

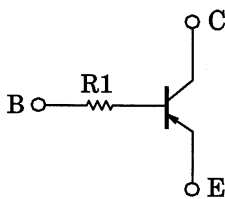
TOSHIBA Transistor Silicon PNP Epitaxial Type (PCT Process) (Bias Resistor built-in Transistor)

## 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)

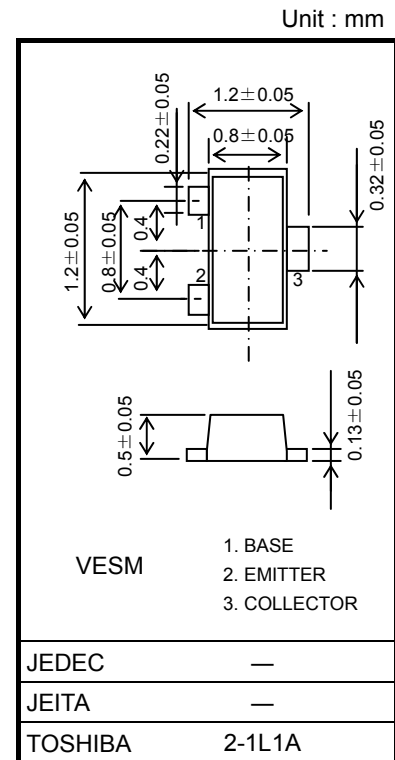
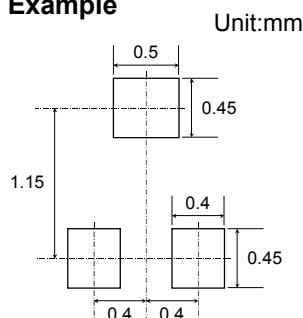
Characteristic	Symbol	Rating	Unit
Collector-base voltage	$V_{CBO}$	-50	V
Collector-emitter voltage	$V_{CEO}$	-50	V
Emitter-base voltage	$V_{EBO}$	-5	V
Collector current	$I_C$	-100	mA
Collector power dissipation	$P_C$ (Note 1)	150	mW
Junction temperature	$T_j$	150	°C
Storage temperature range	$T_{stg}$	-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)

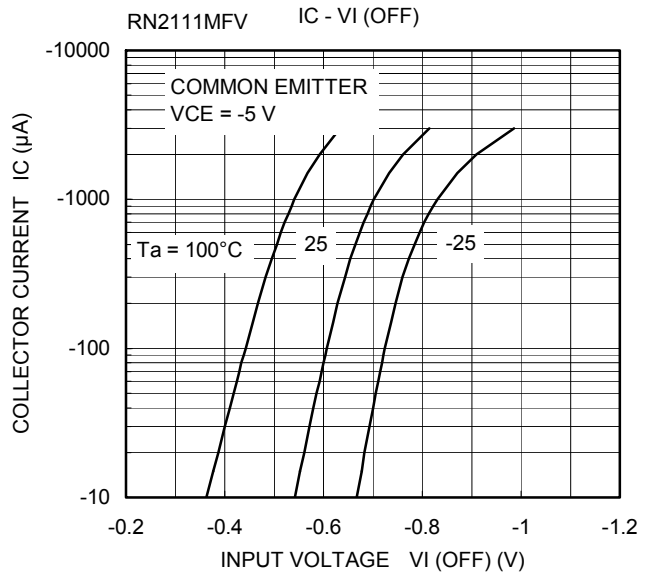
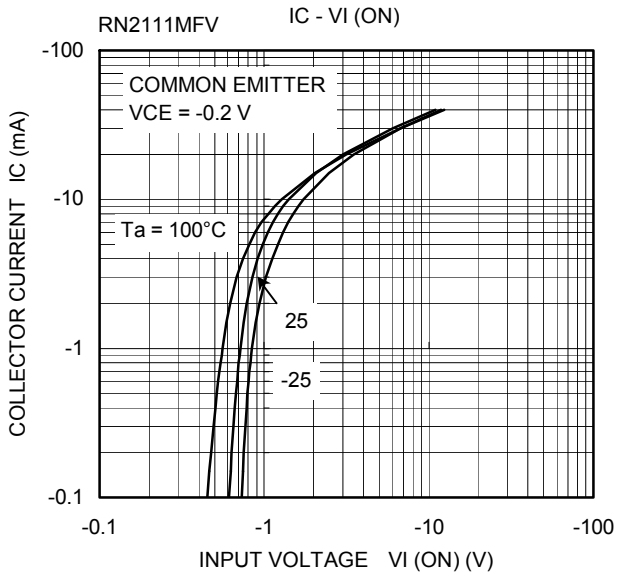
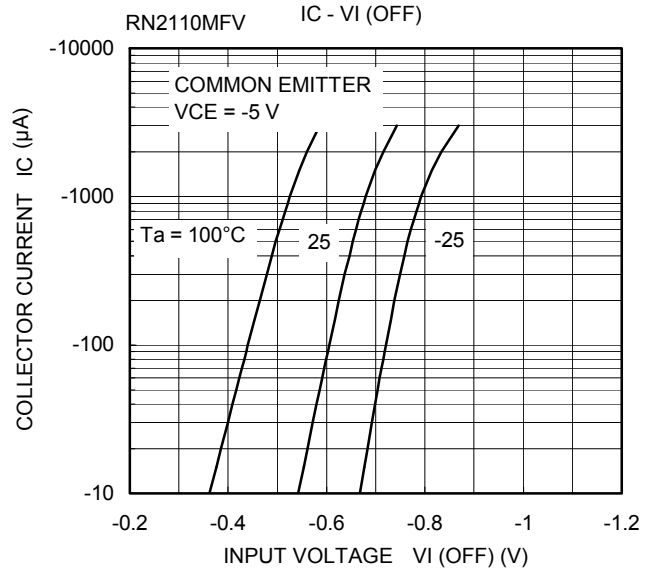
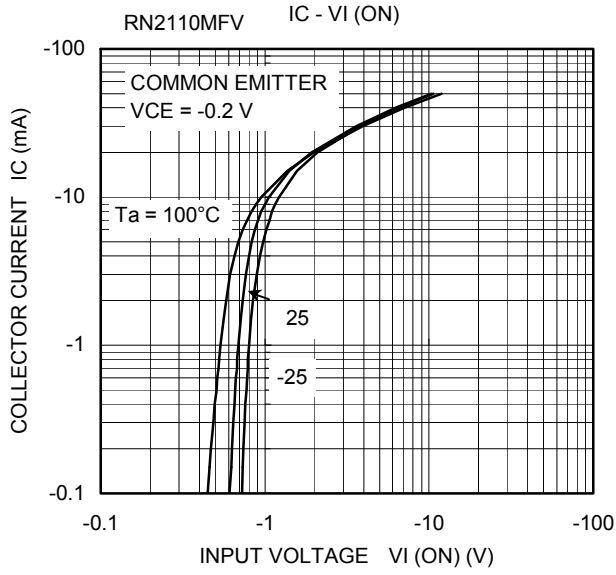
### Land Pattern Example

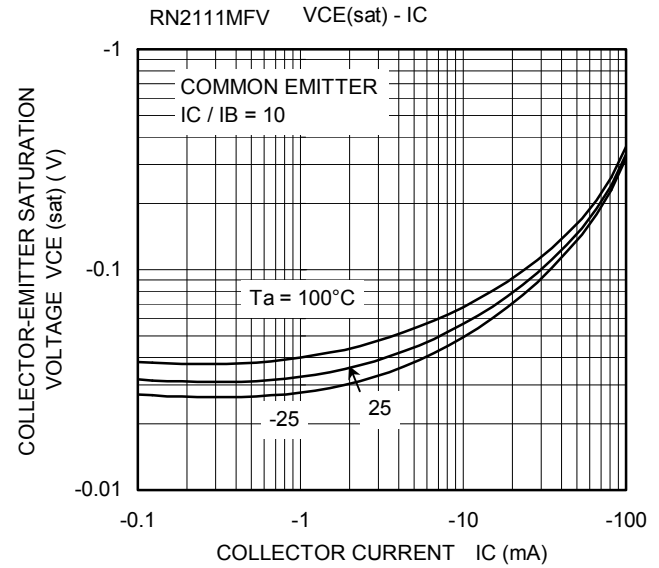
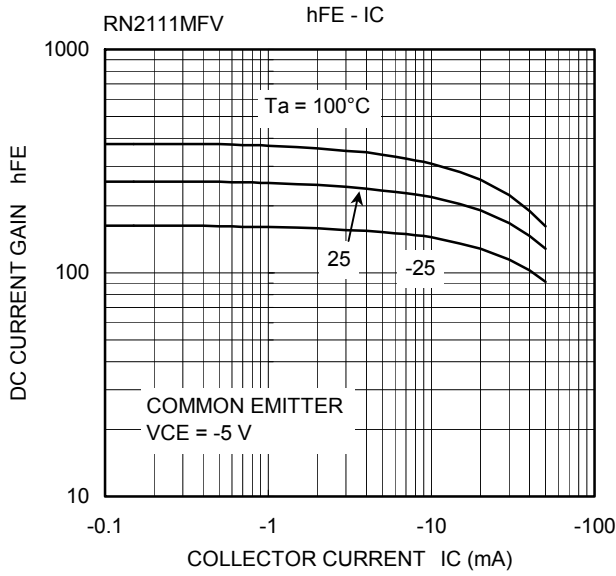
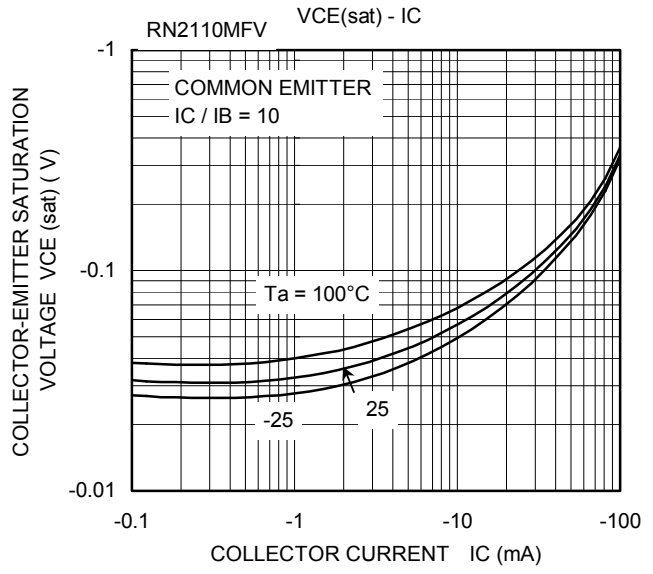
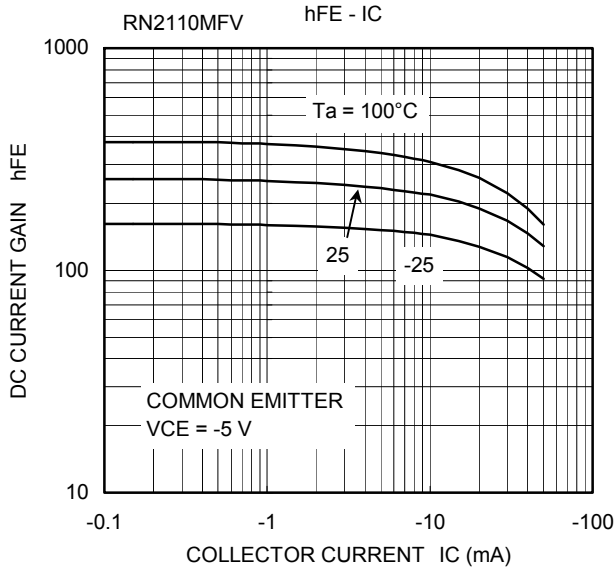


Weight: 1.5 mg (typ.)

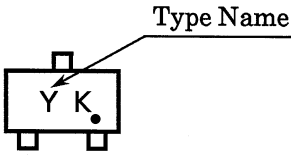
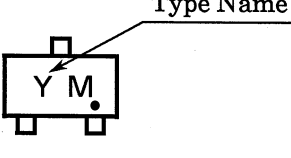
## Electrical Characteristics (Ta = 25°C)

Characteristic		Symbol	Test Circuit	Test Condition	Min	Typ.	Max	Unit
Collector cutoff current		$I_{CBO}$	—	$V_{CB} = -50\text{ V}, I_E = 0$	—	—	-100	nA
Emitter cutoff current		$I_{EBO}$	—	$V_{EB} = -5\text{ V}, I_C = 0$	—	—	-100	nA
DC current gain		$h_{FE}$	—	$V_{CE} = -5\text{ V}, I_C = -1\text{ mA}$	120	—	400	—
Collector-emitter saturation voltage		$V_{CE}(\text{sat})$	—	$I_C = -5\text{ mA}, I_B = -0.5\text{ mA}$	—	-0.1	-0.3	V
Collector output capacitance		$C_{ob}$	—	$V_{CB} = -10\text{ V}, I_E = 0, f = 1\text{ MHz}$	—	0.9	—	pF
Input resistor	RN2110MFV	R1	—	—	3.29	4.7	6.11	k $\Omega$
	RN2111MFV				7	10	13	





**Marking**

Type Name	Marking
RN2110MFV	 <p>The diagram shows a rectangular component with a small square protrusion at the top center and two small square protrusions at the bottom. The letters 'Y K' are printed on the component, with a small dot to the right of the 'K'. An arrow points from the text 'Type Name' to the 'Y'.</p>
RN2111MFV	 <p>The diagram shows a rectangular component with a small square protrusion at the top center and two small square protrusions at the bottom. The letters 'Y M' are printed on the component, with a small dot to the right of the 'M'. An arrow points from the text 'Type Name' to the 'Y'.</p>

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