

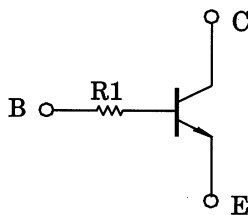
TOSHIBA Transistor Silicon NPN Epitaxial Type (PCT Process)

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_{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 (Note 1) | 150 | mW |
| Junction temperature | T_j | 150 | °C |
| Storage temperature range | T_{stg} | -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.

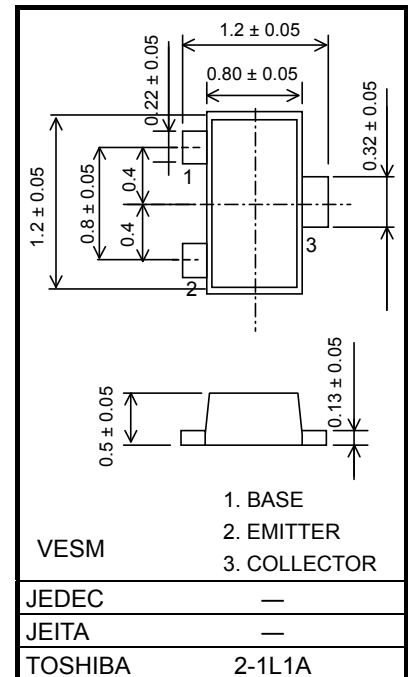
Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/"Derating Concept and Methods") and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

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

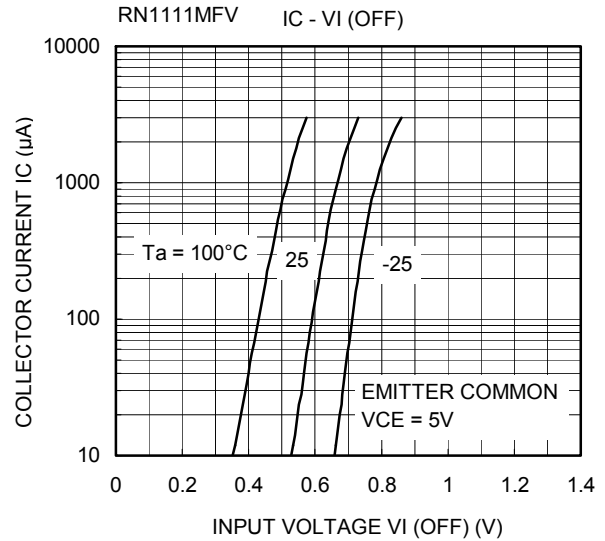
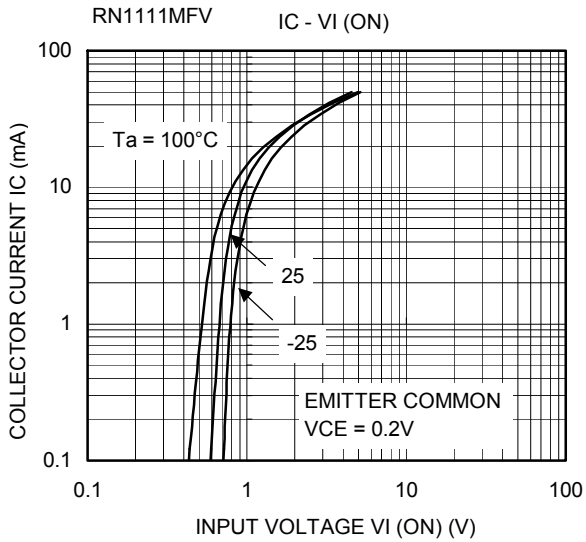
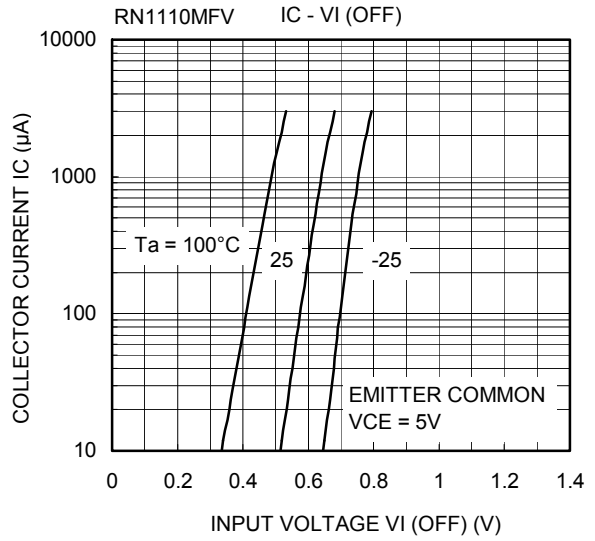
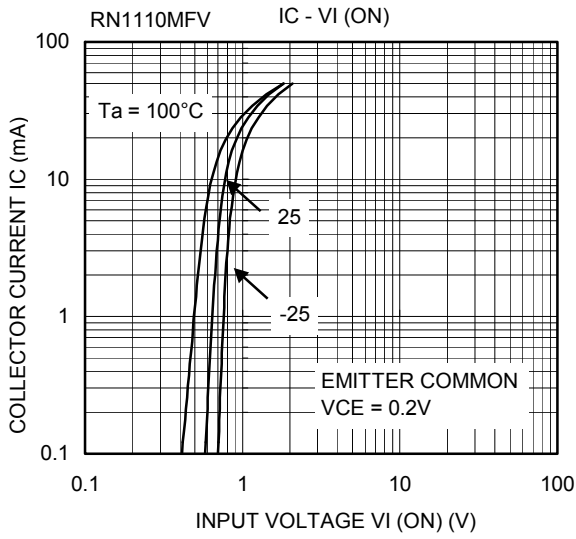
Electrical Characteristics (Ta = 25°C)

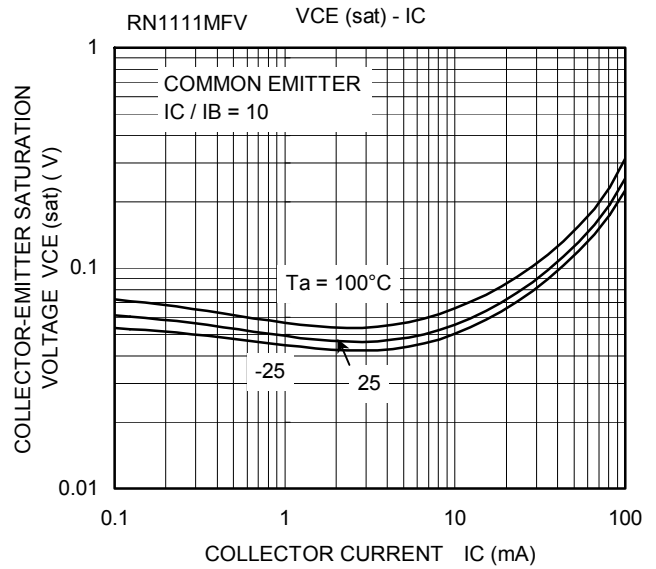
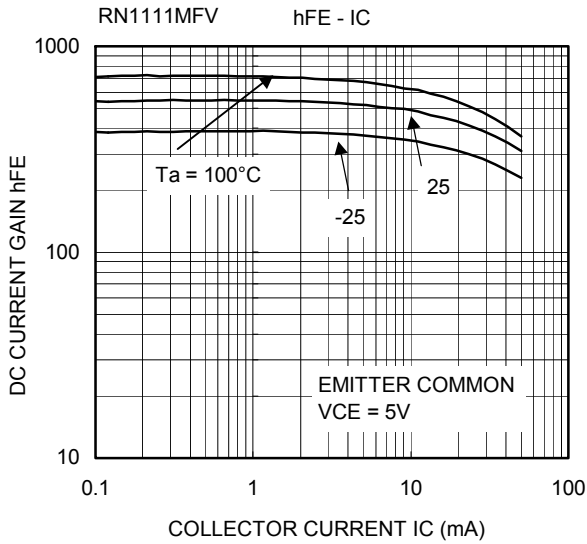
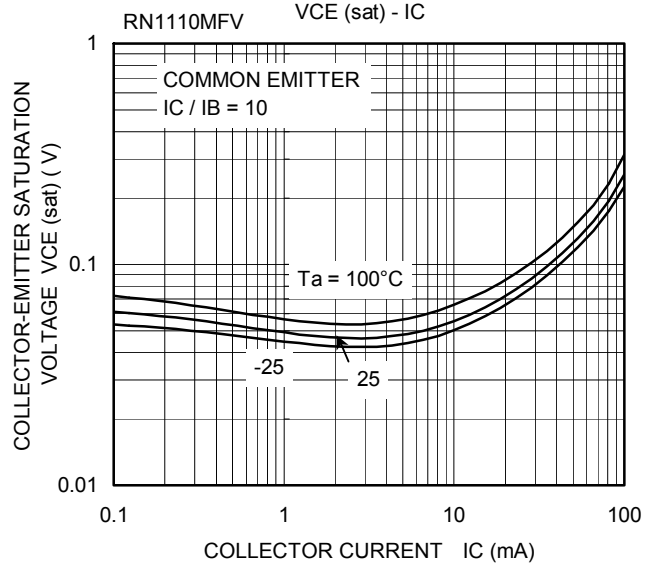
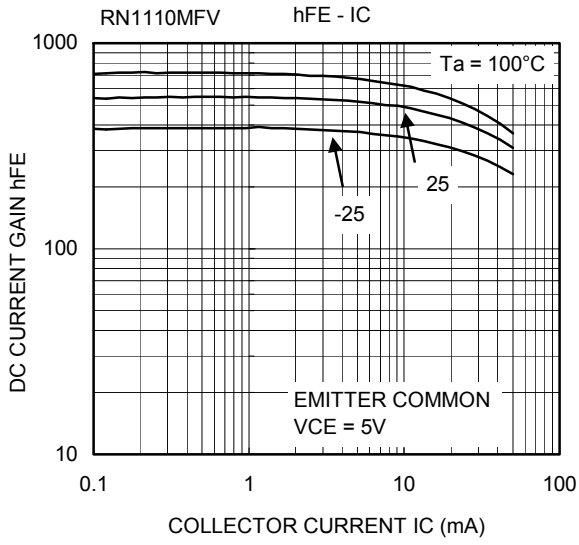
| Characteristic | Symbol | Test Circuit | Test Condition | Min | Typ. | Max | Unit |
|--------------------------------------|---------------|--------------|---|------|------|------|------|
| Collector cutoff current | I_{CBO} | — | $V_{CB} = 50\text{ V}, I_E = 0$ | — | — | 100 | nA |
| Emitter cutoff 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 | — | 700 | — |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | — | $I_C = 5\text{ mA}, I_B = 0.25\text{ mA}$ | — | 0.1 | 0.3 | V |
| Collector output capacitance | C_{ob} | — | $V_{CB} = 10\text{ V}, I_E = 0, f = 1\text{ MHz}$ | — | 0.7 | — | pF |
| Input resistor | RN1110MFV | R1 | — | 3.29 | 4.7 | 6.11 | kΩ |
| | RN1111MFV | | | 7 | 10 | 13 | |

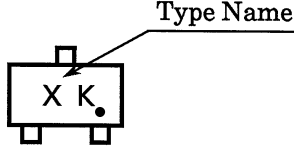
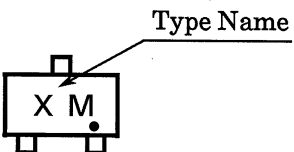
Unit: mm



Weight: 0.0015 g (typ.)





| Type Name | Marking |
|-----------|---|
| RN1110MFV |  <p>The diagram shows a rectangular component with a top terminal and two bottom terminals. The marking 'X K.' is printed on the component. An arrow points from the text 'Type Name' to the 'X' in the marking.</p> |
| RN1111MFV |  <p>The diagram shows a rectangular component with a top terminal and two bottom terminals. The marking 'X M.' is printed on the component. An arrow points from the text 'Type Name' to the 'X' in the marking.</p> |

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