Bipolar Transistors Silicon PNP Epitaxial Type

# 2SA1832

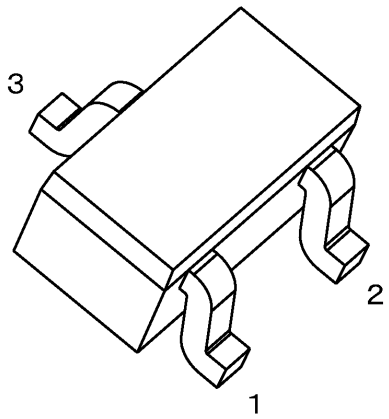
## 1. Applications

- Low-Frequency Amplifiers

## 2. Features

(1) AEC-Q101 qualified
(2) High voltage: $V_{CEO}$ = -50 V
(3) High collector current: $I_C$ = -150 mA (max)
(4) High $h_{FE}$: $h_{FE}$ = 70 to 400
(5) Excellent $h_{FE}$ linearity: $h_{FE}$ ($I_C$ = -0.1 mA)/$h_{FE}$ ($I_C$ = -2 mA) = 0.95 (typ.)
(6) Complementary to 2SC4738
(7) Small package

## 3. Packaging




1: Base
2: Emitter
3: Collector

SSM

Start of commercial production
1990-10

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## 4. Absolute Maximum Ratings (Note) (Unless otherwise specified, $T_a$ = 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 (DC) | | $I_C$ | -150 | mA |
| Base current | | $I_B$ | -30 | mA |
| Collector power dissipation | (Note 1), (Note 3) | $P_C$ | 120 | mW |
| | (Note 2) | | 100 | |
| Junction temperature | (Note 1) | $T_j$ | 150 | °C |
| | (Note 2) | | 125 | |
| Storage temperature | (Note 1) | $T_{stg}$ | -55 to 150 | °C |
| | (Note 2) | | -55 to 125 | |

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).

Note 1: For devices with the ordering part number ending in LF(T.

Note 2: For devices with the ordering part number in other than LF(T.

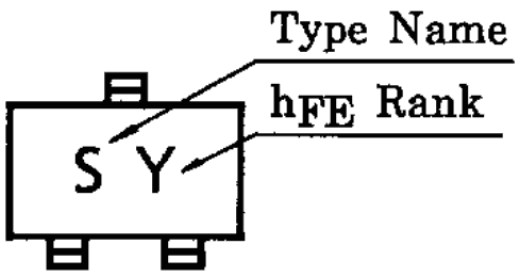
Note 3: Device mounted on an 25.4 mm × 25.4 mm × 1.6 mm FR4 glass epoxy board (Cu pad: 0.36 $mm^2$ × 3)

## 5. Electrical Characteristics (Unless otherwise specified, $T_a$ = 25 °C)

| Characteristics | Symbol | Note | Test Condition | Min | Typ. | Max | Unit |
|---|---|---|---|---|---|---|---|
| Collector cut-off current | $I_{CBO}$ | | $V_{CB}$ = -50 V, $I_E$ = 0 A | — | — | -0.1 | μA |
| Emitter cut-off current | $I_{EBO}$ | | $V_{EB}$ = -5 V, $I_C$ = 0 mA | — | — | -0.1 | μA |
| DC current gain | $h_{FE}$ | (Note 4) | $V_{CE}$ = -6 V, $I_C$ = -2 mA | 70 | — | 400 | — |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | | $I_C$ = -100 mA, $I_B$ = -10 mA | — | -0.1 | -0.3 | V |
| Transition frequency | $f_T$ | | $V_{CE}$ = -10 V, $I_C$ = -1 mA | 80 | — | — | MHz |
| Collector output capacitance | $C_{ob}$ | | $V_{CB}$ = -10 V, $I_E$ = 0 A, f = 1 MHz | — | 4 | 7 | pF |

Note 4: $h_{FE}$ classification O (O): 70 to 140, Y (Y): 120 to 240, GR (G): 200 to 400
( ) marking symbol

## 6. Marking (Note)




Note: Example: hFE classification is Y rank

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## 7. Characteristics Curves (Note)

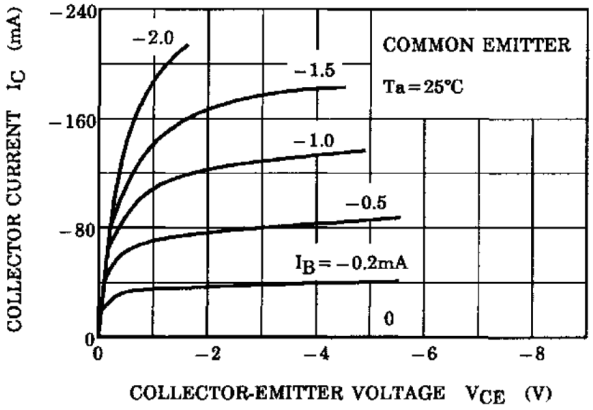



Fig. 7.1 $I_C$ - $V_{CE}$

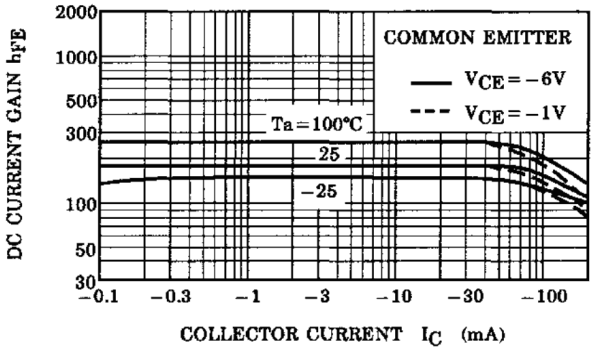



Fig. 7.2 $h_{FE}$ - $I_C$

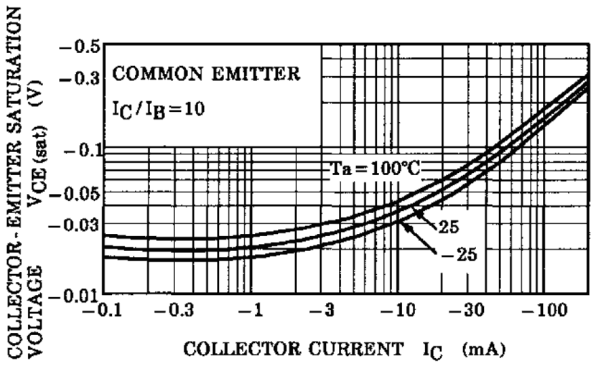



Fig. 7.3 $V_{CE(sat)}$ - $I_C$

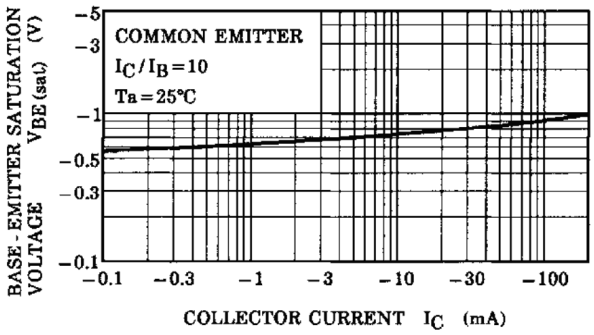



Fig. 7.4 $V_{BE(sat)}$ - $I_C$

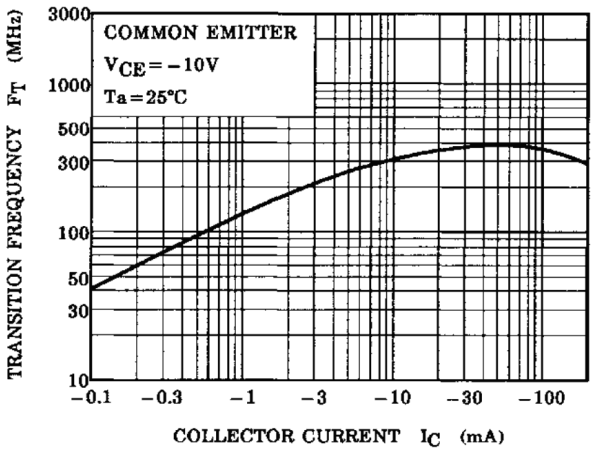



Fig. 7.5 $f_T$ - $I_C$

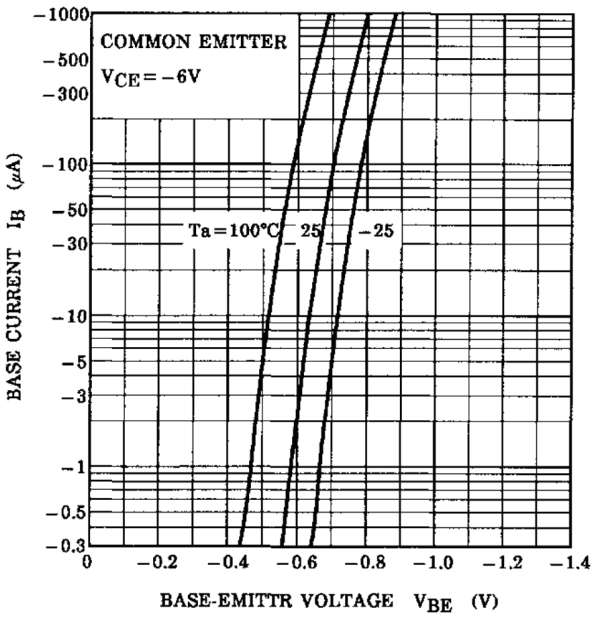



Fig. 7.6 $I_B$ - $V_{BE}$

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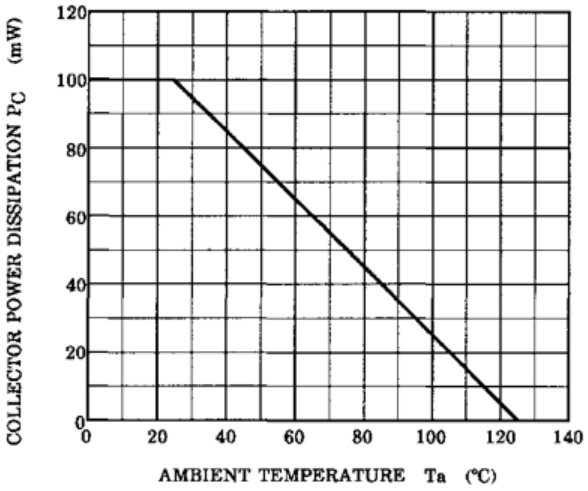



Fig. 7.7 $P_C$ - $T_a$
Reference only with $T_j$ of 125 °C.

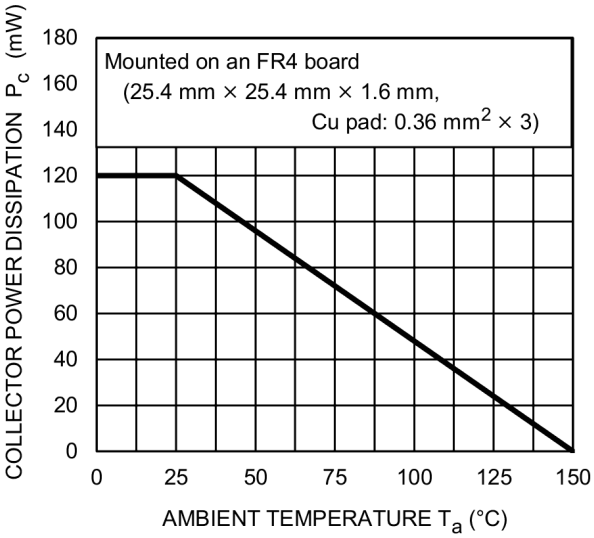


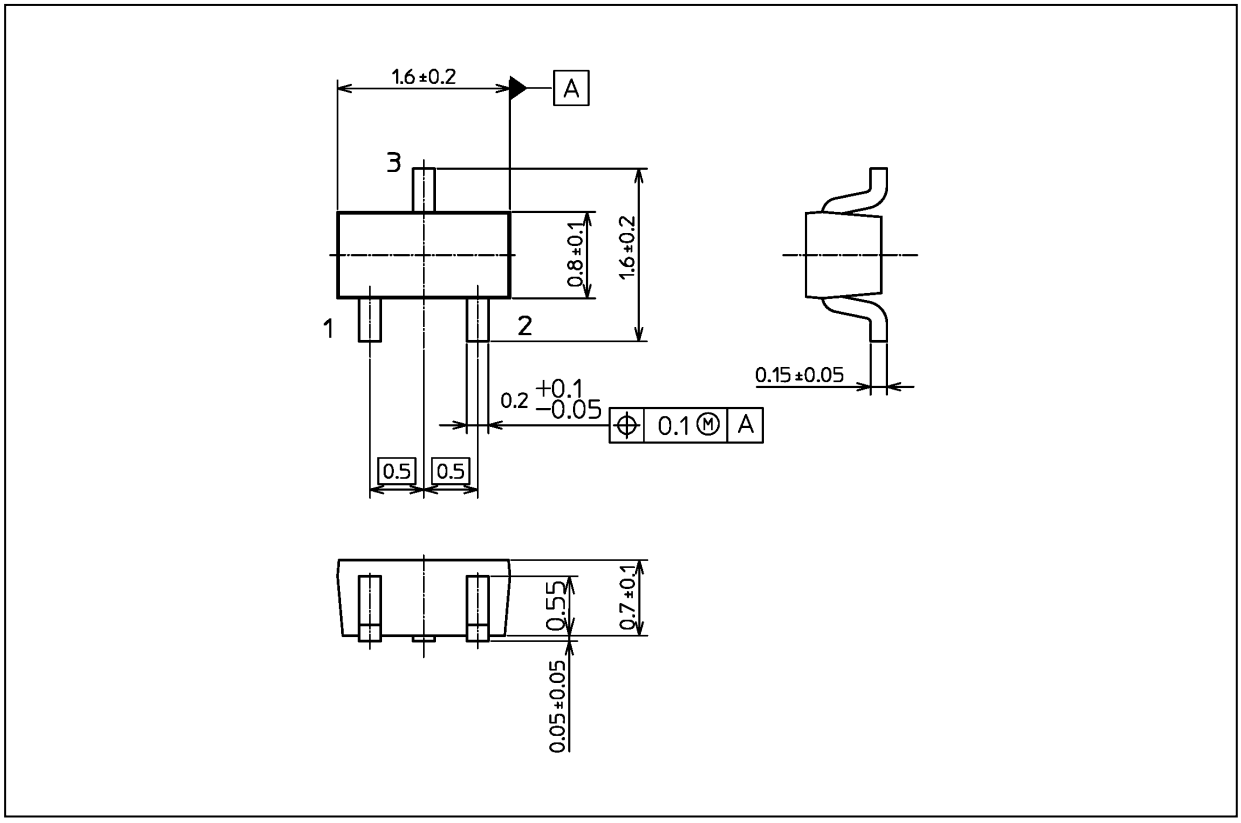

Fig. 7.8 $P_C$ - $T_a$
Reference only with $T_j$ of 150 °C.

Note: The above characteristics curves are presented for reference only and not guaranteed by production test, unless otherwise noted.

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## Package Dimensions

Unit: mm




Weight: 2.4 mg (typ.)

| Package Name(s) |
|---|
| JEDEC: SOT-416 |
| Nickname: SSM |

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