

TOSHIBA Transistor Silicon NPN Epitaxial Type (PCT process)

2SC4213

For Muting and Switching Applications

- High emitter-base voltage: $V_{EBO} = 25\text{ V}$
- High reverse h_{FE} : Reverse $h_{FE} = 150$ (typ.) ($V_{CE} = -2\text{ V}$, $I_C = -4\text{ mA}$)
- Low on resistance: $R_{ON} = 1\ \Omega$ (typ.) ($I_B = 5\text{ mA}$)
- High DC current gain: $h_{FE} = 200$ to 1200
- Small package

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

| Characteristics | Symbol | Rating | Unit |
|-----------------------------|--------------------|------------|------------------|
| Collector-base voltage | V_{CB0} | 50 | V |
| Collector-emitter voltage | V_{CE0} | 20 | V |
| Emitter-base voltage | V_{EBO} | 25 | V |
| Collector current | I_C | 300 | mA |
| Base current | I_B | 60 | mA |
| Collector power dissipation | P_C (Note 1, 3) | 200 | mW |
| | P_C (Note 2) | 100 | |
| Junction temperature | T_j (Note 1) | 150 | $^\circ\text{C}$ |
| | T_j (Note 2) | 125 | |
| Storage temperature range | T_{stg} (Note 1) | -55 to 150 | $^\circ\text{C}$ |
| | T_{stg} (Note 2) | -55 to 125 | |

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.

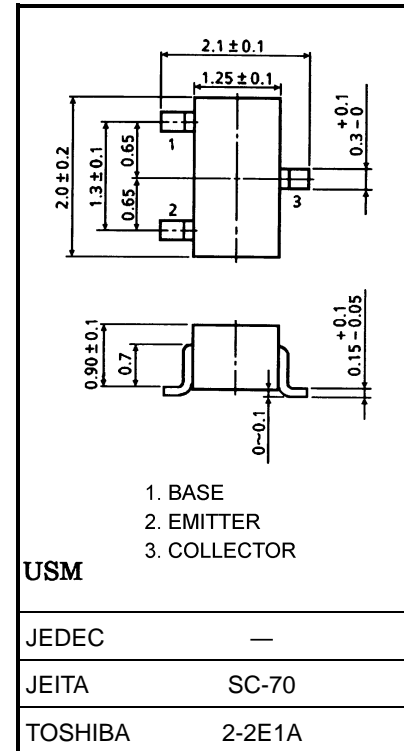
Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/"Derating Concept and Methods") and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

Note 1 : For devices with the ordering part number ending in LF(T).

Note 2 : For devices with the ordering part number in other than LF(T).

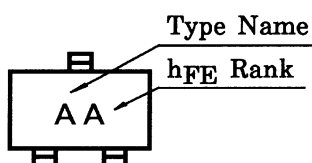
Note 3 : Mounted on a FR4 board. (25.4 mm × 25.4 mm × 1.6 mm, Cu pad: 0.5 mm² × 3)

Unit: mm



Weight: 0.006 g (typ.)

Marking

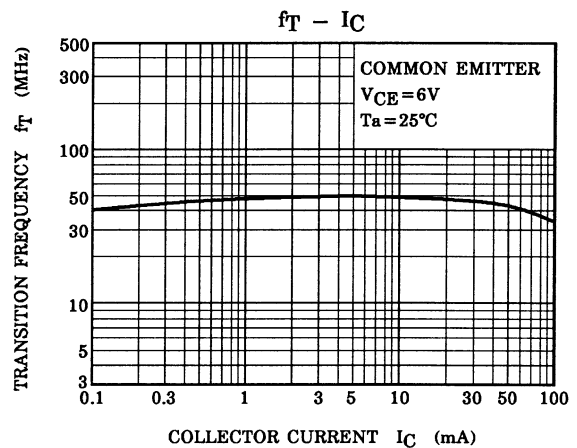
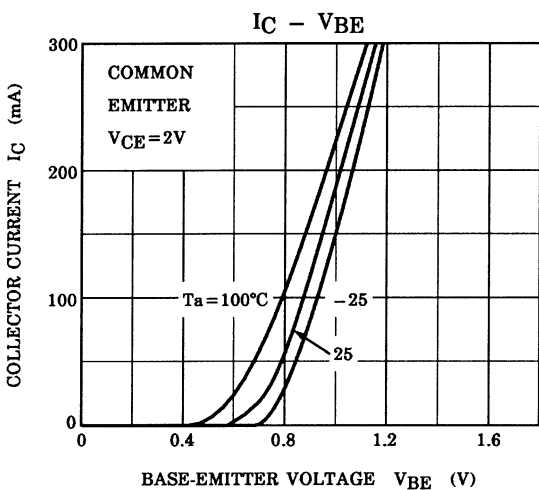
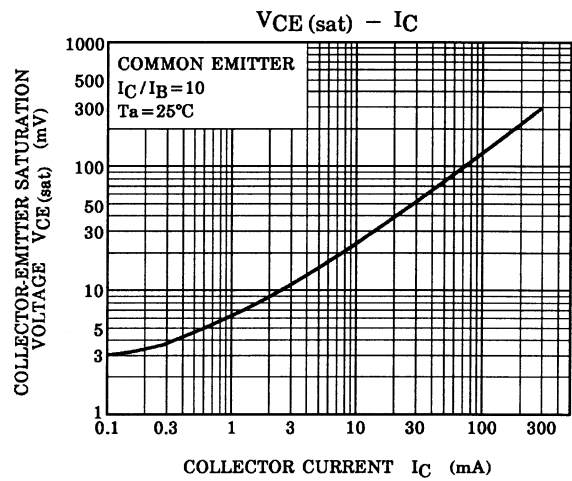
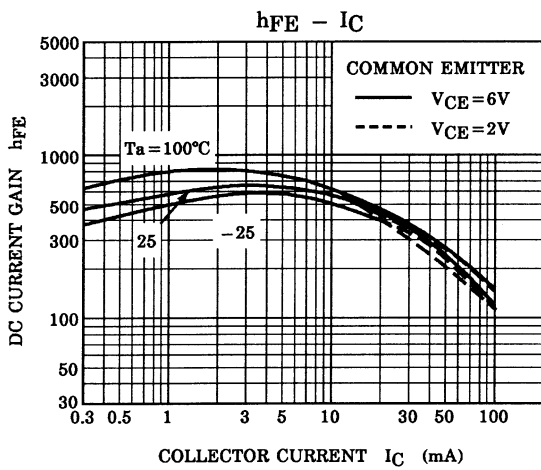
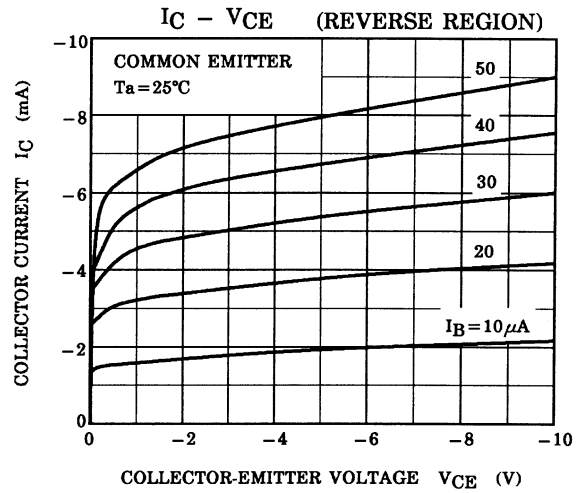
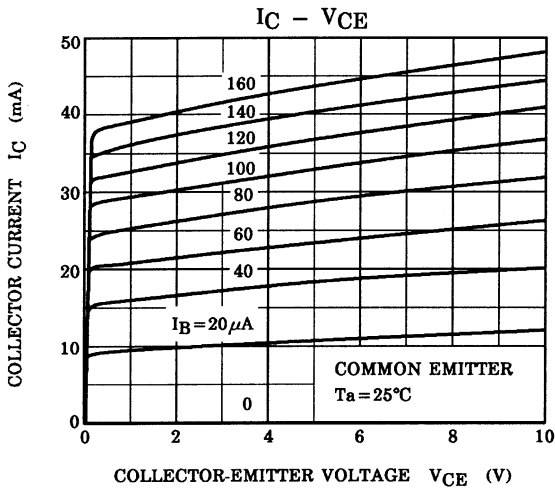


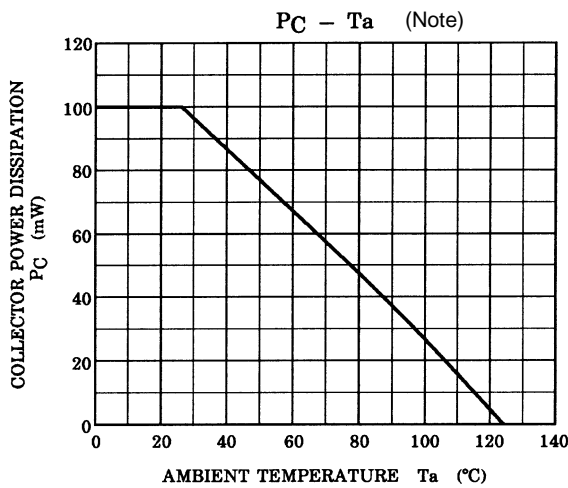
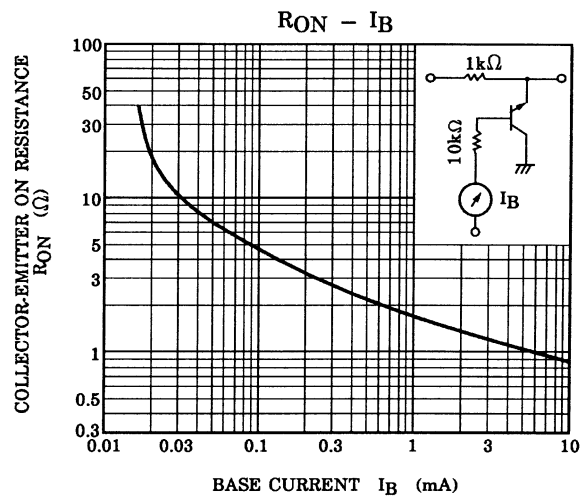
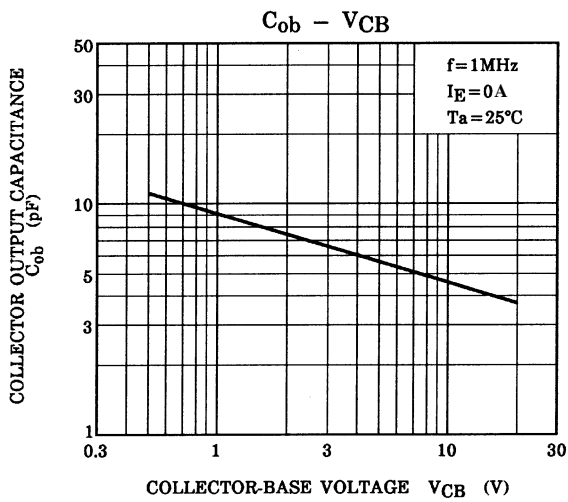
Start of commercial production
1987-05

Electrical Characteristics (Ta = 25°C)

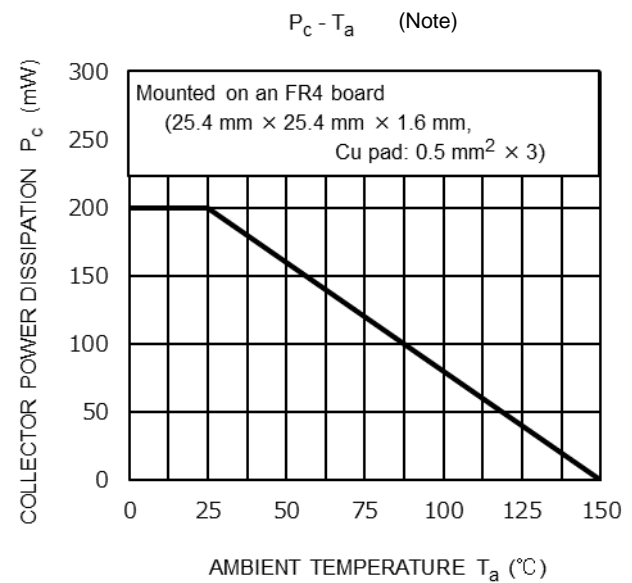
| Characteristics | | Symbol | Test Condition | Min | Typ. | Max | Unit |
|--------------------------------------|--------------|---------------------------|---|-----|-------|------|------|
| Collector cut-off current | | ICBO | V _{CB} = 50 V, I _E = 0 A | — | — | 0.1 | μA |
| Emitter cut-off current | | IEBO | V _{EB} = 25 V, I _C = 0 A | — | — | 0.1 | μA |
| DC current gain | | h _{FE} (Note) | V _{CE} = 2 V, I _C = 4 mA | 200 | — | 1200 | — |
| Collector-emitter saturation voltage | | V _{CE (sat)} | I _C = 30 mA, I _B = 3 mA | — | 0.042 | 0.1 | V |
| Base-emitter voltage | | V _{BE} | V _{CE} = 2 V, I _C = 4 mA | — | 0.61 | — | V |
| Transition frequency | | f _T | V _{CE} = 6 V, I _C = 4 mA | — | 30 | — | MHz |
| Collector output capacitance | | C _{ob} | V _{CB} = 10 V, I _E = 0 A, f = 1 MHz | — | 4.8 | 7 | pF |
| Switching time | Turn-on time | t _{on} | <p>Duty cycle ≤ 2%</p> | — | 160 | — | ns |
| | Storage time | t _{stg} | | — | 500 | — | |
| | Fall time | t _f | | — | 130 | — | |

Note: h_{FE} classification A: 200 to 700, B: 350 to 1200





Note: Reference only with T_j of 125°C .



Note: Reference only with T_j of 150°C .

The above characteristics curves are presented for reference only and not guaranteed by production test, unless otherwise noted.

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