

TOSHIBA Transistor Silicon PNP Epitaxial Type (PCT process)

# 2SA1244

## High Current Switching Applications

- Low collector saturation voltage:  $V_{CE(sat)} = -0.4\text{ V (max)}$  ( $I_C = -3\text{ A}$ )
- High speed switching time:  $t_{stg} = 1.0\text{ }\mu\text{s (typ.)}$
- Complementary to 2SC3074

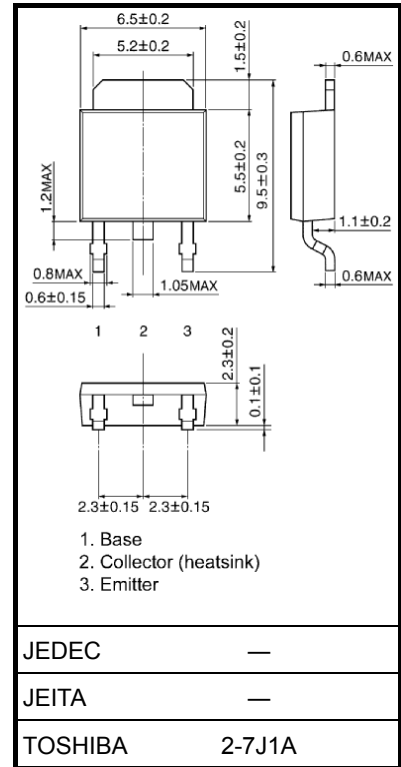
## Absolute Maximum Ratings (Ta = 25°C)

| Characteristics             |           | Symbol    | Rating     | Unit |
|-----------------------------|-----------|-----------|------------|------|
| Collector-base voltage      |           | $V_{CBO}$ | -60        | V    |
| Collector-emitter voltage   |           | $V_{CEO}$ | -50        | V    |
| Emitter-base voltage        |           | $V_{EBO}$ | -5         | V    |
| Collector current           |           | $I_C$     | -5         | A    |
| Base current                |           | $I_B$     | -1         | A    |
| Collector power dissipation | Ta = 25°C | $P_C$     | 1.0        | W    |
|                             | Tc = 25°C |           | 20         |      |
| Junction temperature        |           | $T_j$     | 150        | °C   |
| Storage temperature range   |           | $T_{stg}$ | -55 to 150 | °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).

Unit: mm



Weight: 0.36 g (typ.)

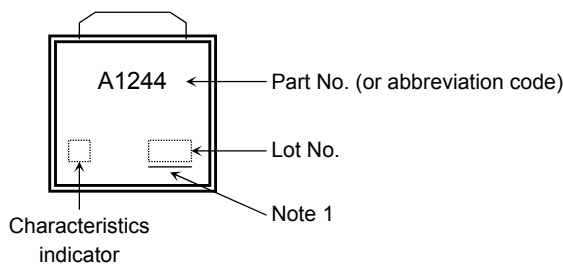
Start of commercial production  
1981-05

## 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   | $\mu\text{A}$ |
| Emitter cut-off current              |                       | $I_{EBO}$     | $V_{EB} = -5\text{ V}, I_C = 0$                    | —   | —    | -1   | $\mu\text{A}$ |
| Collector-emitter breakdown voltage  |                       | $V_{(BR)CEO}$ | $I_C = -10\text{ mA}, I_B = 0$                     | -50   | —    | —    | V             |
| DC current gain                      | $h_{FE(1)}$<br>(Note) |               | $V_{CE} = -1\text{ V}, I_C = -1\text{ A}$          | 70  | —    | 240  |               |
|                                      | $h_{FE(2)}$           |               | $V_{CE} = -1\text{ V}, I_C = -3\text{ A}$          | 30  | —    | —    |               |
| 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                 |                       | $f_T$         | $V_{CE} = -4\text{ V}, I_C = -1\text{ A}$          | —   | 60   | —    | MHz           |
| Collector output capacitance         |                       | $C_{ob}$      | $V_{CB} = -10\text{ V}, I_E = 0, f = 1\text{ MHz}$ | —   | 170  | —    | pF            |
| Switching time                       | Turn-on time          | $t_{on}$      |  | —   | 0.1  | —    | $\mu\text{s}$ |
|                                      | Storage time          | $t_{stg}$     |  | —   | 1.0  | —    |               |
|                                      | Fall time             | $t_f$         |  | $I_{B1} = 0.15\text{ A}, I_{B2} = 0.15\text{ A}$<br>DUTY CYCLE $\leq 1\%$ | —    | 0.1  |               |

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

## Marking

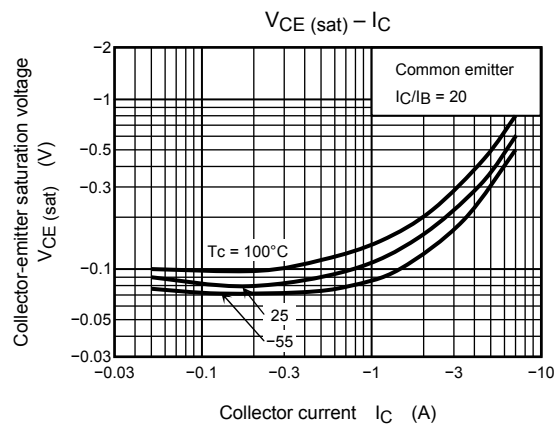
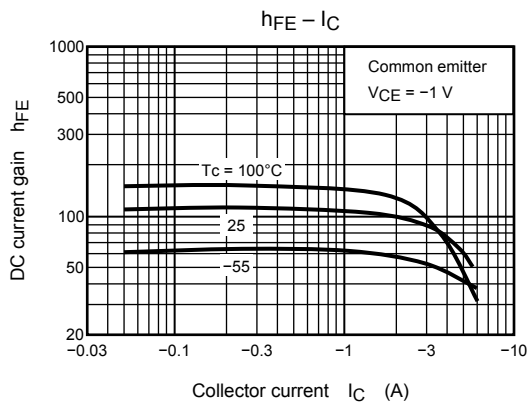
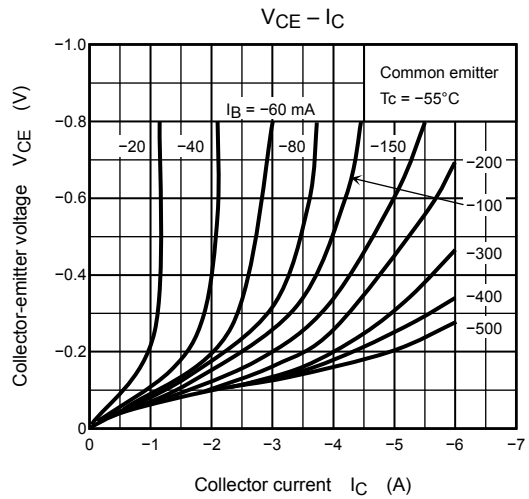
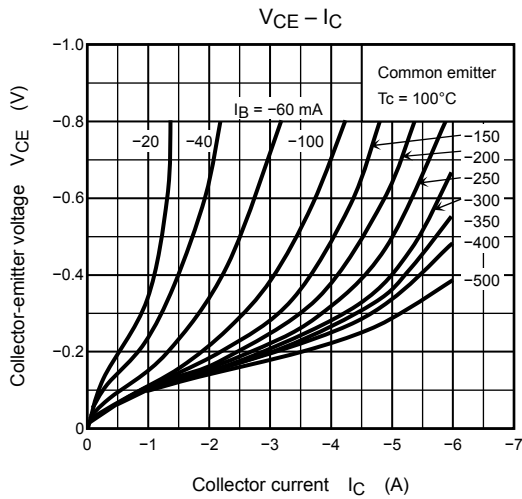
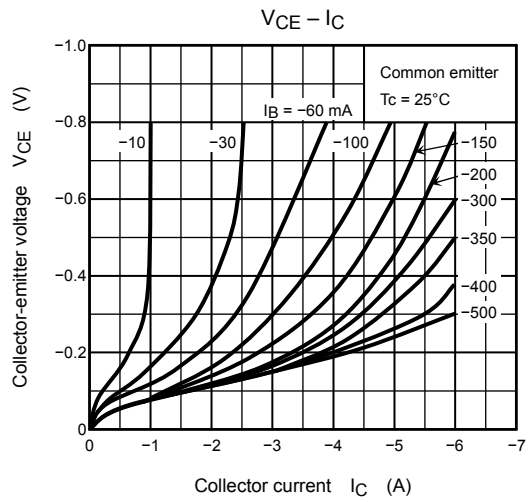
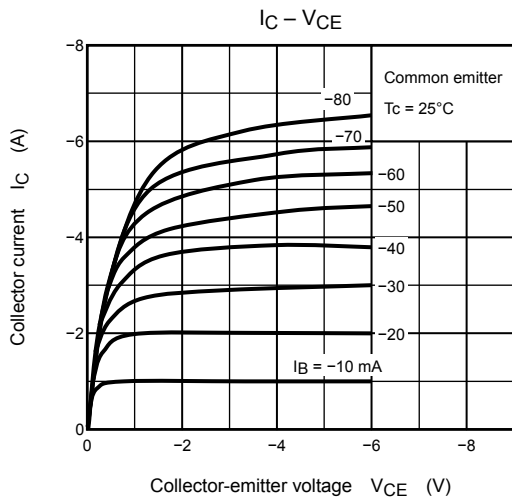


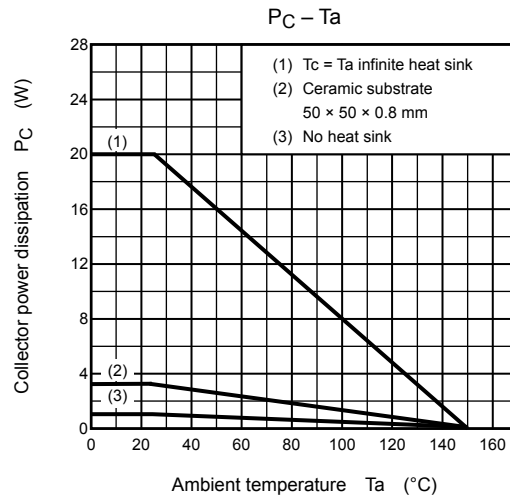
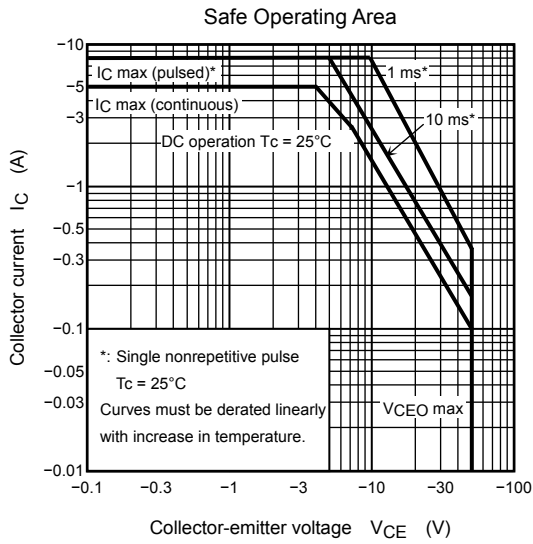
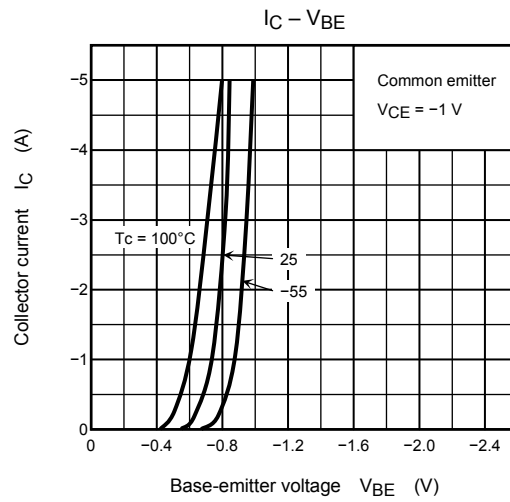
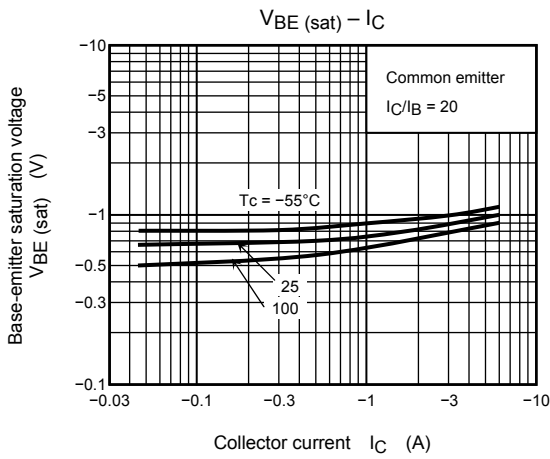
Note 1: A line under a Lot No. identifies the indication of product Labels.

Not underlined:  $[[\text{Pb}]]/\text{INCLUDES} > \text{MCV}$

Underlined:  $[[\text{G}]]/\text{RoHS COMPATIBLE}$  or  $[[\text{G}]]/\text{RoHS} [[\text{Pb}]]$

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