

TOSHIBA Transistor Silicon NPN Epitaxial Type (PCT Process)

2SC3668

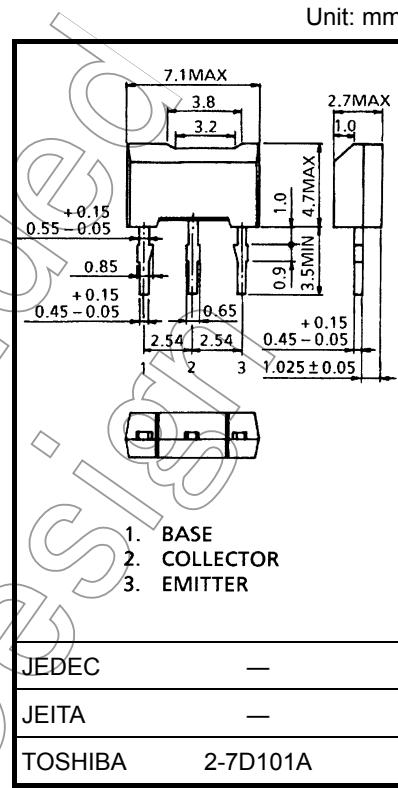
Power Amplifier Applications

Power Switching Applications

- Low saturation voltage: $V_{CE}(\text{sat}) = 0.5 \text{ V (max)}$ ($I_C = 1 \text{ A}$)
- High collector power dissipation: $P_C = 1000 \text{ mW}$
- High-speed switching: $t_{\text{stg}} = 1.0 \mu\text{s}$ (typ.)
- Complementary to 2SA1428.

Absolute Maximum Ratings (Ta = 25°C)

| Characteristics | 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 | 2 | A |
| Base current | I_B | 0.5 | A |
| Collector power dissipation | P_C | 1000 | mW |
| Junction temperature | T_j | 150 | °C |
| Storage temperature range | T_{stg} | -55 to 150 | °C |



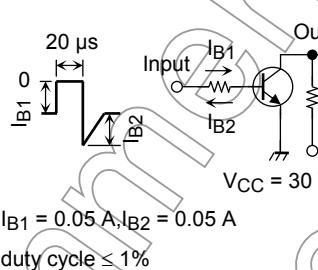
Weight: 0.2 g (typ.)

Note1: 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).

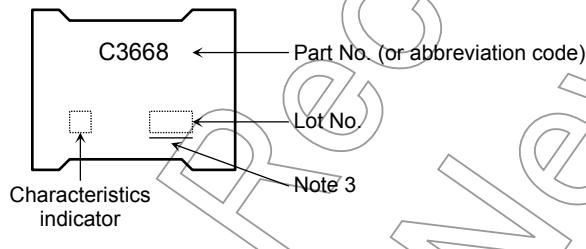
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Electrical Characteristics (Ta = 25°C)

| Characteristics | Symbol | Test Condition | Min | Typ. | Max | Unit |
|--------------------------------------|--------------------------|---|---|------|-----|---------------|
| Collector cut-off current | I_{CBO} | $V_{CB} = 50 \text{ V}, I_E = 0$ | — | — | 1.0 | μA |
| Emitter cut-off current | I_{EBO} | $V_{EB} = 5 \text{ V}, I_C = 0$ | — | — | 1.0 | μA |
| Collector-emitter breakdown voltage | $V_{(BR)CEO}$ | $I_C = 10 \text{ mA}, I_B = 0$ | 50 | — | — | V |
| DC current gain | h_{FE} (1) (Note 2) | $V_{CE} = 2 \text{ V}, I_C = 0.5 \text{ A}$ | 70 | — | 240 | |
| | h_{FE} (2) | $V_{CE} = 2 \text{ V}, I_C = 1.5 \text{ A}$ | 40 | — | — | |
| Collector-emitter saturation voltage | $V_{CE(\text{sat})}$ | $I_C = 1 \text{ A}, I_B = 0.05 \text{ A}$ | — | — | 0.5 | V |
| Base-emitter saturation voltage | $V_{BE(\text{sat})}$ | $I_C = 1 \text{ A}, I_B = 0.05 \text{ A}$ | — | — | 1.2 | V |
| Transition frequency | f_T | $V_{CE} = 2 \text{ V}, I_C = 0.5 \text{ A}$ | — | 100 | — | MHz |
| Collector output capacitance | C_{ob} | $V_{CB} = 10 \text{ V}, I_C = 0, f = 1 \text{ MHz}$ | — | 30 | — | pF |
| Switching time | Turn-on time | t_{on} |  $I_{B1} = 0.05 \text{ A}, I_{B2} = 0.05 \text{ A}$ duty cycle $\leq 1\%$ | — | 0.1 | — |
| | Storage time | t_{stg} | | — | 1.0 | — |
| | Fall time | t_f | | — | 0.1 | — |

Note 2: h_{FE} (1) classification O: 70 to 140, Y: 120 to 240

Marking

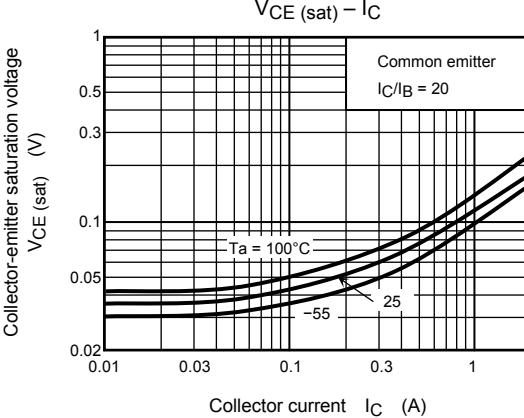
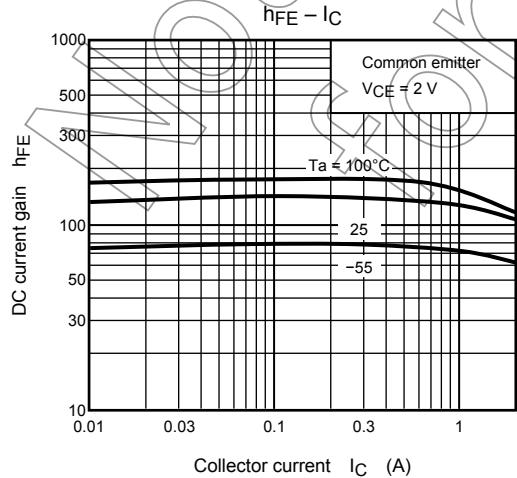
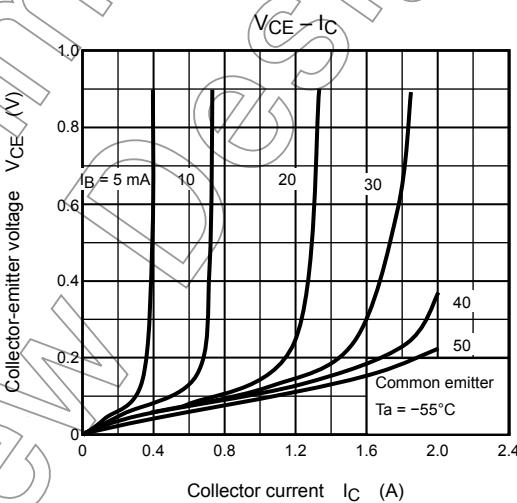
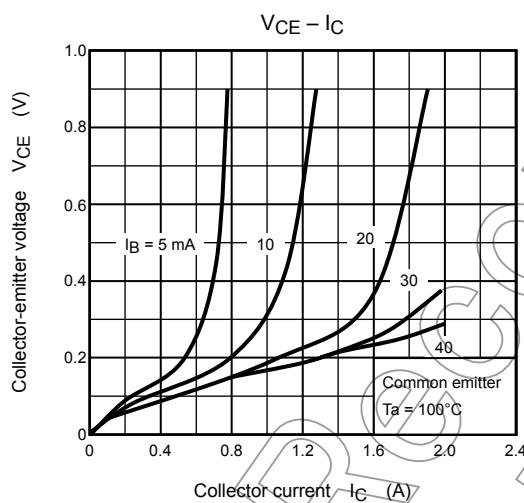
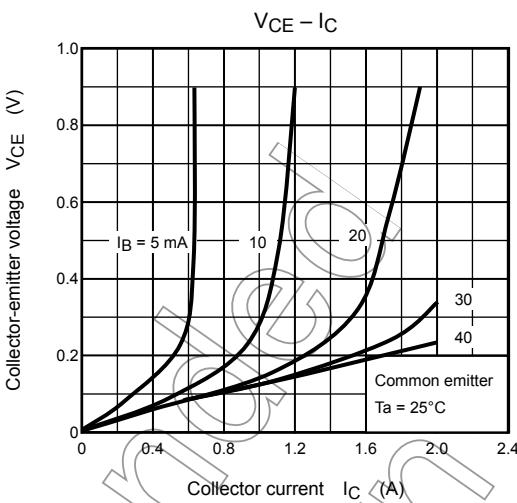
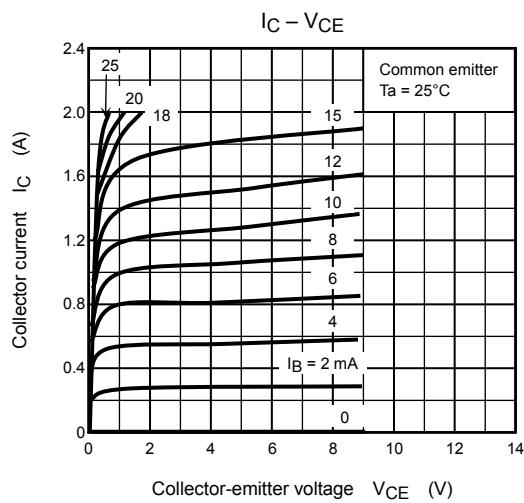


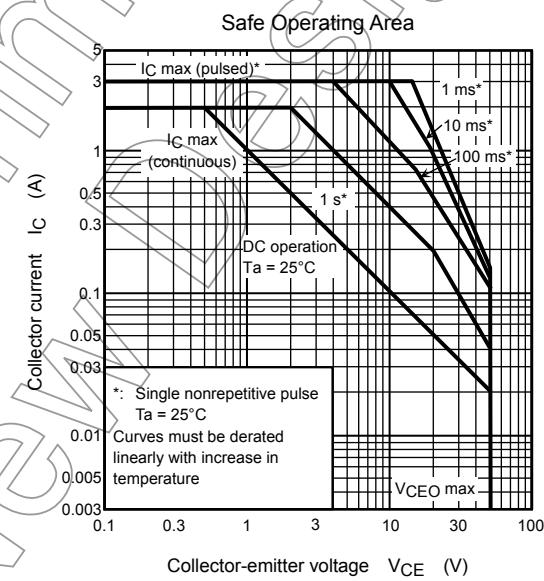
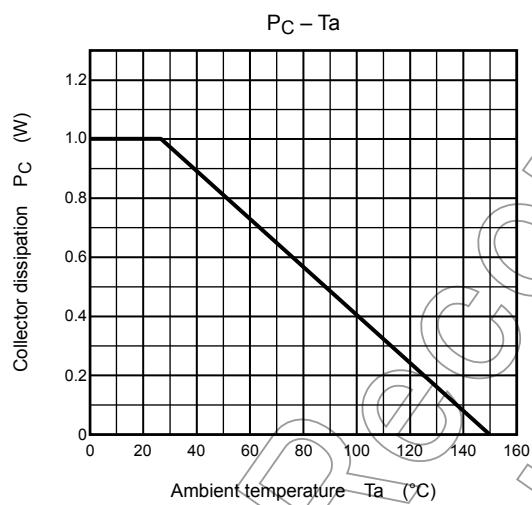
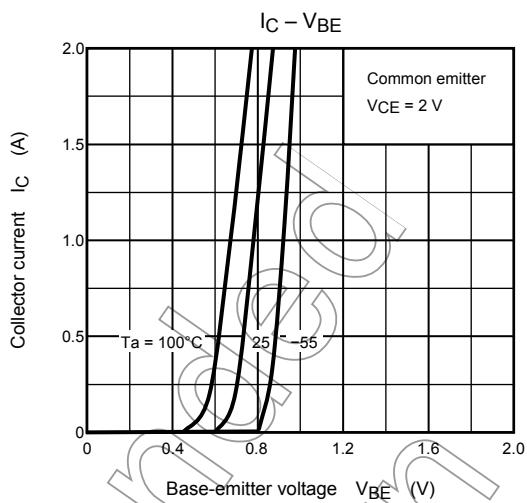
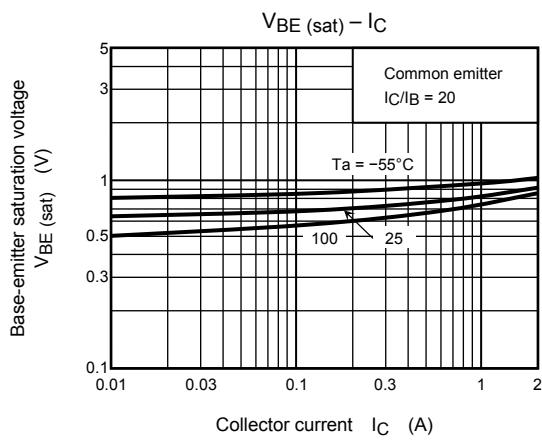
Note 3: A line under a Lot No. identifies the indication of product Labels.

Not underlined: [[Pb]]/INCLUDES > MCV

Underlined: [[G]]/RoHS COMPATIBLE or [[G]]/RoHS [[Pb]]

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