

TOSHIBA Transistor Silicon NPN Epitaxial Type (PCT Process)

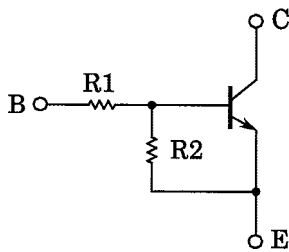
## RN1501,RN1502,RN1503 RN1504,RN1505,RN1506

Unit: mm

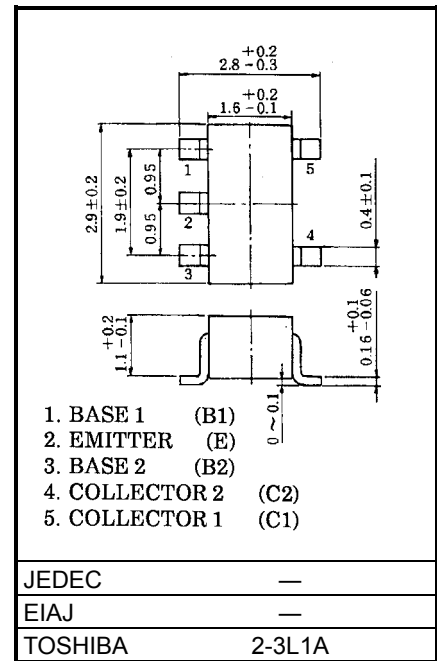
Switching, Inverter Circuit, Interface Circuit  
And Driver Circuit Applications

- 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 RN2501~RN2506

### Equivalent Circuit and Bias Resister Values



Type No.	R1 (kΩ)	R2 (kΩ)
RN1501	4.7	4.7
RN1502	10	10
RN1503	22	22
RN1504	47	47
RN1505	2.2	47
RN1506	4.7	47



1. BASE 1 (B1)
2. EMITTER (E)
3. BASE 2 (B2)
4. COLLECTOR 2 (C2)
5. COLLECTOR 1 (C1)

JEDEC	—
EIAJ	—
TOSHIBA	2-3L1A

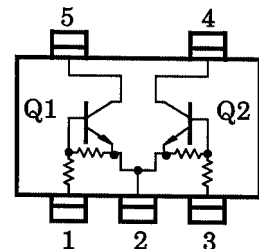
Weight: 6.8mg

### Equivalent Circuit (Top View)

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

Characteristic	Symbol	Rating	Unit
Collector-base voltage	V <sub>CB0</sub>	50	V
Collector-emitter voltage			
Emitter-base voltage	V <sub>EB0</sub>	10	V
		5	
Collector current	I <sub>C</sub>	100	mA
Collector power dissipation	P <sub>C</sub> *	300	mW
Junction temperature	T <sub>j</sub>	150	°C
Storage temperature range	T <sub>stg</sub>	-55~150	°C

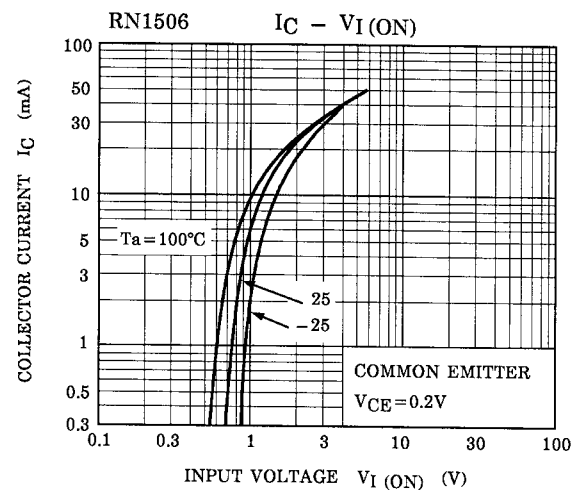
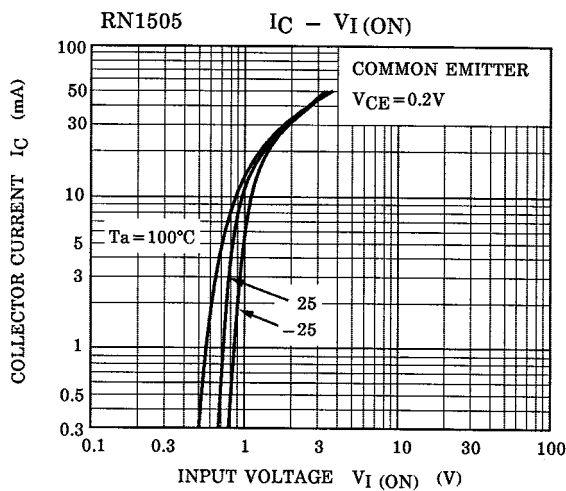
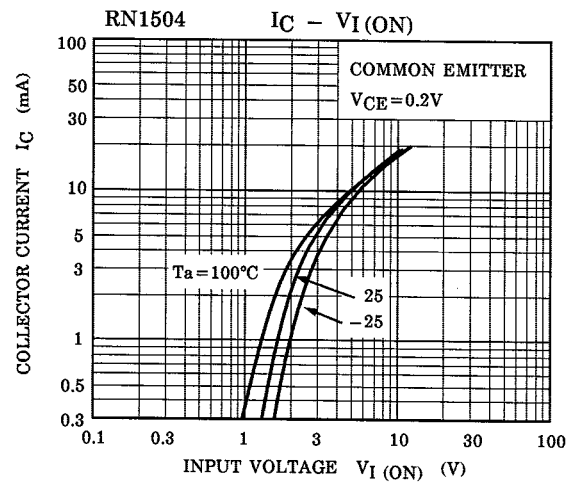
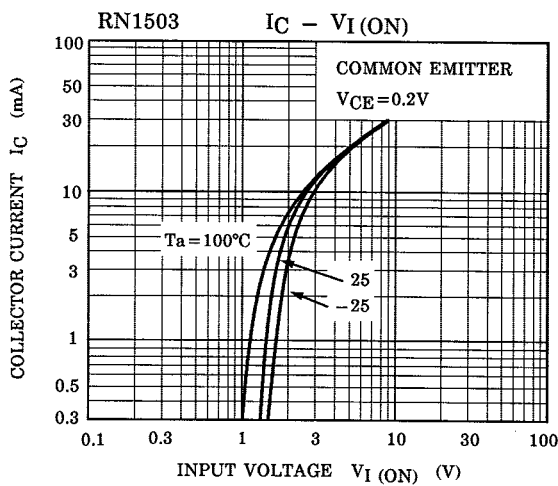
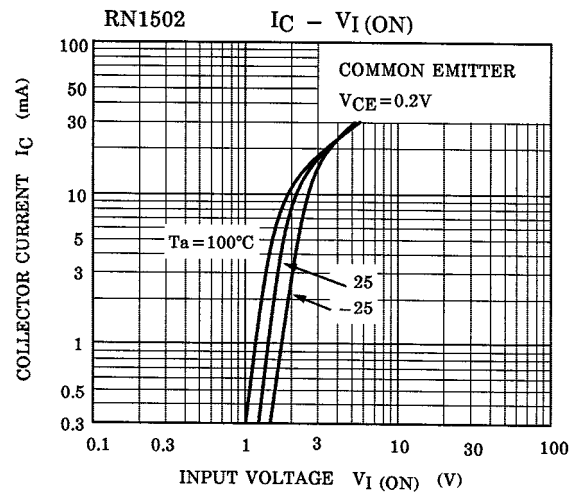
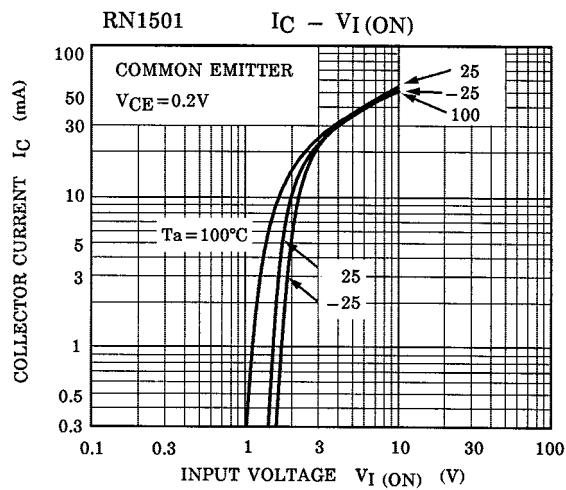
\* Total rating



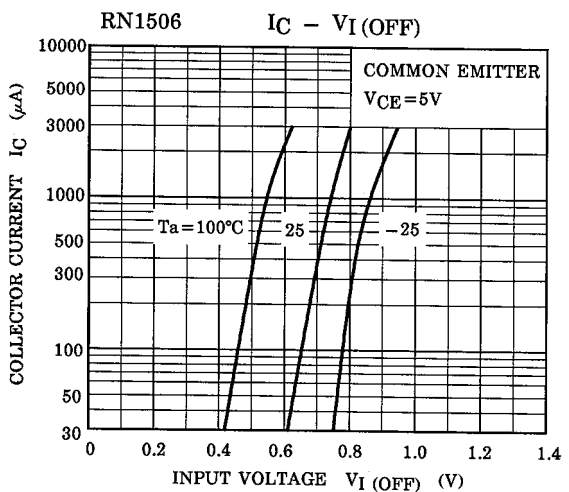
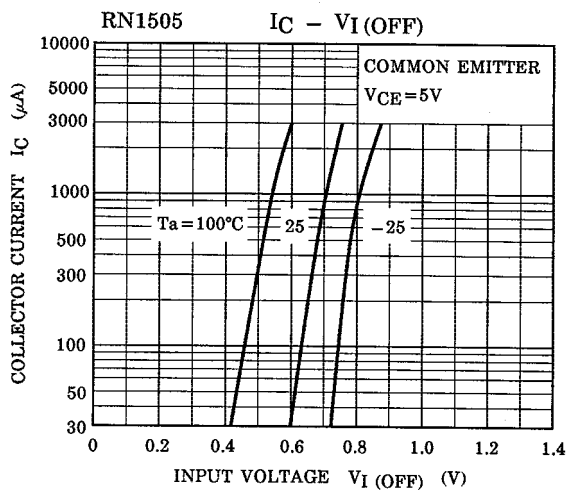
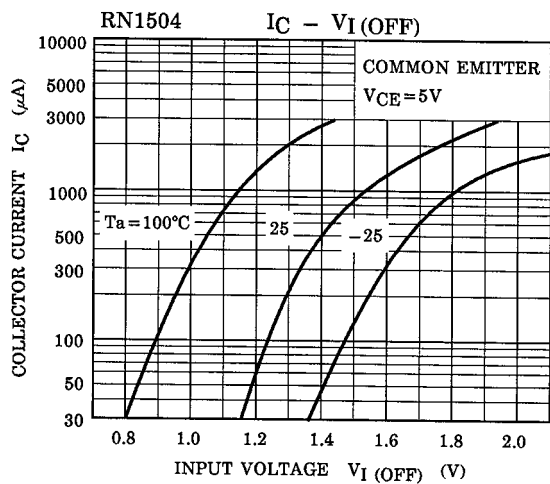
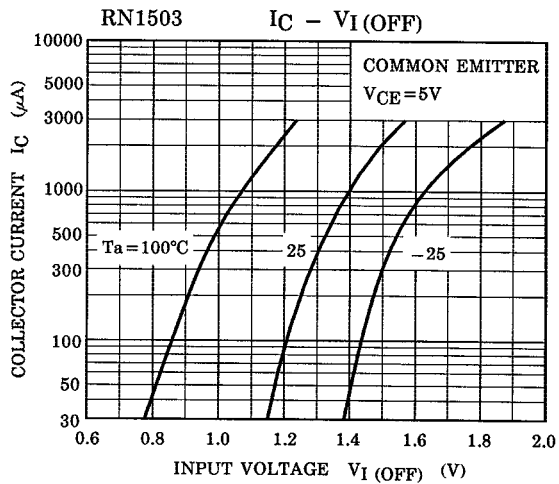
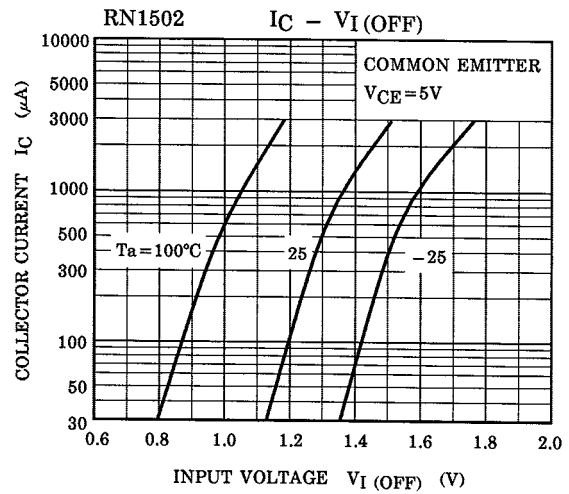
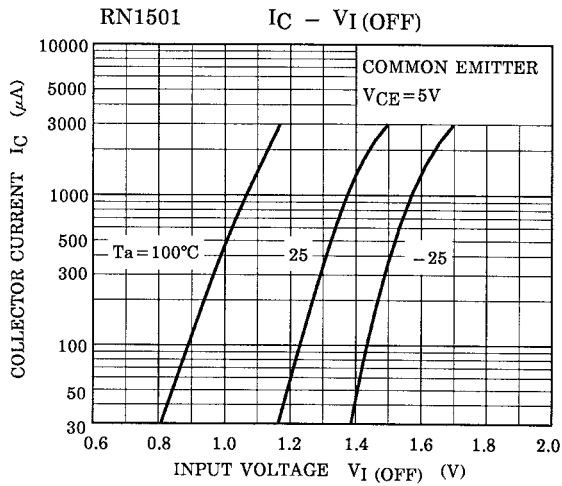
## Electrical Characteristics (Ta = 25°C) (Q1, Q2 Common)

Characteristic		Symbol	Test Circuit	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current	RN1501~1506	$I_{CBO}$	—	$V_{CB} = 50V, I_E = 0$	—	—	100	nA
		$I_{CEO}$	—	$V_{CE} = 50V, I_B = 0$	—	—	500	
Emitter cut-off current	RN1501	$I_{EBO}$	—	$V_{EB} = 10V, I_C = 0$	0.82	—	1.52	mA
	RN1502				0.38	—	0.71	
	RN1503				0.17	—	0.33	
	RN1504			0.082	—	0.15		
	RN1505			$V_{EB} = 5V, I_C = 0$	0.078	—	0.145	
	RN1506				0.074	—	0.138	
DC current gain	RN1501	$h_{FE}$	—	$V_{CE} = 5V, I_C = 10mA$	30	—	—	
	RN1502				50	—	—	
	RN1503				70	—	—	
	RN1504				80	—	—	
	RN1505				80	—	—	
	RN1506				80	—	—	
Collector-emitter saturation voltage	RN1501~1506	$V_{CE(sat)}$	—	$I_C = 5mA, I_B = 0.25mA$	—	0.1	0.3	V
Input voltage (ON)	RN1501	$V_{I(ON)}$	—	$V_{CE} = 0.2V, I_C = 5mA$	1.1	—	2.0	V
	RN1502				1.2	—	2.4	
	RN1503				1.3	—	3.0	
	RN1504				1.5	—	5.0	
	RN1505				0.6	—	1.1	
	RN1506				0.7	—	1.3	
Input voltage (OFF)	RN1501~1504	$V_{I(OFF)}$	—	$V_{CE} = 5V, I_C = 0.1mA$	1.0	—	1.5	V
	RN1505, 1506				0.5	—	0.8	
Transition frequency	RN1501~1506	$f_T$	—	$V_{CE} = 10V, I_C = 5mA$	—	250	—	MHz
Collector Output capacitance	RN1501~1506	$C_{ob}$	—	$V_{CB} = 10V, I_E = 0, f = 1MHz$	—	3	6	pF
Input resistor	RN1501	R1	—		3.29	4.7	6.11	kΩ
	RN1502				7	10	13	
	RN1503				15.4	22	28.6	
	RN1504				32.9	47	61.1	
	RN1505				1.54	2.2	2.86	
	RN1506				3.29	4.7	6.11	
Resistor ratio	RN1501~1504	R1/R2	—		0.9	1.0	1.1	
	RN1505				0.0421	0.0468	0.0515	
	RN1506				0.09	0.1	0.11	

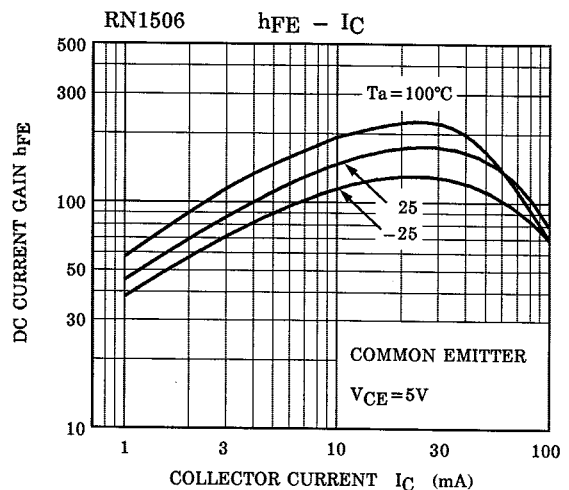
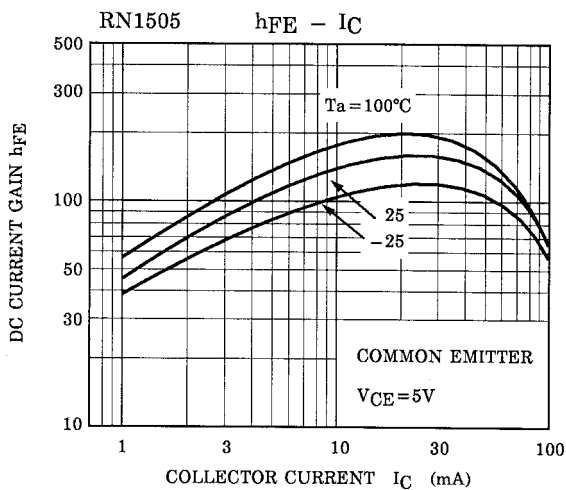
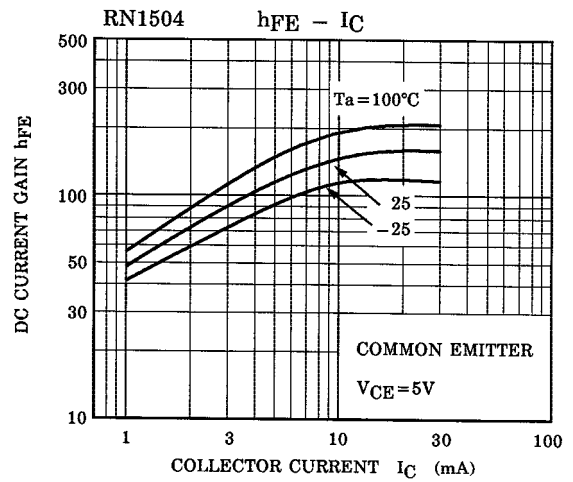
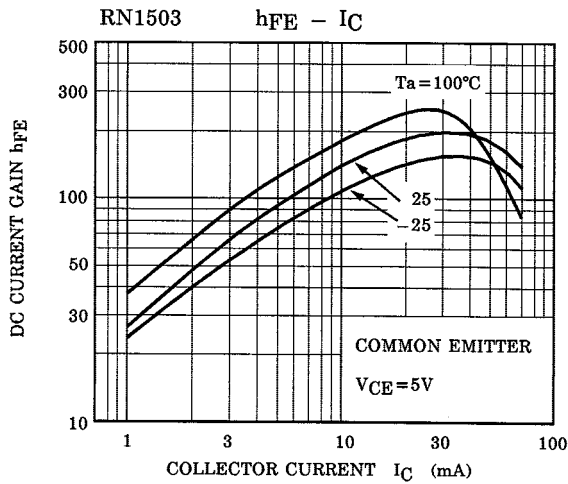
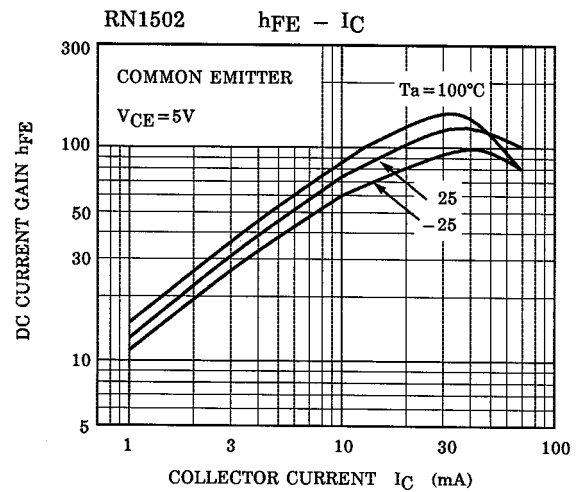
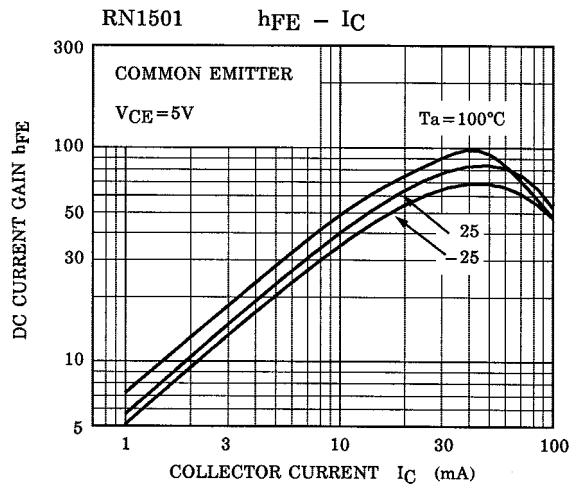
(Q1, Q2 COMMON)

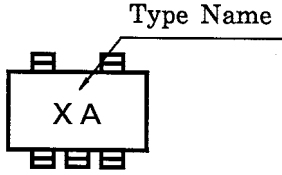
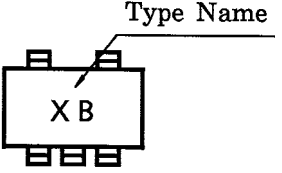
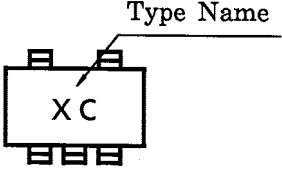
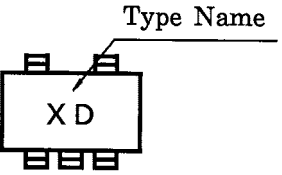
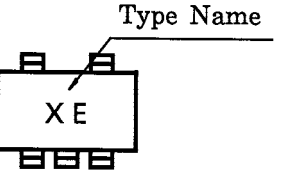
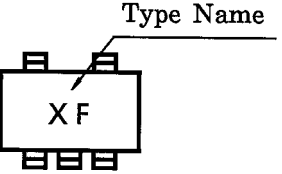


(Q1, Q2 COMMON)



(Q1, Q2 COMMON)



Type Name	Marking
RN1501	
RN1502	
RN1503	
RN1504	
RN1505	
RN1506	

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000707EAA

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