

Power Transistor (−100V , −2A)

2SB1316

●Features

- 1) Darlington connection for high DC current gain.
- 2) Built-in resistor between base and emitter.
- 3) Built-in damper diode.
- 4) Complements the 2SD2195 / 2SD1980.

●Absolute maximum ratings (Ta = 25°C)

| Parameter | Symbol | Limits | Unit |
|-----------------------------|------------------|-------------|--------------------------|
| Collector-base voltage | V _{CB0} | −100 | V |
| Collector-emitter voltage | V _{CEO} | −100 | V |
| Emitter-base voltage | V _{EB0} | −8 | V |
| Collector current | I _c | −2 | A(DC) |
| | | −3 | A(Pulse) *1 |
| Collector power dissipation | P _c | 2 | W |
| | | 1 | W |
| | | 10 | W(T _c = 25°C) |
| Junction temperature | T _j | 150 | °C |
| Storage temperature | T _{stg} | −55 to +150 | °C |

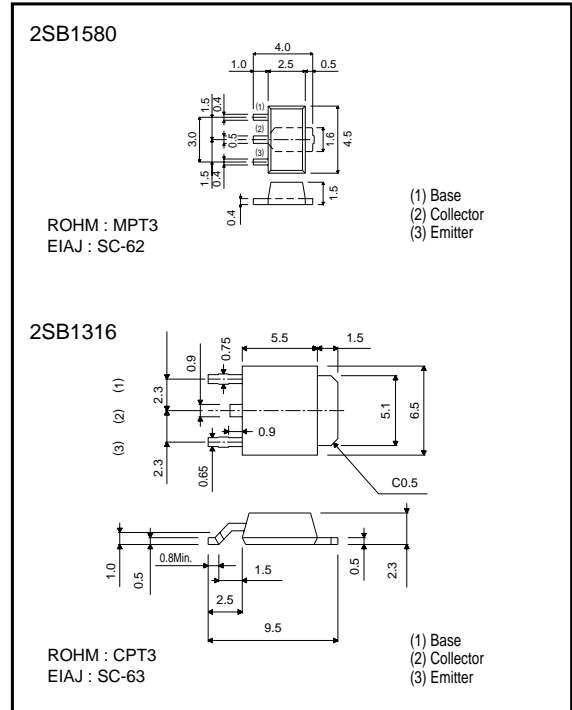
*1 Single pulse P_w = 100ms
 *2 When mounted on a 40 x 40 x 0.7 mm ceramic board.

●Packaging specifications and h_{FE}

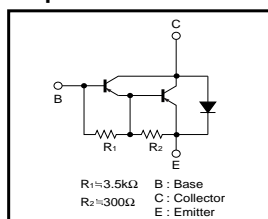
| Type | 2SB1580 | 2SB1316 |
|------------------------------|-----------|-----------|
| Package | MPT3 | CPT3 |
| h _{FE} | 1k to 10k | 1k to 10k |
| Marking | BN* | — |
| Code | T100 | TL |
| Basic ordering unit (pieces) | 1000 | 2500 |

* Denotes h_{FE}

●External dimensions (Unit : mm)



●Equivalent circuit



●Electrical characteristics (Ta = 25°C)

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Conditions |
|--------------------------------------|----------------------|------|------|-------|------|---|
| Collector-base breakdown voltage | BV _{CB0} | −100 | — | — | V | I _c = −50μA |
| Collector-emitter breakdown voltage | BV _{CEO} | −100 | — | — | V | I _c = −5mA |
| Emitter-base breakdown voltage | BV _{EB0} | −10 | — | — | V | I _E = −5mA |
| Collector cutoff current | I _{cbo} | — | — | −10 | μA | V _{CB} = −100V |
| Emitter cutoff current | I _{ebo} | — | — | −3 | mA | V _{EB} = −7V |
| Collector-emitter saturation voltage | V _{CE(sat)} | — | — | −1.5 | V | I _c /I _E = −1A/−1mA |
| DC current transfer ratio | h _{FE} | 1000 | — | 10000 | — | V _{CE} = −2V, I _c = −1A |
| Transition frequency | f _T | — | 50 | — | MHz | V _{CE} = −5V, I _E = 0.1A, f = 30MHz |
| Output capacitance | C _{ob} | — | 35 | — | pF | V _{CB} = −10V, I _E = 0A, f = 1MHz |

* Measured using pulse current.

Transistors

●Electrical characteristics curve

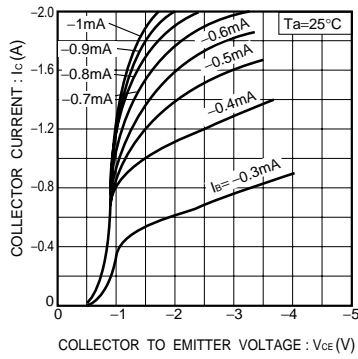


Fig.1 Grounded emitter output characteristics

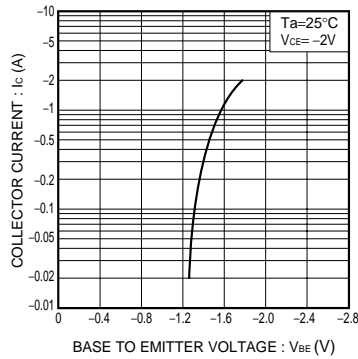


Fig.2 Grounded emitter propagation characteristics

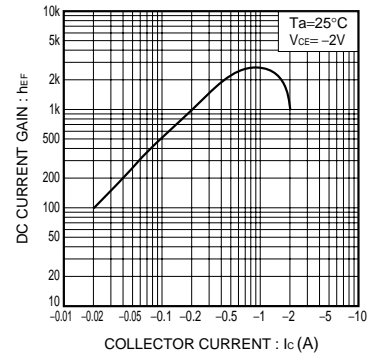


Fig.3 DC current gain vs. collector current

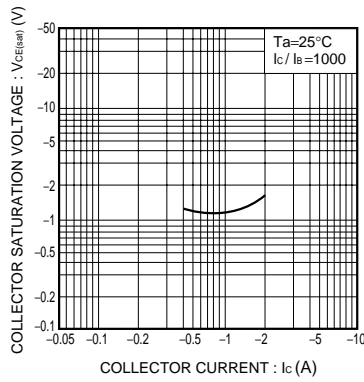


Fig.4 Collector-emitter saturation voltage vs. collector current

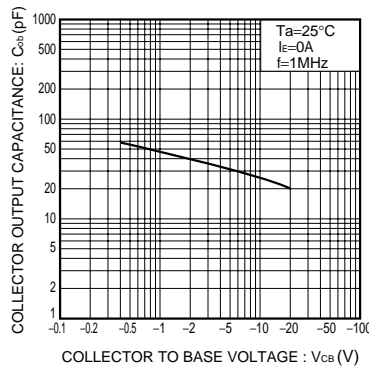


Fig.5 Collector output capacitance vs. collector-base voltage

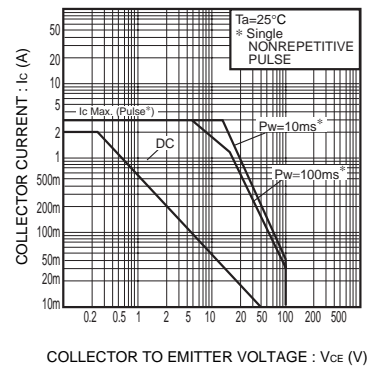


Fig.6 Safe Operating area (2SB1580)

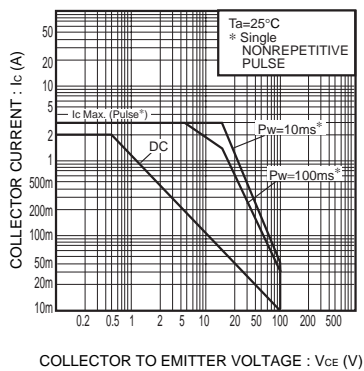


Fig.7 Safe Operating area (2SB1316)

Notes

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