

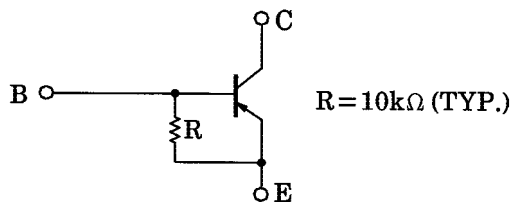
TOSHIBA Transistor Silicon NPN Epitaxial Type (PCT Process)

RN6003

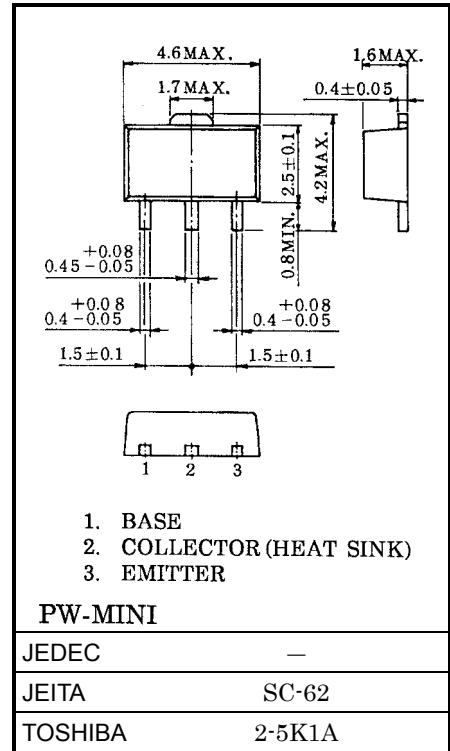
Motor Drive Circuit Applications
 Power Amplifier Applications
 Power Switching Applications

- With built-in bias resistors
- Simplify circuit design
- Reduce a quantity of parts and manufacturing process
- Small flat package
- $P_C = 1\sim 2W$ (mounted on ceramic substrate)
- Complementary to RN5003

Equivalent Circuit



Unit: mm



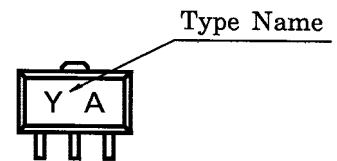
Weight: 0.05g (typ.)

Maximum Ratings (Ta = 25°C)

| Characteristic | Symbol | Rating | Unit |
|-----------------------------|-----------|---------|------|
| Collector-base voltage | V_{CBO} | -30 | V |
| Collector-emitter voltage | V_{CES} | -30 | V |
| Emitter-base voltage | V_{EBO} | -5 | V |
| Collector current | I_C | -2 | A |
| Base current | I_B | -0.4 | A |
| Collector power dissipation | P_C | 500 | mW |
| Collector power dissipation | P_C^* | 1000 | mW |
| Junction temperature | T_j | 150 | °C |
| Storage temperature range | T_{stg} | -55~150 | °C |

* : Mounted on ceramic substrate (250mm² × 0.8t)

Marking



Electrical Characteristics (Ta = 25°C)

| Characteristic | Symbol | Test Circuit | Test Condition | Min | Typ. | Max | Unit |
|--------------------------------------|---------------|--------------|--|--------|-------|--------|------------|
| Collector cut-off current | I_{CBO} | — | $V_{CB} = -30V, I_E = 0$ | — | — | -0.1 | μA |
| Emitter cut-off current | I_{EBO} | — | $V_{EB} = -5V, I_C = 0$ | -0.385 | -0.50 | -0.714 | mA |
| Collector-emitter breakdown voltage | $V_{(BR)CES}$ | — | $I_C = -10mA$ | -30 | — | — | V |
| DC current gain | $h_{FE} (1)$ | — | $V_{CE} = -2V, I_C = -0.5A$ | 100 | — | 400 | — |
| | $h_{FE} (2)$ | | $V_{CE} = -2V, I_C = -2.0A$ | 30 | — | — | |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | — | $I_C = -1A, I_B = -0.05A$ | — | — | -0.5 | V |
| Base-emitter saturation voltage | $V_{BE(sat)}$ | — | $I_C = -1A, I_B = -0.05A$ | — | — | -1.2 | V |
| Transition frequency | f_T | — | $V_{CE} = -2V, I_C = -0.5A$ | — | 120 | — | MHz |
| Collector output capacitance | C_{ob} | — | $V_{CB} = -10V, I_E = 0,$ $f = 1 \text{ MHz}$ | — | 40 | — | pF |
| Resistor | R | — | — | 7 | 10 | 13 | k Ω |

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