

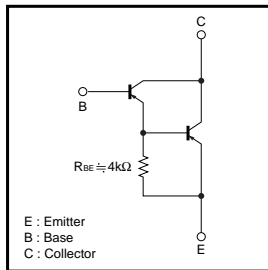
High-gain Amplifier Transistor (−32V, −0.3A)

2SB852K / 2SA830S

●Features

- 1) Darlington connection for high DC current gain.
- 2) Built-in 4kΩ resistor between base and emitter.
- 3) Complements the 2SD1383K / 2SD1645S.

●Circuit diagram



●Packaging specifications

| Type | 2SB852K | 2SA830S |
|------------------------------|---------|---------|
| Package | SMT3 | SPT |
| hFE | B | B |
| Marking | U* | — |
| Code | T146 | TP |
| Basic ordering unit (pieces) | 3000 | 5000 |

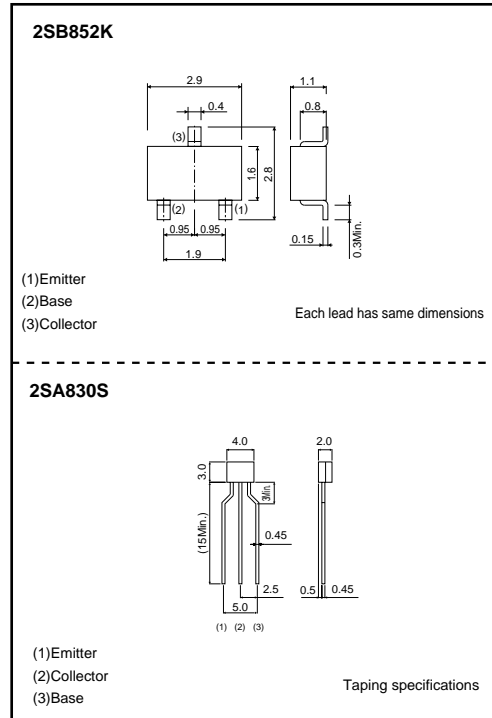
* Denotes hFE

●Absolute maximum ratings (Ta=25°C)

| Parameter | Symbol | Limits | Unit |
|-----------------------------|------------------|-------------|------|
| Collector-base voltage | V _{CB0} | −40 | V |
| Collector-emitter voltage | V _{CEs} | −32 | V * |
| Emitter-base voltage | V _{EB0} | −6 | V |
| Collector current | I _c | −0.3 | A |
| Collector power dissipation | 2SB852K | 0.2 | W |
| | 2SA830S | 0.3 | |
| Junction temperature | T _j | 150 | °C |
| Storage temperature | T _{stg} | −55 to +150 | °C |

* R_{BE}=0Ω

●External dimensions (Unit : mm)



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●Electrical characteristics (Ta=25°C)

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Conditions |
|--------------------------------------|---------------|------|------|------|---------|---|
| Collector-base breakdown voltage | BV_{CB0} | -40 | - | - | V | $I_C = -100\mu A$ |
| Collector-emitter breakdown voltage | BV_{CES} | -32 | - | - | V | $I_C = -1mA$ |
| Emitter-base breakdown voltage | BV_{EBO} | -6 | - | - | V | $I_E = -100\mu A$ |
| Collector cutoff current | I_{CBO} | - | - | -1 | μA | $V_{CB} = -24V$ |
| Emitter cutoff current | I_{EBO} | - | - | -1 | μA | $V_{EB} = -4.5V$ |
| DC current transfer ratio | h_{FE} | 5000 | - | - | - | $V_{CE} = -5V, I_C = -0.1A$ |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | - | - | -1.5 | V | $I_C = -200mA, I_B = -0.4mA$ *1 |
| Transition frequency | f_T | - | 200 | - | MHz | $V_{CE} = -5V, I_E = 10mA, f = 100MHz$ *2 |
| Output capacitance | C_{ob} | - | 3 | - | pF | $V_{CB} = -10V, I_E = 0A, f = 1MHz$ |

*1 Measured using pulse current.
*2 Transition frequency of the device.

●Electrical characteristic curves

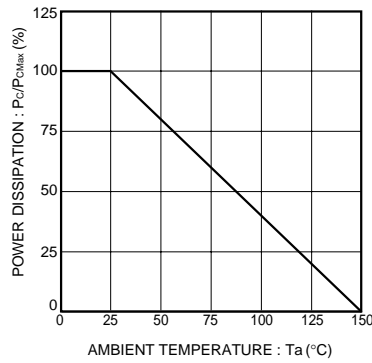


Fig.1 Power dissipation curves

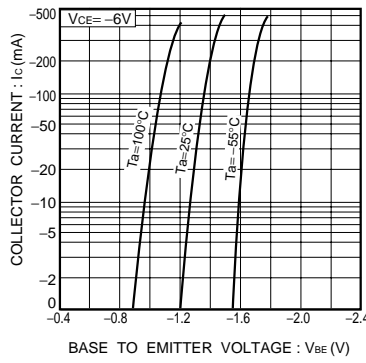


Fig.2 Ground emitter propagation characteristic

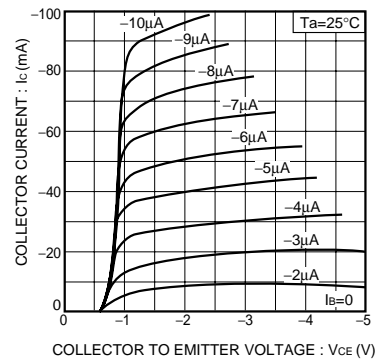


Fig.3 Ground emitter output characteristics

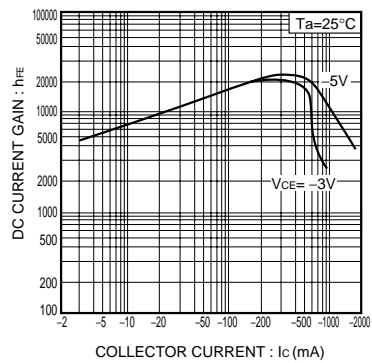


Fig.4 DC current gain vs. collector current (I)

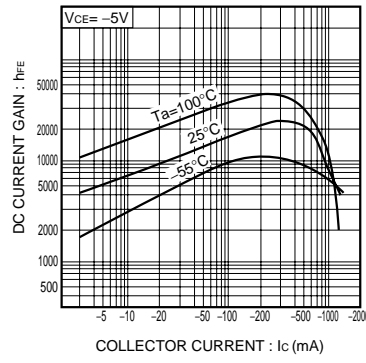


Fig.5 DC current gain vs. collector current (II)

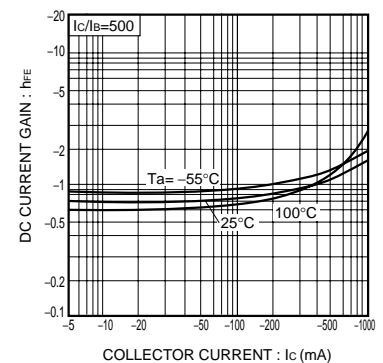


Fig.6 Collector-emitter saturation voltage vs. collector current

Transistors

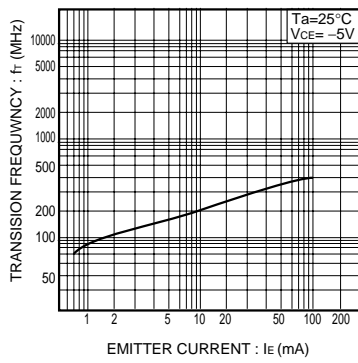


Fig.7 Gain bandwidth product vs. emitter current

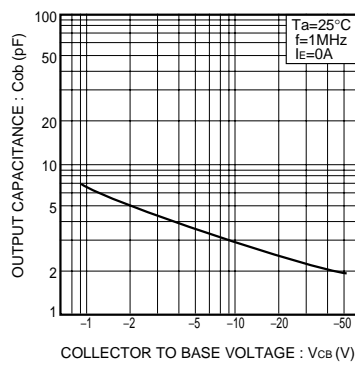


Fig.8 Collector output capacitance vs. collector-base voltage

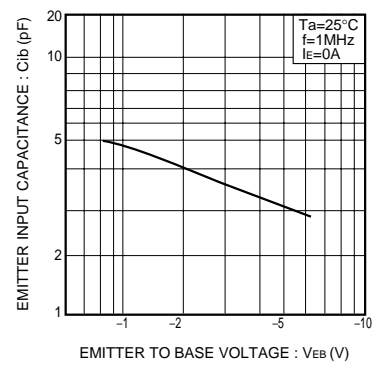


Fig.9 Emitter input capacitance vs. emitter-base voltage

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