

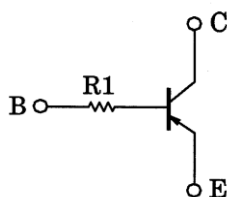
TOSHIBA Transistor Silicon PNP Epitaxial Type (PCT Process) (Bias Resistor built-in Transistor)

## RN2110MFV, RN2111MFV

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 RN1110MFV to RN1111MFV

### Equivalent Circuit



### Absolute Maximum Ratings (Ta = 25°C)

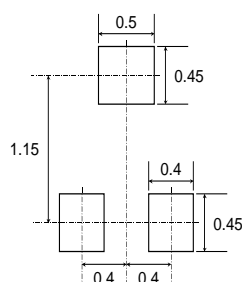
Characteristic	Symbol	Rating	Unit
Collector-base voltage	V <sub>CBO</sub>	-50	V
Collector-emitter voltage	V <sub>CEO</sub>	-50	V
Emitter-base voltage	V <sub>EB0</sub>	-5	V
Collector current	I <sub>C</sub>	-100	mA
Collector power dissipation	P <sub>C</sub> (Note 1)	150	mW
Junction temperature	T <sub>j</sub>	150	°C
Storage temperature range	T <sub>stg</sub>	-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.).

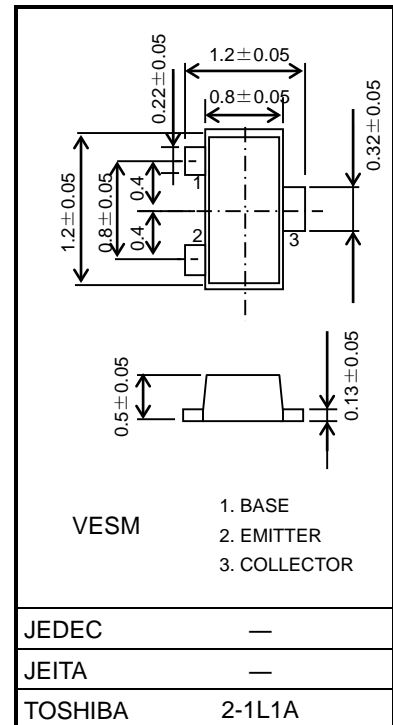
Note 1: Mounted on an FR4 board (25.4 mm × 25.4 mm × 1.6 mm)

### Land Pattern Example

Unit: mm



Unit : mm

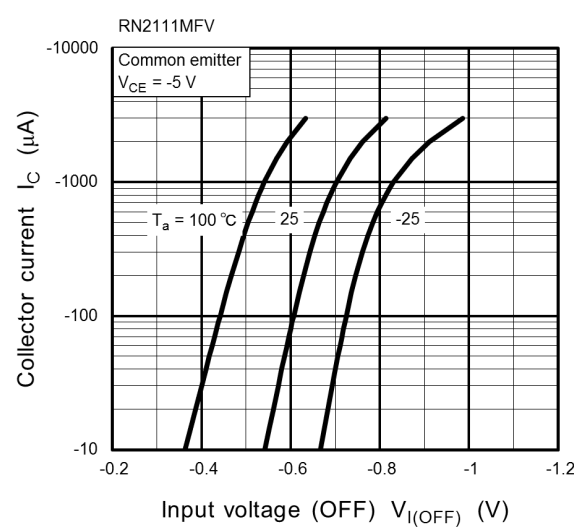
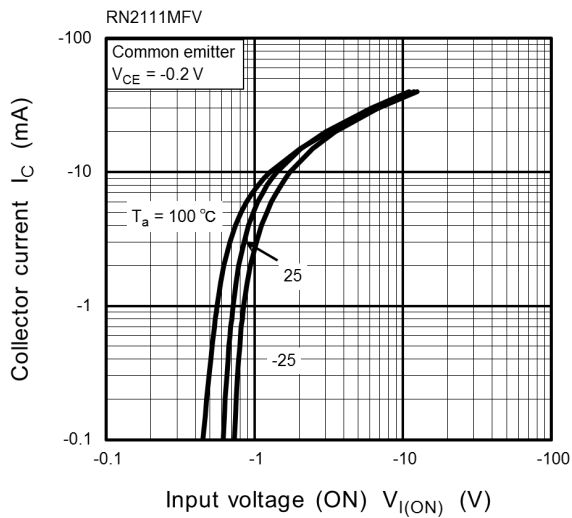
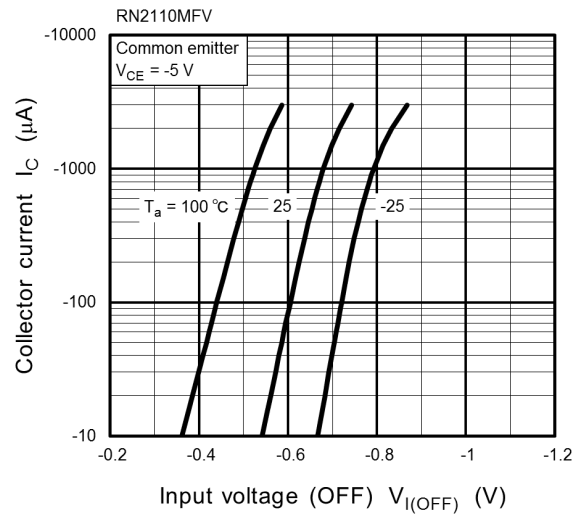
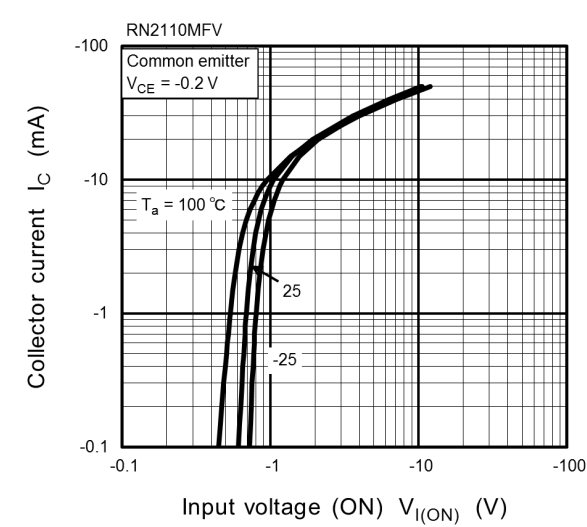


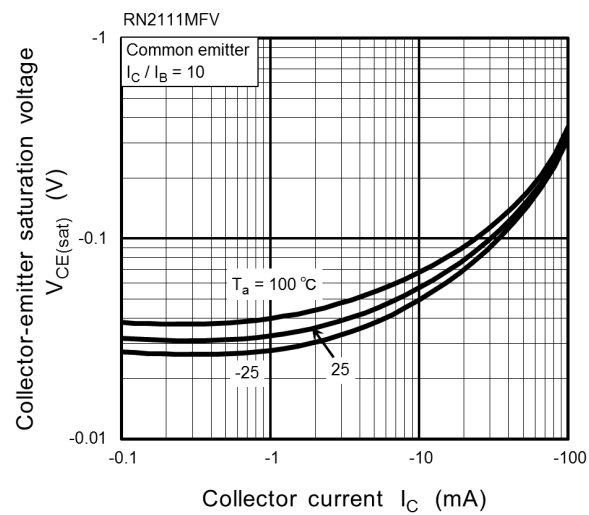
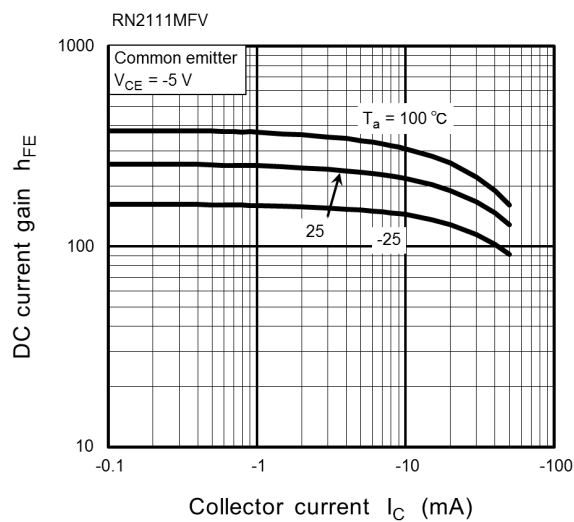
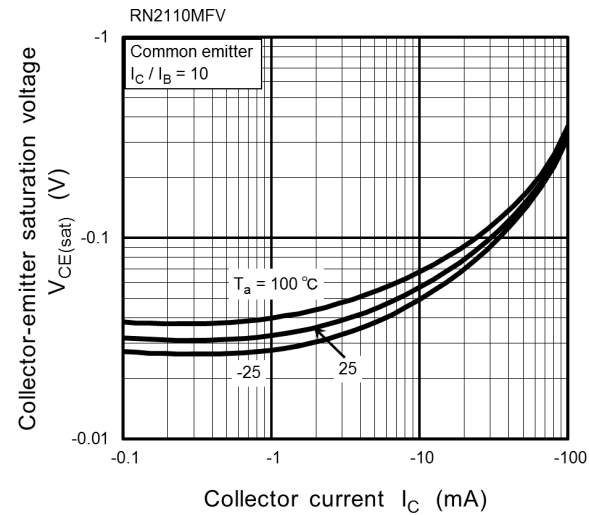
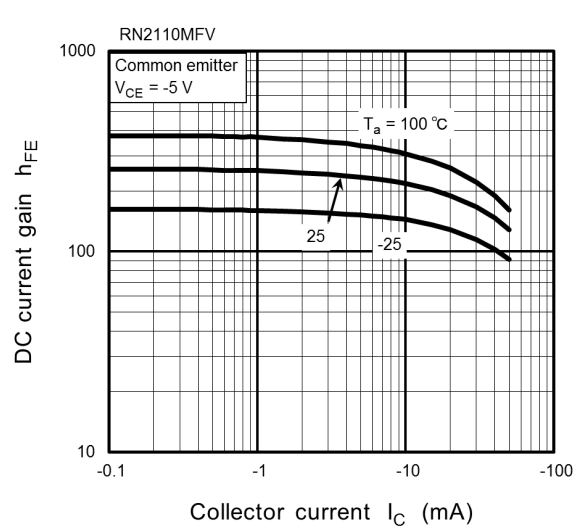
Weight: 1.5 mg (typ.)

Start of commercial production  
2005-02

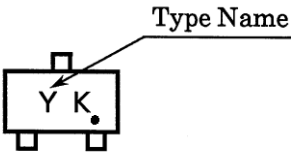
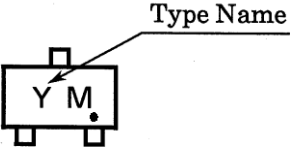
**Electrical Characteristics (Ta = 25°C)**

Characteristic		Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cutoff current		ICBO	V <sub>CB</sub> = -50 V, I <sub>E</sub> = 0	—	—	-100	nA
Emitter cutoff current		IEBO	VEB = -5 V, I <sub>C</sub> = 0	—	—	-100	nA
DC current gain		h <sub>FE</sub>	V <sub>CE</sub> = -5 V, I <sub>C</sub> = -1 mA	120	—	400	—
Collector-emitter saturation voltage		V <sub>CE (sat)</sub>	I <sub>C</sub> = -5 mA, I <sub>B</sub> = -0.5 mA	—	-0.1	-0.3	V
Collector output capacitance		C <sub>ob</sub>	V <sub>CB</sub> = -10 V, I <sub>E</sub> = 0, f = 1 MHz	—	0.9	—	pF
Input resistor	RN2110MFV	R1	—	3.29	4.7	6.11	kΩ
	RN2111MFV			7	10	13	





**Marking**

Type Name	Marking
RN2110MFV	 <p>The diagram shows a rectangular component with a small square tab at the top center and two small square tabs at the bottom. Inside the rectangle, the characters 'Y K' are printed, followed by a small dot. An arrow points from the text 'Type Name' to the 'Y' character.</p>
RN2111MFV	 <p>The diagram shows a rectangular component with a small square tab at the top center and two small square tabs at the bottom. Inside the rectangle, the characters 'Y M' are printed, followed by a small dot. An arrow points from the text 'Type Name' to the 'Y' character.</p>

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