

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

RN1131MFV, RN1132MFV

Switching Applications

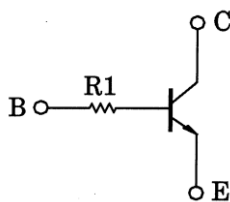
Inverter Circuit Applications

Interface Circuit Applications

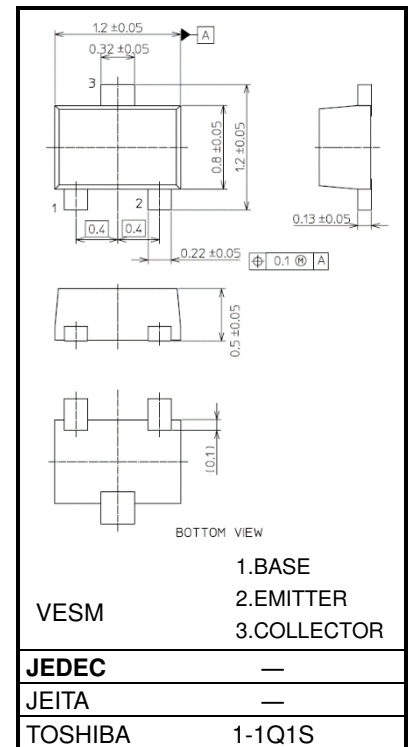
Driver Circuit Applications

- 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



Unit: mm

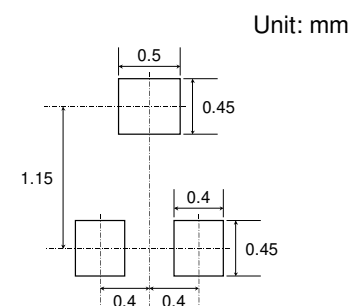


Weight: 1.5 mg (typ.)

Absolute Maximum Ratings (Ta = 25°C)

| Characteristic | Symbol | Rating | Unit |
|-----------------------------|------------------------|------------|------|
| Collector-base voltage | V _{CB0} | 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 (Note1) | 150 | mW |
| Junction temperature | T _j | 150 | °C |
| Storage temperature range | T _{stg} | -55 to 150 | °C |

Land Pattern Dimensions (for reference only)



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.

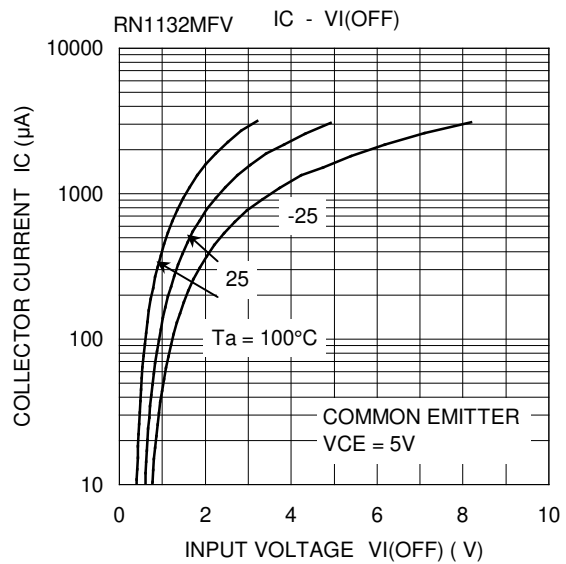
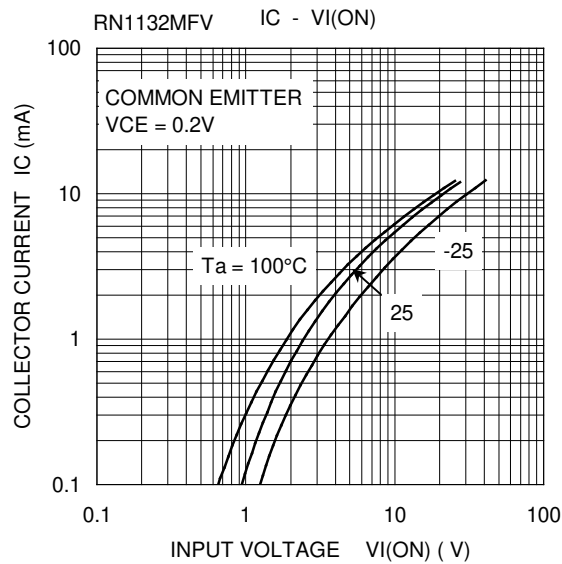
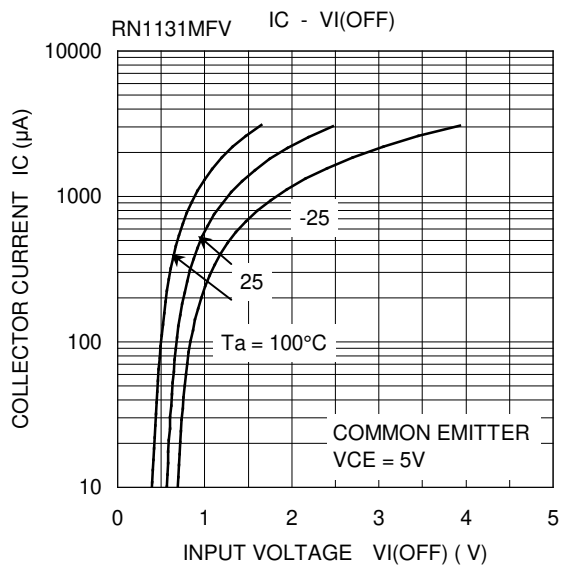
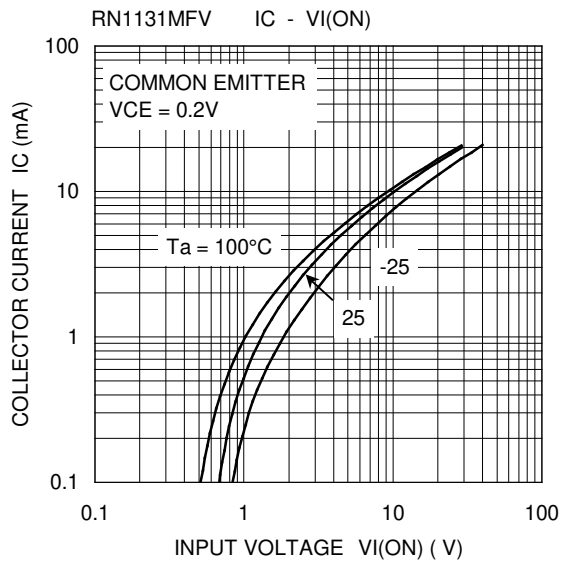
Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/"Derating Concept and Methods") and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

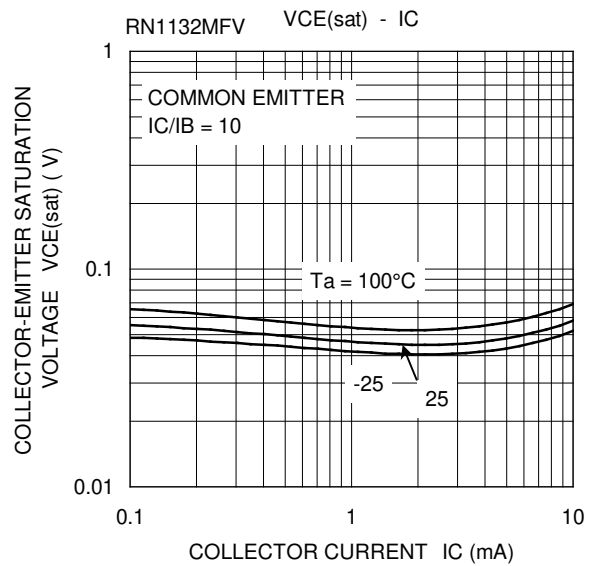
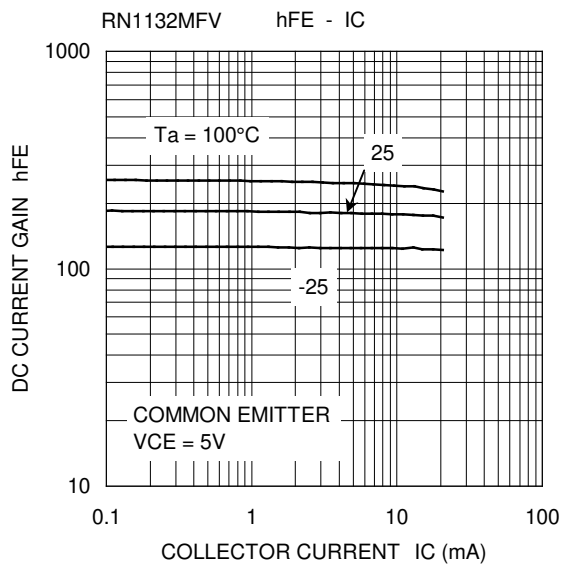
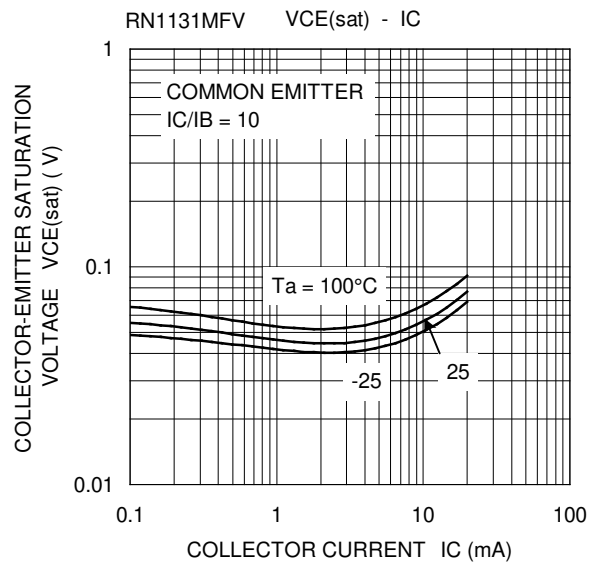
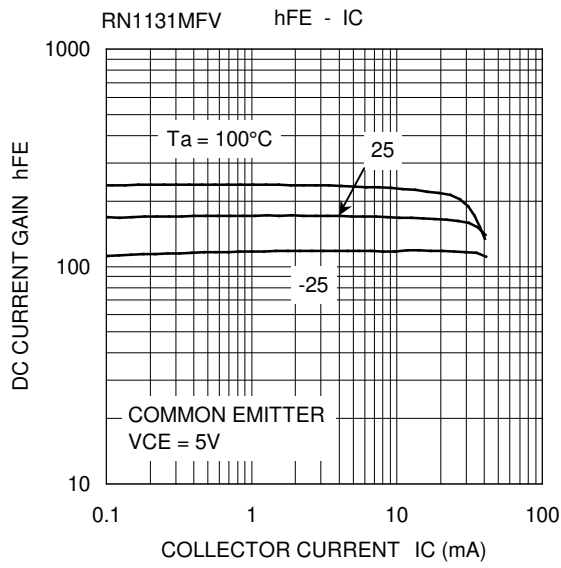
Note1 : Mounted on FR4 board (25.4 mm × 25.4 mm × 1.6 mm)

Start of commercial production
2005-04

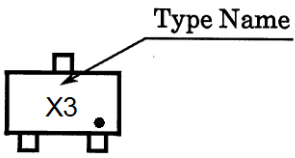
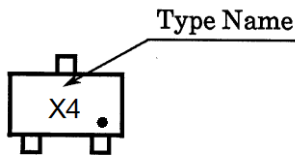
Electrical Characteristics (Ta = 25°C)

| Characteristic | | Symbol | Test Circuit | Test Condition | Min | Typ. | Max | Unit |
|--------------------------------------|-----------|-----------------------|--------------|---|-----|------|-----|------|
| Collector cut-off current | | ICBO | — | V _{CB} = 50 V, I _E = 0 A | — | — | 100 | nA |
| Emitter cut-off current | | IEBO | — | V _{EB} = 5 V, I _C = 0 A | — | — | 100 | nA |
| DC current gain | | h _{FE} | — | V _{CE} = 5 V, I _C = 1 mA | 120 | — | 700 | — |
| 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 | — | 0.7 | — | pF |
| Input resistor | RN1131MFV | R ₁ | — | — | 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. Inside the rectangle, the text 'X3' is printed. A line 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. Inside the rectangle, the text 'X4' is printed. A line points from the text 'Type Name' to the top protrusion.</p> |

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