

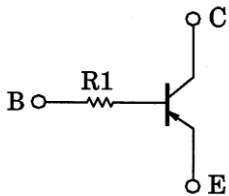
TOSHIBA Transistor Silicon PNP Epitaxial Type (PCT Process)(Bias Resistor built-in Transistor)

RN2112MFV, RN2113MFV

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 RN1112MFV, RN1113MFV

Equivalent Circuit



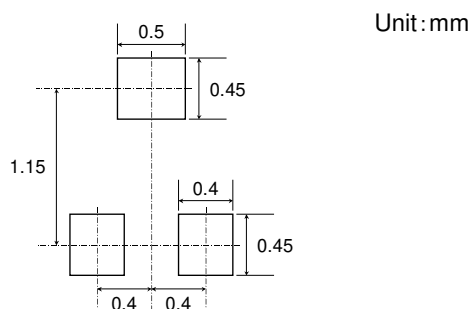
Absolute Maximum Ratings (Ta = 25°C)

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

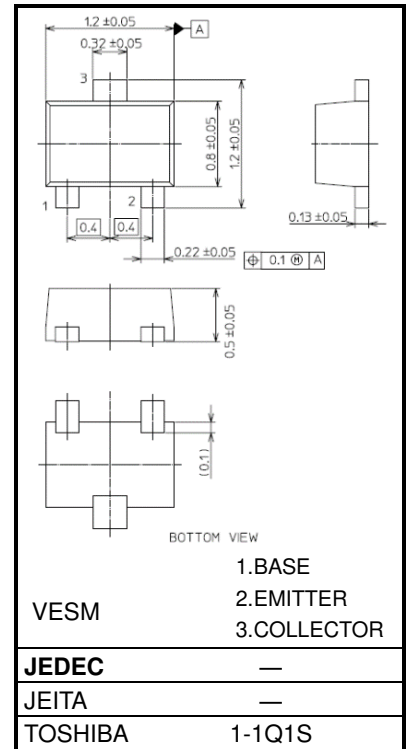
Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) 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 Dimensions (for reference only)



Unit: mm



VESM

- 1.BASE
- 2.EMITTER
- 3.COLLECTOR

JEDEC

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JEITA

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TOSHIBA

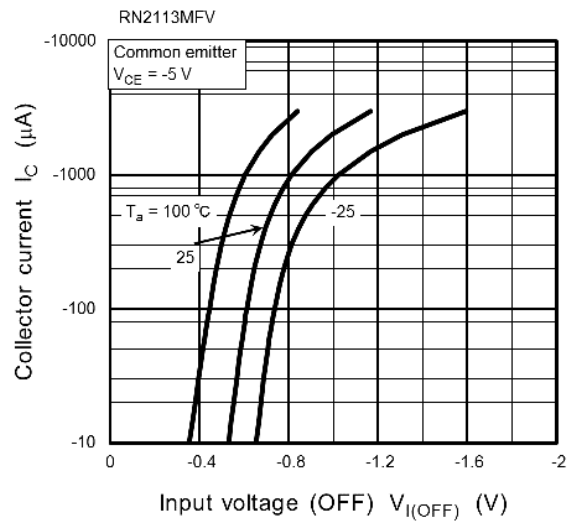
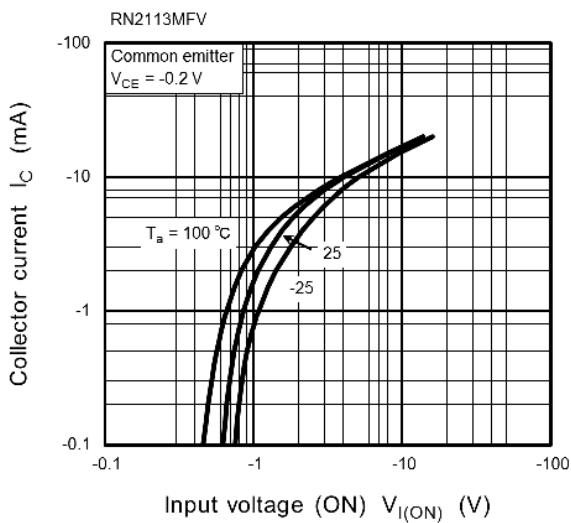
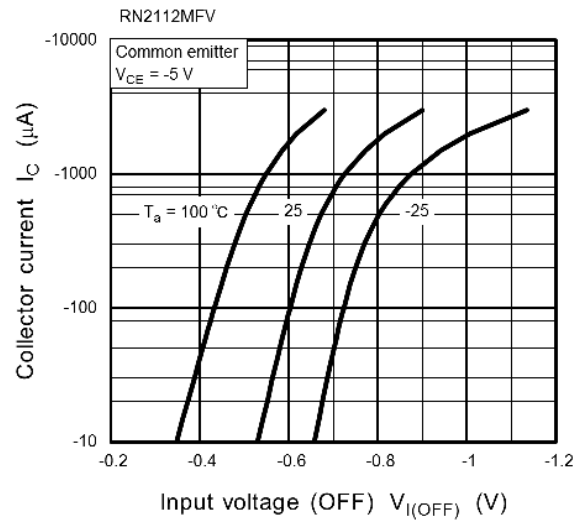
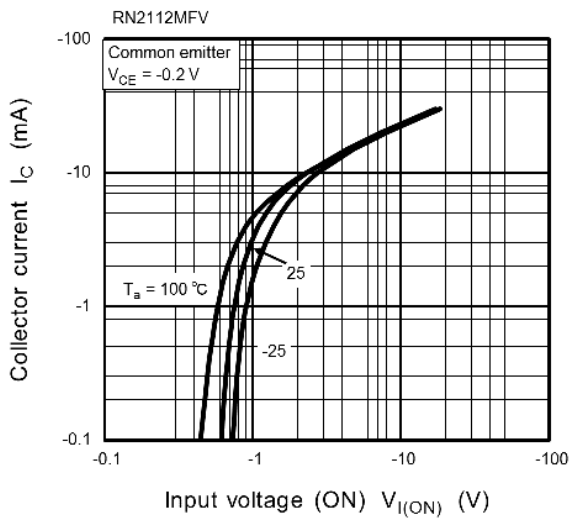
1-1Q1S

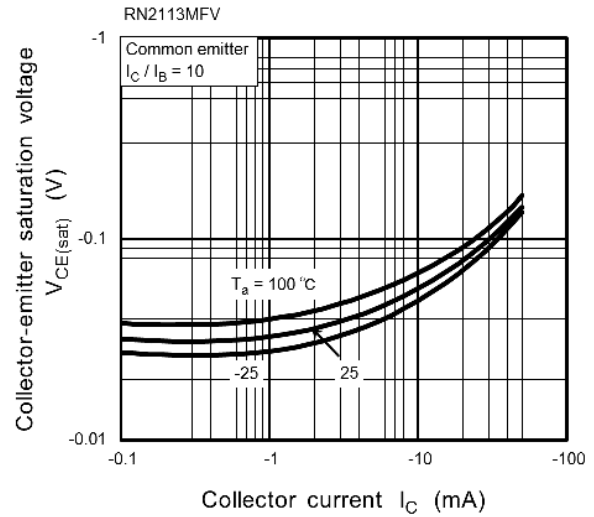
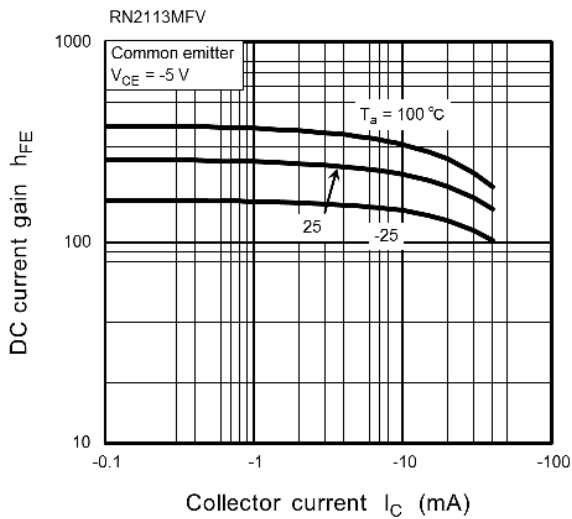
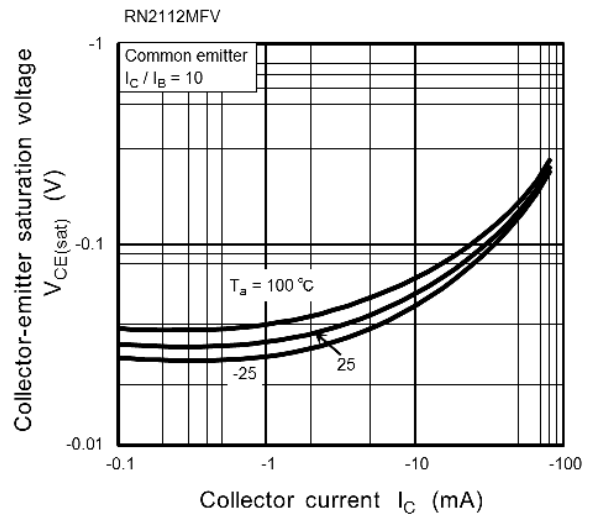
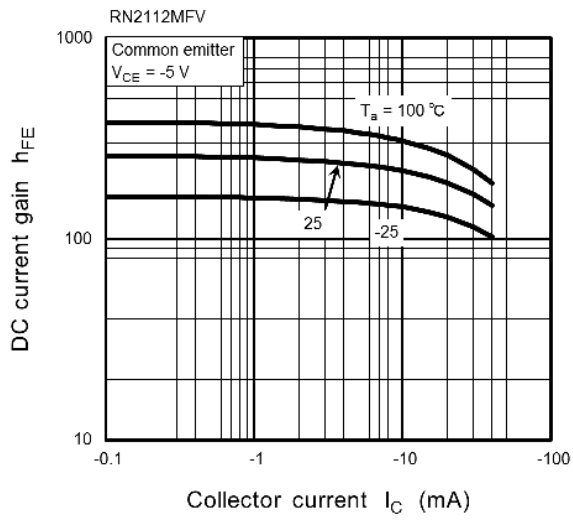
Weight: 1.5 mg (typ.)

Start of commercial production
2005-02

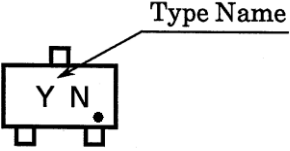
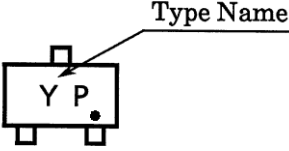
Electrical Characteristics (Ta = 25°C)

Characteristic	Symbol	Test Condition	Min	Typ.	Max	Unit	
Collector cutoff current	ICBO	V _{CB} = -50 V, I _E = 0 A	—	—	-100	nA	
Emitter cutoff current	IEBO	V _{EB} = -5 V, I _C = 0 A	—	—	-100	nA	
DC current gain	hFE	V _{CE} = -5 V, I _C = -1 mA	120	—	400	—	
Collector-emitter saturation voltage	V _{CE (sat)}	I _C = -5 mA, I _B = -0.5 mA	—	-0.1	-0.3	V	
Collector output capacitance	C _{ob}	V _{CB} = -10 V, I _E = 0 A, f = 1 MHz	—	0.9	—	pF	
Input resistor	RN2112MFV	R1	—	15.4	22	28.6	kΩ
	RN2113MFV			32.9	47	61.1	





Marking

Type Name	Marking
RN2112MFV	 <p>The diagram shows a rectangular component with a notch at the top and two feet at the bottom. Inside the rectangle, the letters 'Y N' are printed. A line points from the text 'Type Name' to the 'N' in the marking.</p>
RN2113MFV	 <p>The diagram shows a rectangular component with a notch at the top and two feet at the bottom. Inside the rectangle, the letters 'Y P' are printed. A line points from the text 'Type Name' to the 'P' in the marking.</p>

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