

TOSHIBA Transistor Silicon PNP Epitaxial Type (PCT Process)

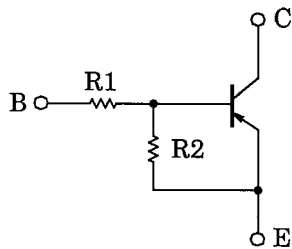
RN2507, RN2508, RN2509

Switching, Inverter Circuit, Interface Circuit
And Driver Circuit Applications

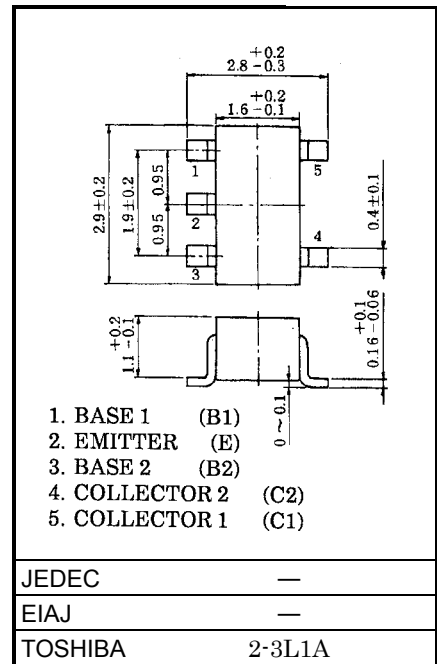
Unit in mm

- Including two devices in SMV (super mini type with 5 leads)
- With built-in bias resistors
- Simplify circuit design
- Reduce a quantity of parts and manufacturing process
- Complementary to RN1507~RN1509

Equivalent Circuit and Bias Resistor Values

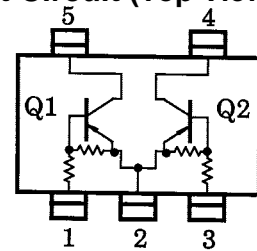


Type No.	R1 (kΩ)	R2 (kΩ)
RN2507	10	47
RN2508	22	47
RN2509	47	22



Weight: 0.014g

Equivalent Circuit (Top View)



Maximum Ratings (Ta = 25°C) (Q1, Q2 Common)

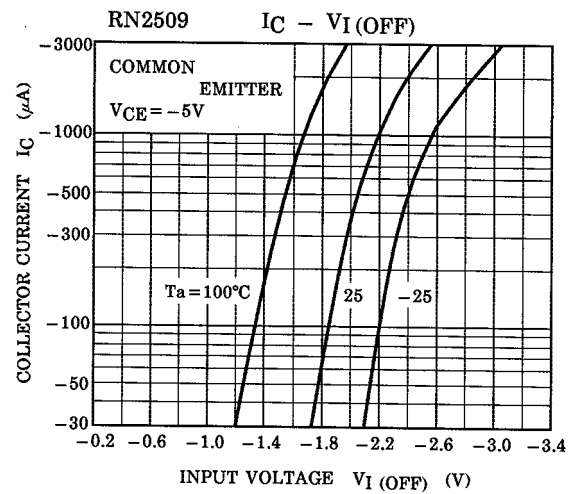
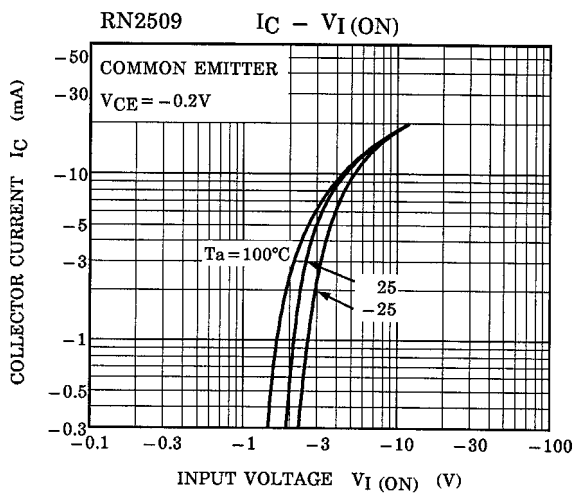
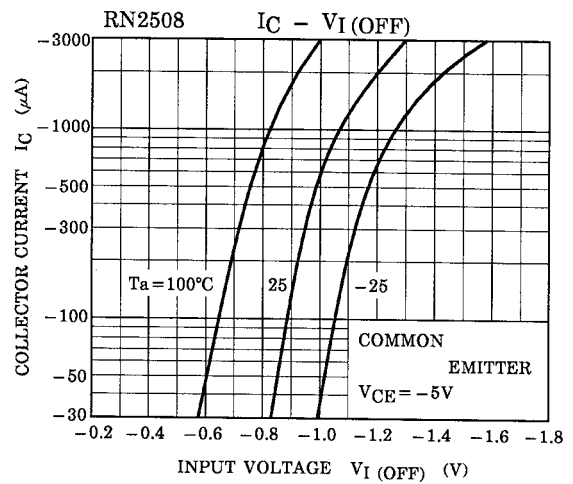
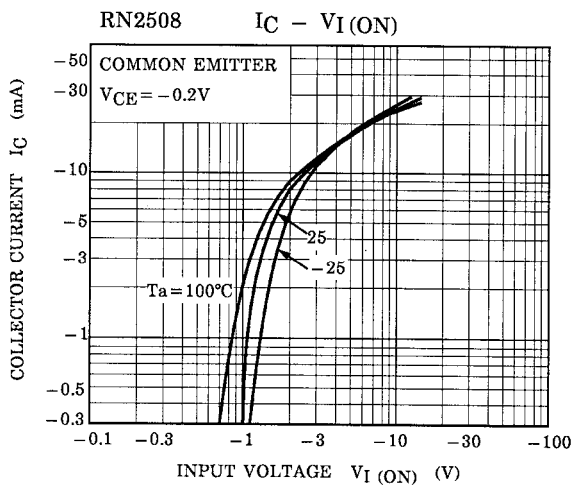
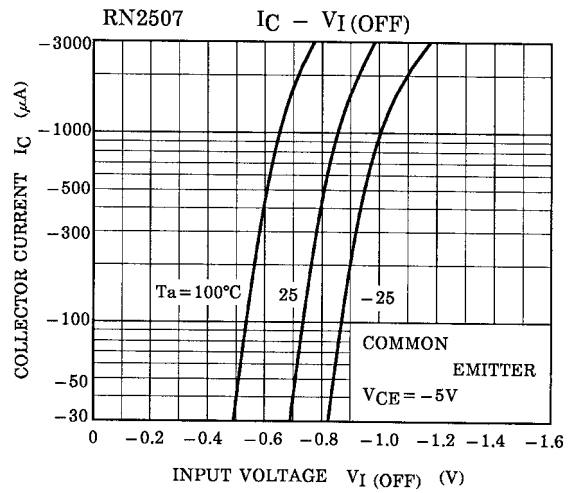
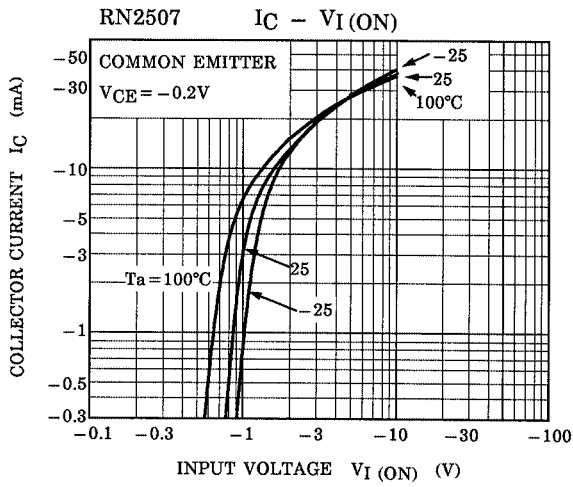
Characteristic	Symbol	Rating	Unit
Collector-base voltage	V _{CB0}	-50	V
Collector-emitter voltage			
Emitter-base voltage	V _{EBO}	-6	V
		-7	
		-15	
Collector current	I _C	-100	mA
Collector power dissipation	P _C *	300	mW
Junction temperature	T _J	150	°C
Storage temperature range	T _{stg}	-55~150	°C

* Total rating

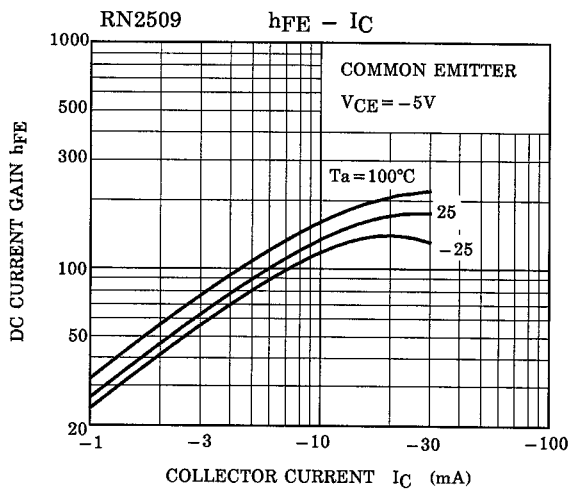
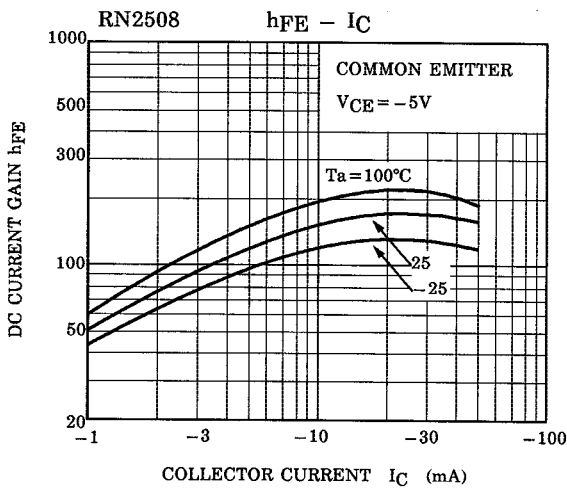
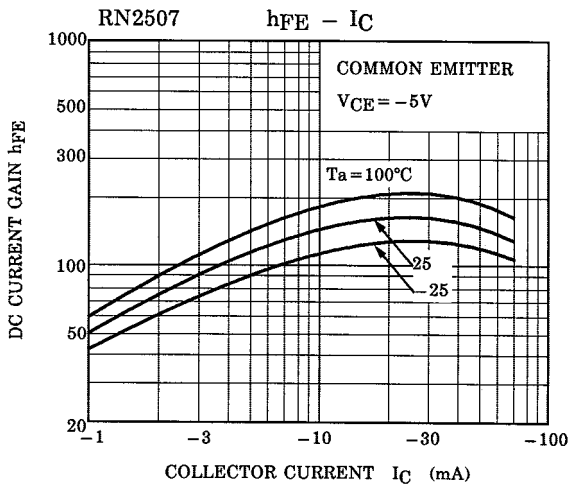
Electrical Characteristics (Ta = 25°C) (Q1, Q2 Common)

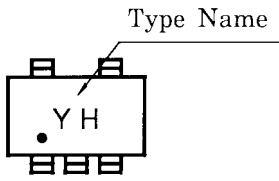
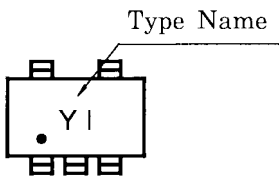
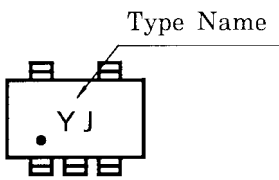
Characteristic		Symbol	Test Circuit	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current	RN2507~RN2509	ICBO	—	V _{CB} = -50V, I _E = 0	—	—	-100	nA
		ICEO	—	V _{CE} = -50V, I _B = 0	—	—	-500	nA
Emitter cut-off current	RN2507	IEBO	—	V _{EB} = -6V, I _C = 0	-0.081	—	-0.15	mA
	RN2508		—	V _{EB} = -7V, I _C = 0	-0.078	—	-0.145	
	RN2509		—	V _{EB} = -15V, I _C = 0	-0.167	—	-0.311	
DC current gain	RN2507	h _{FE}	—	V _{CE} = -5V, I _C = -10mA	80	—	—	—
	RN2508		—		80	—	—	
	RN2509		—		70	—	—	
Collector-emitter saturation voltage	RN2507~RN2509	V _{CE(sat)}	—	I _C = -5mA, I _B = -0.25mA	—	-0.1	-0.3	V
Input voltage (ON)	RN2507	V _{I(ON)}	—	V _{CE} = -0.2V, I _C = -5mA	-0.7	—	-1.8	V
	RN2508		—		-1.0	—	-2.6	
	RN2509		—		-2.2	—	-5.8	
Input voltage (OFF)	RN2507	V _{I(OFF)}	—	V _{CE} = -5V, I _C = -0.1mA	-0.5	—	-1.0	V
	RN2508		—		-0.6	—	-1.16	
	RN2509		—		-1.5	—	-2.6	
Translation frequency	RN2507~RN2509	f _T	—	V _{CE} = -10V, I _C = -5mA	—	200	—	MHz
Collector output capacitance	RN2507~RN2509	C _{ob}	—	V _{CB} = -10V, I _E = 0 f = 1MHz	—	3	6	pF
Input resistor	RN2507	R1	—	—	7	10	13	kΩ
	RN2508		—		15.4	22	28.6	
	RN2509		—		32.9	47	61.1	
Resistor ratio	RN2507	R1/R2	—	—	0.191	0.213	0.232	—
	RN2508		—		0.421	0.468	0.515	
	RN2509		—		1.92	2.14	2.35	

(Q1, Q2 Common)



(Q1, Q2 Common)



Type Name	Marking
RN2507	 A schematic diagram of a component marking. It shows a rectangular box with a dot on the left side and the letters 'YH' in the center. Above the box are two small rectangular protrusions, and below it are four small rectangular protrusions. A line points from the text 'Type Name' to the top-right corner of the box.
RN2508	 A schematic diagram of a component marking. It shows a rectangular box with a dot on the left side and the letters 'YI' in the center. Above the box are two small rectangular protrusions, and below it are four small rectangular protrusions. A line points from the text 'Type Name' to the top-right corner of the box.
RN2509	 A schematic diagram of a component marking. It shows a rectangular box with a dot on the left side and the letters 'YJ' in the center. Above the box are two small rectangular protrusions, and below it are four small rectangular protrusions. A line points from the text 'Type Name' to the top-right corner of the box.

RESTRICTIONS ON PRODUCT USE

000707EAA

- TOSHIBA is continually working to improve the quality and 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 comply with the standards of safety in making a safe design for the entire system, and to avoid situations in which a malfunction or failure of such TOSHIBA products 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 TOSHIBA products specifications. Also, please keep in mind the precautions and conditions set forth in the "Handling Guide for Semiconductor Devices," or "TOSHIBA Semiconductor Reliability Handbook" etc..
- The TOSHIBA products listed in this document are intended for usage in general electronics applications (computer, personal equipment, office equipment, measuring equipment, industrial robotics, domestic appliances, etc.). These TOSHIBA products are neither intended nor warranted for usage in equipment that requires extraordinarily high quality and/or reliability or a malfunction or failure of which may cause loss of human life or bodily injury ("Unintended Usage"). Unintended Usage include atomic energy control instruments, airplane or spaceship instruments, transportation instruments, traffic signal instruments, combustion control instruments, medical instruments, all types of safety devices, etc.. Unintended Usage of TOSHIBA products listed in this document shall be made at the customer's own risk.
- 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.