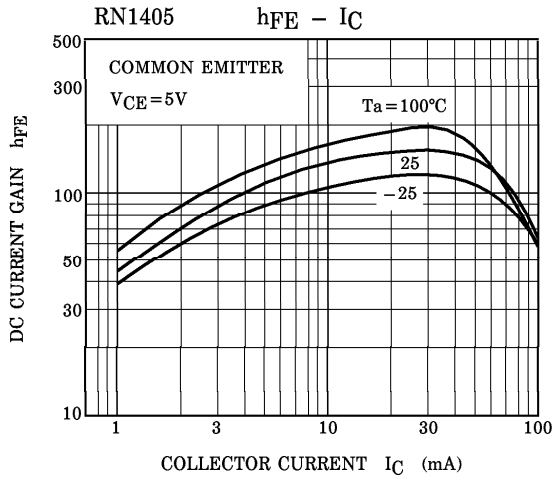
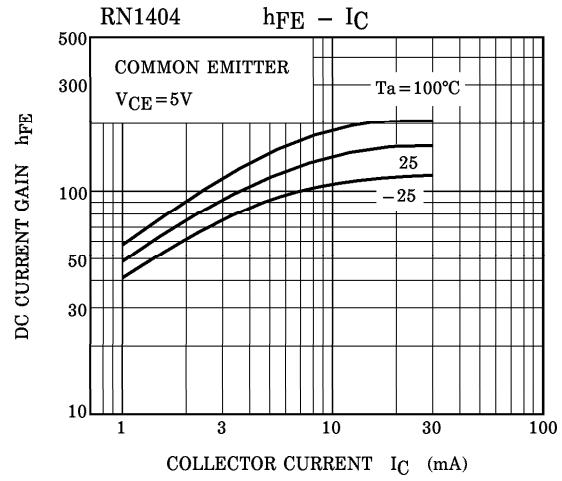
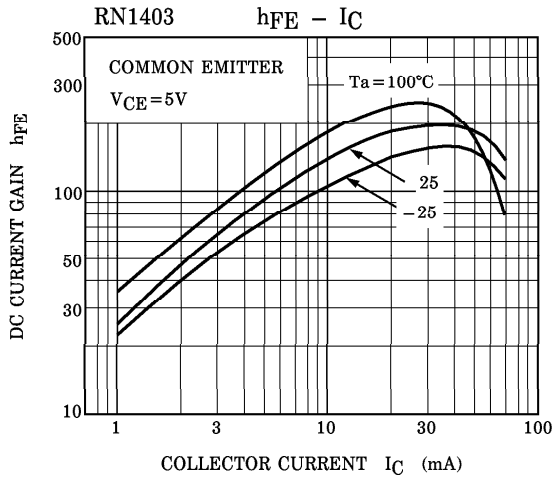
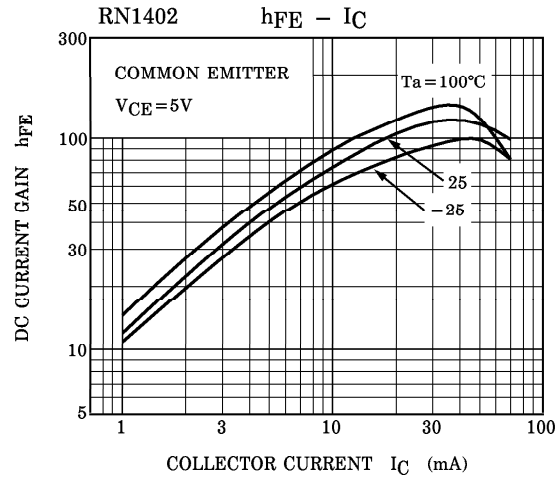
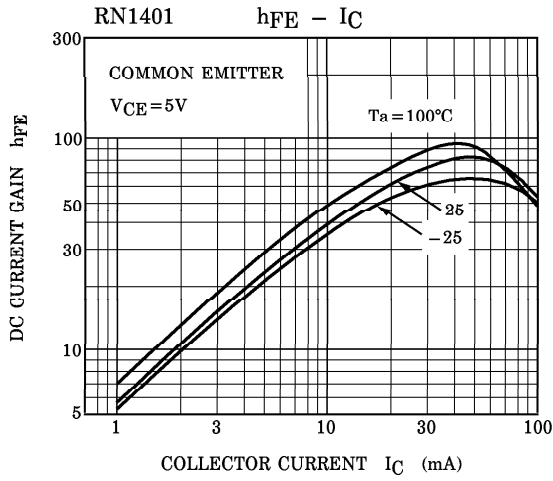
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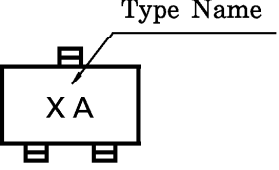
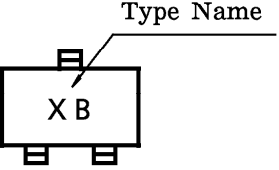
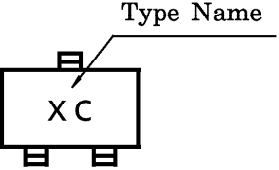
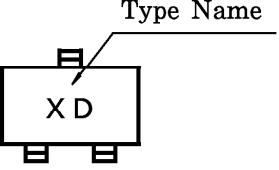
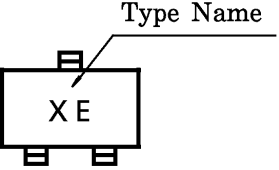
ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current	RN1401~1406	I_{CBO}	$V_{CB}=50V, I_E=0$	—	—	100	nA
		I_{CEO}	$V_{CE}=50V, I_B=0$	—	—	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 RN1405, 1406	$V_{I(OFF)}$	$V_{CE}=5V, I_C=0.1mA$	1.0 0.5	—	1.5 0.8	V
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	R1	—	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	R1 / R2	—	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	