TOSHIBA Transistor Silicon NPN Epitaxial Type (PCT process)

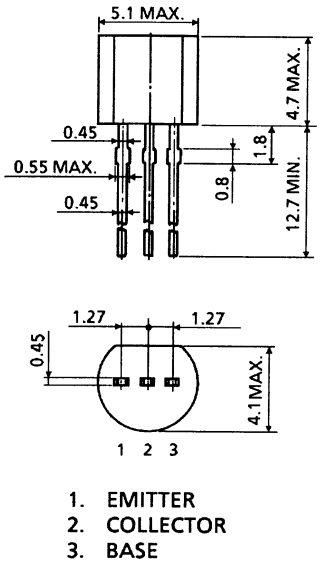
# 2SC2551

Industrial Applications

Hight Voltage Control Applications
Plasma Display, Nixie Tube Driver Applications
Cathode Ray Tube Brightness Control Applications

- High voltage: $V_{CBO}$ = 300 V, $V_{CEO}$ = 300 V
- Low saturation voltage: $V_{CE\ (sat)}$ = 0.5 V (max)
- Small collector output capacitance: $C_{ob}$ = 3 pF (typ.)
- Complementary to 2SA1091.

Unit: mm




| | |
|---|---|
| JEDEC | TO-92 |
| JEITA | SC-43 |
| TOSHIBA | 2-5F1B |

Weight: 0.21 g (typ.)

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

| Characteristics | Symbol | Rating | Unit |
|---|---|---|---|
| Collector-base voltage | $V_{CBO}$ | 300 | V |
| Collector-emitter voltage | $V_{CEO}$ | 300 | V |
| Emitter-base voltage | $V_{EBO}$ | 6 | V |
| Collector current | $I_C$ | 100 | mA |
| Base current | $I_B$ | 20 | mA |
| Collector power dissipation | $P_C$ | 400 | mW |
| Junction temperature | $T_j$ | 150 | °C |
| Storage temperature range | $T_{stg}$ | −55~150 | °C |

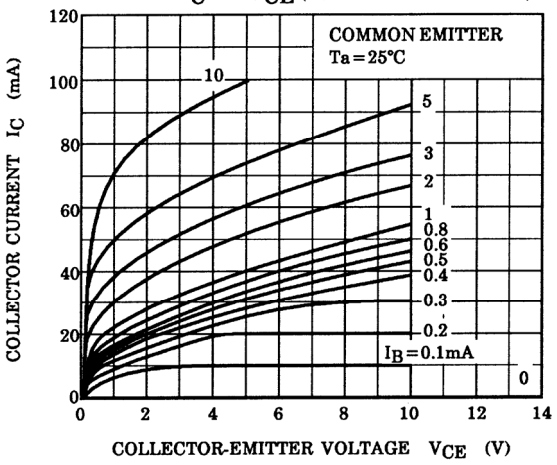
Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.)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

## Electrical Characteristics (Ta = 25°C)

| Characteristics | Symbol | Test Condition | Min | Typ. | Max | Unit |
|---|---|---|---|---|---|---|
| Collector cut-off current | $I_{CBO}$ | $V_{CB}$ = 300 V, $I_E$ = 0 | — | — | 0.1 | μA |
| Emitter cut-off current | $I_{EBO}$ | $V_{EB}$ = 6 V, $I_C$ = 0 | — | — | 0.1 | μA |
| Collector-base breakdown voltage | $V_{(BR)\ CBO}$ | $I_C$ = 0.1 mA, $I_E$ = 0 | 300 | — | — | V |
| Collector-emitter breakdown voltage | $V_{(BR)\ CEO}$ | $I_C$ = 1 mA, $I_B$ = 0 | 300 | — | — | V |
| DC current gain | $h_{FE\ (1)}$ (Note) | $V_{CE}$ = 10 V, $I_C$ = 20 mA | 30 | — | 150 | |
| | $h_{FE\ (2)}$ | $V_{CE}$ = 10 V, $I_C$ = 1 mA | 20 | — | — | |
| Collector-emitter saturation voltage | $V_{CE\ (sat)}$ | $I_C$ = 20 mA, $I_B$ = 2 mA | — | — | 0.5 | V |
| Base-emitter saturation voltage | $V_{BE\ (sat)}$ | $I_C$ = 20 mA, $I_B$ = 2 mA | — | — | 1.2 | V |
| Transition frequency | $f_T$ | $V_{CE}$ = 10 V, $I_C$ = 20 mA | 50 | 80 | — | MHz |
| Collector output capacitance | $C_{ob}$ | $V_{CB}$ = 20 V, $I_E$ = 0, f = 1 MHz | — | 3 | 4 | pF |

Note: $h_{FE\ (1)}$ classification R: 30~90, O: 50~150

$I_C$ – $V_{CE}$ (LOW VOLTAGE REGION)

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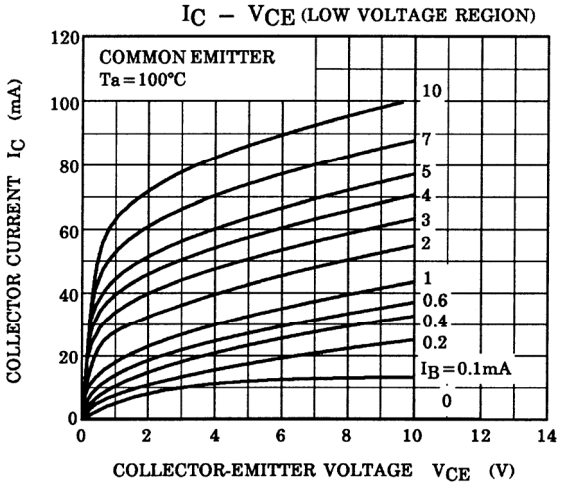


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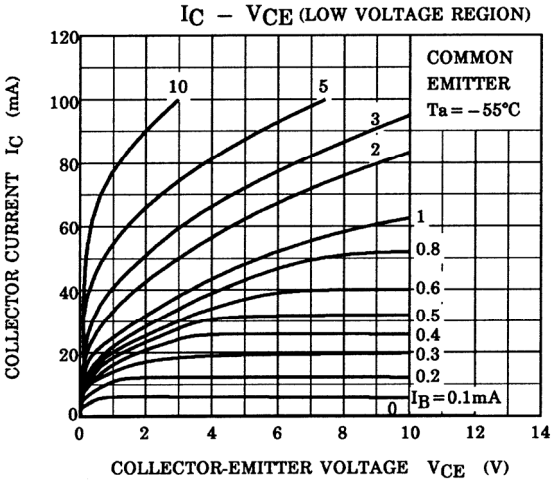


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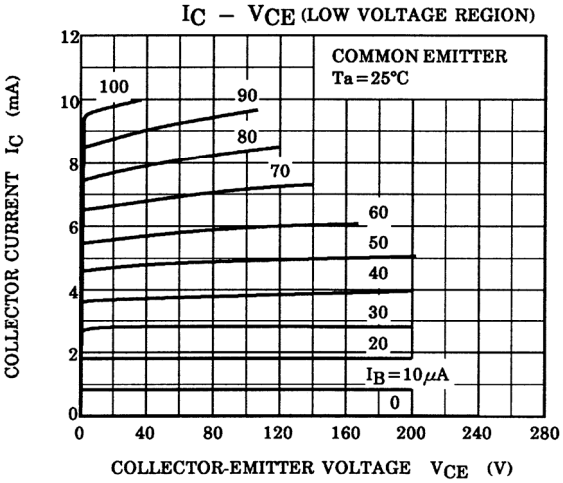


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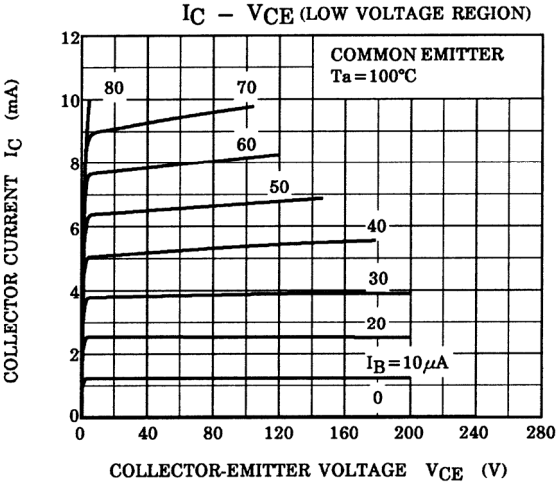


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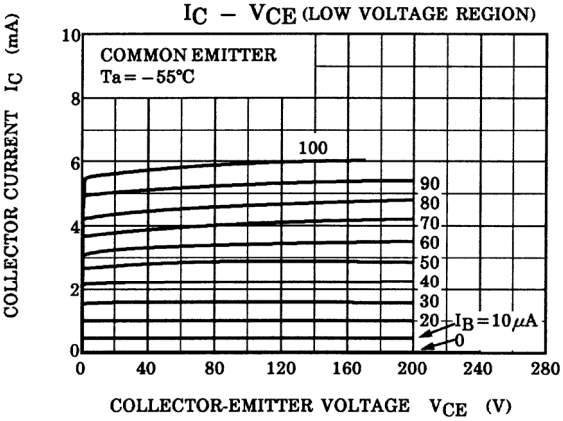
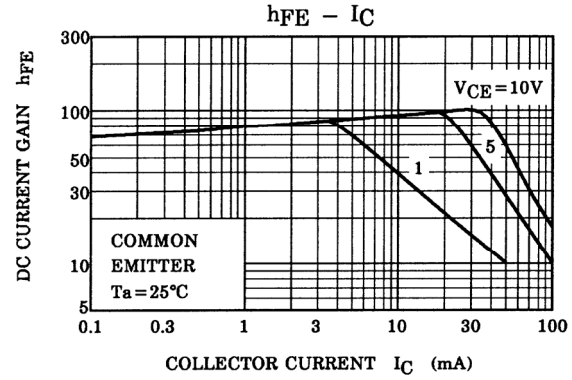
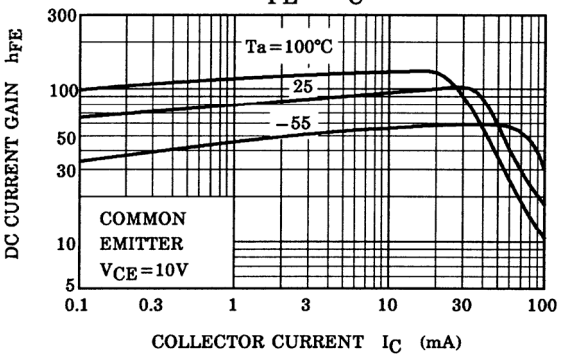


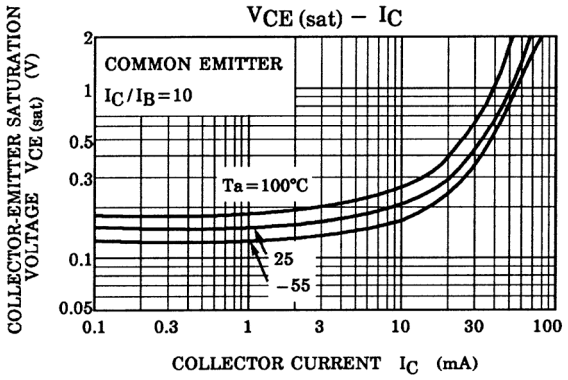
$h_{FE}$ – $I_C$



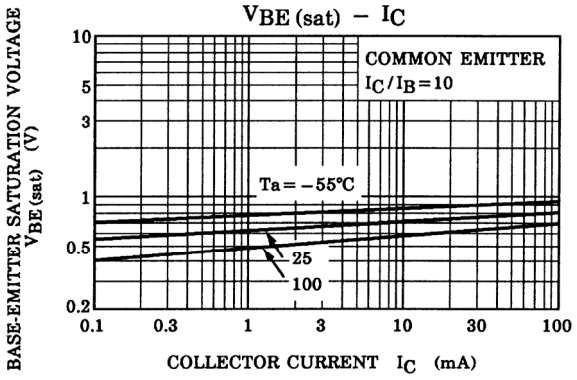

$h_{FE}$ – $I_C$



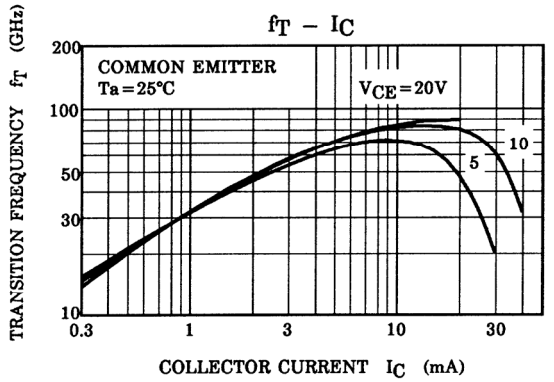

$V_{CE\,(sat)}$ – $I_C$



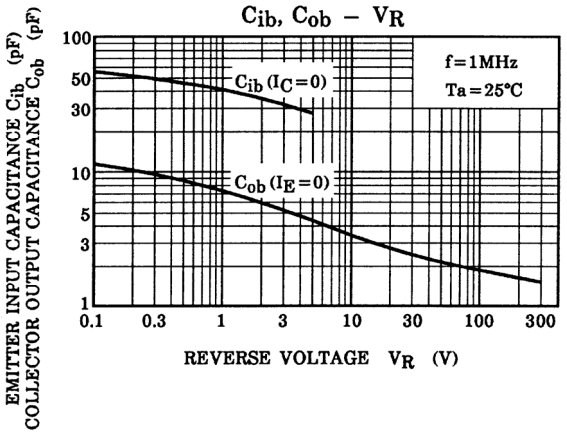

$V_{BE\,(sat)}$ – $I_C$



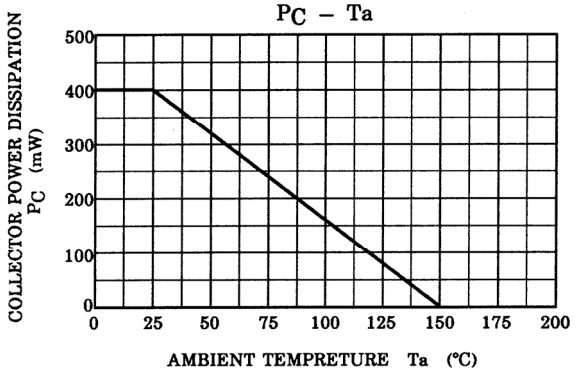

$f_T$ – $I_C$




$C_{ib}$, $C_{ob}$ – $V_R$




$P_C$ – Ta



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20070701-EN GENERAL

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