

TOSHIBA Transistor Silicon NPN Epitaxial Type (PCT Process)

RN5003

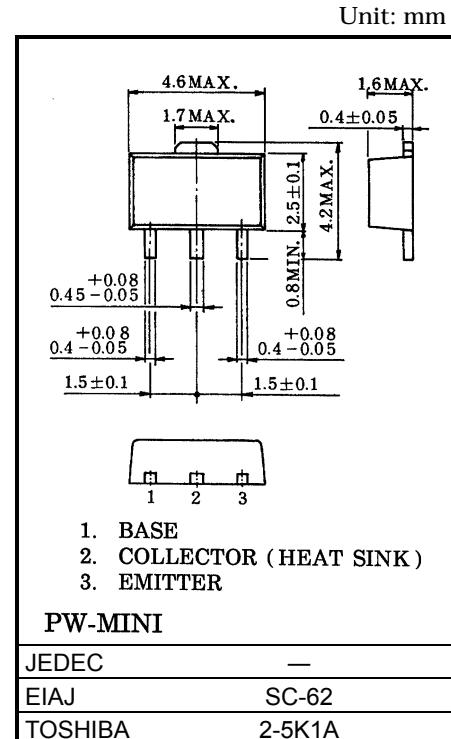
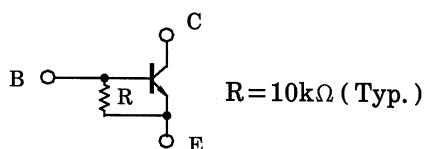
Motor Drive Circuit Applications

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
- PC = 1~2W (mounted on ceramic substrate)
- Complementary to RN6003

Equivalent Circuit



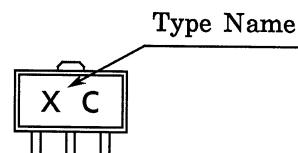
Weight: 0.05g

Maximum Ratings (Ta = 25°C)

| Characteristic | Symbol | Rating | Unit |
|-----------------------------|------------------|---------|------|
| Collector-base voltage | V _{CBO} | 30 | V |
| Collector-emitter voltage | V _{CEO} | 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 |

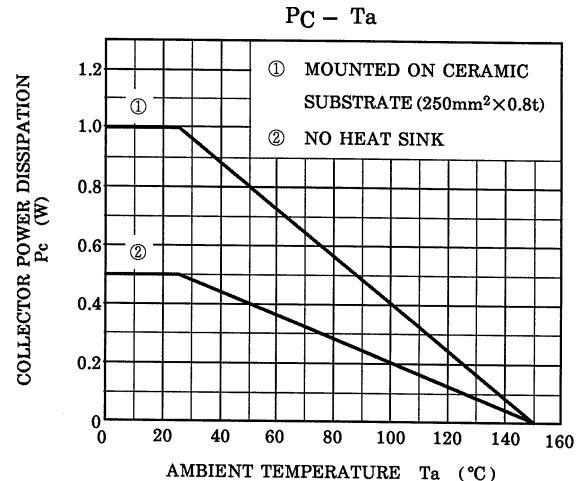
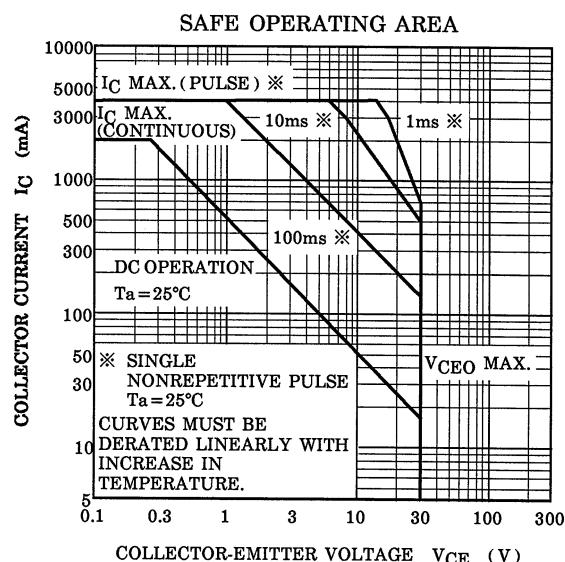
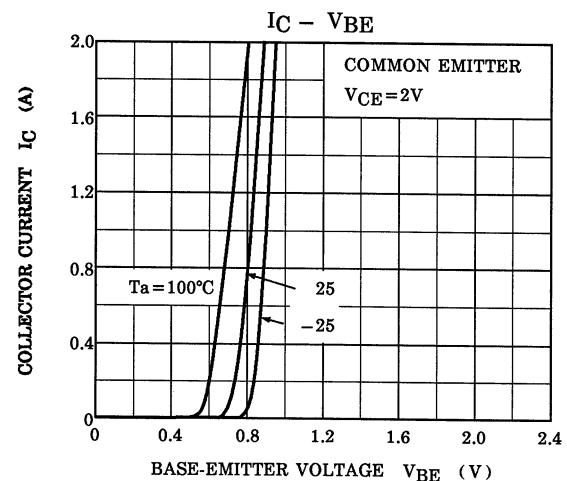
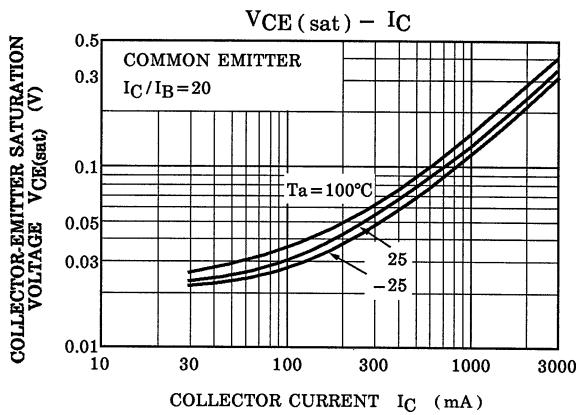
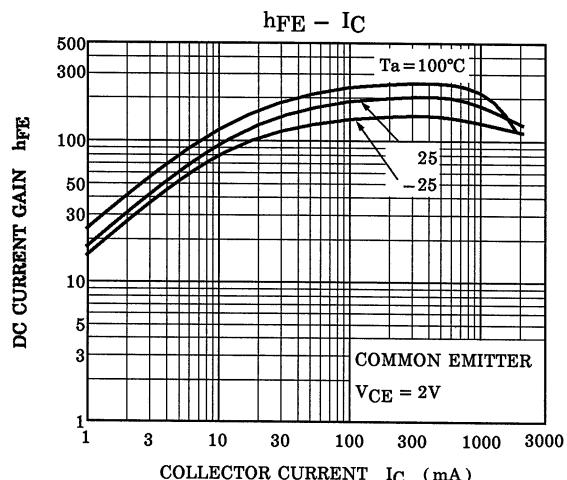
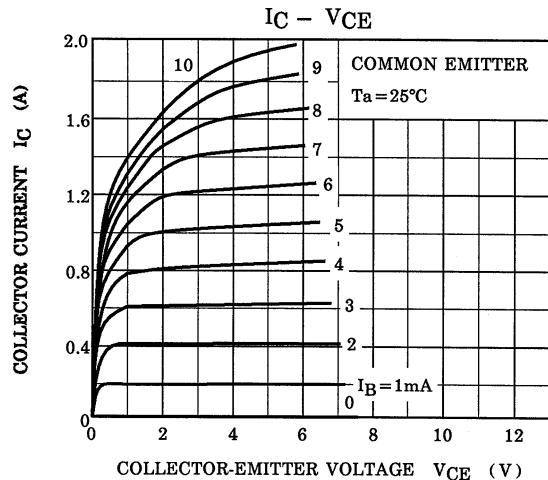
* : Mounterd on ceramic substrate (250mm² × 0.8t)

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 MHz | — | 40 | — | pF |
| Resistor | R | — | — | 7 | 10 | 13 | kΩ |



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