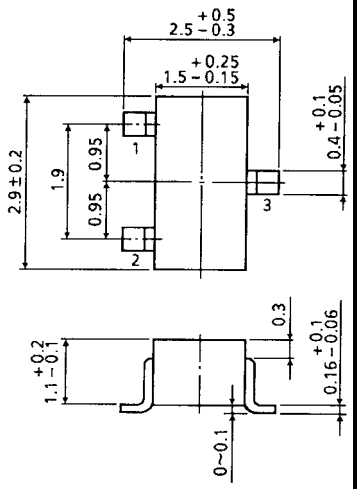
TOSHIBA Transistor Silicon PNP Epitaxial Type (PCT process)

# 2SA1313

Audio Frequency Low Power Amplifier Applications
Driver Stage Amplifier Applications
Switching Applications

- Excellent $h_{FE}$ linearity: $h_{FE\ (2)}$ = 25 (min)
  at $V_{CE}$ = −6 V, $I_C$ = −400 mA
- High voltage: $V_{CEO}$ = −50 V (min)
- Complementary to 2SC3325
- Small package

Unit: mm



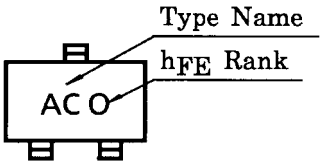

| | |
|---|---|
| JEDEC | TO-236MOD |
| JEITA | SC-59 |
| TOSHIBA | 2-3F1A |

Weight: 0.012 g (typ.)

## Maximum Ratings (Ta = 25°C)

| Characteristics | Symbol | Rating | Unit |
|---|---|---|---|
| Collector-base voltage | $V_{CBO}$ | −50 | V |
| Collector-emitter voltage | $V_{CEO}$ | −50 | V |
| Emitter-base voltage | $V_{EBO}$ | −5 | V |
| Collector current | $I_C$ | −500 | mA |
| Base current | $I_B$ | −50 | mA |
| Collector power dissipation | $P_C$ | 200 | mW |
| Junction temperature | $T_j$ | 150 | °C |
| Storage temperature range | $T_{stg}$ | −55~150 | °C |

## Marking



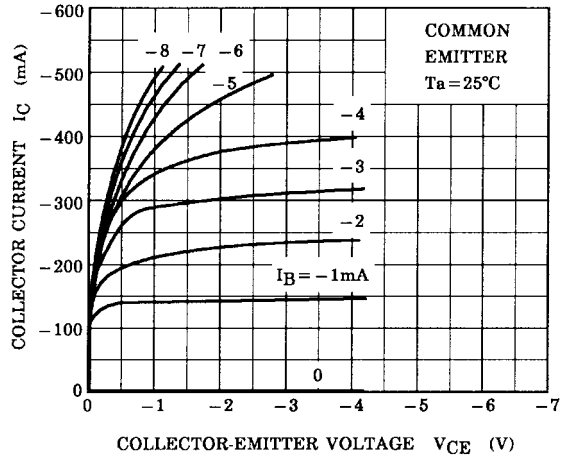
## Electrical Characteristics (Ta = 25°C)

| Characteristics | Symbol | Test Condition | Min | Typ. | Max | Unit |
|---|---|---|---|---|---|---|
| Collector cut-off current | $I_{CBO}$ | $V_{CB}$ = −50 V, $I_E$ = 0 | — | — | −0.1 | μA |
| Emitter cut-off current | $I_{EBO}$ | $V_{EB}$ = −5 V, $I_C$ = 0 | — | — | −0.1 | μA |
| DC current gain | $h_{FE\ (1)}$ (Note) | $V_{CE}$ = −1 V, $I_C$ = −100 mA | 70 | — | 240 | |
| | $h_{FE\ (2)}$ (Note) | $V_{CE}$ = −6 V, $I_C$ = −400 mA | 25 | — | — | |
| Collector-emitter saturation voltage | $V_{CE\ (sat)}$ | $I_C$ = −100 mA, $I_B$ = −10 mA | — | −0.1 | −0.25 | V |
| Base-emitter voltage | $V_{BE}$ | $V_{CE}$ = −1 V, $I_C$ = −100 mA | — | −0.8 | −1.0 | V |
| Transition frequency | $f_T$ | $V_{CE}$ = −6 V, $I_C$ = −20 mA | — | 200 | — | MHz |
| Collector output capacitance | $C_{ob}$ | $V_{CB}$ = −6 V, $I_E$ = 0, f = 1 MHz | — | 13 | — | pF |

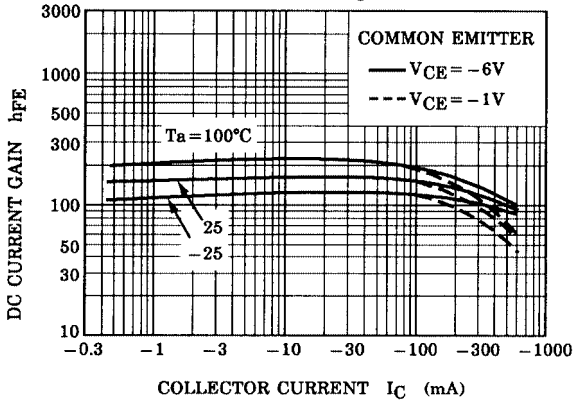
Note: $h_{FE\ (1)}$ classification O: 70~140, Y: 120~240

$h_{FE\ (2)}$ classification O: 25 (min), Y: 40 (min)

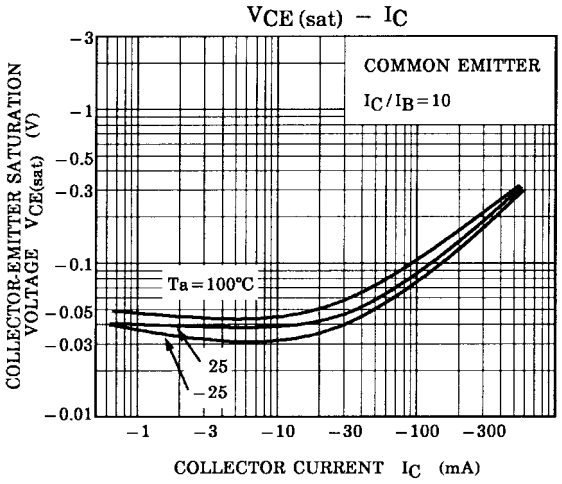
$I_C - V_{CE}$



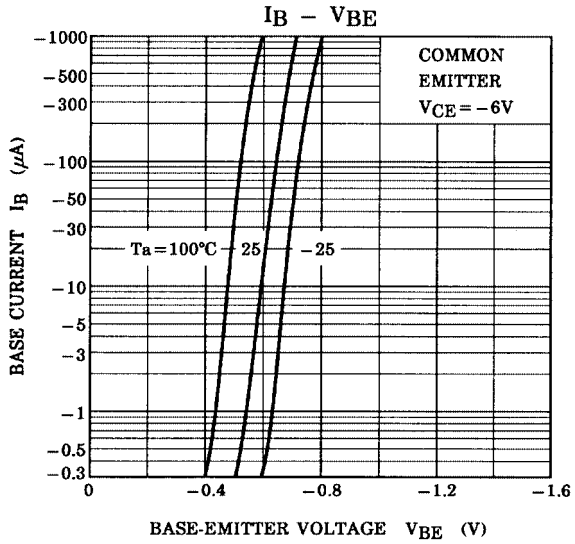

$h_{FE} - I_C$



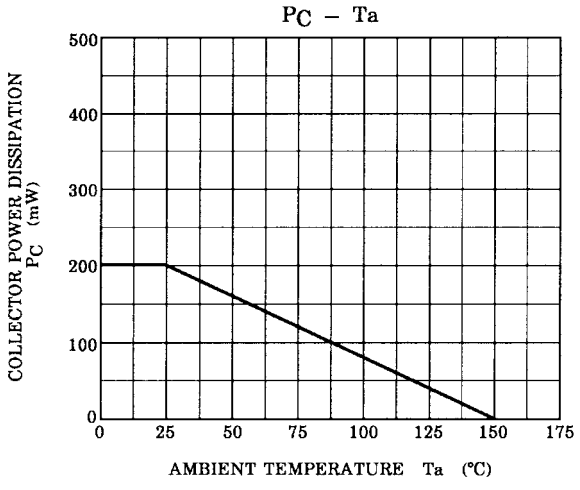

$V_{CE(sat)} - I_C$




$I_B - V_{BE}$




$P_C - Ta$



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