

TOSHIBA TRANSISTOR SILICON NPN EPITAXIAL TYPE (PCT PROCESS)

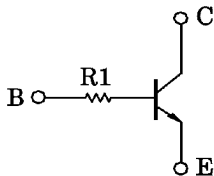
RN1312, RN1313

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

Unit in mm

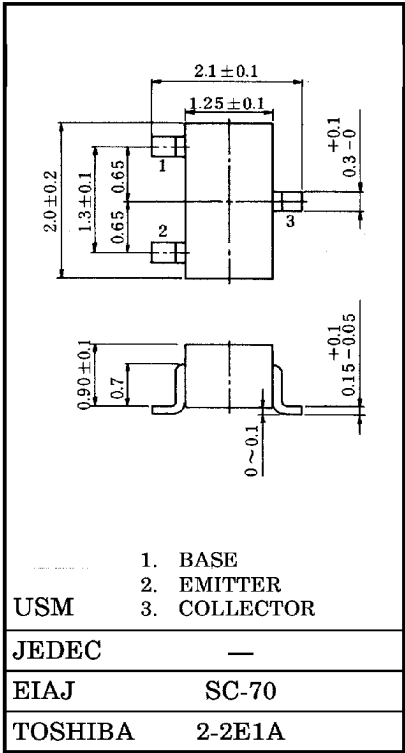
- With Built-in Bias Resistors
- Simplify Circuit Design
- Reduce a Quantity of Parts and Manufacturing Process
- Complementary to RN2312, RN2313

EQUIVALENT CIRCUIT



MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Collector-Base Voltage	V _{CB0}	50	V
Collector-Emitter Voltage	V _{CEO}	50	V
Emitter-Base Voltage	V _{EB0}	5	V
Collector Current	I _C	100	mA
Collector Power Dissipation	P _C	100	mW
Junction Temperature	T _j	150	°C
Storage Temperature Range	T _{stg}	-55~150	°C



1. BASE
2. EMITTER
3. COLLECTOR

USM

JEDEC

EIAJ

TOSHIBA

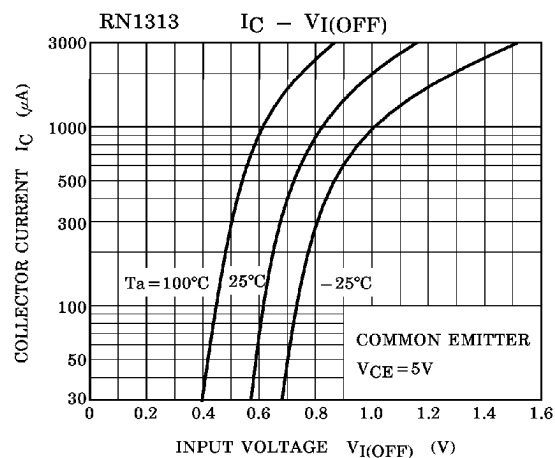
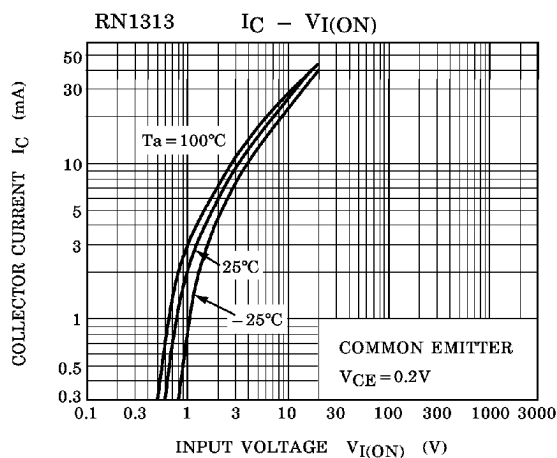
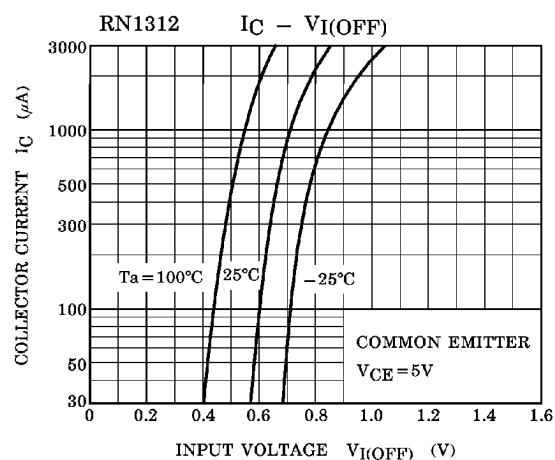
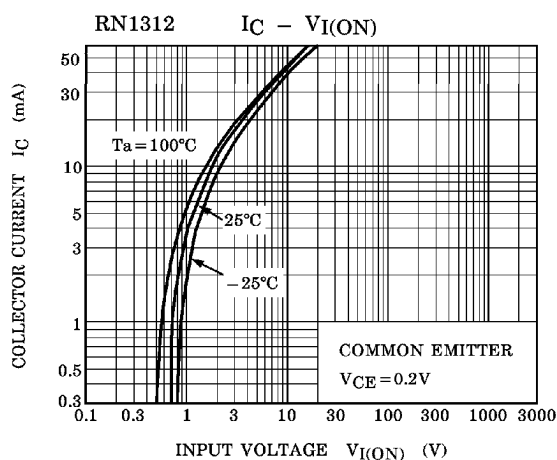
Weight : 0.006g

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
Emitter Cut-off Current		I _{EBO}	V _{EB} =5V, I _C =0	—	—	100	nA
DC Current Gain		h _{FE}	V _{CE} =5V, I _C =1mA	120	—	700	
Collector-Emitter Saturation Voltage		V _{CE (sat)}	I _C =5mA, I _B =0.25mA	—	0.1	0.3	V
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 Resistance	RN1312	R1	—	15.4	22	28.6	kΩ
	RN1313			32.9	47	61.1	

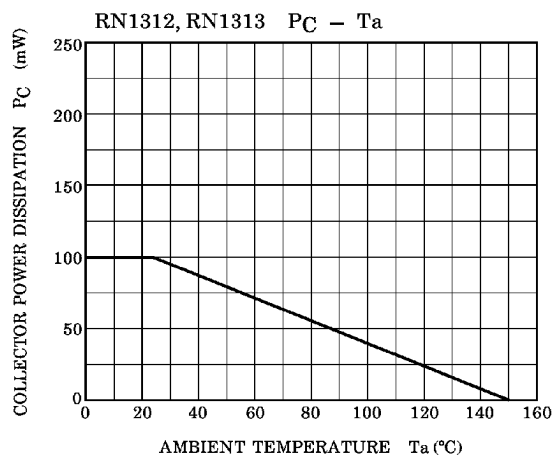
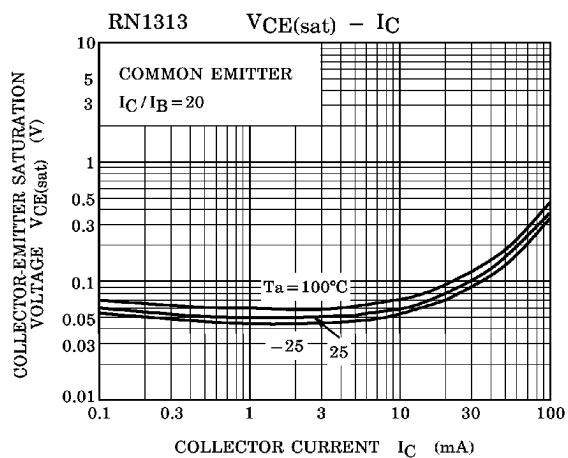
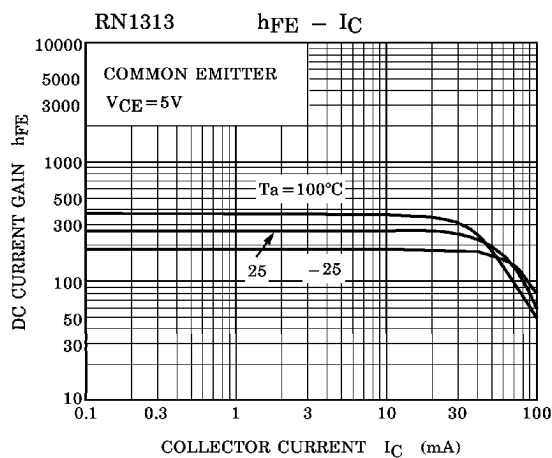
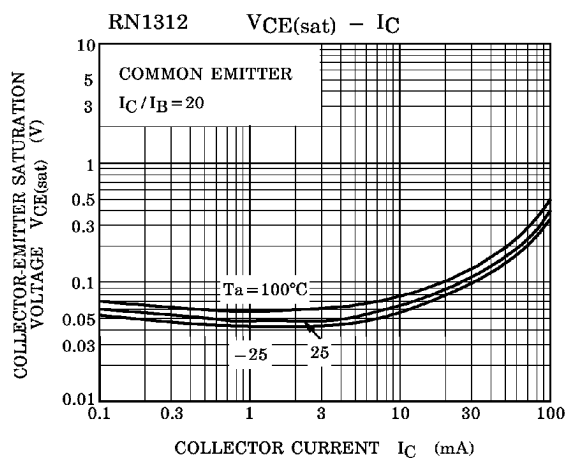
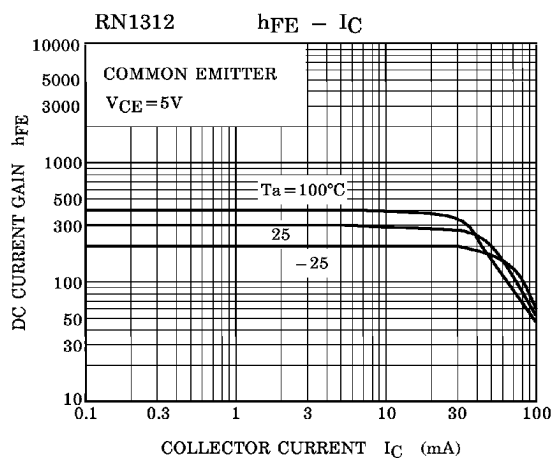
961001EAA2

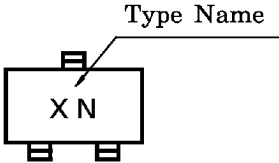
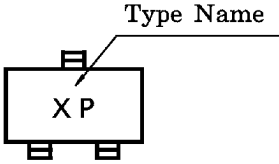
● TOSHIBA is continually working to improve the quality and the reliability of its products. Nevertheless, semiconductor devices in general can malfunction or fail due to their inherent electrical sensitivity and vulnerability to physical stress. It is the responsibility of the buyer, when utilizing 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.



961001EAA2'

- The information contained herein is presented only as a guide for the applications of our products. No responsibility is assumed by TOSHIBA CORPORATION for any infringements of intellectual property or other rights of the third parties which may result from its use. No license is granted by implication or otherwise under any intellectual property or other rights of TOSHIBA CORPORATION or others.
- The information contained herein is subject to change without notice.



TYPE NAME	MARKING
RN1312	 The diagram shows a rectangular component with four pins. The top-left pin is labeled 'Type Name' with a line pointing to it. The center of the component is marked with 'X N'.
RN1313	 The diagram shows a rectangular component with four pins. The top-left pin is labeled 'Type Name' with a line pointing to it. The center of the component is marked with 'X P'.