

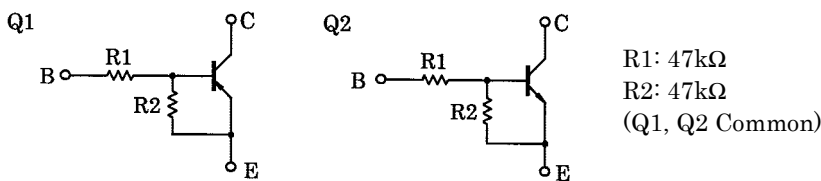
TOSHIBA Transistor
Silicon PNP Epitaxial Type (PCT Process) Silicon NPN Epitaxial Type (PCT Process)

RN4604

Switching, Inverter Circuit, Interface Circuit
And Driver Circuit Applications

- Including two devices in SM6 (super mini type with 6 leads)
- With built-in bias resistors
- Simplify circuit design
- Reduce a quantity of parts and manufacturing process

Equivalent Circuit and Bias Resister Values



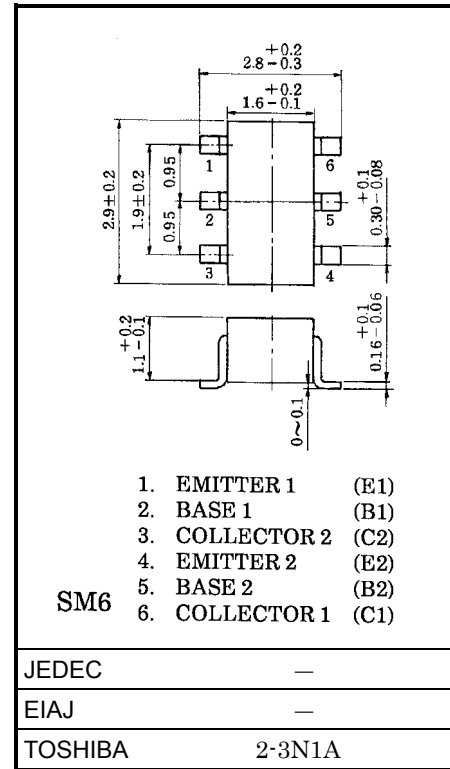
Q1 Maximum Ratings (Ta = 25°C)

| Characteristic | Symbol | Rating | Unit |
|---------------------------|-----------|--------|------|
| Collector-base voltage | V_{CBO} | -50 | V |
| Collector-emitter voltage | V_{CEO} | -50 | V |
| Emitter-base voltage | V_{EBO} | -10 | V |
| Collector current | I_C | -100 | mA |

Q2 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} | 10 | V |
| Collector current | I_C | 100 | mA |

Unit in mm



Weight: 0.015g

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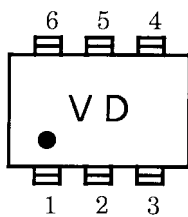
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Q1, Q2 Common Maximum Ratings (Ta = 25°C)

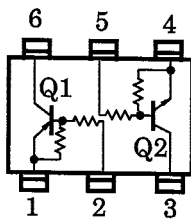
| Characteristic | Symbol | Rating | Unit |
|-----------------------------|------------------|---------|------|
| Collector power dissipation | P _C * | 300 | mW |
| Junction temperature | T _j | 150 | °C |
| Storage temperature range | T _{stg} | -55~150 | °C |

* Total rating

Marking



Equivalent Circuit (Top View)



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- The information contained herein is subject to change without notice.

Q1 Electrical Characteristics (Ta = 25°C)

| Characteristic | Symbol | Test Circuit | Test Condition | Min | Typ. | Max | Unit |
|--------------------------------------|---------------|--------------|------------------------------------|--------|------|-------|------|
| Collector cut-off current | I_{CBO} | — | $V_{CB} = -50V, I_E = 0$ | — | — | -100 | nA |
| | I_{CEO} | — | $V_{CE} = -50V, I_B = 0$ | — | — | -500 | |
| Emitter cut-off current | I_{EBO} | — | $V_{EB} = -10V, I_C = 0$ | -0.082 | — | -0.15 | mA |
| DC current gain | h_{FE} | — | $V_{CE} = -5V, I_C = -10mA$ | 80 | — | — | — |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | — | $I_C = -5mA, I_B = -0.25mA$ | — | -0.1 | -0.3 | V |
| Input voltage (ON) | $V_I(ON)$ | — | $V_{CE} = -0.2V, I_C = -5mA$ | -1.5 | — | -5.0 | V |
| Input voltage (OFF) | $V_I(OFF)$ | — | $V_{CE} = -5V, I_C = -0.1mA$ | -1.0 | — | -1.5 | V |
| Transition frequency | f_T | — | $V_{CE} = -10V, I_C = -5mA$ | — | 200 | — | MHz |
| Collector output capacitance | C_{ob} | — | $V_{CB} = -10V, I_E = 0, f = 1MHz$ | — | 3 | 6 | pF |

Q2 Electrical Characteristics (Ta = 25°C)

| Characteristic | Symbol | Test Circuit | Test Condition | Min | Typ. | Max | Unit |
|--------------------------------------|---------------|--------------|-----------------------------------|-------|------|------|------|
| Collector cut-off current | I_{CBO} | — | $V_{CB} = 50V, I_E = 0$ | — | — | 100 | nA |
| | I_{CEO} | — | $V_{CE} = 50V, I_B = 0$ | — | — | 500 | |
| Emitter cut-off current | I_{EBO} | — | $V_{EB} = 10V, I_C = 0$ | 0.082 | — | 0.15 | mA |
| DC current gain | h_{FE} | — | $V_{CE} = 5V, I_C = 10mA$ | 80 | — | — | — |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | — | $I_C = 5mA, I_B = 0.25mA$ | — | 0.1 | 0.3 | V |
| Input voltage (ON) | $V_I(ON)$ | — | $V_{CE} = 0.2V, I_C = 5mA$ | 1.5 | — | 5.0 | V |
| Input voltage (OFF) | $V_I(OFF)$ | — | $V_{CE} = 5V, I_C = 0.1mA$ | 1.0 | — | 1.5 | V |
| Transition frequency | f_T | — | $V_{CE} = 10V, I_C = 5mA$ | — | 250 | — | MHz |
| Collector output capacitance | C_{ob} | — | $V_{CB} = 10V, I_E = 0, f = 1MHz$ | — | 3 | 6 | pF |

Q1, Q2 Common Electrical Characteristics (Ta = 25°C)

| Characteristic | Symbol | Test Circuit | Test Condition | Min | Typ. | Max | Unit |
|----------------|--------|--------------|----------------|------|------|------|------|
| Input resistor | R1 | — | — | 32.9 | 47 | 61.1 | kΩ |
| Resistor ratio | R1/R2 | — | — | 0.9 | 1.0 | 1.1 | — |

