TOSHIBA Transistor Silicon PNP Epitaxial Type (PCT process)

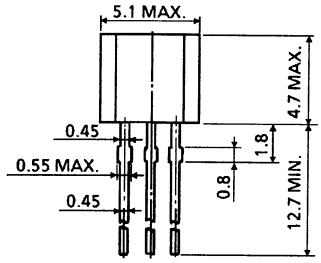
# 2SA1300

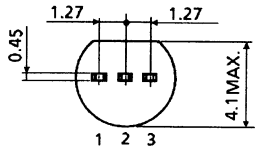
Strobe Flash Applications

Medium Power Amplifier Applications

- High DC current gain and excellent $h_{FE}$ linearity
  : $h_{FE\ (1)}$ = 140~600 ($V_{CE}$ = −1 V, $I_C$ = −0.5 A)
  : $h_{FE\ (2)}$ = 60 (min), 120 (typ.) ($V_{CE}$ = −1 V, $I_C$ = −4 A)
- Low saturation voltage: $V_{CE\ (sat)}$ = −0.5 V (max)
  ($I_C$ = −2 A, $I_B$ = −50 mA)

Unit: mm




1. EMITTER
2. COLLECTOR
3. BASE

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

Weight: 0.21 g (typ.)

## Maximum Ratings (Ta = 25°C)

| Characteristics | | Symbol | Rating | Unit |
|---|---|---|---|---|
| Collector-base voltage | | $V_{CBO}$ | −20 | V |
| Collector-emitter voltage | | $V_{CES}$ | −20 | V |
| | | $V_{CEO}$ | −10 | |
| Emitter-base voltage | | $V_{EBO}$ | −6 | V |
| Collector current | DC | $I_C$ | −2 | A |
| | Pulsed (Note 1) | $I_{CP}$ | −5 | |
| Base current | | $I_B$ | −0.2 | A |
| Collector power dissipation | | $P_C$ | 750 | mW |
| Junction temperature | | $T_j$ | 150 | °C |
| Storage temperature range | | $T_{stg}$ | −55~150 | °C |

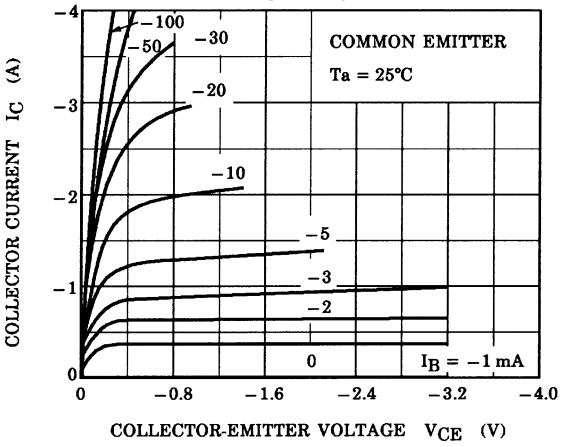
Note 1: Pulse width = 10 ms (max), duty cycle = 30% (max)

## Electrical Characteristics (Ta = 25°C)

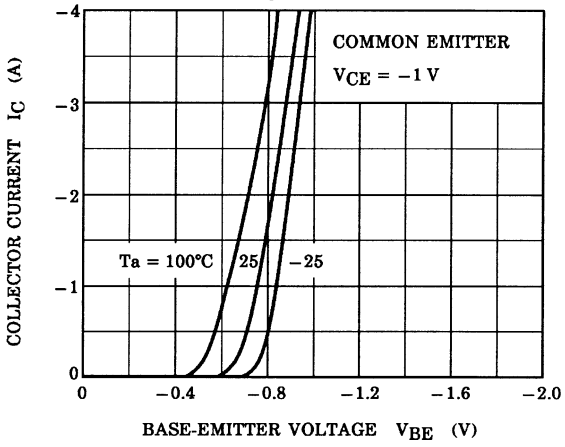
| Characteristics | Symbol | Test Condition | Min | Typ. | Max | Unit |
|---|---|---|---|---|---|---|
| Collector cut-off current | $I_{CBO}$ | $V_{CB}$ = −20 V, $I_E$ = 0 | — | — | −0.1 | μA |
| Emitter cut-off current | $I_{EBO}$ | $V_{EB}$ = −6 V, $I_C$ = 0 | — | — | −0.1 | μA |
| Collector-emitter breakdown voltage | $V_{(BR)\ CEO}$ | $I_C$ = −10 mA, $I_B$ = 0 | −10 | — | — | V |
| Emitter-base breakdown voltage | $V_{(BR)\ EBO}$ | $I_E$ = −1 mA, $I_C$ = 0 | −6 | — | — | V |
| DC current gain | $h_{FE\ (1)}$ (Note 2) | $V_{CE}$ = −1 V, $I_C$ = −0.5 A | 140 | — | 600 | |
| | $h_{FE\ (2)}$ | $V_{CE}$ = −1 V, $I_C$ = −4 A | 60 | 120 | — | |
| Collector-emitter saturation voltage | $V_{CE\ (sat)}$ | $I_C$ = −2 A, $I_B$ = −50 mA | — | −0.2 | −0.5 | V |
| Base-emitter voltage | $V_{BE}$ | $V_{CE}$ = −1 V, $I_C$ = −2 A | — | −0.83 | −1.5 | V |
| Transition frequency | $f_T$ | $V_{CE}$ = −1 V, $I_C$ = −0.5 A | — | 140 | — | MHz |
| Collector output capacitance | $C_{ob}$ | $V_{CB}$ = −10 V, $I_E$ = 0, f = 1 MHz | — | 50 | — | pF |

Note 2: $h_{FE\ (1)}$ classification Y: 140~280, GR: 200~400, BL: 300~600

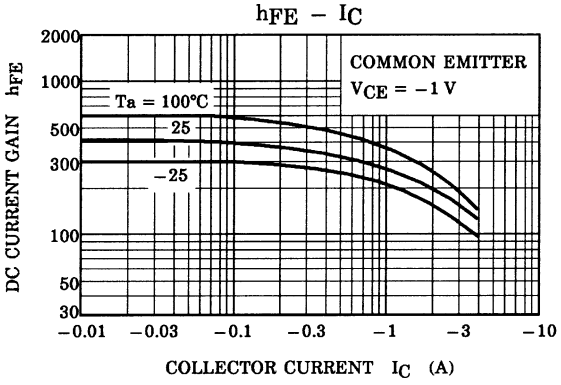
$I_C - V_{CE}$



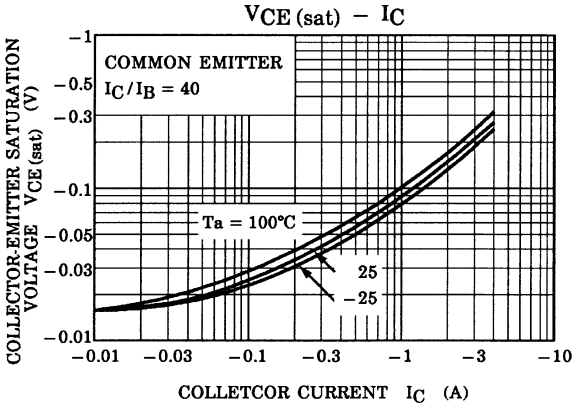

$I_C - V_{BE}$



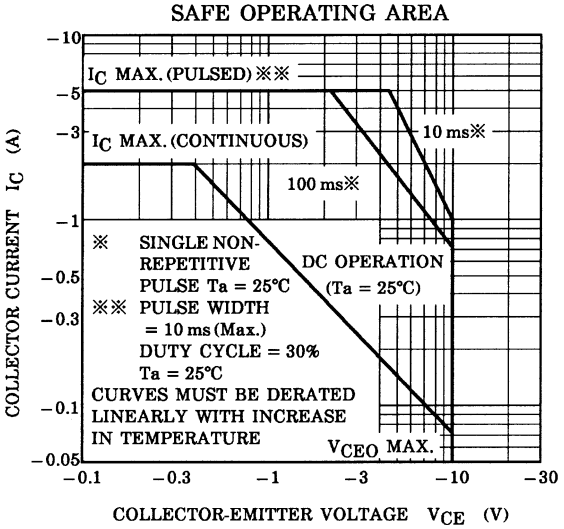

$h_{FE} - I_C$



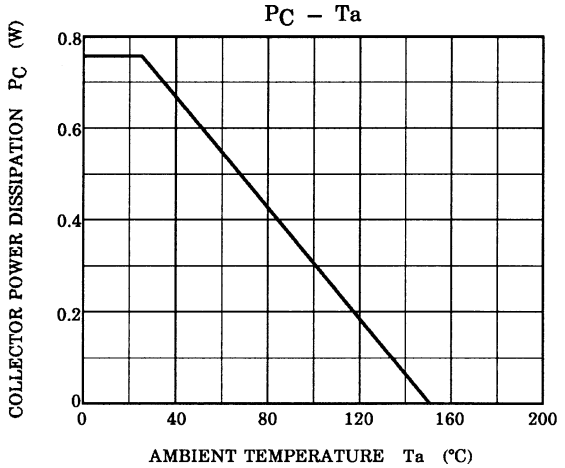

$V_{CE\,(sat)} - I_C$




SAFE OPERATING AREA




$P_C - Ta$



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