

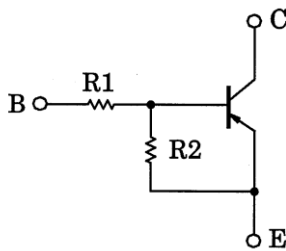
TOSHIBA Transistor Silicon PNP Epitaxial Type (PCT Process)(Bias Resistor built-in Transistor)

RN2107MFV, RN2108MFV, RN2109MFV

Switching, Inverter Circuit, Interface Circuit and Driver Circuit Applications

- Ultra-small package, suited to very high density mounting
- Incorporating a bias resistor into the transistor reduces the number of parts, so enabling the manufacture of ever more compact equipment and lowering assembly cost.
- A wide range of resistor values is available for use in various circuits.
- Complementary to the RN1107MFV to RN1109MFV

Equivalent Circuit and Bias Resistor Values



Type No.	R1 (kΩ)	R2 (kΩ)
RN2107MFV	10	47
RN2108MFV	22	47
RN2109MFV	47	22

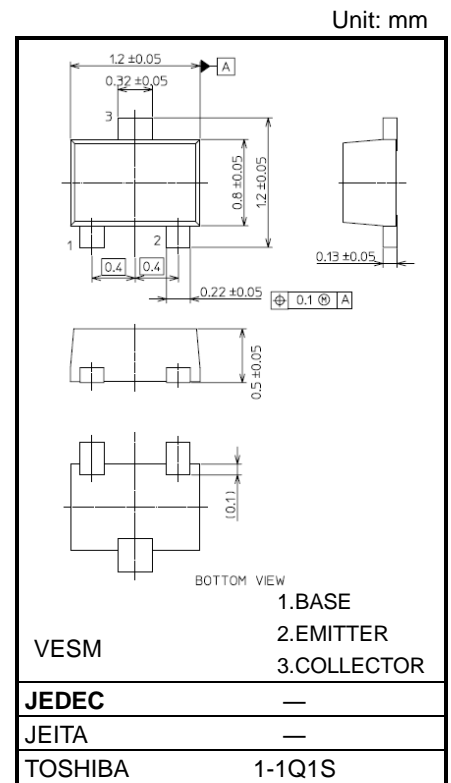
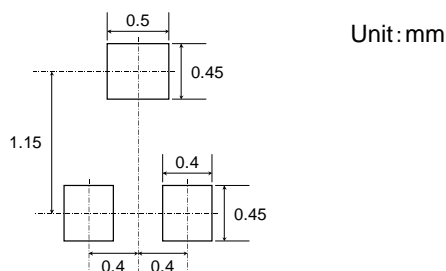
Absolute Maximum Ratings (Ta = 25°C)

Characteristic	Symbol	Rating	Unit
Collector-base voltage	VCBO	-50	V
Collector-emitter voltage	VCEO	-50	V
Emitter-base voltage	VEBO	-6	V
		-7	
		-15	
Collector current	IC	-100	mA
Collector power dissipation	PC (Note 1)	150	mW
Junction temperature	Tj	150	°C
Storage temperature range	Tstg	-55 to 150	°C

Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) are within the absolute maximum ratings. Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/"Derating Concept and Methods") and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

Note 1: Mounted on an FR4 board (25.4 mm × 25.4 mm × 1.6 mm)

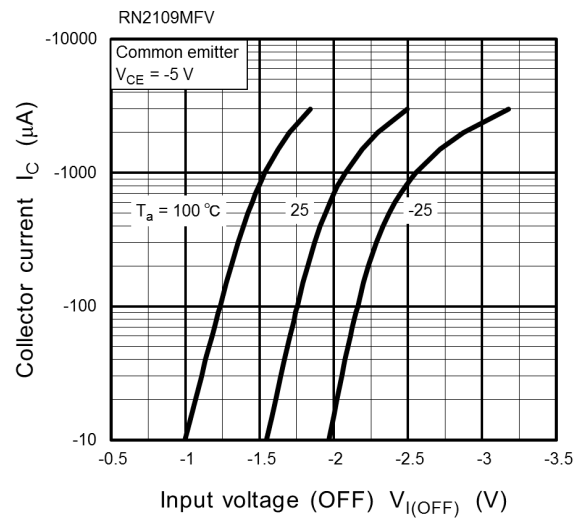
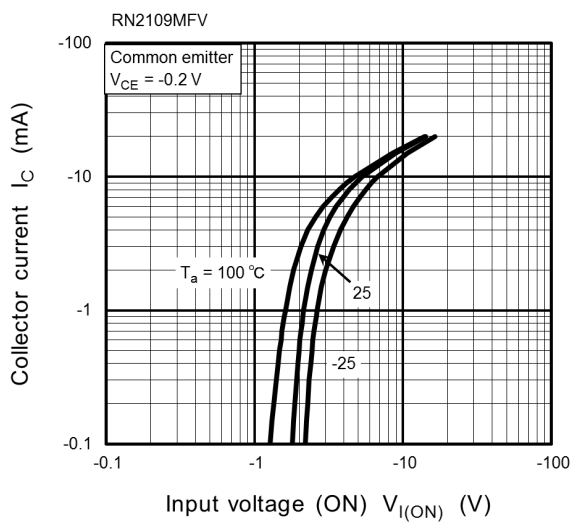
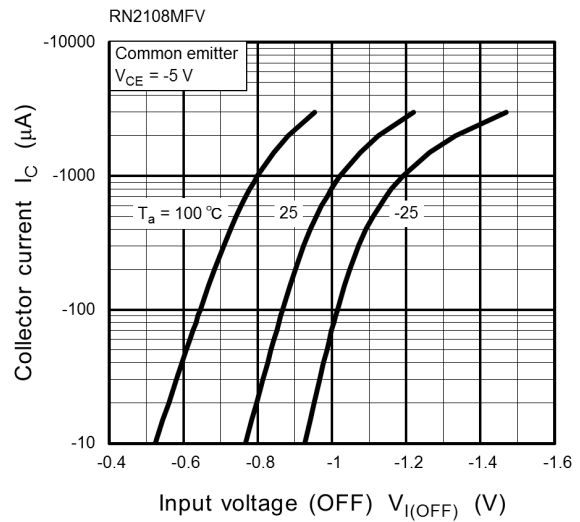
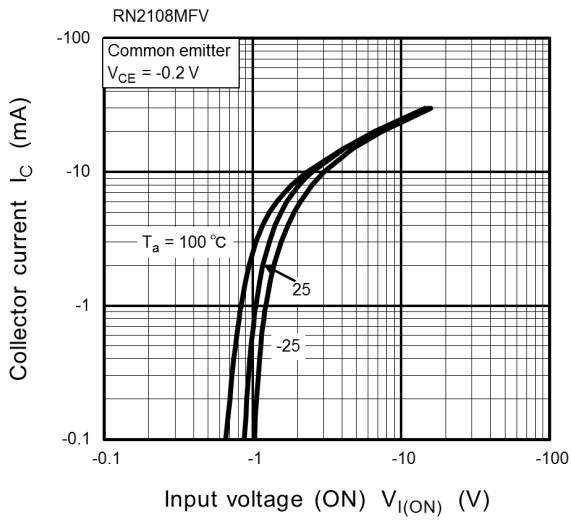
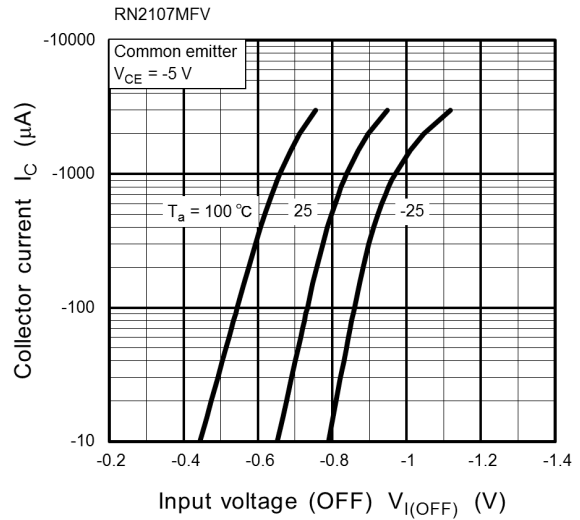
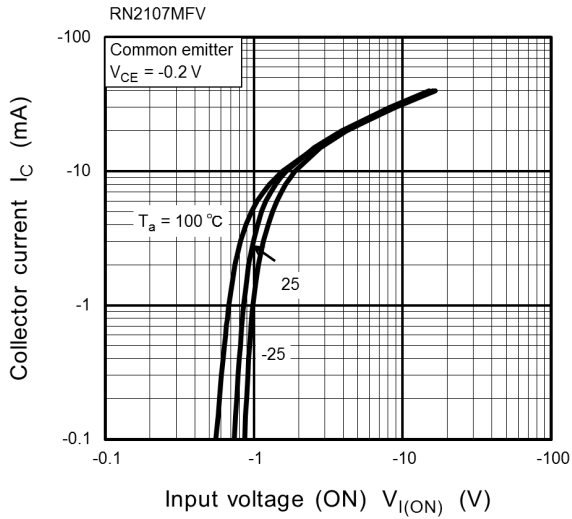
Land Pattern Dimensions (for reference only)

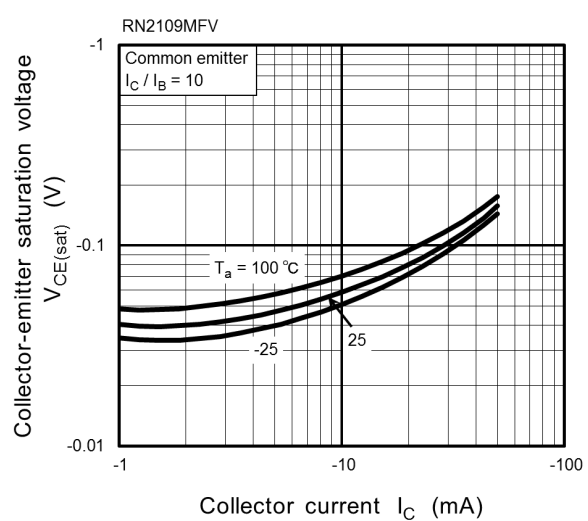
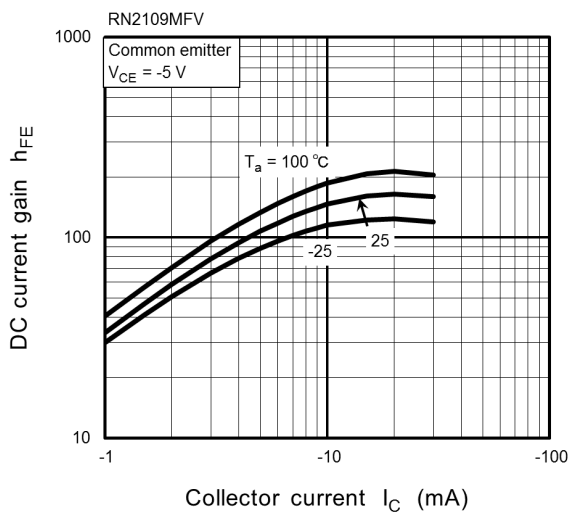
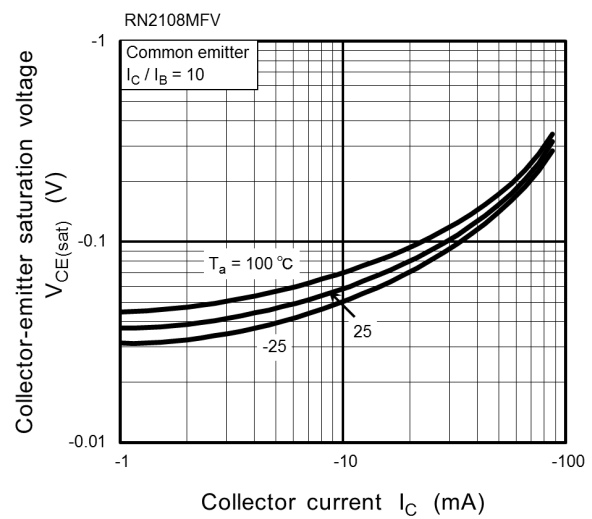
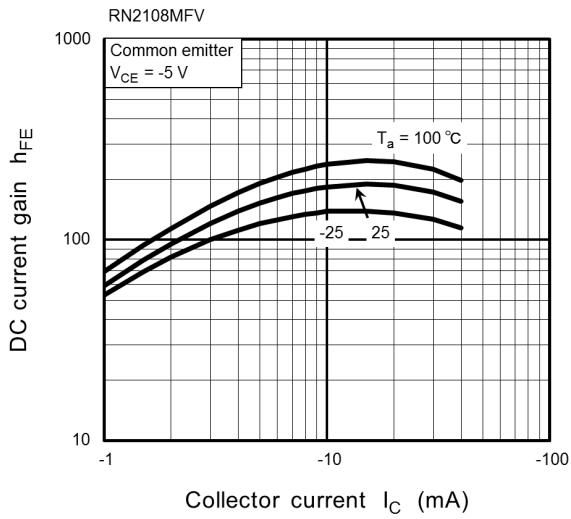
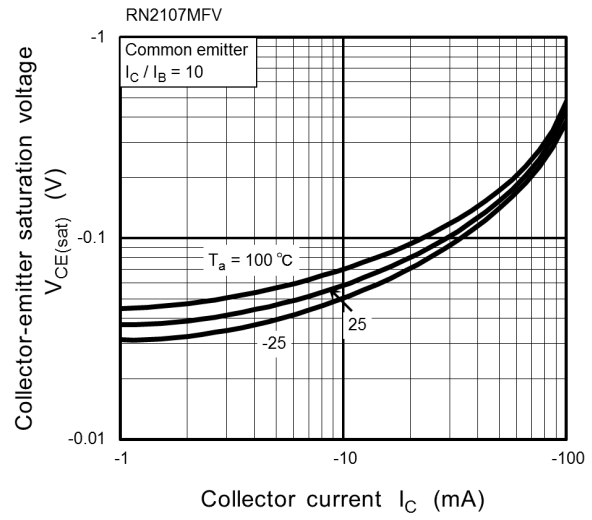
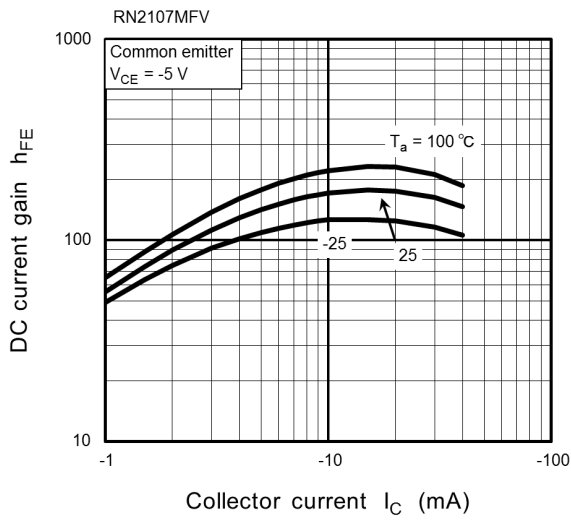


Weight: 1.5 mg (typ.)

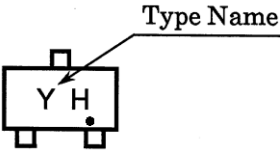
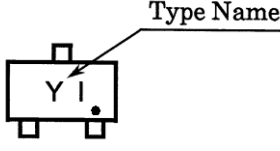
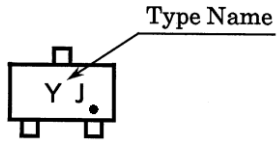
Electrical Characteristics (Ta = 25°C)

Characteristic		Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cutoff current	RN2107MFV to RN2109MFV	ICBO	V _{CB} = -50 V, I _E = 0 A	—	—	-100	nA
		ICEO	V _{CE} = -50 V, I _B = 0 A	—	—	-500	nA
Emitter cutoff current	RN2107MFV	IEBO	V _{EB} = -6 V, I _C = 0 A	-0.081	—	-0.15	mA
	RN2108MFV		V _{EB} = -7 V, I _C = 0 A	-0.078	—	-0.145	
	RN2109MFV		V _{EB} = -15 V, I _C = 0 A	-0.167	—	-0.311	
DC current gain	RN2107MFV	h _{FE}	V _{CE} = -5 V, I _C = -10 mA	80	—	—	—
	RN2108MFV			80	—	—	
	RN2109MFV			70	—	—	
Collector-emitter saturation voltage	RN2107MFV to RN2109MFV	V _{CE (sat)}	I _C = -5 mA, I _B = -0.5 mA	—	-0.1	-0.3	V
Input voltage (ON)	RN2107MFV	V _{I (ON)}	V _{CE} = -0.2 V, I _C = -5 mA	-0.7	—	-1.8	V
	RN2108MFV			-1.0	—	-2.6	
	RN2109MFV			-2.2	—	-5.8	
Input voltage (OFF)	RN2107MFV	V _{I (OFF)}	V _{CE} = -5 V, I _C = -0.1 mA	-0.5	—	-1.0	V
	RN2108MFV			-0.6	—	-1.16	
	RN2109MFV			-1.5	—	-2.6	
Collector output capacitance	RN2107MFV to RN2109MFV	C _{ob}	V _{CB} = -10 V, I _E = 0 A, f = 1 MHz	—	0.9	—	pF
Input resistor	RN2107MFV	R1	—	7	10	13	kΩ
	RN2108MFV			15.4	22	28.6	
	RN2109MFV			32.9	47	61.1	
Resistor ratio	RN2107MFV	R1/R2	—	0.17	0.213	0.255	—
	RN2108MFV			0.374	0.468	0.562	
	RN2109MFV			1.71	2.14	2.56	





Marking

Type Name	Marking
RN2107MFV	 <p>The diagram shows a rectangular component with a small square protrusion on top and two small square protrusions at the bottom. Inside the rectangle, the characters 'Y H' are printed. A line with an arrow points from the text 'Type Name' to the 'Y' character.</p>
RN2108MFV	 <p>The diagram shows a rectangular component with a small square protrusion on top and two small square protrusions at the bottom. Inside the rectangle, the characters 'Y I' are printed. A line with an arrow points from the text 'Type Name' to the 'Y' character.</p>
RN2109MFV	 <p>The diagram shows a rectangular component with a small square protrusion on top and two small square protrusions at the bottom. Inside the rectangle, the characters 'Y J' are printed. A line with an arrow points from the text 'Type Name' to the 'Y' character.</p>

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