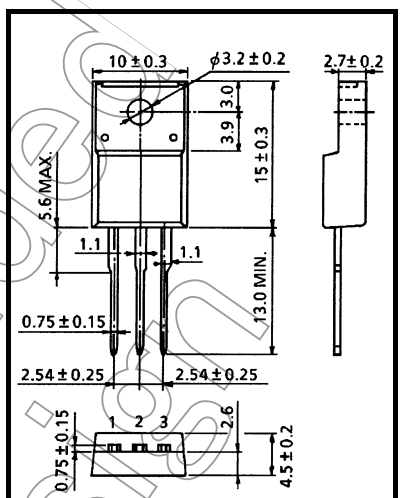
TOSHIBA Transistor Silicon PNP Triple Diffused Type

# 2SB1375

Audio Frequency Power Amplifier

- Low saturation voltage: $V_{CE\ (sat)}$ = −1.5 V (max) ($I_C$ = −2 A, $I_B$ = −0.2 A)
- High power dissipation: $P_C$ = 25 W (Tc = 25°C)
- Collector metal (fin) is covered with mold resin
- Complementary to 2SD2012

Unit: mm




| | |
|---|---|
| JEDEC | — |
| JEITA | — |
| TOSHIBA | 2-10R1A |

Weight: 1.7 g (typ.)

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

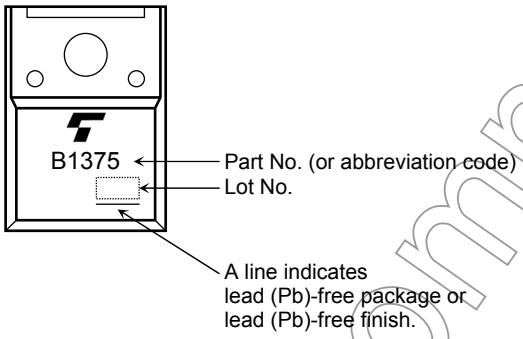
| Characteristics | | Symbol | Rating | Unit |
|---|---|---|---|---|
| Collector-base voltage | | $V_{CBO}$ | −60 | V |
| Collector-emitter voltage | | $V_{CEO}$ | −60 | V |
| Emitter-base voltage | | $V_{EBO}$ | −7 | V |
| Collector current | | $I_C$ | −3 | A |
| Base current | | $I_B$ | −0.5 | A |
| Collector power dissipation | Ta = 25°C | $P_C$ | 2.0 | W |
| | Tc = 25°C | | 25 | |
| Junction temperature | | $T_j$ | 150 | °C |
| Storage temperature range | | $T_{stg}$ | −55 to 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).

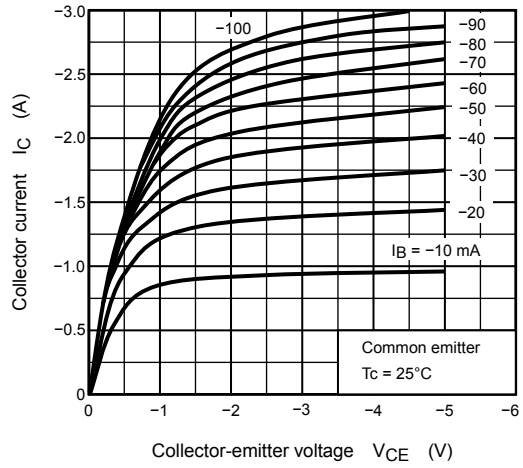
## Electrical Characteristics (Tc = 25°C)

| Characteristics | Symbol | Test Condition | Min | Typ. | Max | Unit |
|---|---|---|---|---|---|---|
| Collector cut-off current | $I_{CBO}$ | $V_{CB}$ = −60 V, $I_E$ = 0 | — | — | −10 | μA |
| Emitter cut-off current | $I_{EBO}$ | $V_{EB}$ = −7 V, $I_C$ = 0 | — | — | −10 | μA |
| Collector-emitter breakdown voltage | $V_{(BR)\ CEO}$ | $I_C$ = −50 mA, $I_B$ = 0 | −60 | — | — | V |
| DC current gain | $h_{FE\ (1)}$ | $V_{CE}$ = −5 V, $I_C$ = −0.5 A | 100 | — | 320 | |
| | $h_{FE\ (2)}$ | $V_{CE}$ = −5 V, $I_C$ = −2 A | 15 | — | — | |
| Collector-emitter saturation voltage | $V_{CE\ (sat)}$ | $I_C$ = −2 A, $I_B$ = −0.2 A | — | −1.0 | −1.5 | V |
| Base-emitter voltage | $V_{BE}$ | $V_{CE}$ = −5 V, $I_C$ = −0.5 A | — | −0.75 | −1.0 | V |
| Transition frequency | $f_T$ | $V_{CE}$ = −5 V, $I_C$ = −0.5 A | — | 9 | — | MHz |
| Collector output capacitance | $C_{ob}$ | $V_{CB}$ = −10 V, $I_E$ = 0, f = 1 MHz | — | 50 | — | pF |

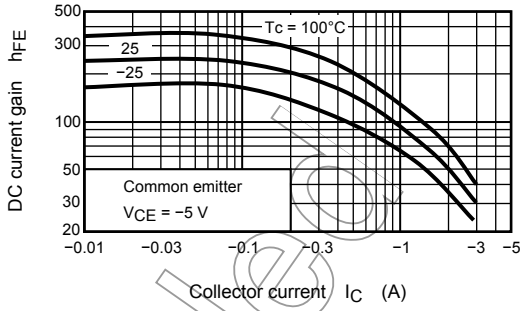
## Marking



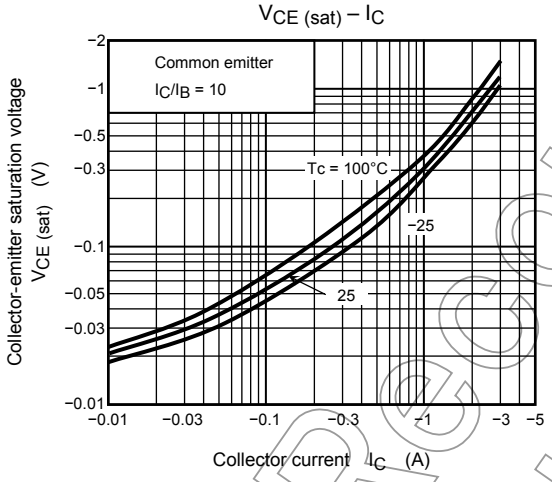
$I_C - V_{CE}$



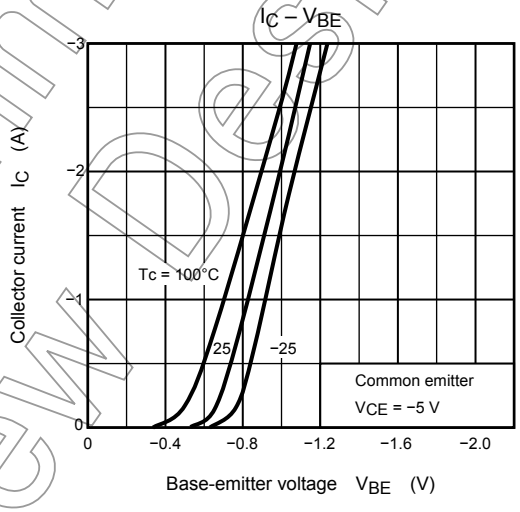

$h_{FE} - I_C$



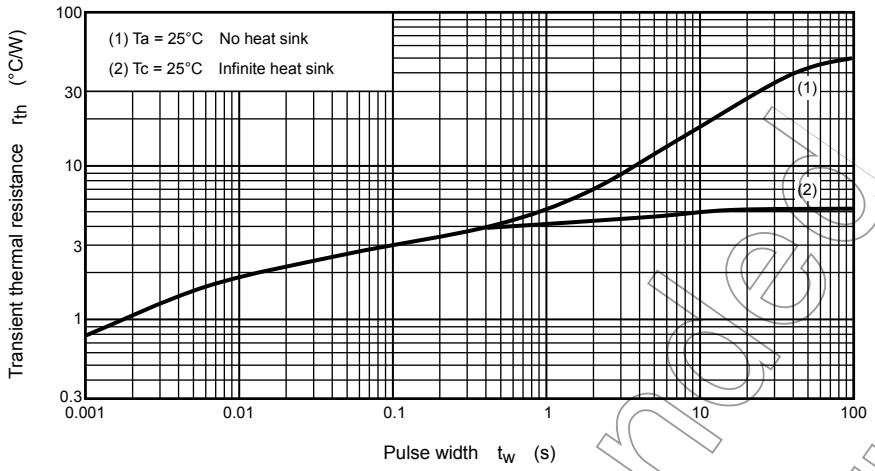

$V_{CE\ (sat)} - I_C$



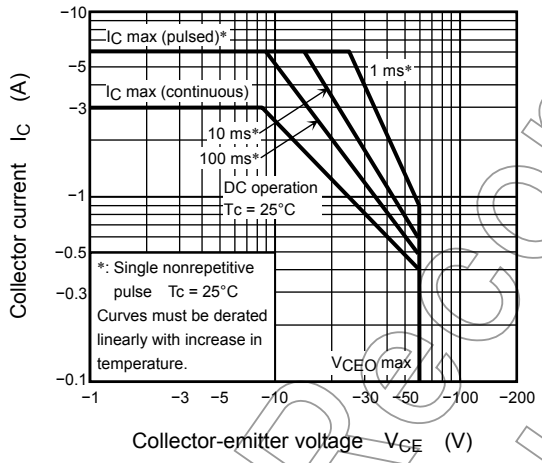

$I_C - V_{BE}$



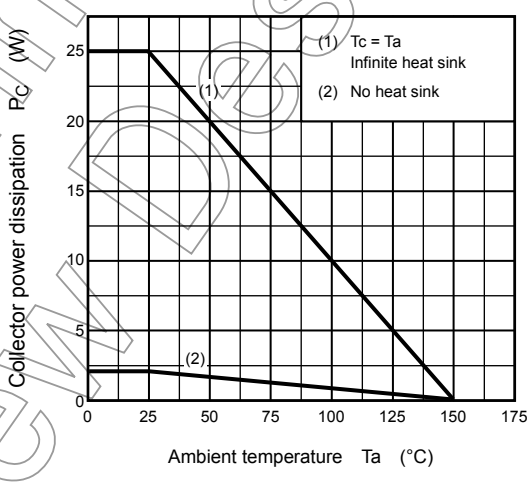
$r_{th} - t_w$




Safe Operating Area




$P_C - Ta$



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