

TOSHIBA Transistor Silicon PNP Epitaxial Type (PCT process) (Bias Resistor built-in Transistor)

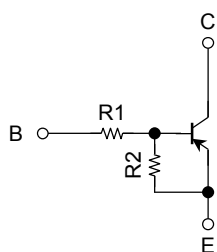
## RN2701JE, RN2702JE, RN2703JE RN2704JE, RN2705JE, RN2706JE

Switching, Inverter Circuit, Interface Circuit and  
Driver Circuit Applications.

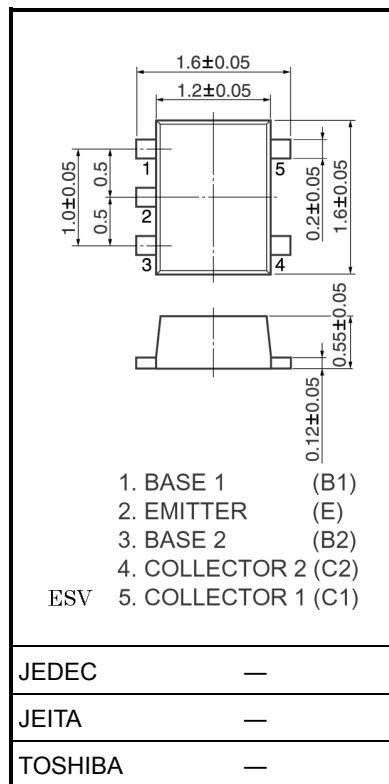
Unit: mm

- Two devices are incorporated into an Extreme-Super-Mini (5 pin) package.
- Incorporating a bias resistor into a transistor reduces parts count.  
Reducing the parts count enable the manufacture of ever more compact equipment and save assembly cost.
- Complementary to RN1701JE~RN1706JE

### Equivalent Circuit and Bias Resistor Values



Type No.	R1 (kΩ)	R2 (kΩ)
RN2701JE	4.7	4.7
RN2702JE	10	10
RN2703JE	22	22
RN2704JE	47	47
RN2705JE	2.2	47
RN2706JE	4.7	47



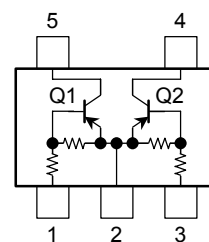
Weight: g (typ.)

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

Characteristics		Symbol	Rating	Unit
Collector-base voltage	RN2701JE~RN2706JE	V <sub>CBO</sub>	-50	V
Collector-emitter voltage		V <sub>CEO</sub>	-50	V
Emitter-base voltage	RN2701JE~RN2704JE	V <sub>EBO</sub>	-10	V
	RN2705JE, RN2706JE		-5	
Collector current	RN2701JE~RN2706JE	I <sub>C</sub>	-100	mA
Collector power dissipation		P <sub>C</sub> (Note)	100	mW
Junction temperature		T <sub>j</sub>	150	°C
Storage temperature range		T <sub>stg</sub>	-55~150	°C

Note: Total rating

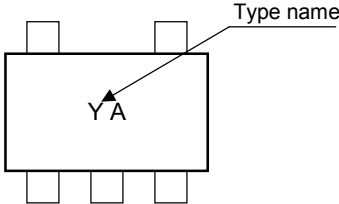
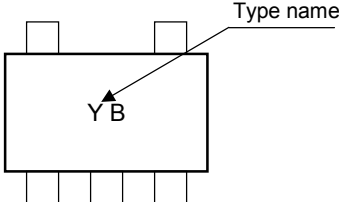
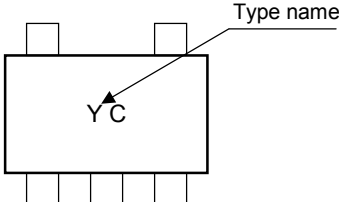
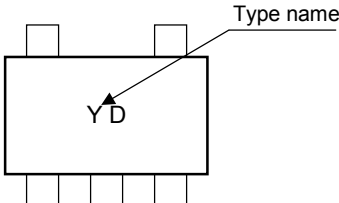
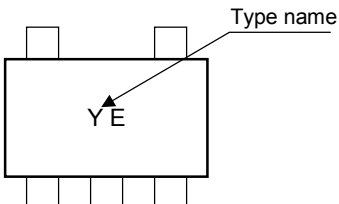
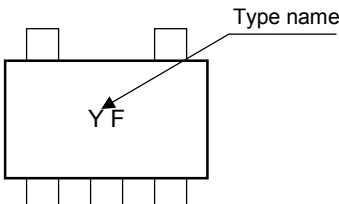
### Equivalent Circuit (top view)



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

Characteristics		Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current	RN2701JE~2706JE	$I_{CBO}$	$V_{CB} = -50\text{ V}, I_E = 0$	—	—	-100	nA
		$I_{CEO}$	$V_{CE} = -50\text{ V}, I_B = 0$	—	—	-500	
Emitter cut-off current	RN2701JE	$I_{EBO}$	$V_{EB} = -10\text{ V}, I_C = 0$	-0.82	—	-1.52	mA
	RN2702JE			-0.38	—	-0.71	
	RN2703JE			-0.17	—	-0.33	
	RN2704JE			-0.082	—	-0.15	
	RN2705JE	$I_{EBO}$	$V_{EB} = -5\text{ V}, I_C = 0$	-0.078	—	-0.145	
	RN2706JE			-0.074	—	-0.138	
DC current gain	RN2701JE	$h_{FE}$	$V_{CE} = -5\text{ V}, I_C = -10\text{ mA}$	30	—	—	
	RN2702JE			50	—	—	
	RN2703JE			70	—	—	
	RN2704JE			80	—	—	
	RN2705JE			80	—	—	
	RN2706JE			80	—	—	
Collector-emitter saturation voltage	RN2701JE~2706JE	$V_{CE(sat)}$	$I_C = -5\text{ mA}, I_B = -0.25\text{ mA}$	—	-0.1	-0.3	V
Input voltage (ON)	RN2701JE	$V_{I(ON)}$	$V_{CE} = -0.2\text{ V}, I_C = -5\text{ mA}$	-1.1	—	-2.0	V
	RN2702JE			-1.2	—	-2.4	
	RN2703JE			-1.3	—	-3.0	
	RN2704JE			-1.5	—	-5.0	
	RN2705JE			-0.6	—	-1.1	
	RN2706JE			-0.7	—	-1.3	
Input voltage (OFF)	RN2701JE~2704JE	$V_{I(OFF)}$	$V_{CE} = -5\text{ V}, I_C = -0.1\text{ mA}$	-1.0	—	-1.5	V
	RN2705JE, 2706JE			-0.5	—	-0.8	
Transition frequency	RN2701JE~2706JE	$f_T$	$V_{CE} = -10\text{ V}, I_C = -5\text{ mA}$	—	200	—	MHz
Collector output capacitance	RN2701JE~2706JE	$C_{ob}$	$V_{CB} = -10\text{ V}, I_E = 0, f = 1\text{ MHz}$	—	3	6	pF
Input resistor	RN2701JE	R1	—	3.29	4.7	6.11	k $\Omega$
	RN2702JE			7	10	13	
	RN2703JE			15.4	22	28.6	
	RN2704JE			32.9	47	61.1	
	RN2705JE			1.54	2.2	2.86	
	RN2706JE			3.29	4.7	6.11	
Resistor ratio	RN2701JE~2704JE	R1/R2	—	0.9	1.0	1.1	
	RN2705JE			0.0421	0.0468	0.0515	
	RN2706JE			0.09	0.1	0.11	

Type Name	Marking
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RN2701JE	
RN2702JE	
RN2703JE	
RN2704JE	
RN2705JE	
RN2706JE	

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000707EAA

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