

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

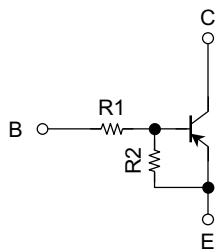
# RN2107FT, RN2108FT, RN2109FT

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

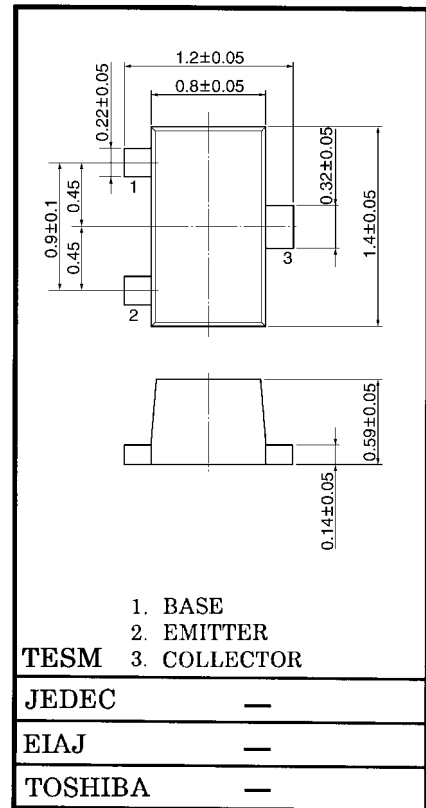
Unit in mm

- High-density mount is possible because of devices housed in very thin TESH packages.
- 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.
- Wide range of resistor values are available to use in various circuit designs.
- Complementary to RN1107FT, RN1108FT, RN1109FT

## Equivalent Circuit and Bias Resistor Values



Type No.	R1 (kΩ)	R2 (kΩ)
RN2107FT	10	47
RN2108FT	22	47
RN2109FT	47	22



## Maximum Ratings (Ta = 25°C)

Characteristics	Symbol	Rating	Unit
Collector-base voltage	RN2107FT~2109FT	V <sub>CBO</sub>	–50
Collector-emitter voltage		V <sub>CEO</sub>	–50
Emitter-base voltage	RN2107FT	V <sub>EBO</sub>	–6
	RN2108FT		–7
	RN2109FT		–15
Collector current	RN2107FT~2109FT	I <sub>C</sub>	–100
Collector power dissipation		P <sub>C</sub>	100
Junction temperature		T <sub>j</sub>	150
Storage temperature range		T <sub>stg</sub>	–55~150

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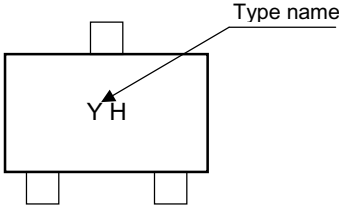
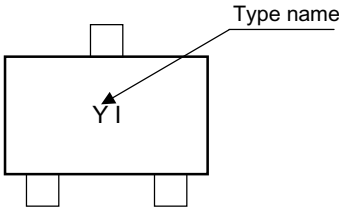
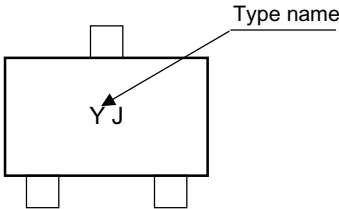
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## Electrical Characteristics (Ta = 25°C)

Characteristics		Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current	RN2107FT~2109FT	$I_{CBO}$	$V_{CB} = -50\text{ V}, I_E = 0$	—	—	-100	nA
		$I_{CEO}$	$V_{CE} = -50\text{ V}, I_B = 0$	—	—	-500	
Emitter cut-off current	RN2107FT	$I_{EBO}$	$V_{EB} = -6\text{ V}, I_C = 0$	-0.081	—	-0.15	mA
	RN2108FT		$V_{EB} = -7\text{ V}, I_C = 0$	-0.078	—	-0.145	
	RN2109FT		$V_{EB} = -15\text{ V}, I_C = 0$	-0.167	—	-0.311	
DC current gain	RN2107FT	$h_{FE}$	$V_{CE} = -5\text{ V}, I_C = -10\text{ mA}$	80	—	—	
	RN2108FT			80	—	—	
	RN2109FT			70	—	—	
Collector-emitter saturation voltage	RN2107FT~2109FT	$V_{CE(sat)}$	$I_C = -5\text{ mA}, I_B = -0.25\text{ mA}$	—	-0.1	-0.3	V
Input voltage (ON)	RN2107FT	$V_{I(ON)}$	$V_{CE} = -0.2\text{ V}, I_C = -5\text{ mA}$	-0.7	—	-1.8	V
	RN2108FT			-1.0	—	-2.6	
	RN2109FT			-2.2	—	-5.8	
Input voltage (OFF)	RN2107FT	$V_{I(OFF)}$	$V_{CE} = -5\text{ V}, I_C = -0.1\text{ mA}$	-0.5	—	-1.0	V
	RN2108FT			-0.6	—	-1.16	
	RN2109FT			-1.5	—	-2.6	
Transition frequency	RN2107FT~2109FT	$f_T$	$V_{CE} = -10\text{ V}, I_C = -5\text{ mA}$	—	200	—	V
Collector output capacitance	RN2107FT~2109FT	$C_{ob}$	$V_{CB} = -10\text{ V}, I_E = 0, f = 1\text{ MHz}$	—	3	6	pF
Input resistor	RN2107FT	R1	—	7	10	13	kΩ
	RN2108FT			15.4	22	28.6	
	RN2109FT			32.9	47	61.1	
Resistor ratio	RN2107FT	R1/R2	—	0.919	0.213	0.232	
	RN2108FT			0.421	0.468	0.515	
	RN2109FT			1.92	2.14	2.35	

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Type Name	Marking
RN1107FT	 <p>The diagram shows a rectangular component with a top pin and two bottom pins. The marking 'YH' is on the front face. An arrow points from the text 'Type name' to the 'Y' in 'YH'.</p>
RN1108FT	 <p>The diagram shows a rectangular component with a top pin and two bottom pins. The marking 'YI' is on the front face. An arrow points from the text 'Type name' to the 'Y' in 'YI'.</p>
RN1109FT	 <p>The diagram shows a rectangular component with a top pin and two bottom pins. The marking 'YJ' is on the front face. An arrow points from the text 'Type name' to the 'Y' in 'YJ'.</p>