

TOSHIBA Transistor Silicon NPN Epitaxial Type (PCT process)

2SC3303

High Current Switching Applications
DC-DC Converter Applications

- Low collector saturation voltage: $V_{CE(sat)} = 0.4\text{ V (max)}$ ($I_C = 3\text{ A}$)
- High speed switching time: $t_{stg} = 1.0\text{ }\mu\text{s (typ.)}$

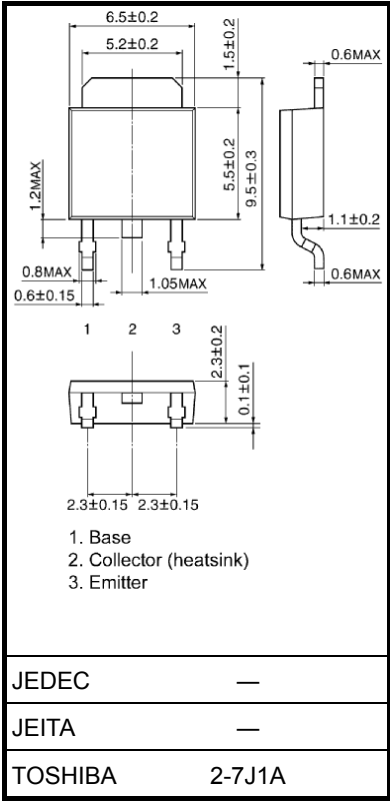
Absolute Maximum Ratings ($T_a = 25^\circ\text{C}$)

| Characteristics | | Symbol | Rating | Unit |
|-----------------------------|--------------------------|-----------|------------|------------------|
| Collector-base voltage | | V_{CBO} | 100 | V |
| Collector-emitter voltage | | V_{CEO} | 80 | V |
| Emitter-base voltage | | V_{EBO} | 7 | V |
| Collector current | DC | I_C | 5 | A |
| | Pulse | I_{CP} | 8 | |
| Base current | | I_B | 1 | A |
| Collector power dissipation | $T_a = 25^\circ\text{C}$ | P_C | 1.0 | W |
| | $T_c = 25^\circ\text{C}$ | | 20 | |
| Junction temperature | | T_j | 150 | $^\circ\text{C}$ |
| Storage temperature range | | T_{stg} | -55 to 150 | $^\circ\text{C}$ |

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).

Industrial Applications

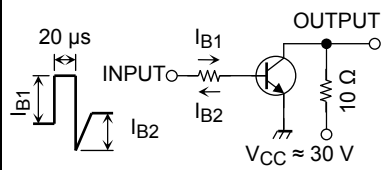
Unit: mm



Weight: 0.36 g (typ.)

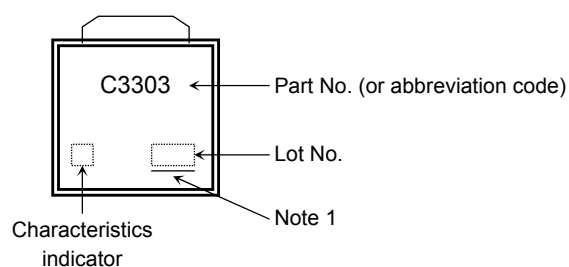
Start of commercial production
1989-02

Electrical Characteristics (Ta = 25°C)

| Characteristics | | Symbol | Test Condition | Min | Typ. | Max | Unit |
|--------------------------------------|-----------------------|---------------|--|-----|------|-----|---------------|
| Collector cut-off current | | I_{CBO} | $V_{CB} = 100\text{ V}, I_E = 0$ | — | — | 1 | μA |
| Emitter cut-off current | | I_{EBO} | $V_{EB} = 7\text{ V}, I_C = 0$ | — | — | 1 | μA |
| Collector-emitter breakdown voltage | | $V_{(BR)CEO}$ | $I_C = 10\text{ mA}, I_B = 0$ | 80 | — | — | V |
| DC current gain | $h_{FE(1)}$ (Note) | | $V_{CE} = 1\text{ V}, I_C = 1\text{ A}$ | 70 | — | 240 | |
| | $h_{FE(2)}$ | | $V_{CE} = 1\text{ V}, I_C = 3\text{ A}$ | 40 | — | — | |
| Collector-emitter saturation voltage | | $V_{CE(sat)}$ | $I_C = 3\text{ A}, I_B = 0.15\text{ A}$ | — | 0.2 | 0.4 | V |
| Base-emitter saturation voltage | | $V_{BE(sat)}$ | $I_C = 3\text{ A}, I_B = 0.15\text{ A}$ | — | 0.9 | 1.2 | V |
| Transition frequency | | f_T | $V_{CE} = 4\text{ V}, I_C = 1\text{ A}$ | — | 120 | — | MHz |
| Collector output capacitance | | C_{ob} | $V_{CB} = 10\text{ V}, I_E = 0, f = 1\text{ MHz}$ | — | 80 | — | pF |
| Switching time | Turn-on time | t_{on} |  | — | 0.2 | — | μs |
| | Storage time | t_{stg} | | — | 1.0 | — | |
| | Fall time | t_f | | — | 0.1 | — | |

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

Marking

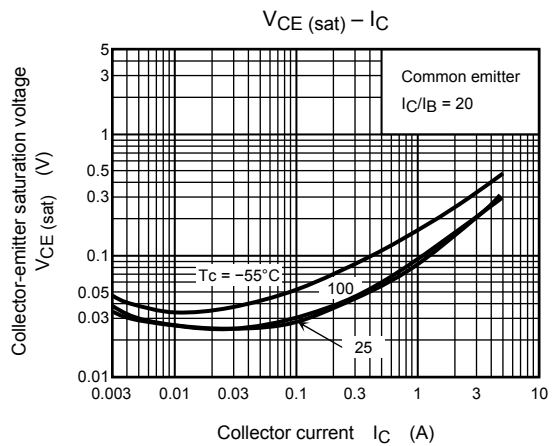
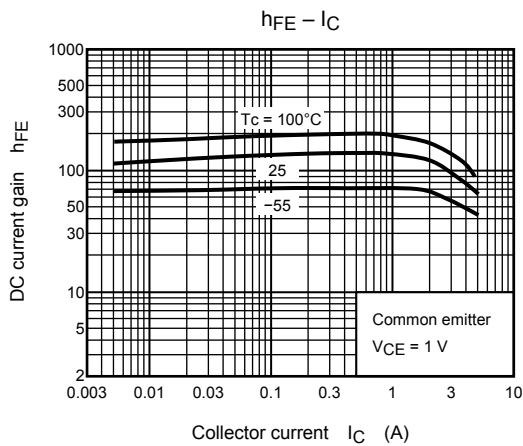
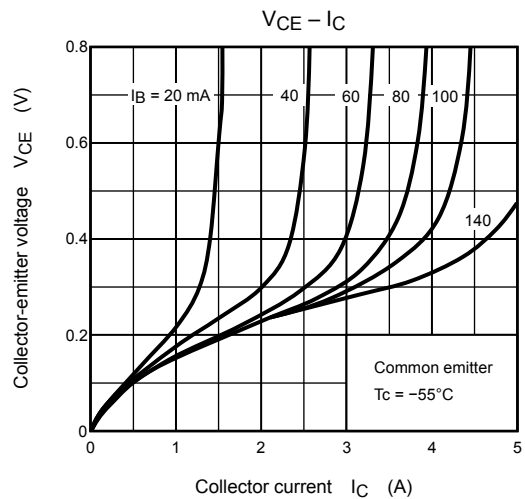
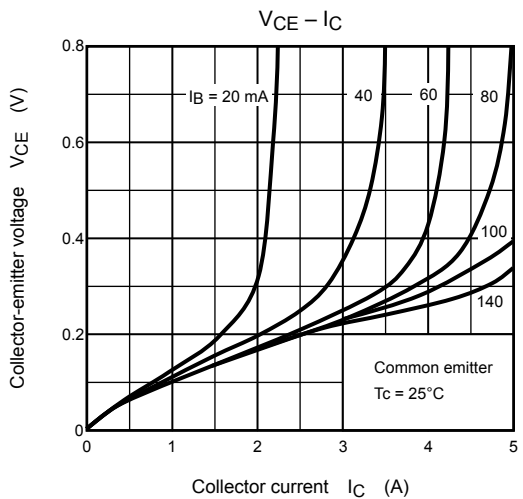
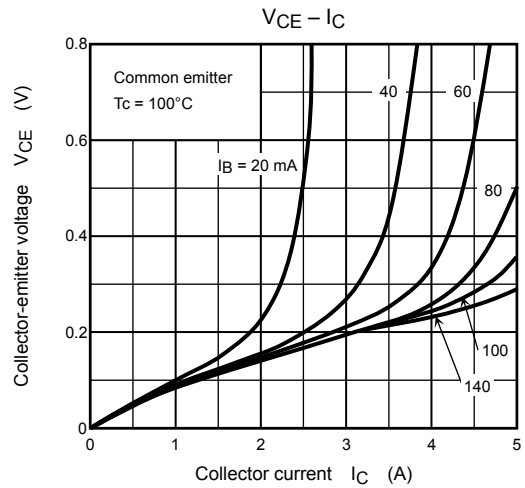
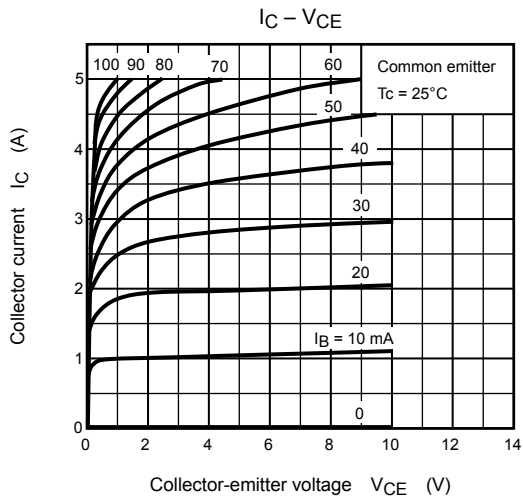


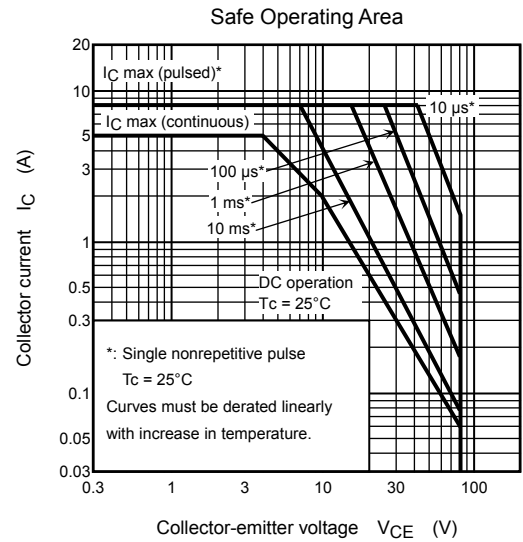
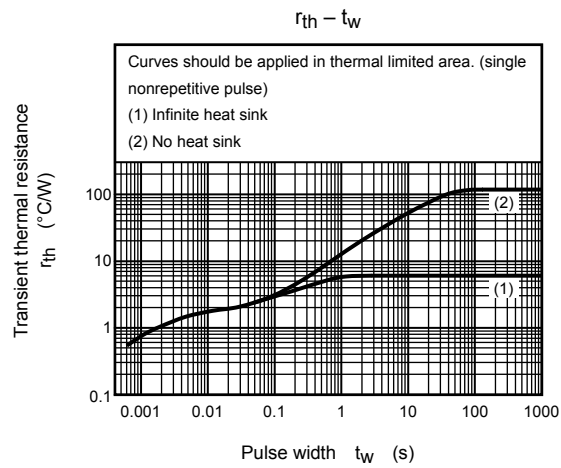
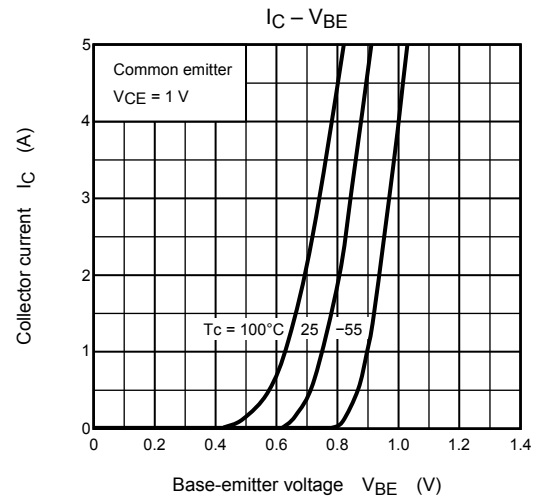
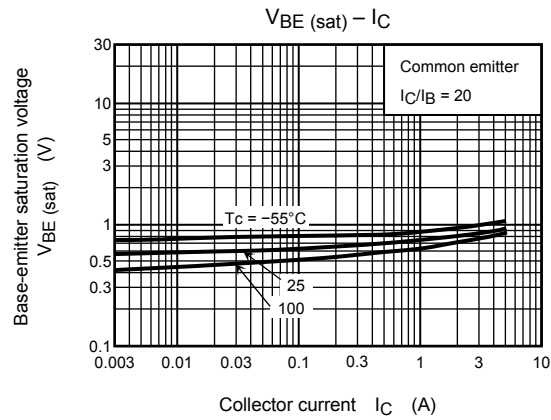
Note 1: A line under a Lot No. identifies the indication of product Labels.

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

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

Please contact your TOSHIBA sales representative for details as to environmental matters such as the RoHS compatibility of Product. The RoHS is the Directive 2011/65/EU of the European Parliament and of the Council of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment.





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