

TOSHIBA Transistor Silicon NPN Triple Diffused Type

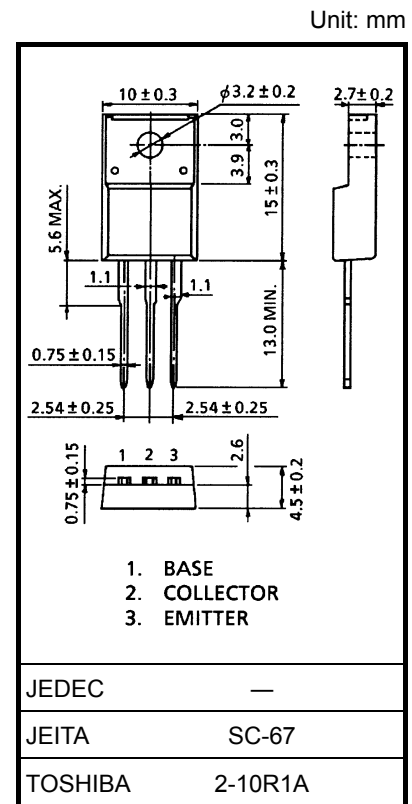
2SC5459

Switching Regulator Applications
 High-Voltage Switching Applications
 DC-DC Converter Applications

- High-speed switching: $t_f = 0.3 \mu s$ (max) ($I_C = 1.2 A$)
- High collector breakdown voltage: $V_{CEO} = 400 V$
- High DC current gain: $h_{FE} = 20$ (min) ($I_C = 0.3 A$)

Absolute Maximum Ratings ($T_c = 25^\circ C$)

| Characteristics | | Symbol | Rating | Unit |
|-----------------------------|--------------------|-----------|------------|------------|
| Collector-base voltage | | V_{CBO} | 600 | V |
| Collector-emitter voltage | | V_{CEO} | 400 | V |
| Emitter-base voltage | | V_{EBO} | 7 | V |
| Collector current | DC | I_C | 3 | A |
| | Pulse | I_{CP} | 5 | |
| Base current | | I_B | 1 | A |
| Collector power dissipation | $T_a = 25^\circ C$ | P_C | 2.0 | W |
| | $T_c = 25^\circ C$ | | 25 | |
| Junction temperature | | T_j | 150 | $^\circ C$ |
| Storage temperature range | | T_{stg} | -55 to 150 | $^\circ C$ |



Weight: 1.7 g (typ.)

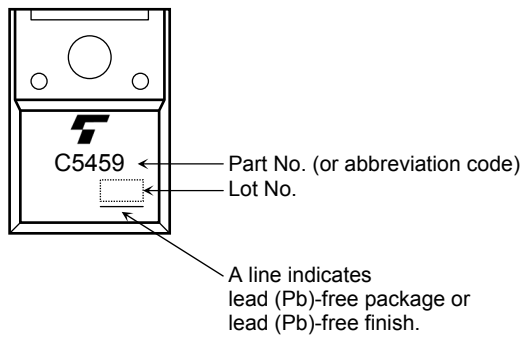
Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) are within the absolute maximum ratings.

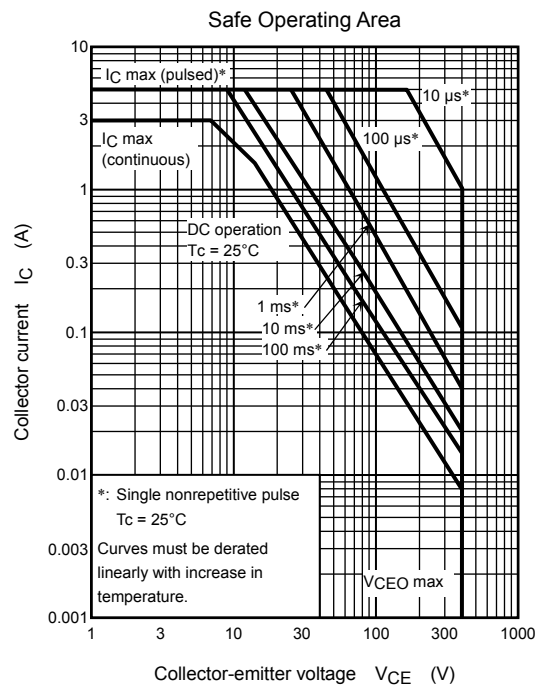
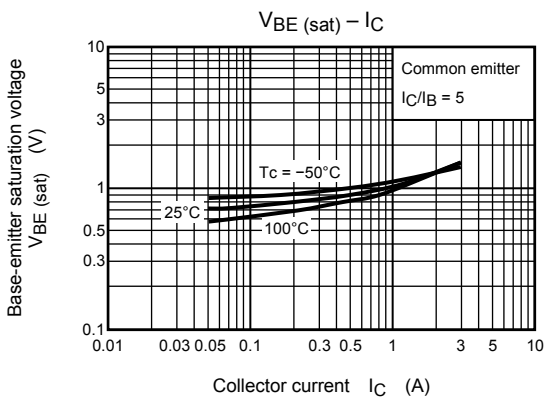
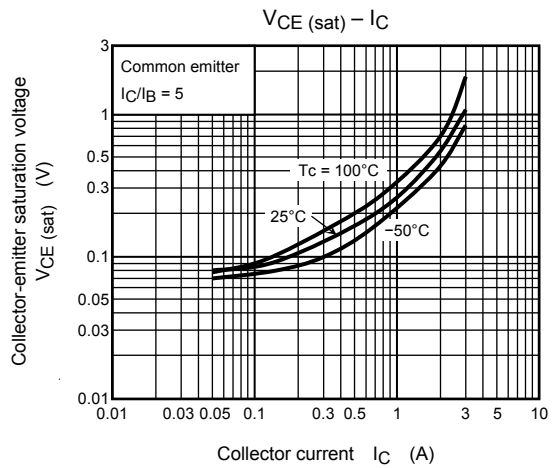
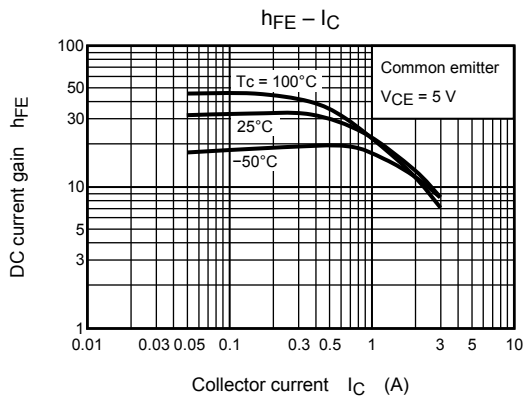
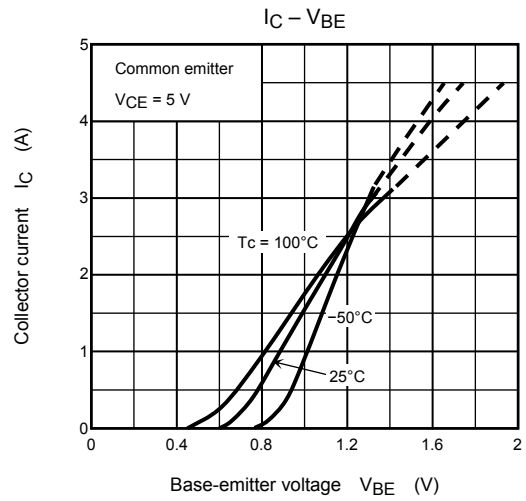
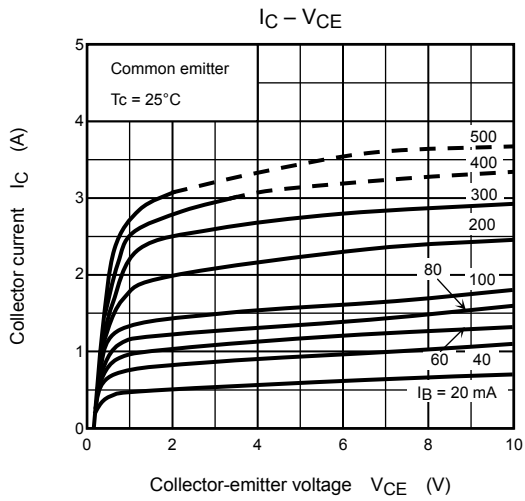
Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/Derating Concept and Methods) and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

Electrical Characteristics (Tc = 25°C)

| Characteristics | | Symbol | Test Condition | Min | Typ. | Max | Unit |
|--------------------------------------|--------------|----------------|---|-----|------|-----|---------------|
| Collector cut-off current | | I_{CBO} | $V_{CB} = 480 \text{ V}, I_E = 0$ | — | — | 100 | μA |
| Emitter cut-off current | | I_{EBO} | $V_{EB} = 7 \text{ V}, I_C = 0$ | — | — | 10 | μA |
| Collector-base breakdown voltage | | $V_{(BR) CBO}$ | $I_C = 1 \text{ mA}, I_E = 0$ | 600 | — | — | V |
| Collector-emitter breakdown voltage | | $V_{(BR) CEO}$ | $I_C = 10 \text{ mA}, I_B = 0$ | 400 | — | — | V |
| DC current gain | | $h_{FE} (1)$ | $V_{CE} = 5 \text{ V}, I_C = 1 \text{ mA}$ | 13 | — | — | |
| | | $h_{FE} (2)$ | $V_{CE} = 5 \text{ V}, I_C = 0.3 \text{ A}$ | 20 | — | — | |
| Collector-emitter saturation voltage | | $V_{CE (sat)}$ | $I_C = 1.2 \text{ A}, I_B = 0.15 \text{ A}$ | — | — | 1.0 | V |
| Base-emitter saturation voltage | | $V_{BE (sat)}$ | $I_C = 1.2 \text{ A}, I_B = 0.15 \text{ A}$ | — | — | 1.3 | V |
| Switching time | Turn-on time | t_r | <p>$V_{CC} \approx 360 \text{ V}$ 300Ω $20 \mu\text{s}$ I_{B1} I_{B2} $I_{B1} = 0.15 \text{ A}, I_{B2} = -0.3 \text{ A},$ $\text{duty cycle} \leq 1\%$</p> | — | — | 0.5 | μs |
| | Storage time | t_{stg} | | — | — | 2.0 | |
| | Fall time | t_f | | — | — | 0.3 | |

Marking





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