

TOSHIBA Transistor Silicon PNP Epitaxial Type

2SA2215

High-Speed Switching Applications

DC-DC Converter Applications

Strobe Applications

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

Absolute Maximum Ratings ($T_a = 25^\circ\text{C}$)

| Characteristics | | Symbol | Rating | Unit |
|-----------------------------|-------|----------------|------------|------------------|
| Collector-base voltage | | V_{CBO} | -20 | V |
| Collector-emitter voltage | | V_{CEO} | -20 | V |
| Emitter-base voltage | | V_{EBO} | -7 | V |
| Collector current | DC | I_C | -2.5 | A |
| | Pulse | I_{CP} | -4.0 | |
| Base current | | I_B | -250 | mA |
| Collector power dissipation | | P_C (Note 1) | 800 | mW |
| | | P_C (Note 2) | 500 | |
| Junction temperature | | T_j | 150 | $^\circ\text{C}$ |
| Storage temperature range | | T_{stg} | -55 to 150 | $^\circ\text{C}$ |

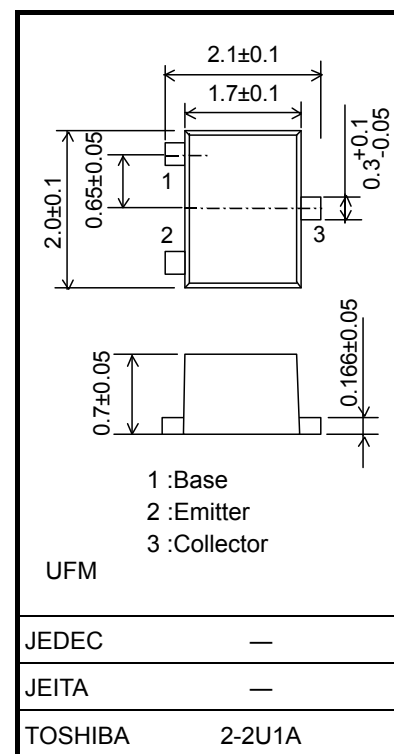
Note 1: Mounted on ceramic board. (25.4mm × 25.4mm × 0.8mm, Cu Pad: 645 mm²)

Note 2: Mounted on FR4 board. (25.4mm × 25.4mm × 1.6mm, Cu Pad: 645 mm²)

Note 3: 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: 6.6 mg (typ.)

Start of commercial production
2007-08

Electrical Characteristics (Ta = 25°C)

| Characteristics | | Symbol | Test Condition | Min | Typ. | Max | Unit |
|--------------------------------------|--------------|-----------------------|--|-----|------|-------|------|
| Collector cut-off current | | I_{CBO} | $V_{CB} = -20\text{ V}, I_E = 0$ | — | — | -100 | nA |
| Emitter cut-off current | | I_{EBO} | $V_{EB} = -7\text{ V}, I_C = 0$ | — | — | -100 | nA |
| Collector-emitter breakdown voltage | | $V_{(BR)\text{ CEO}}$ | $I_C = -10\text{ mA}, I_B = 0$ | -20 | — | — | V |
| DC current gain | Rise time | $h_{FE} (1)$ | $V_{CE} = -2\text{ V}, I_C = -0.5\text{ A}$ | 200 | — | 500 | |
| | Storage time | $h_{FE} (2)$ | $V_{CE} = -2\text{ V}, I_C = -1.6\text{ A}$ | 100 | — | — | |
| Collector-emitter saturation voltage | | $V_{CE\text{ (sat)}}$ | $I_C = -1.6\text{ A}, I_B = -53\text{ mA}$ | — | — | -0.19 | V |
| Base-emitter saturation voltage | | $V_{BE\text{ (sat)}}$ | $I_C = -1.6\text{ A}, I_B = -53\text{ mA}$ | — | — | -1.10 | V |
| Switching time | Rise time | t_r | See Figure 1 circuit diagram. | — | 70 | — | ns |
| | Storage time | t_{stg} | $V_{CC} \approx -12\text{ V}, R_L = 7.5\ \Omega$ | — | 150 | — | |
| | Fall time | t_f | $I_{B1} = -I_{B2} = -53\text{ mA}$ | — | 40 | — | |

Marking

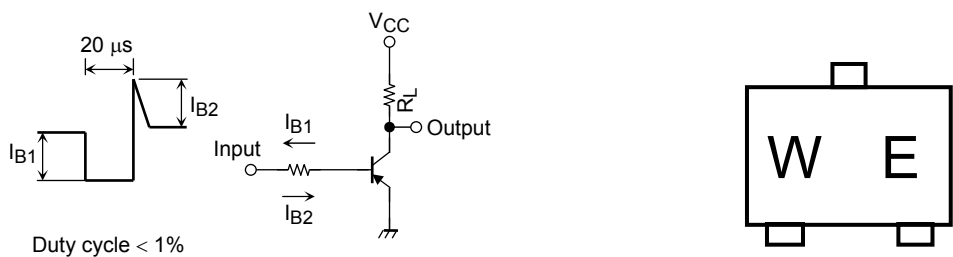
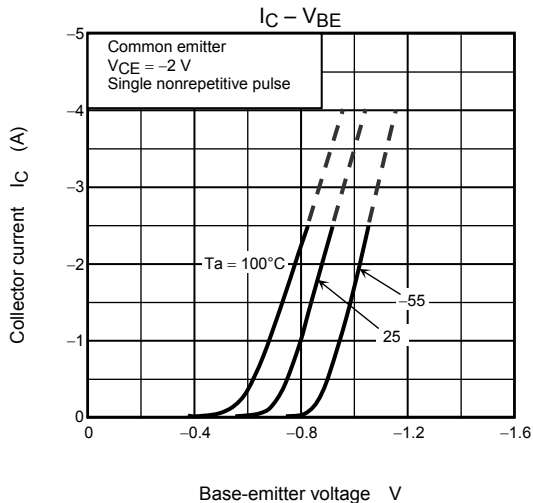
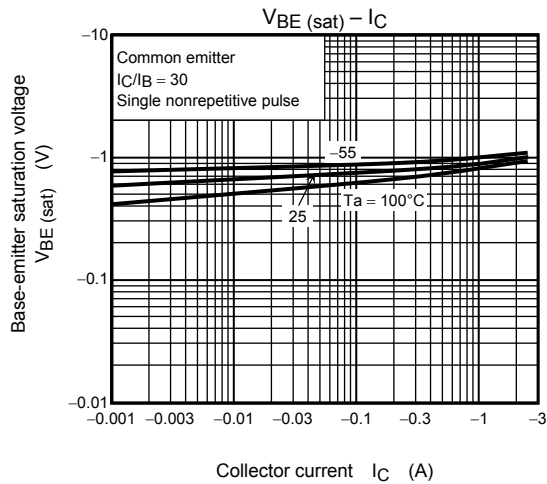
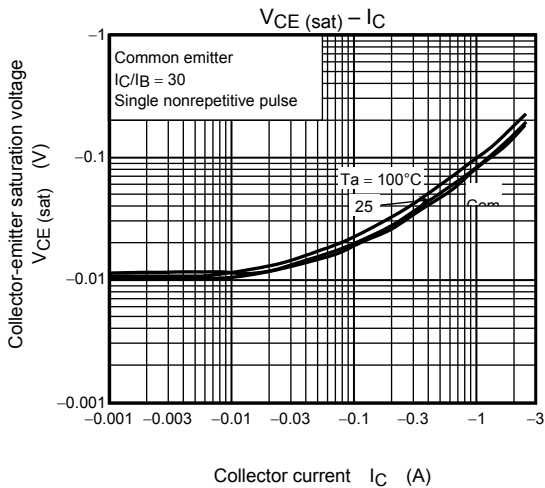
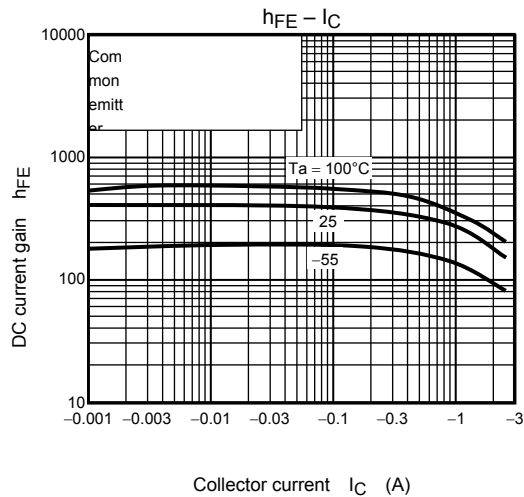
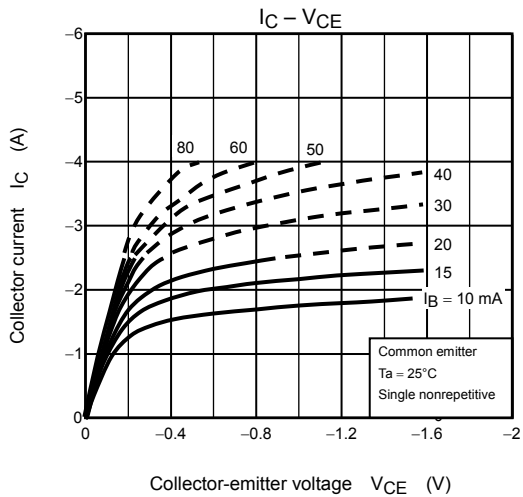


Figure 1 Switching Time Test Circuit & Timing Chart



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