

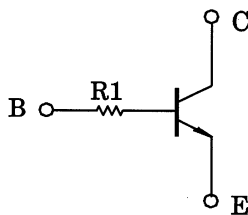
TOSHIBA Transistor Silicon NPN Epitaxial Type (PCT Process)

## RN1110MFV, RN1111MFV

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 RN2110MFV~RN2111MFV

### Equivalent Circuit



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

Characteristic	Symbol	Rating	Unit
Collector-base voltage	V <sub>CB0</sub>	50	V
Collector-emitter voltage	V <sub>CEO</sub>	50	V
Emitter-base voltage	V <sub>EBO</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>	-55~150	°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.

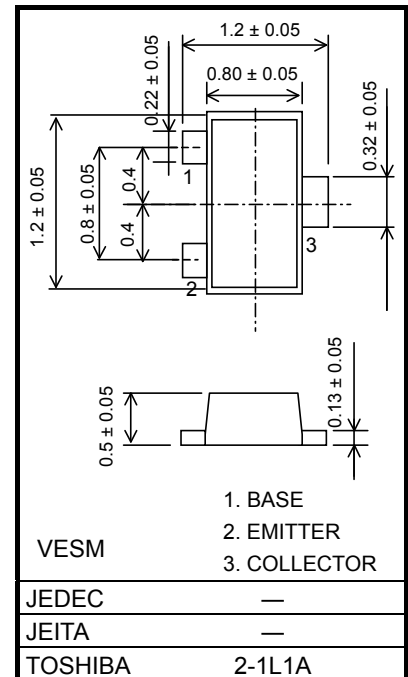
Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/"Derating Concept and Methods") and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

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

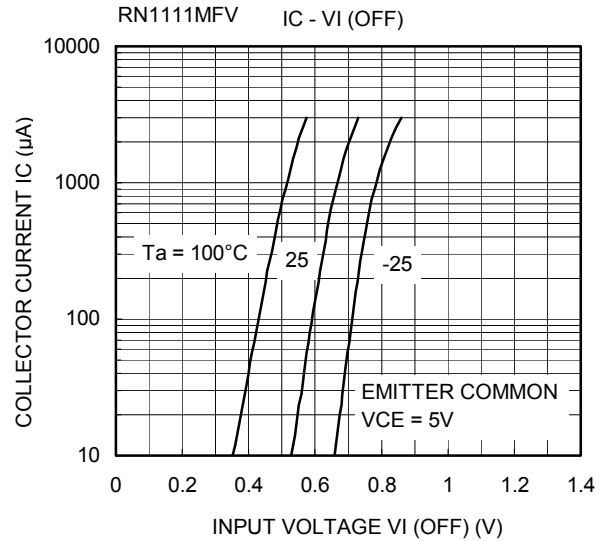
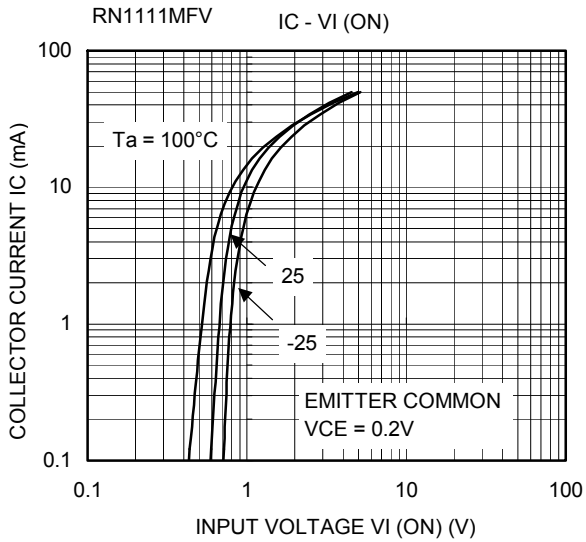
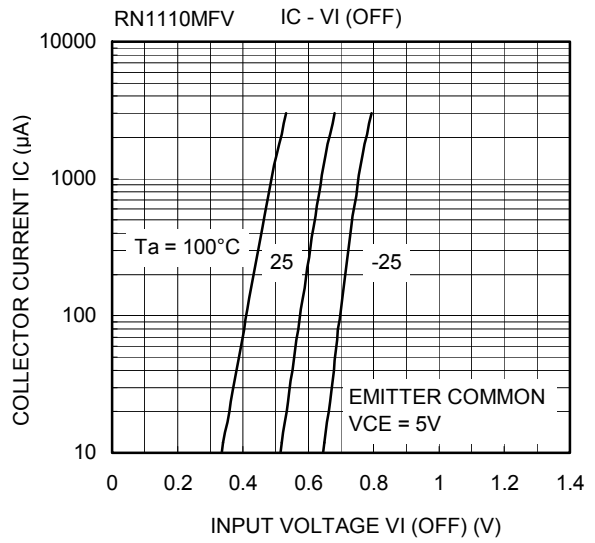
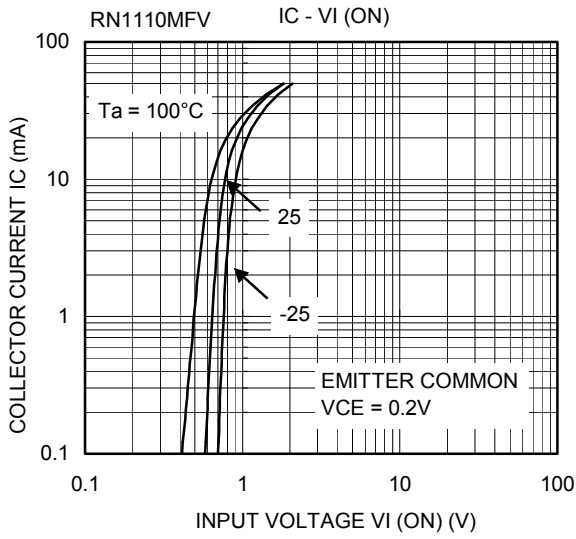
### Electrical Characteristics (Ta = 25°C)

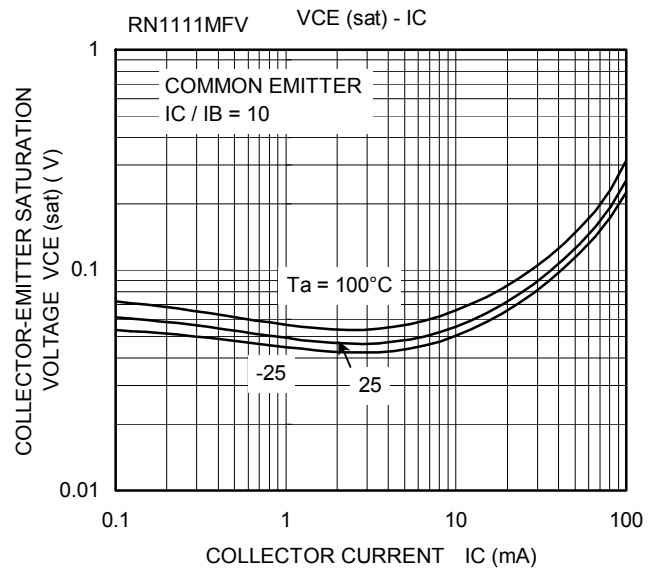
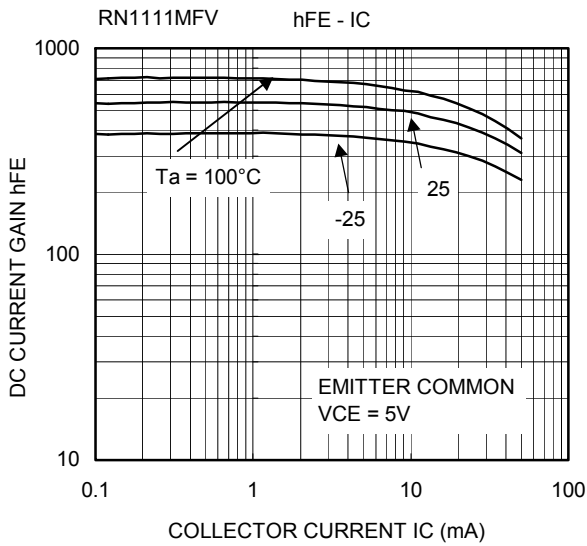
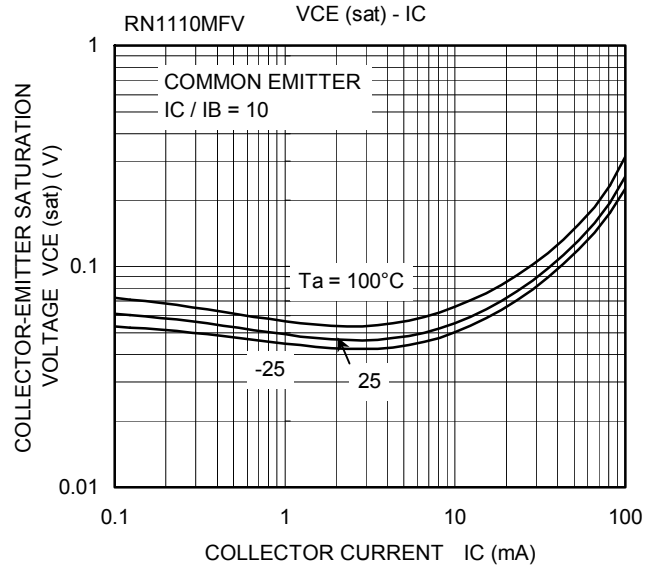
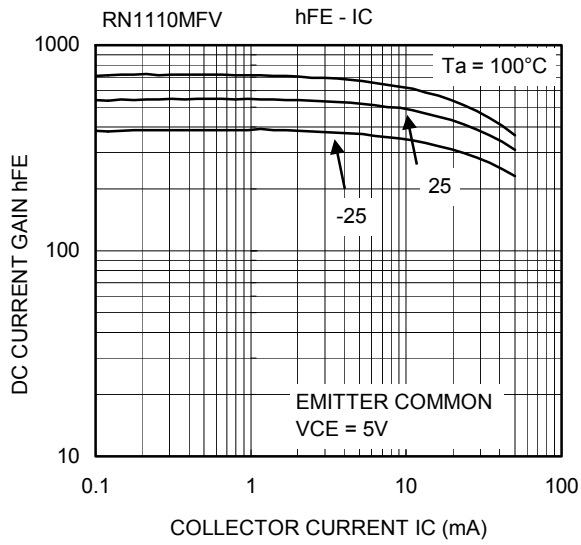
Characteristic	Symbol	Test Circuit	Test Condition	Min	Typ.	Max	Unit
Collector cutoff current	I <sub>CBO</sub>	—	V <sub>CB</sub> = 50 V, I <sub>E</sub> = 0	—	—	100	nA
Emitter cutoff current	I <sub>EBO</sub>	—	V <sub>EB</sub> = 5 V, I <sub>C</sub> = 0	—	—	100	nA
DC current gain	h <sub>FE</sub>	—	V <sub>CE</sub> = 5 V, I <sub>C</sub> = 1 mA	120	—	700	—
Collector-emitter saturation voltage	V <sub>CE (sat)</sub>	—	I <sub>C</sub> = 5 mA, I <sub>B</sub> = 0.25 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	—	0.7	—	pF
Input resistor	RN1110MFV	R1	—	3.29	4.7	6.11	kΩ
	RN1111MFV			7	10	13	

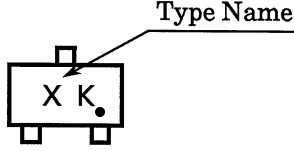
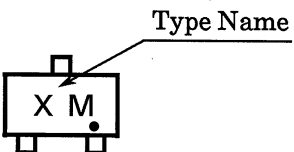
Unit: mm



Weight: 0.0015 g (typ.)





Type Name	Marking
RN1110MFV	 <p>The diagram shows a rectangular component with a small square protrusion at the top center and two small square protrusions at the bottom corners. Inside the rectangle, the characters 'X K' are printed, with a small dot to the right of the 'K'. A line with an arrow points from the text 'Type Name' to the top protrusion.</p>
RN1111MFV	 <p>The diagram shows a rectangular component with a small square protrusion at the top center and two small square protrusions at the bottom corners. Inside the rectangle, the characters 'X M' are printed, with a small dot to the right of the 'M'. A line with an arrow points from the text 'Type Name' to the top protrusion.</p>

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