

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

# RN1131MFV, RN1132MFV

Switching Applications

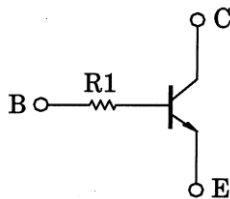
Inverter Circuit Applications

Interface Circuit Applications

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 RN2131MFV, RN2132MFV

### Equivalent Circuit



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

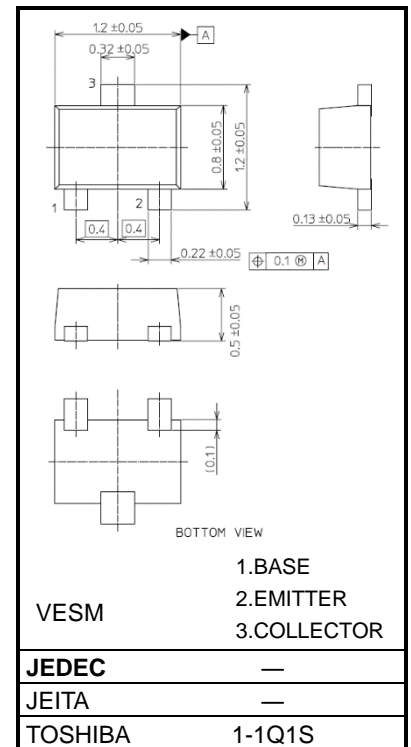
Characteristic	Symbol	Rating	Unit
Collector-base voltage	V <sub>CBO</sub>	50	V
Collector-emitter voltage	V <sub>CEO</sub>	50	V
Emitter-base voltage	V <sub>EBO</sub>	5	V
Collector current	I <sub>C</sub>	100	mA
Collector power dissipation	P <sub>C</sub> (Note1)	150	mW
Junction temperature	T <sub>j</sub>	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).

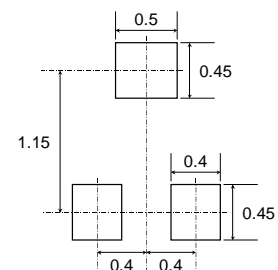
Note1 : Mounted on FR4 board (25.4 mm × 25.4 mm × 1.6 mm)

Unit: mm



### Land Pattern Dimensions (for reference only)

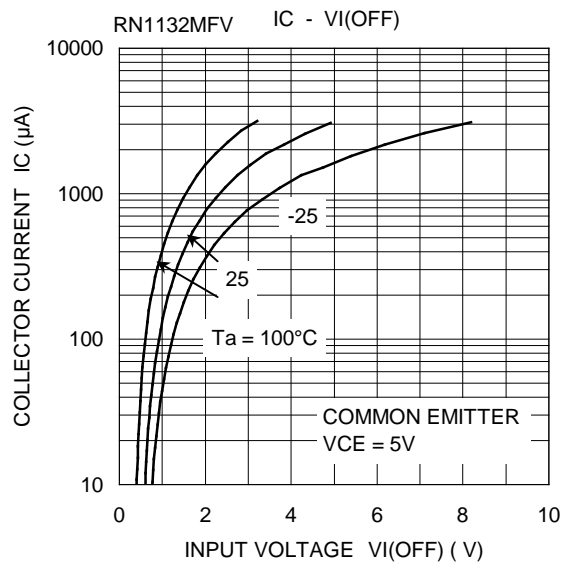
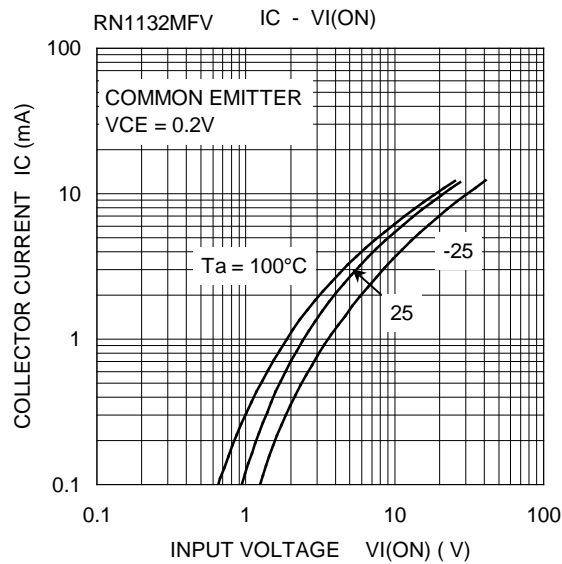
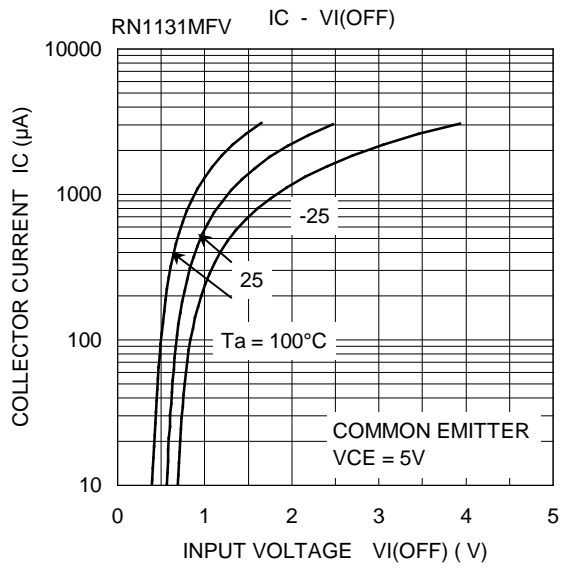
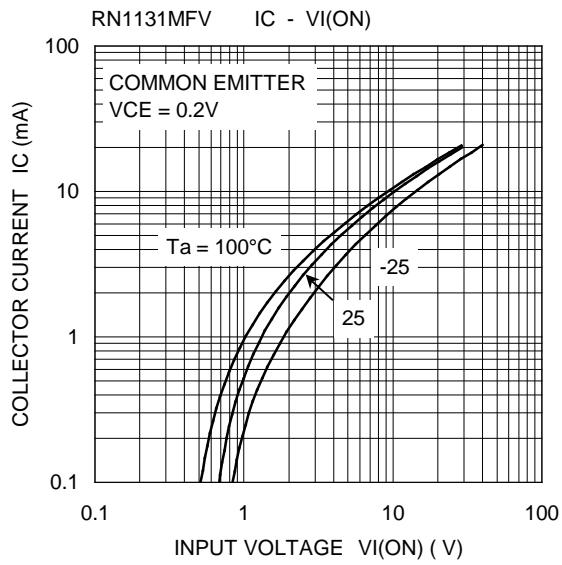
Unit: mm

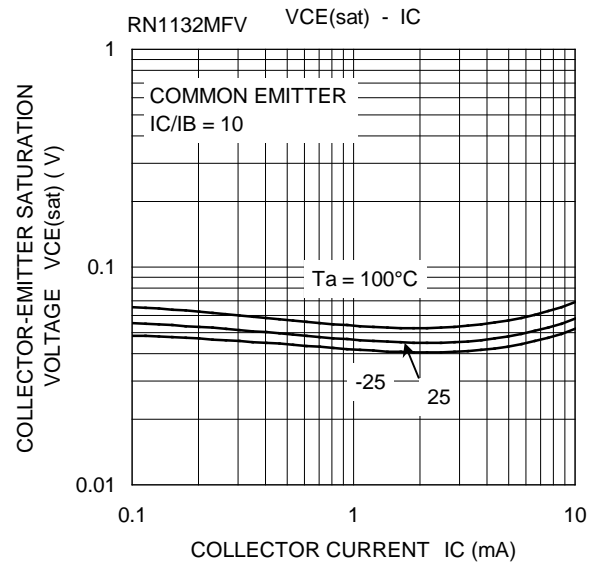
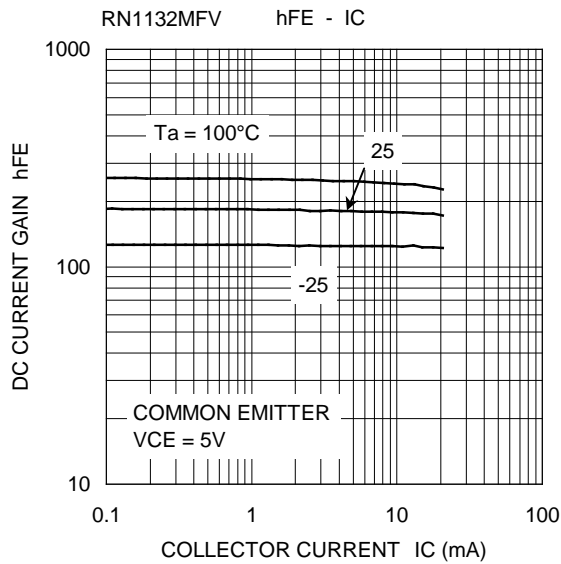
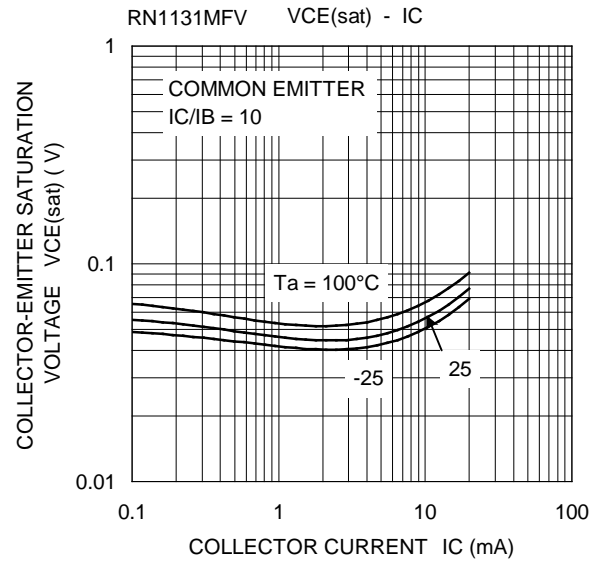
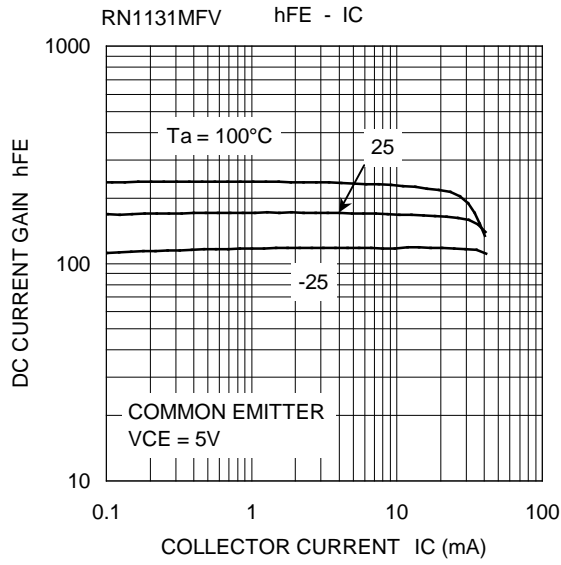


Start of commercial production  
2005-04

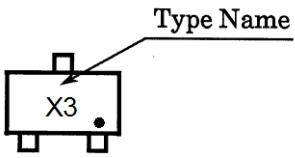
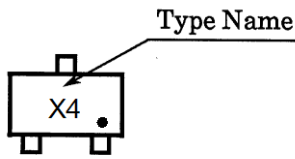
### Electrical Characteristics (Ta = 25°C)

Characteristic		Symbol	Test Circuit	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current		ICBO	—	V <sub>CB</sub> = 50 V, I <sub>E</sub> = 0 A	—	—	100	nA
Emitter cut-off current		IEBO	—	V <sub>EB</sub> = 5 V, I <sub>C</sub> = 0 A	—	—	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> = 0.5 mA	—	0.1	0.3	V
Collector output capacitance		C <sub>ob</sub>	—	V <sub>CB</sub> = 10 V, I <sub>E</sub> = 0 A, f = 1 MHz	—	0.7	—	pF
Input resistor	RN1131MFV	R1	—	—	70	100	130	kΩ
	RN1132MFV				140	200	260	





### Marking

Type Name	Marking
RN1131MFV	 <p>The diagram shows a rectangular component with a small square protrusion on top and two small square protrusions on the bottom. The text 'X3' is printed inside the rectangle. An arrow points from the text 'Type Name' to the top protrusion.</p>
RN1132MFV	 <p>The diagram shows a rectangular component with a small square protrusion on top and two small square protrusions on the bottom. The text 'X4' is printed inside the rectangle. An arrow points from the text 'Type Name' to the top protrusion.</p>

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