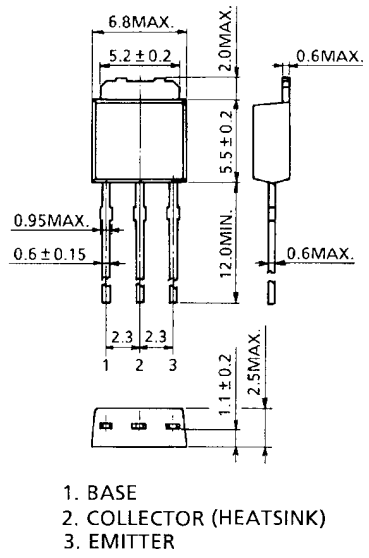
TOSHIBA Transistor Silicon PNP Triple Diffused Type

# 2SA1937

High Voltage Switching Applications

Unit: mm




| | |
|---|---|
| JEDEC | — |
| JEITA | — |
| TOSHIBA | 2-7B1A |

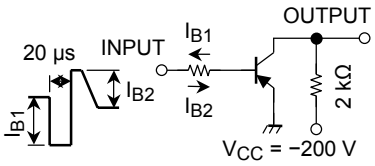
Weight: 0.36 g (typ.)

- High voltage: $V_{CEO}$ = −600 V

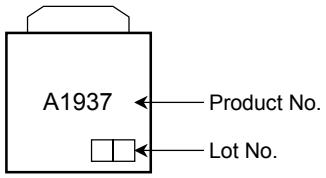
## Maximum Ratings (Ta = 25°C)

| Characteristics | | Symbol | Rating | Unit |
|---|---|---|---|---|
| Collector-base voltage | | $V_{CBO}$ | −600 | V |
| Collector-emitter voltage | | $V_{CEO}$ | −600 | V |
| Emitter-base voltage | | $V_{EBO}$ | −7 | V |
| Collector current | DC | $I_C$ | −0.5 | A |
| | Pulse | $I_{CP}$ | −1 | |
| Base current | | $I_B$ | −0.25 | A |
| Collector power dissipation | Ta = 25°C | $P_C$ | 1 | W |
| | Tc = 25°C | | 10 | |
| Junction temperature | | $T_j$ | 150 | °C |
| Storage temperature range | | $T_{stg}$ | −55 to 150 | °C |

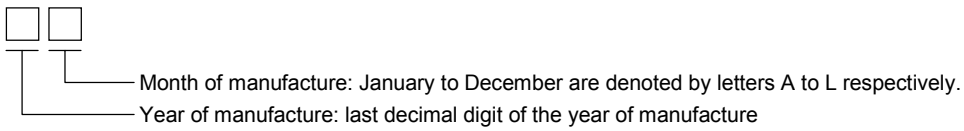
## Electrical Characteristics (Ta = 25°C)

| Characteristics | | Symbol | Test Condition | Min | Typ. | Max | Unit |
|---|---|---|---|---|---|---|---|
| Collector cut-off current | | $I_{CBO}$ | $V_{CB}$ = −600 V, $I_E$ = 0 | — | — | −10 | μA |
| Emitter cut-off current | | $I_{EBO}$ | $V_{EB}$ = −7 V, $I_C$ = 0 | — | — | −1 | μA |
| Collector-emitter breakdown voltage | | $V_{(BR)\ CEO}$ | $I_C$ = −10 mA, $I_B$ = 0 | −600 | — | — | V |
| DC current gain | | $h_{FE\ (1)}$ | $V_{CE}$ = −5 V, $I_C$ = −20 mA | 100 | — | 500 | |
| | | $h_{FE\ (2)}$ | $V_{CE}$ = −5 V, $I_C$ = −100 mA | 80 | — | 450 | |
| Collector-emitter saturation voltage | | $V_{CE\ (sat)}$ | $I_C$ = −100 mA, $I_B$ = −10 mA | — | — | −1.0 | V |
| Base-emitter saturation voltage | | $V_{BE\ (sat)}$ | $I_C$ = −100 mA, $I_B$ = −10 mA | — | −0.76 | −0.9 | V |
| Transition frequency | | $f_T$ | $V_{CE}$ = −5 V, $I_C$ = −50 mA | — | 35 | — | MHz |
| Collector output capacitance | | $C_{ob}$ | $V_{CB}$ = −10 V, $I_E$ = 0, f = 1 MHz | — | 24 | — | pF |
| Switching time | Turn-on time | $t_{on}$ |  | — | 0.2 | — | μs |
| | Storage time | $t_{stg}$ | | — | 2.3 | — | |
| | Fall time | $t_f$ | $I_{B1}$ = −10 mA, $I_{B2}$ = 20 mA, DUTY CYCLE ≤ 1% | — | 0.2 | — | |

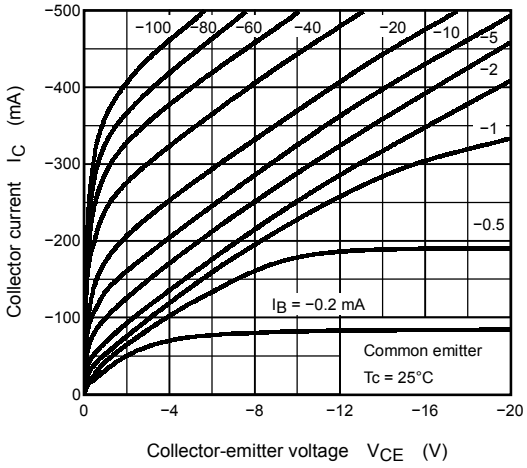
## Marking



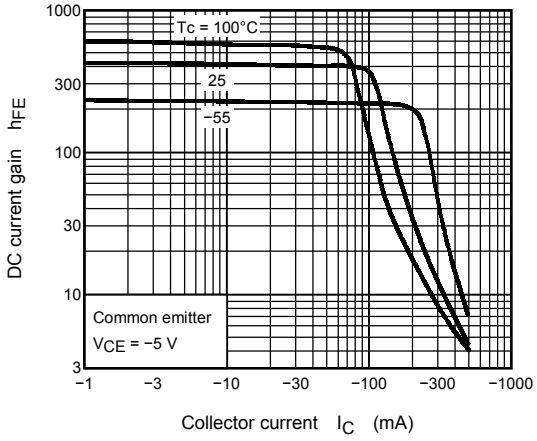

## Explanation of Lot No.



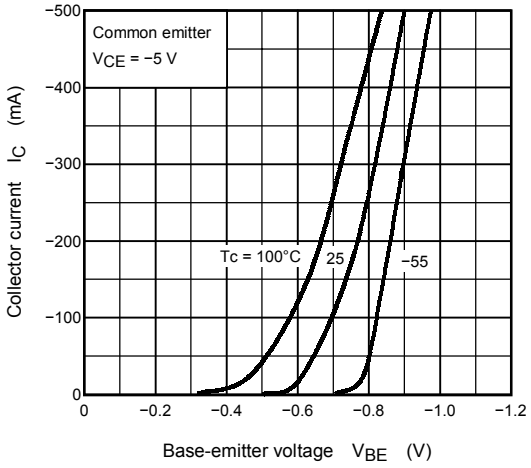
$I_C - V_{CE}$



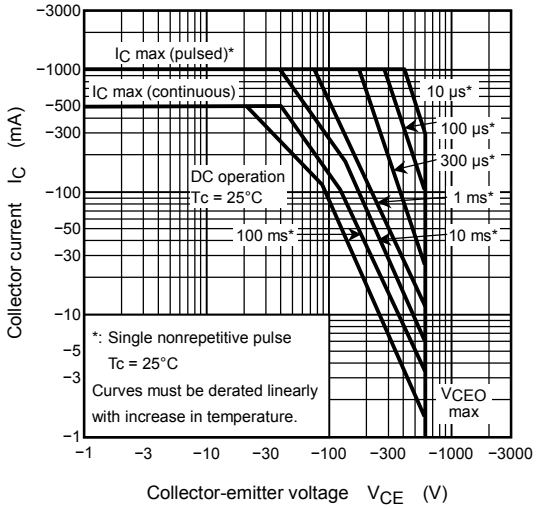

$h_{FE} - I_C$



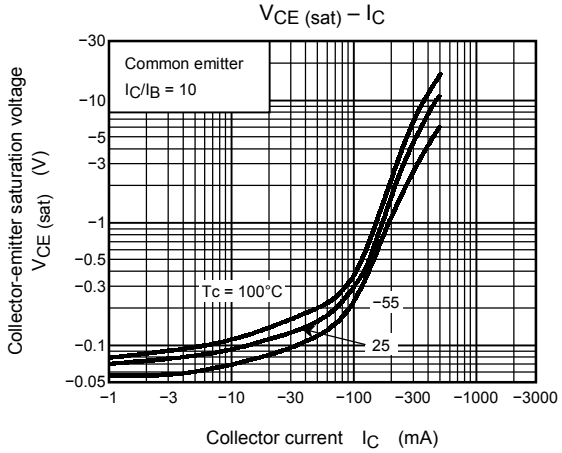

$I_C - V_{BE}$



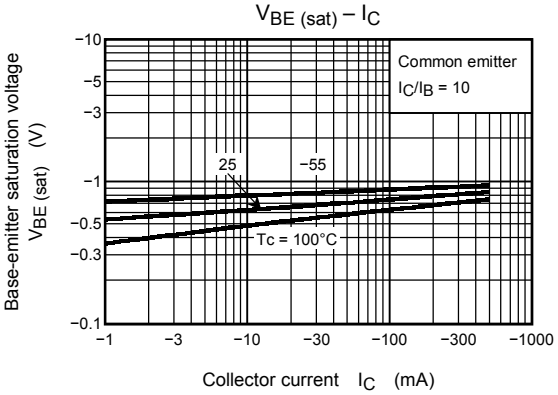

Safe Operating Area




$V_{CE\ (sat)} - I_C$




$V_{BE\ (sat)} - I_C$



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