

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

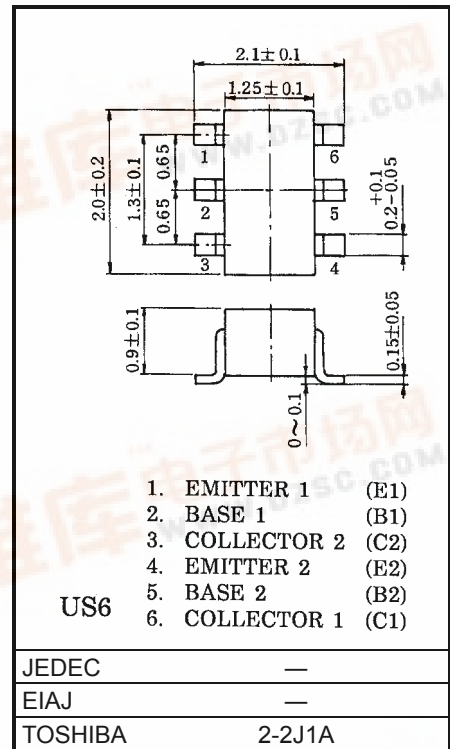
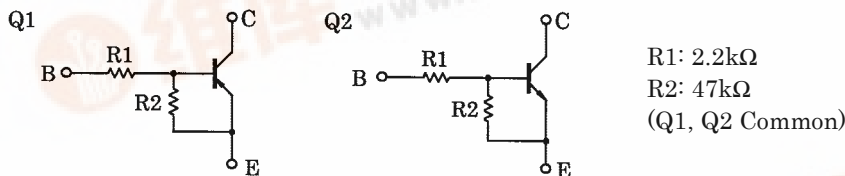
RN4905

Switching, Inverter Circuit, Interface Circuit
And Driver Circuit Applications

Unit: mm

- Including two devices in US6 (ultra 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 Resistor 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} | -5 | V |
| Collector current | I _C | -100 | mA |

Q2 Maximum Ratings (Ta = 25°C)

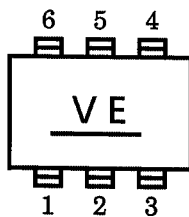
| Characteristic | Symbol | Rating | Unit |
|---------------------------|------------------|--------|------|
| Collector-base voltage | V _{CBO} | 50 | V |
| Collector-emitter voltage | V _{CEO} | 50 | V |
| Emitter-base voltage | V _{EBO} | 5 | V |
| Collector current | I _C | 100 | mA |

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

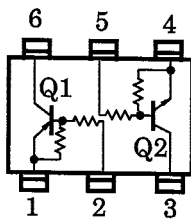
| Characteristic | Symbol | Rating | Unit |
|-----------------------------|-----------|---------|------|
| Collector power dissipation | P_C * | 200 | mW |
| Junction temperature | T_j | 150 | °C |
| Storage temperature range | T_{stg} | -55~150 | °C |

* : Total rating

Marking



Equivalent Circuit (Top View)



Q1 Electrical Characteristics (Ta = 25°C)

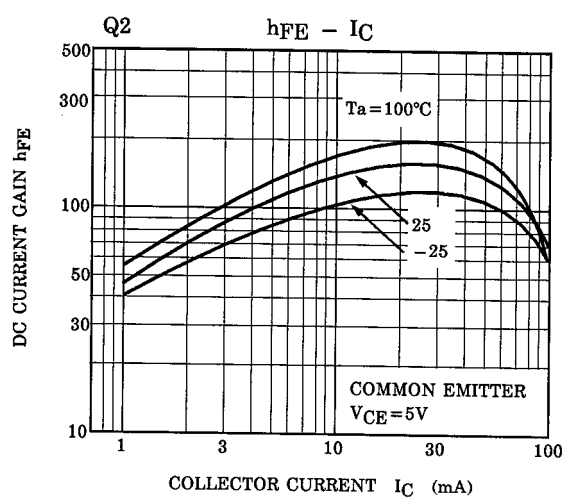
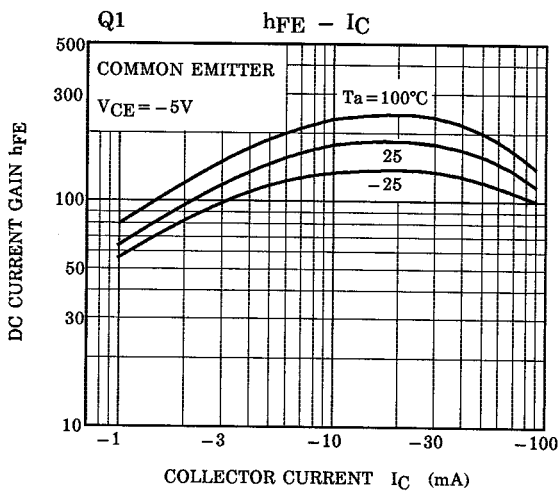
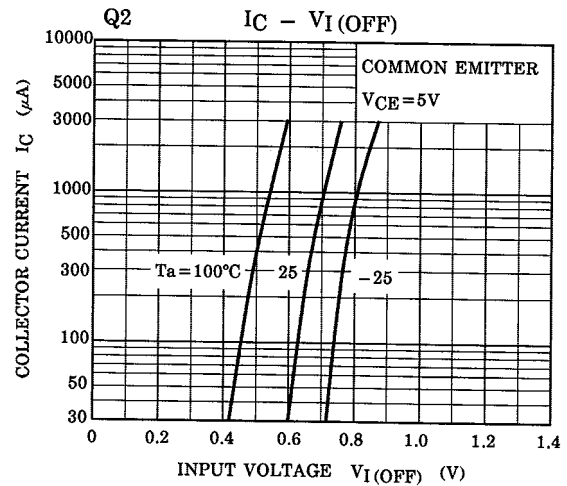
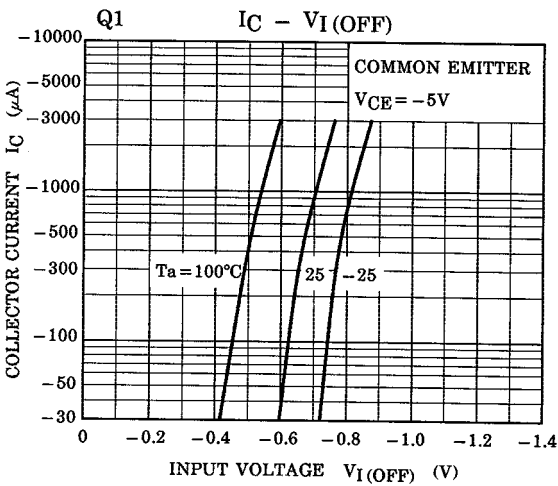
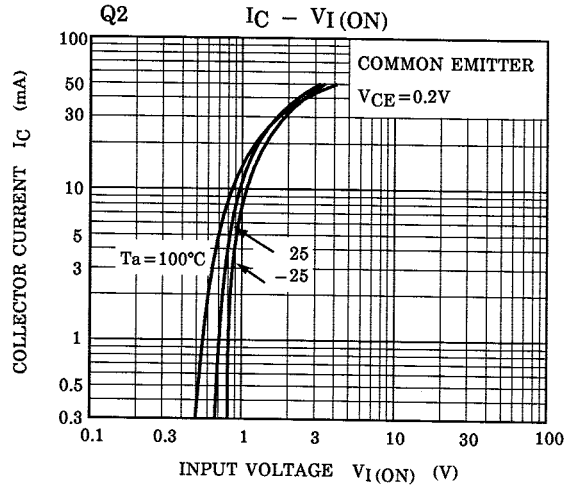
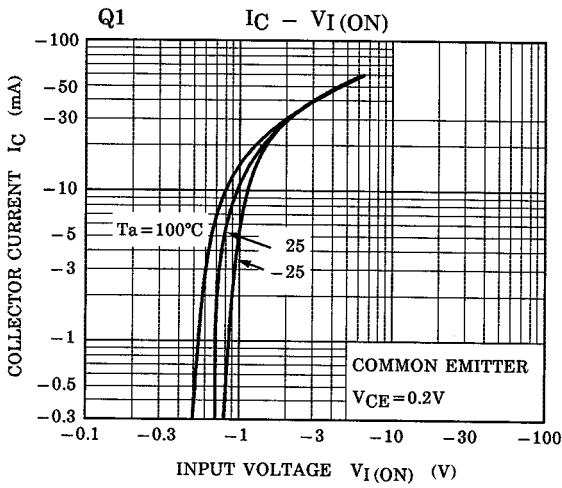
| Characteristic | Symbol | Test Circuit | Test Condition | Min | Typ. | Max | Unit |
|--------------------------------------|---------------|--------------|------------------------------|--------|------|--------|------|
| Collector cut-off current | I_{CBO} | — | $V_{CB} = -50V, I_E = 0$ | — | — | -100 | nA |
| | I_{CEO} | — | $V_{CE} = -50V, I_B = 0$ | — | — | -500 | |
| Emitter cut-off current | I_{EBO} | — | $V_{EB} = -5V, I_C = 0$ | -0.078 | — | -0.145 | 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) | $V_I(ON)$ | — | $V_{CE} = -0.2V, I_C = -5mA$ | -0.6 | — | -1.1 | V |
| Input voltage (OFF) | $V_I(OFF)$ | — | $V_{CE} = -5V, I_C = -0.1mA$ | -0.5 | — | -0.8 | V |
| Transition frequency | f_T | — | $V_{CE} = -10V, I_C = -5mA$ | — | 200 | — | MHz |
| Collector output capacitance | C_{ob} | — | $V_{CB} = -10V, I_E = 0$ | — | 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} | — | $V_{EB} = 5V, I_C = 0$ | 0.078 | — | 0.145 | 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) | $V_{I(ON)}$ | — | $V_{CE} = 0.2V, I_C = 5mA$ | 0.6 | — | 1.1 | V |
| Input voltage (OFF) | $V_{I(OFF)}$ | — | $V_{CE} = 5V, I_C = 0.1mA$ | 0.5 | — | 0.8 | V |
| Transition frequency | f_T | — | $V_{CE} = 10V, I_C = 5mA$ | — | 250 | — | MHz |
| Collector output capacitance | C_{ob} | — | $V_{CB} = 10V, I_E = 0, f = 1 MHz$ | — | 3 | 6 | pF |

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

| Characteristic | Symbol | Test Circuit | Test Condition | Min | Typ. | Max | Unit |
|----------------|--------|--------------|----------------|--------|--------|--------|------|
| Input resistor | R1 | — | — | 1.54 | 2.2 | 2.86 | kΩ |
| Resistor ratio | R1/R2 | — | — | 0.0421 | 0.0468 | 0.0515 | — |



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