

TOSHIBA Transistor Silicon PNP Epitaxial Type

TPC6603

Switching Applications

DC/DC Converter Applications

Strobe Flash Applications

- High DC current gain: $h_{FE} = 200$ to 500 ($I_C = -0.5$ A)
- Low collector-emitter saturation: $V_{CE(sat)} = -0.19$ V (max)
- High-speed switching: $t_f = 40$ ns (typ.)

Absolute Maximum Ratings (Ta = 25°C)

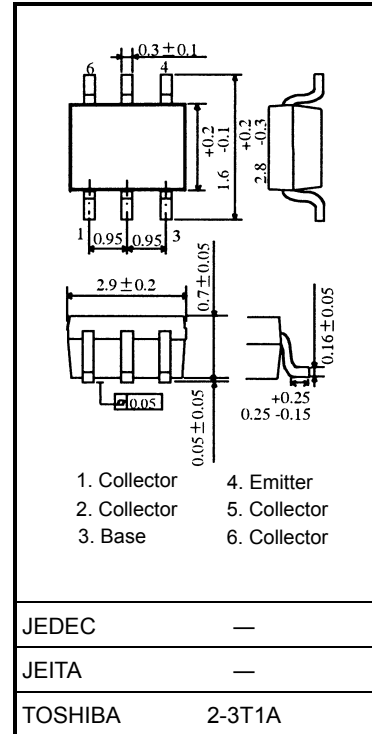
| Characteristic | Symbol | Rating | Unit |
|-----------------------------|------------|----------------|------|
| Collector-base voltage | V_{CBO} | -30 | V |
| Collector-emitter voltage | V_{CEO} | -20 | V |
| Emitter-base voltage | V_{EBO} | -7 | V |
| Collector current | DC | I_C | -3.0 |
| | Pulse | I_{CP} | -5.0 |
| Base current | I_B | -0.3 | mA |
| Collector power dissipation | DC | P_C (Note 1) | 0.8 |
| | $t = 10$ s | | 1.6 |
| Junction temperature | T_j | 150 | °C |
| Storage temperature range | T_{stg} | -55 to 150 | °C |

Note 1: Mounted on an FR4 board (glass-epoxy; 1.6 mm thick; Cu area, 645 mm²)

Note 2: 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).

Unit: mm



Weight: 0.01 g (typ.)

Electrical Characteristics (Ta = 25°C)

| Characteristic | Symbol | Test Condition | Min | Typ. | Max | Unit |
|--------------------------------------|---------------|----------------------------------------------------|-----|------|-------|------|
| Collector cutoff current | I_{CBO} | $V_{CB} = -30\text{ V}, I_E = 0$ | — | — | -100 | nA |
| Emitter cutoff current | I_{EBO} | $V_{EB} = -7\text{ V}, I_C = 0$ | — | — | -100 | nA |
| Collector-emitter breakdown voltage | $V_{(BR)CEO}$ | $I_C = -10\text{ mA}, I_B = 0$ | -20 | — | — | V |
| DC current gain | $h_{FE(1)}$ | $V_{CE} = -2\text{ V}, I_C = -0.5\text{ A}$ | 200 | — | 500 | |
| | $h_{FE(2)}$ | $V_{CE} = -2\text{ V}, I_C = -1.6\text{ A}$ | 100 | — | — | |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | $I_C = -1.6\text{ A}, I_B = -53\text{ mA}$ | — | — | -0.19 | V |
| Base-emitter saturation voltage | $V_{BE(sat)}$ | $I_C = -1.6\text{ A}, I_B = -53\text{ mA}$ | — | — | -1.10 | V |
| Collector output capacitance | C_{ob} | $V_{CB} = -10\text{ V}, I_E = 0, f = 1\text{ MHz}$ | — | 28 | — | pF |
| Switching time | Rise time | t_r | — | 70 | — | ns |
| | Storage time | t_{stg} | — | 150 | — | |
| | Fall time | t_f | — | 40 | — | |

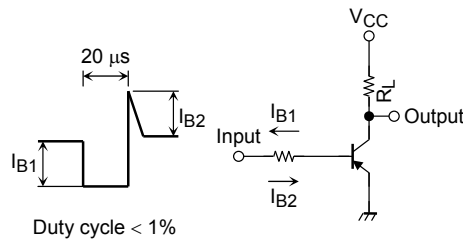
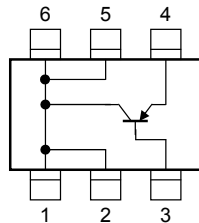
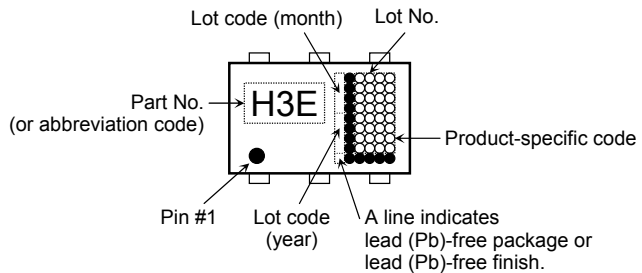


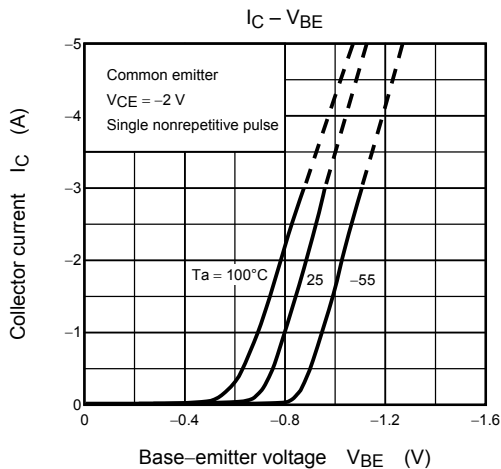
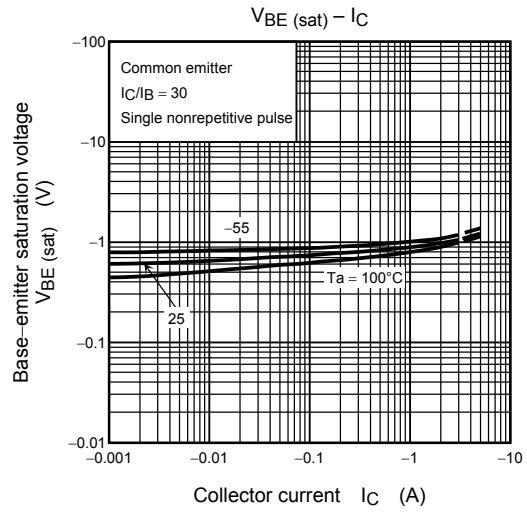
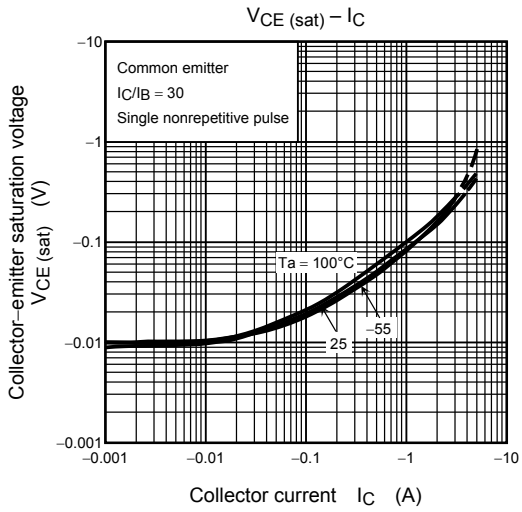
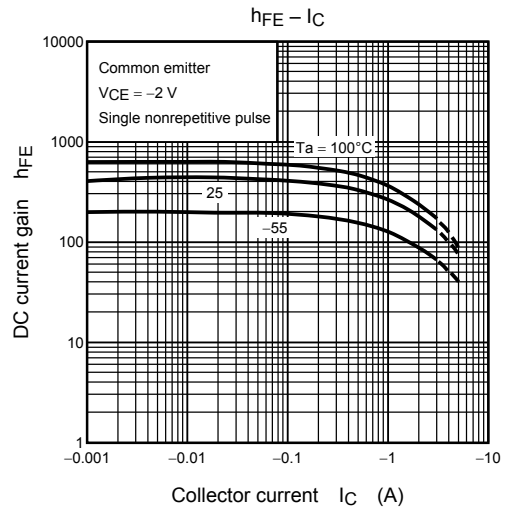
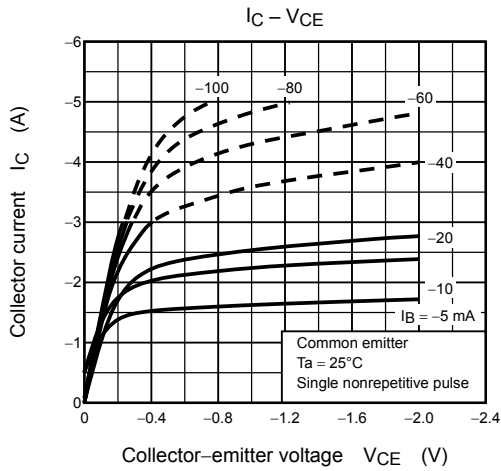
Figure 1. Switching Time Test Circuit

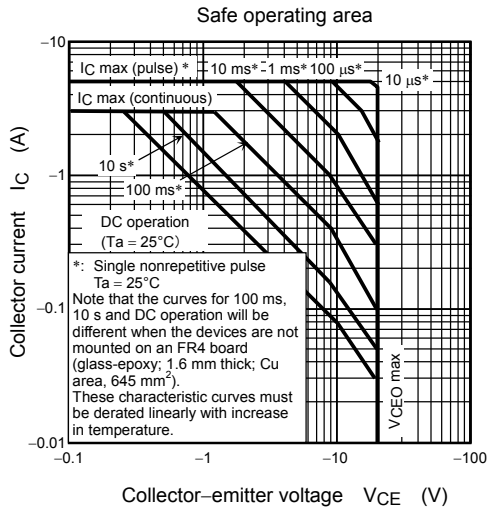
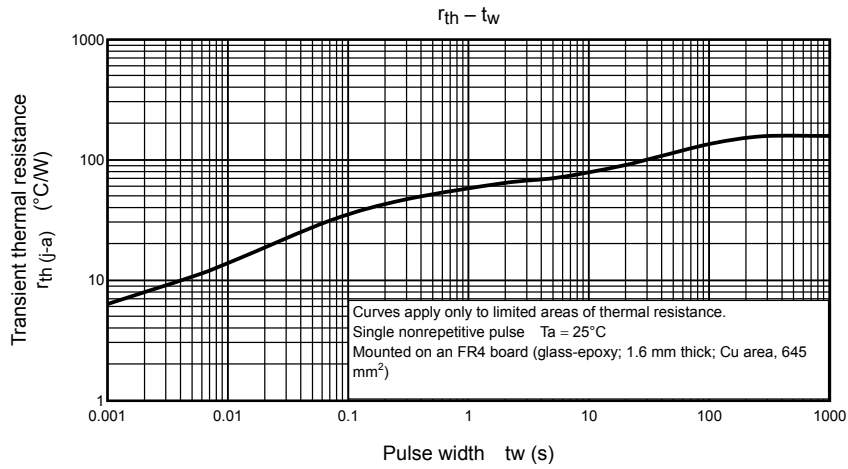
Circuit configuration (Top View)



Marking







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20070701-EN

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