

## Power Transistor (−60V, −3A)

## 2SB1370

## ●Features

- 1) Low saturation voltage, typically  $V_{CE(sat)} = -0.3V$  at  $I_C / I_E = -2A / -0.2A$ .
- 2) Excellent DC current gain characteristics.
- 3)  $P_C = 2W (T_a = 25^\circ C) / 30W (T_C = 25^\circ C)$
- 4) Wide SOA (safe operating area).

## ●Packaging specifications and hFE

|                              |          |
|------------------------------|----------|
| Type                         | 2SB1370  |
| Package                      | TO-220FN |
| h <sub>FE</sub>              | EF       |
| Code                         | —        |
| Basic ordering unit (pieces) | 500      |

●Absolute maximum ratings (T<sub>a</sub> = 25°C)

| Parameter                   | Symbol    | Limits     | Unit                      |
|-----------------------------|-----------|------------|---------------------------|
| Collector-base voltage      | $V_{CBO}$ | −60        | V                         |
| Collector-emitter voltage   | $V_{CEO}$ | −60        | V                         |
| Emitter-base voltage        | $V_{EB0}$ | −5         | V                         |
| Collector current           | $I_C$     | −3         | A (DC)                    |
|                             | $I_{CP}$  | −6         | A (Pulse) *               |
| Collector power dissipation | $P_C$     | 2          | W                         |
|                             |           | 30         | W (T <sub>C</sub> = 25°C) |
| Junction temperature        | $T_J$     | 150        | °C                        |
| Storage temperature         | $T_{stg}$ | −55 ~ +150 | °C                        |

\* Single pulse, P<sub>w</sub> = 100ms●Electrical characteristics (T<sub>a</sub> = 25°C)

| Parameter                            | Symbol        | Min. | Typ. | Max. | Unit    | Conditions                             |
|--------------------------------------|---------------|------|------|------|---------|----------------------------------------|
| Collector-base breakdown voltage     | $BV_{CBO}$    | −60  | —    | —    | V       | $I_C = -50 \mu A$                      |
| Collector-emitter breakdown voltage  | $BV_{CEO}$    | −60  | —    | —    | V       | $I_C = -1mA$                           |
| Emitter-base breakdown voltage       | $BV_{EB0}$    | −5   | —    | —    | V       | $I_E = -50 \mu A$                      |
| Collector cutoff current             | $I_{CBO}$     | —    | —    | −10  | $\mu A$ | $V_{CB} = -60V$                        |
| Emitter cutoff current               | $I_{EB0}$     | —    | —    | −10  | $\mu A$ | $V_{EB} = -4V$                         |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | —    | —    | −1.5 | V       | $I_C/I_E = -2A/-0.2A$ *                |
| Base-emitter saturation voltage      | $V_{BE(sat)}$ | —    | —    | −1.5 | V       | $I_C/I_E = -2A/-0.2A$ *                |
| DC current transfer ratio            | $h_{FE}$      | 100  | —    | 320  | —       | $V_{CE}/I_C = -5V/-0.5A$               |
| Transition frequency                 | $f_T$         | —    | 15   | —    | —       | $V_{CE} = -5V, I_E = 0.5A, f = 5MHz$ * |
| Output capacitance                   | $C_{ob}$      | —    | 80   | —    | pF      | $V_{CB} = -10V, I_E = 0A, f = 1MHz$    |

\* Measured using pulse current.

(94L-411-B303)

## Power Transistor (−60V, −3A)

## 2SB1655/2SB1565

## ●Features

- 1) Low saturation voltage, typically  $V_{CE(sat)} = -0.3V$  at  $I_C / I_E = -2A / -0.2A$ .
- 2) Excellent DC current gain characteristics.
- 3) Wide SOA (safe operating area).

## ●Packaging specifications and hFE

|                              |          |          |
|------------------------------|----------|----------|
| Type                         | 2SB1655  | 2SB1565  |
| Package                      | TO-220FN | TO-220FN |
| h <sub>FE</sub>              | E        | EF       |
| Code                         | —        | —        |
| Basic ordering unit (pieces) | 500      | 500      |

●Absolute maximum ratings (T<sub>a</sub> = 25°C)

| Parameter                   | Symbol    | Limits     | Unit                      |
|-----------------------------|-----------|------------|---------------------------|
| Collector-base voltage      | $V_{CBO}$ | −80        | V                         |
| Collector-emitter voltage   | $V_{CEO}$ | −60        | V                         |
| Emitter-base voltage        | $V_{EB0}$ | −7         | V                         |
| Collector current           | $I_C$     | −3         | A (DC)                    |
|                             | $I_{CP}$  | −6         | A (Pulse) *               |
| Collector power dissipation | $P_C$     | 2          | W                         |
|                             |           | 25         | W (T <sub>C</sub> = 25°C) |
| Junction temperature        | $T_J$     | 150        | °C                        |
| Storage temperature         | $T_{stg}$ | −55 ~ +150 | °C                        |

\* Single pulse, P<sub>w</sub> = 100ms●Electrical characteristics (T<sub>a</sub> = 25°C)

| Parameter                            | Symbol        | Min.          | Typ. | Max. | Unit    | Conditions                             |
|--------------------------------------|---------------|---------------|------|------|---------|----------------------------------------|
| Collector-base breakdown voltage     | $BV_{CBO}$    | −80           | —    | —    | V       | $I_C = -50 \mu A$                      |
| Collector-emitter breakdown voltage  | $BV_{CEO}$    | −60           | —    | —    | V       | $I_C = -1mA$                           |
| Emitter-base breakdown voltage       | $BV_{EB0}$    | −7            | —    | —    | V       | $I_E = -50 \mu A$                      |
| Collector cutoff current             | $I_{CBO}$     | —             | —    | −10  | $\mu A$ | $V_{CB} = -60V$                        |
| Emitter cutoff current               | $I_{EB0}$     | —             | —    | −10  | $\mu A$ | $V_{EB} = -7V$                         |
| Collector-emitter saturation voltage | 2SB1655       | $V_{CE(sat)}$ | —    | −1   | V       | $I_C/I_E = -2A/-0.2A$ *                |
|                                      | 2SB1565       |               |      |      |         |                                        |
| Base-emitter saturation voltage      | $V_{BE(sat)}$ | —             | —    | −1.5 | V       | $I_C/I_E = -2A/-0.2A$ *                |
| DC current transfer ratio            | 2SB1655       | $h_{FE}$      | 100  | 200  | —       | $V_{CE}/I_C = -5V/-0.5A$               |
|                                      | 2SB1565       |               |      |      |         |                                        |
| Transition frequency                 | $f_T$         | —             | 15   | —    | MHz     | $V_{CE} = -5V, I_E = 0.5A, f = 5MHz$ * |
| Output capacitance                   | $C_{ob}$      | —             | 50   | —    | pF      | $V_{CB} = -10V, I_E = 0A, f = 1MHz$    |

\* Measured using pulse current.

(94L-456-B349)