TOSHIBA Transistor Silicon PNP Epitaxial Type (PCT Process)

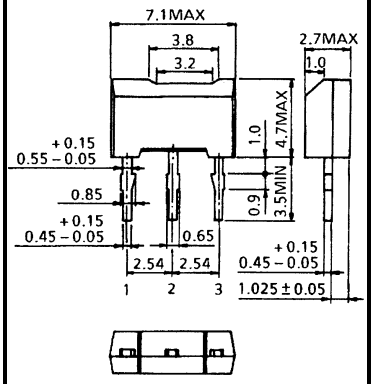
# 2SA1431

Strobe Flash Applications

Medium Power Amplifier Applications

- High DC current gain and excellent $h_{FE}$ linearity
  : $h_{FE(1)}$ = 100 to 320 ($V_{CE}$ = −2 V, $I_C$ = −0.5 A)
  : $h_{FE(2)}$ = 70 (min) ($V_{CE}$ = −2 V, $I_C$ = −4 A)
- Low saturation voltage: $V_{CE\ (sat)}$ = −1.0 V (max)
  ($I_C$ = −4 A, $I_B$ = −0.1 A)

Unit: mm




1. BASE
2. COLLECTOR
3. EMITTER

| | |
|---|---|
| JEDEC | — |
| JEITA | — |
| TOSHIBA | 2-7D101A |

Weight: 0.2 g (typ.)

## Maximum Ratings (Ta = 25°C)

| Characteristics | | Symbol | Rating | Unit |
|---|---|---|---|---|
| Collector-base voltage | | $V_{CBO}$ | −35 | V |
| Collector-emitter voltage | | $V_{CEO}$ | −20 | V |
| Emitter-base voltage | | $V_{EBO}$ | −8 | V |
| Collector current | DC | $I_C$ | −5 | A |
| | Pulsed (Note 1) | $I_{CP}$ | −8 | |
| Base current | | $I_B$ | −0.5 | A |
| Collector power dissipation | | $P_C$ | 1000 | mW |
| Junction temperature | | $T_j$ | 150 | °C |
| Storage temperature range | | $T_{stg}$ | −55 to 150 | °C |

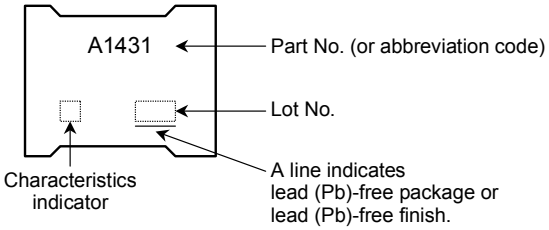
Note 1: Pulse width = 10 ms (max), duty cycle = 30% (max)

## Electrical Characteristics (Ta = 25°C)

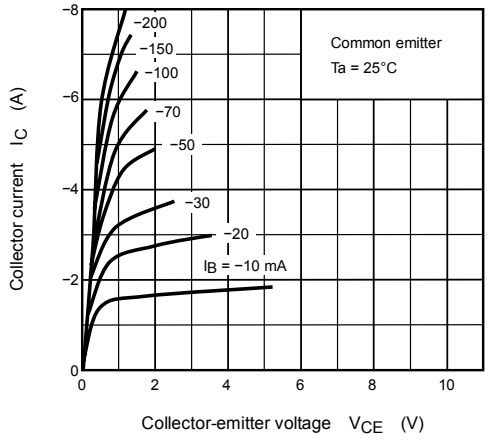
| Characteristics | Symbol | Test Condition | Min | Typ. | Max | Unit |
|---|---|---|---|---|---|---|
| Collector cut-off current | $I_{CBO}$ | $V_{CB}$ = −35 V, $I_E$ = 0 | — | — | −100 | nA |
| Emitter cut-off current | $I_{EBO}$ | $V_{EB}$ = −8 V, $I_C$ = 0 | — | — | −100 | nA |
| Collector-emitter breakdown voltage | $V_{(BR)\ CEO}$ | $I_C$ = −10 mA, $I_B$ = 0 | −20 | — | — | V |
| Emitter-base breakdown voltage | $V_{(BR)\ EBO}$ | $I_E$ = −1 mA, $I_C$ = 0 | −8 | — | — | V |
| DC current gain | $h_{FE\ (1)}$ (Note 2) | $V_{CE}$ = −2 V, $I_C$ = −0.5 A | 100 | — | 320 | |
| | $h_{FE\ (2)}$ | $V_{CE}$ = −2 V, $I_C$ = −4 A | 70 | — | — | |
| Collector-emitter saturation voltage | $V_{CE\ (sat)}$ | $I_C$ = −4 A, $I_B$ = −0.1 A | — | — | −1.0 | V |
| Base-emitter voltage | $V_{BE}$ | $V_{CE}$ = −2 V, $I_C$ = −4 A | — | — | −1.5 | V |
| Transition frequency | $f_T$ | $V_{CE}$ = −2 V, $I_C$ = −0.5 A | — | 170 | — | MHz |
| Collector output capacitance | $C_{ob}$ | $V_{CB}$ = −10 V, $I_E$ = 0, f = 1 MHz | — | 62 | — | pF |

Note 2: $h_{FE\ (1)}$ classification O: 100 to 200, Y: 160 to 320

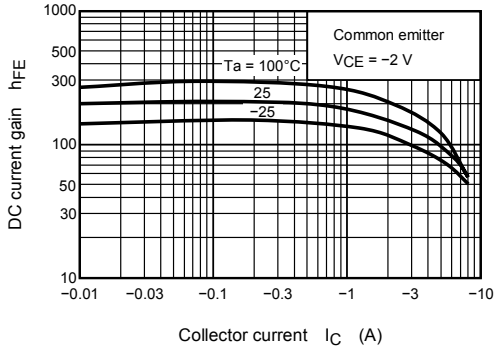
## Marking


A1431
Part No. (or abbreviation code)
Lot No.
A line indicates
lead (Pb)-free package or
lead (Pb)-free finish.
Characteristics
indicator

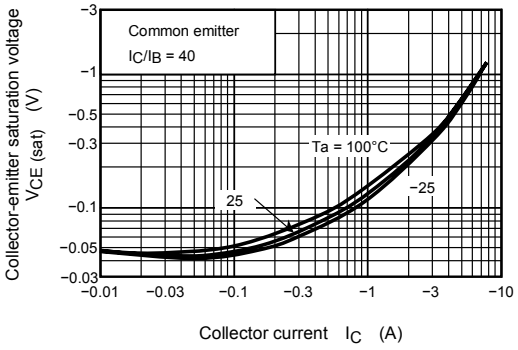
$I_C - V_{BE}$



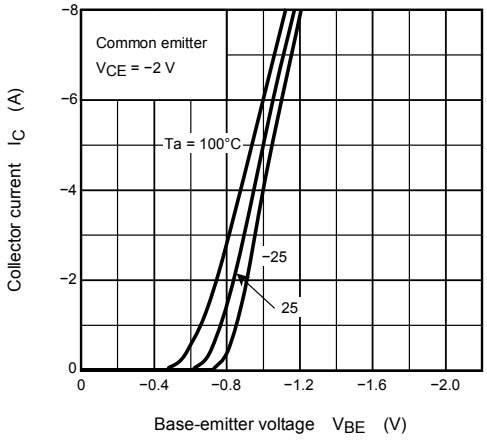

$h_{FE} - I_C$



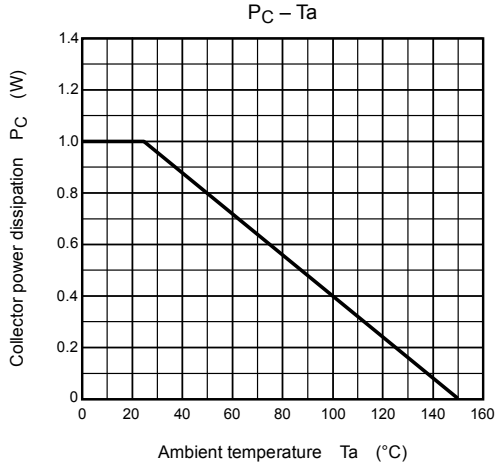

$V_{CE\ (sat)} - I_C$



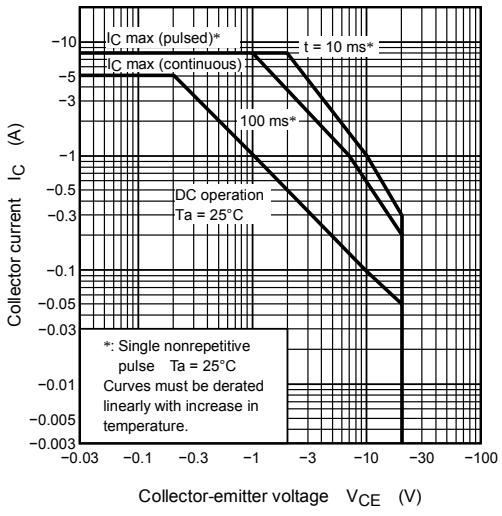

$V_{BE} - I_C$




$P_C - Ta$




Safe Operating Area



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