

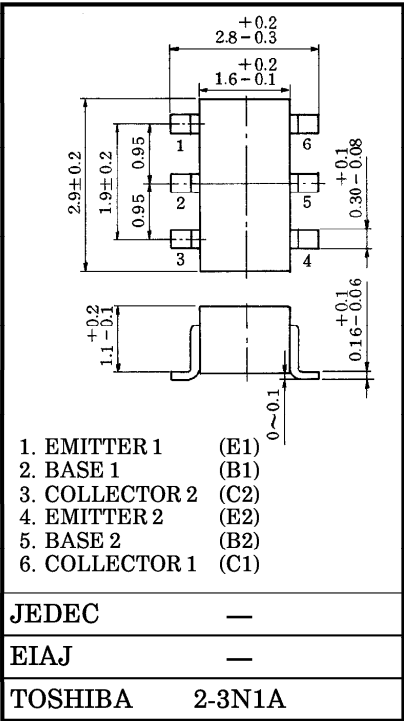
TOSHIBA TRANSISTOR SILICON NPN EPITAXIAL TYPE (PCT PROCESS)

RN1601, RN1602, RN1603, RN1604, RN1605, RN1606

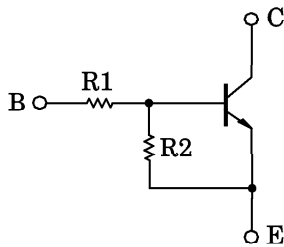
SWITCHING, INVERTER CIRCUIT, INTERFACE CIRCUIT AND DRIVER
CIRCUIT APPLICATIONS.

- Including Two Devices in SM6 (Super Mini Type with 6 leads)
- With Built-in Bias Resistors
- Simplify Circuit Design
- Reduce a Quantity of Parts and Manufacturing Process
- Complementary to RN2601~RN2606

Unit in mm



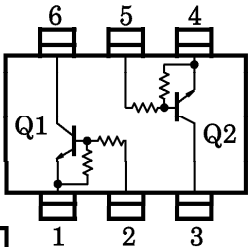
EQUIVALENT CIRCUIT AND BIAS RESISTOR VALUES



TYPE NO.	R1 (kΩ)	R2 (kΩ)
RN1601	4.7	4.7
RN1602	10	10
RN1603	22	22
RN1604	47	47
RN1605	2.2	47
RN1606	4.7	47

Weight : 0.015g

EQUIVALENT CIRCUIT (TOP VIEW)



MAXIMUM RATINGS (Ta = 25°C) (Q1, Q2 COMMON)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Collector-Base Voltage	RN1601~1606	V _{CB0}	50	V
Collector-Emitter Voltage		V _{CEO}	50	V
Emitter-Base Voltage	RN1601~1604	V _{EBO}	10	V
	RN1605, 1606		5	
Collector Current	RN1601~1606	I _C	100	mA
Collector Power Dissipation		P _C *	300	mW
Junction Temperature		T _j	150	°C
Storage Temperature Range		T _{stg}	−55~150	°C

* Total Rating

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● TOSHIBA is continually working to improve the quality and the reliability of its products. Nevertheless, semiconductor devices in general can malfunction or fail due to their inherent electrical sensitivity and vulnerability to physical stress. It is the responsibility of the buyer, when utilizing TOSHIBA products, to observe standards of safety, and to avoid situations in which a malfunction or failure of a TOSHIBA product could cause loss of human life, bodily injury or damage to property. In developing your designs, please ensure that TOSHIBA products are used within specified operating ranges as set forth in the most recent products specifications. Also, please keep in mind the precautions and conditions set forth in the TOSHIBA Semiconductor Reliability Handbook.

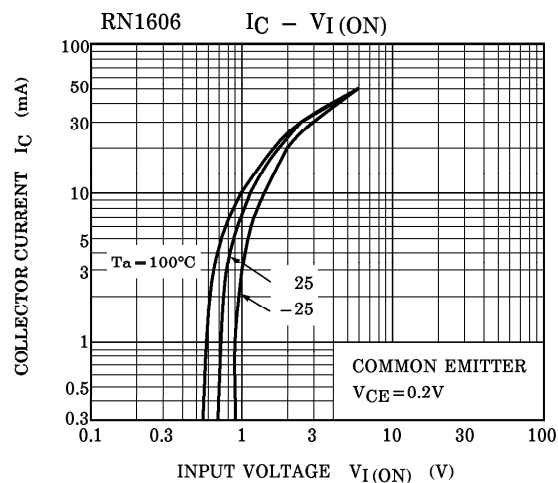
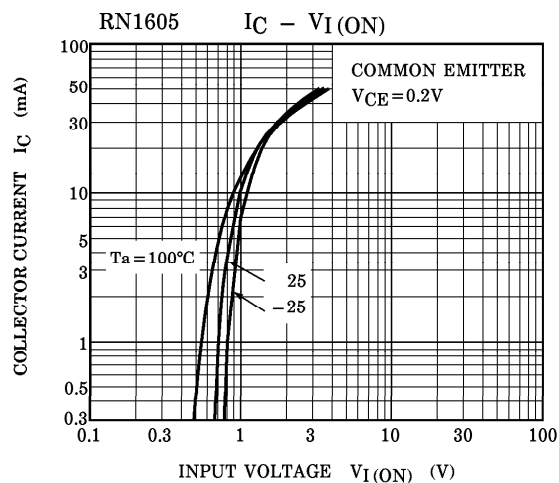
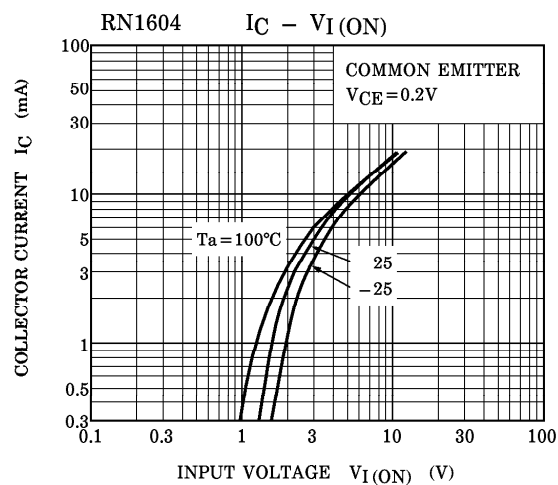
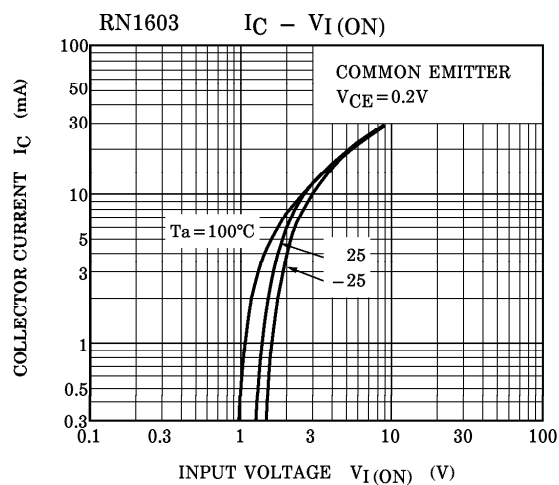
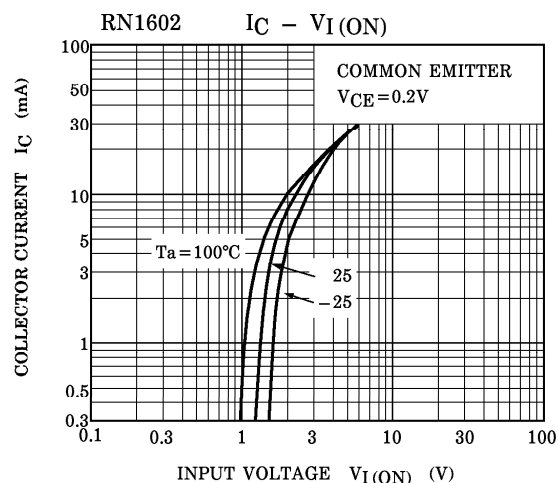
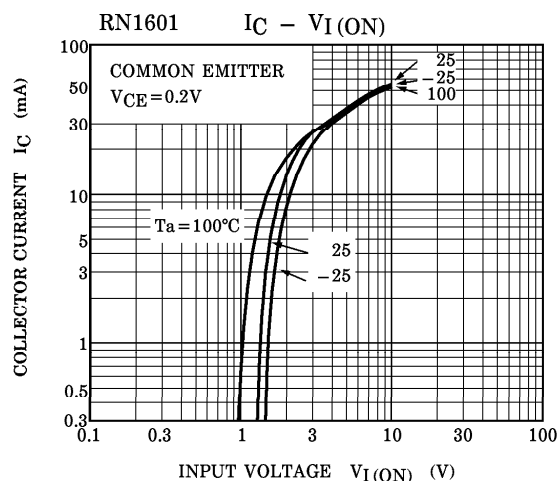
ELECTRICAL CHARACTERISTICS (Ta = 25°C) (Q1, Q2 COMMON)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current	RN1601~1606	I_{CBO}	$V_{CB}=50V, I_E=0$	—	—	100	nA
		I_{CEO}	$V_{CE}=50V, I_B=0$	—	—	500	
Emitter Cut-off Current	RN1601	I_{EBO}	$V_{EB}=10V, I_C=0$	0.82	—	1.52	mA
	RN1602			0.38	—	0.71	
	RN1603			0.17	—	0.33	
	RN1604			0.082	—	0.15	
	RN1605	I_{EBO}	$V_{EB}=5V, I_C=0$	0.078	—	0.145	
	RN1606			0.074	—	0.138	
DC Current Gain	RN1601	h_{FE}	$V_{CE}=5V, I_C=10mA$	30	—	—	
	RN1602			50	—	—	
	RN1603			70	—	—	
	RN1604			80	—	—	
	RN1605			80	—	—	
	RN1606			80	—	—	
Collector-Emitter Saturation Voltage	RN1601~1606	$V_{CE(sat)}$	$I_C=5mA, I_B=0.25mA$	—	0.1	0.3	V
Input Voltage (ON)	RN1601	$V_{I(ON)}$	$V_{CE}=0.2V, I_C=5mA$	1.1	—	2.0	V
	RN1602			1.2	—	2.4	
	RN1603			1.3	—	3.0	
	RN1604			1.5	—	5.0	
	RN1605			0.6	—	1.1	
	RN1606			0.7	—	1.3	
Input Voltage (OFF)	RN1601~1604	$V_{I(OFF)}$	$V_{CE}=5V, I_C=0.1mA$	1.0	—	1.5	V
	RN1605, 1606			0.5	—	0.8	
Transition Frequency	RN1601~1606	f_T	$V_{CE}=10V, I_C=5mA$	—	250	—	MHz
Collector Output Capacitance	RN1601~1606	C_{ob}	$V_{CB}=10V, I_E=0$ $f=1MHz$	—	3	6	pF
Input Resistor	RN1601	R1		3.29	4.7	6.11	k Ω
	RN1602			7	10	13	
	RN1603			15.4	22	28.6	
	RN1604			32.9	47	61.1	
	RN1605			1.54	2.2	2.86	
	RN1606			3.29	4.7	6.11	
Resistor Ratio	RN1601~1604	R1 / R2		0.9	1.0	1.1	
	RN1605			0.0421	0.0468	0.0515	
	RN1606			0.09	0.1	0.11	

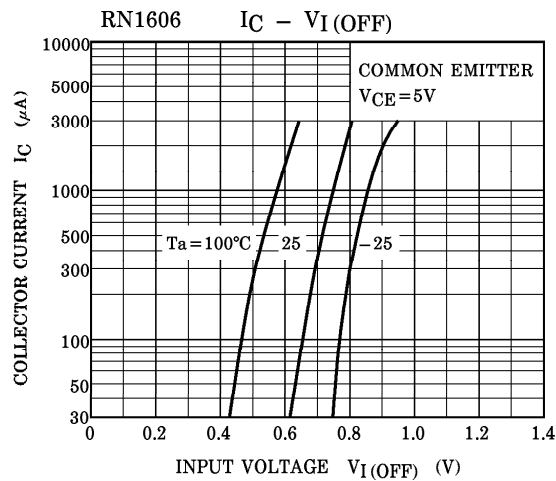
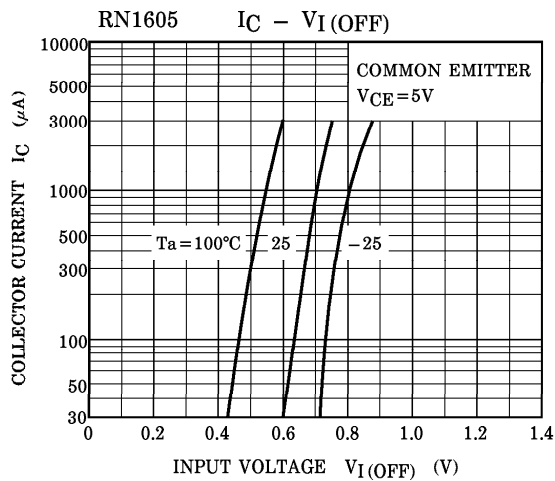
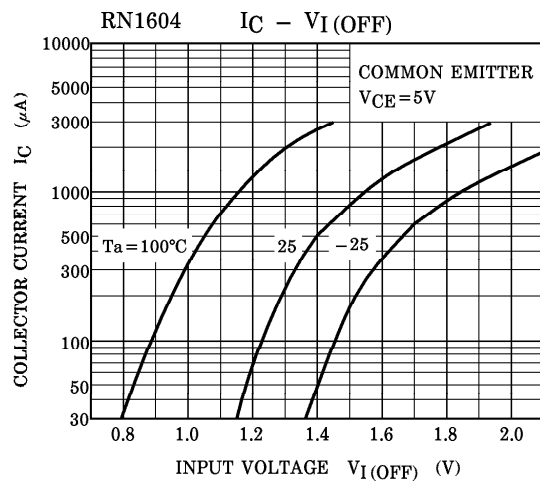
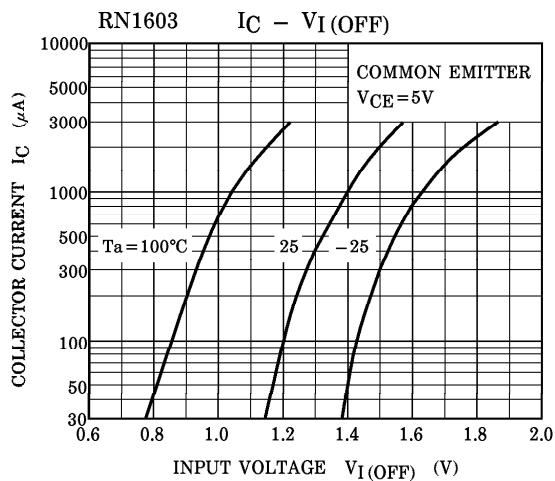
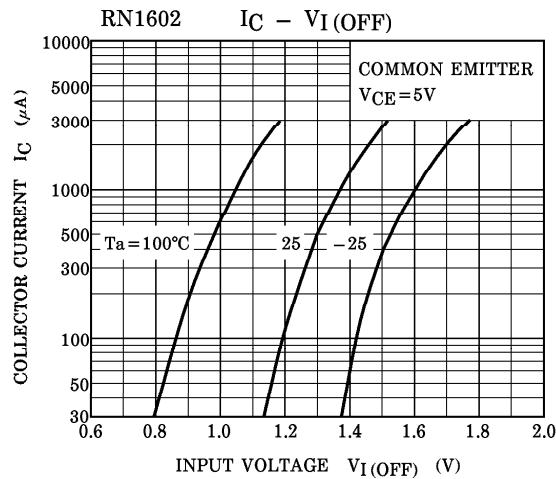
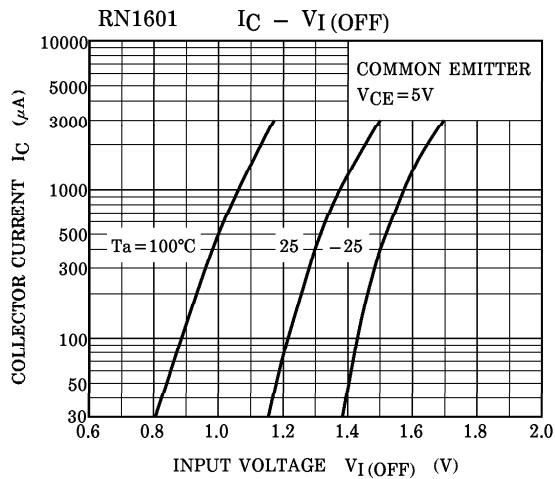
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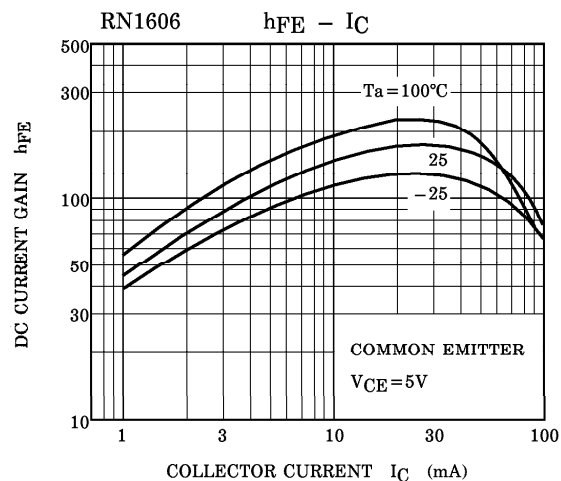
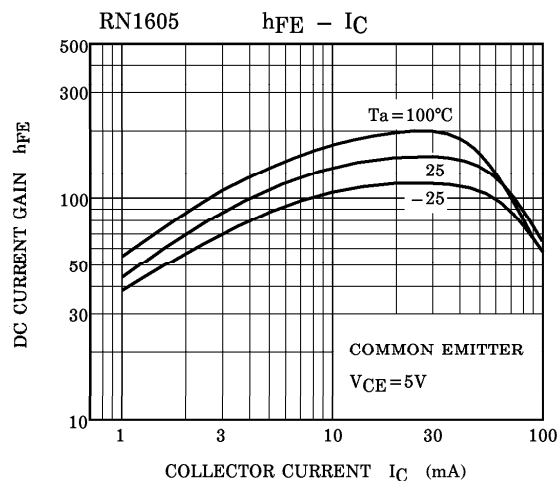
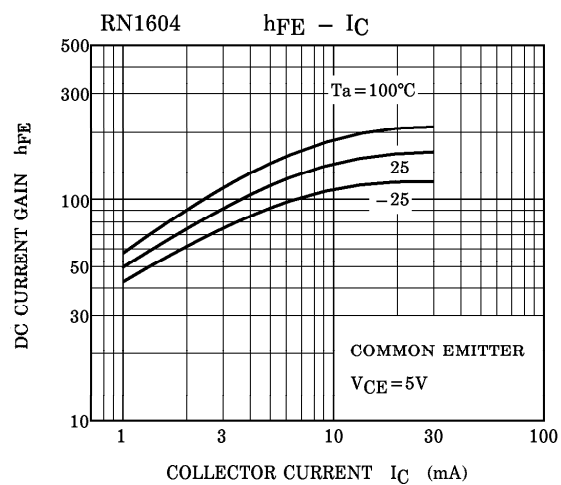
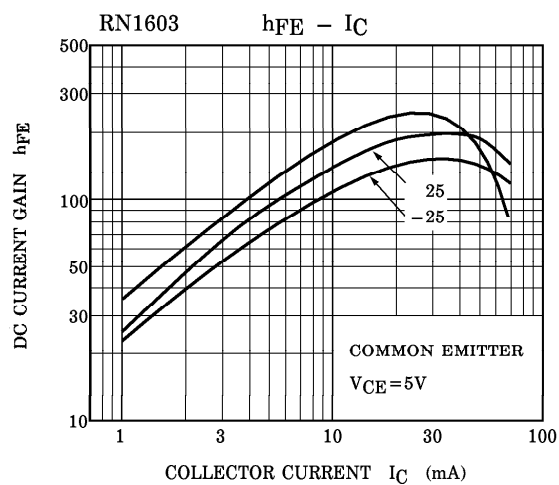
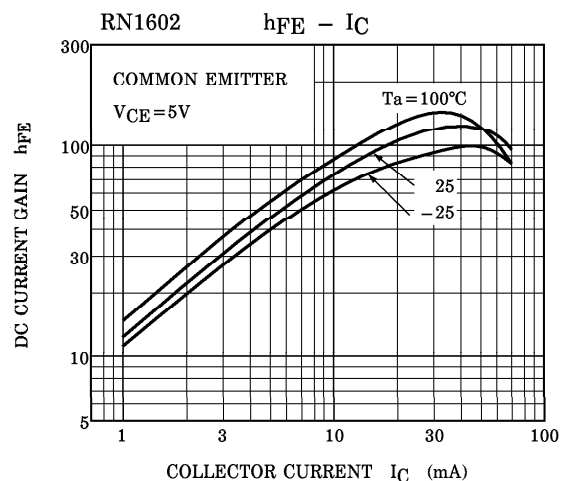
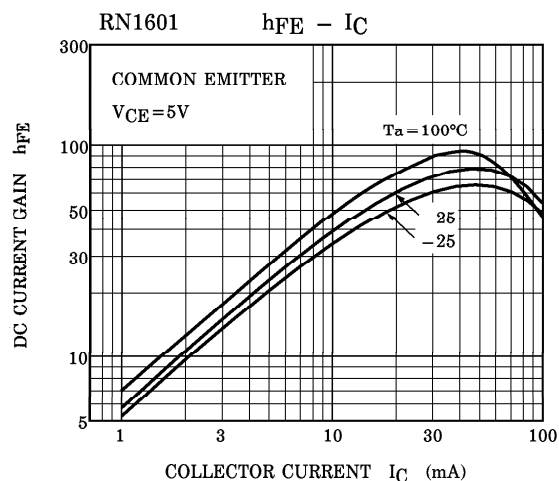
(Q1, Q2 COMMON)

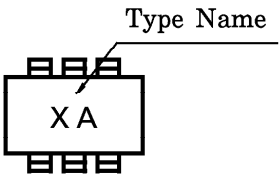
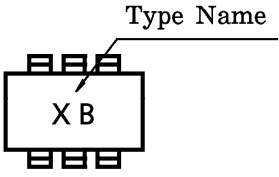
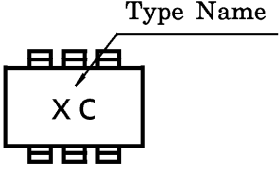
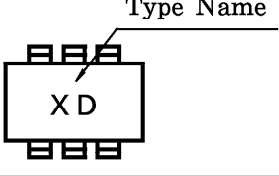
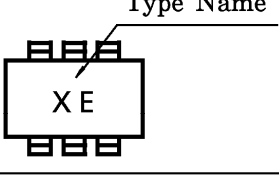


(Q1, Q2 COMMON)



(Q1, Q2 COMMON)



TYPE NAME	MARKING
RN1601	
RN1602	
RN1603	
RN1604	
RN1605	
RN1606	