

Transistors

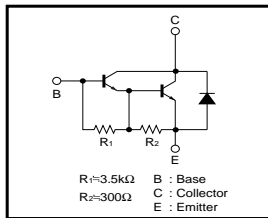
# Power Transistor (100V, 2A)

## 2SD2195 / 2SD1980 / 2SD1867

●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 2SB1580 / 2SB1316.

●Equivalent circuit

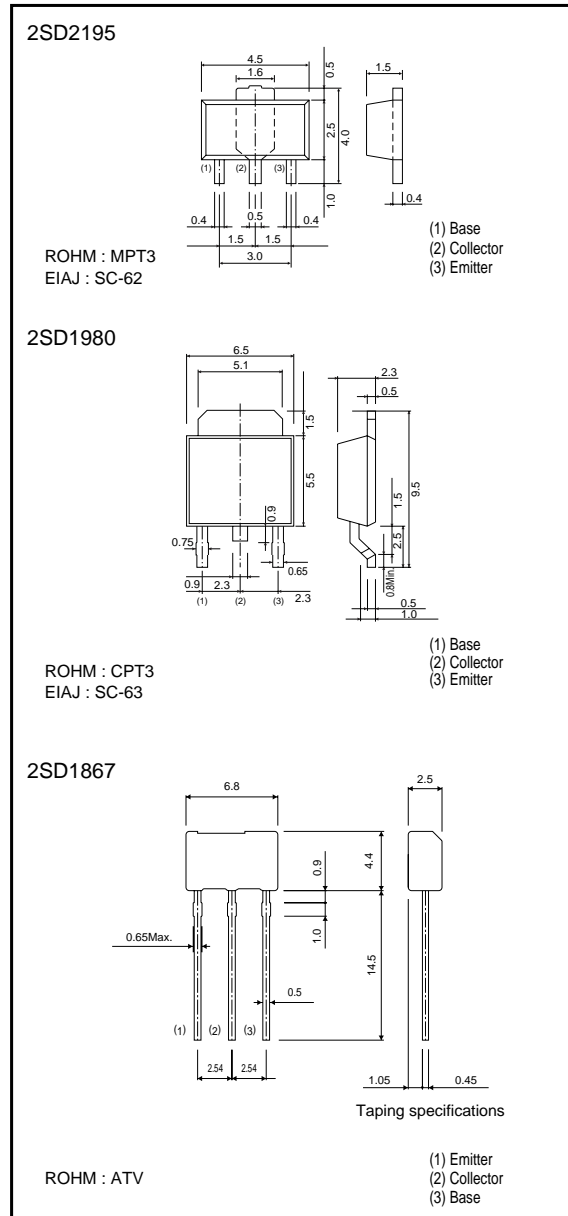


●Absolute maximum ratings (Ta=25°C)

| Parameter                   | Symbol | Limits      | Unit       |
|-----------------------------|--------|-------------|------------|
| Collector-base voltage      | VCBO   | 100         | V          |
| Collector-emitter voltage   | VCEO   | 100         | V          |
| Emitter-base voltage        | VEBO   | 6           | V          |
| Collector current           | IC     | 2           | A(DC)      |
|                             |        | 3 *1        | A(Pulse)   |
| Collector power dissipation | PC     | 0.5         | W          |
|                             |        | 2 *2        |            |
|                             |        | 1           | W(Tc=25°C) |
|                             |        | 10          |            |
| Junction temperature        | Tj     | 150         | °C         |
| Storage temperature         | Tstg   | -55 to +150 | °C         |

\*1 Single pulse Pw=100ms  
\*2 When mounted on a 40 x 40 x 0.7 mm ceramic board.  
\*3 Printed circuit board, 1.7mm thick, collector plating 100mm<sup>2</sup> or larger.

●External dimensions (Unit : mm)



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●Packaging specifications and hFE

| Type                         | 2SD2195   | 2SD1980   | 2SD1867   |
|------------------------------|-----------|-----------|-----------|
| Package                      | MPT3      | CPT3      | ATV       |
| hFE                          | 1k to 10k | 1k to 10k | 1k to 10k |
| Marking                      | DP        | -         | -         |
| Code                         | T100      | TL        | TV2       |
| Basic ordering unit (pieces) | 1000      | 2500      | 2500      |

\* Denotes hFE

●Electrical characteristics (Ta=25°C)

| Parameter                           | Symbol               | Min. | Typ. | Max.  | Unit | Conditions  |
|-------------------------------------|----------------------|------|------|-------|------|---|
| Collector-base breakdown voltage    | BV <sub>CB0</sub>    | 100  | -    | -     | V    | I <sub>c</sub> = 50μA                                   |
| Collector-emitter breakdown voltage | BV <sub>CE0</sub>    | 100  | -    | -     | V    | I <sub>c</sub> = 5mA                                    |
| Emitter-base breakdown voltage      | BV <sub>EB0</sub>    | 6    | -    | -     | V    | I <sub>e</sub> = 5mA                                    |
| Collector cutoff current            | I <sub>cbo</sub>     | -    | -    | 10    | μA   | V <sub>CB</sub> = 100V                                  |
| Emitter cutoff current              | I <sub>ebo</sub>     | -    | -    | 3     | mA   | V <sub>EB</sub> = 5V                                    |
| Collector-emitter saturation voltag | V <sub>CE(sat)</sub> | -    | -    | 1.5   | V    | I <sub>c</sub> = 1A, I <sub>b</sub> = 1mA *             |
| Base-Emitter saturation voltage     | V <sub>BE(sat)</sub> | -    | -    | 2.0   | V    | I <sub>c</sub> /I <sub>b</sub> = 1A/1mA                 |
| DC current transfer ratio           | h <sub>FE</sub>      | 1000 | -    | 10000 | -    | V <sub>CE</sub> = 2V, I <sub>c</sub> = 1A *             |
| Transition frequency                | f <sub>r</sub>       | -    | 80   | -     | MHz  | V <sub>CE</sub> = 5V, I <sub>e</sub> = -0.1A, f = 30MHz |
| Output capacitance                  | C <sub>ob</sub>      | -    | 25   | -     | pF   | V <sub>CB</sub> = 10V, I <sub>e</sub> = 0A, f = 1MHz    |

\* Measured using pulse current.

●Electrical characteristic curves

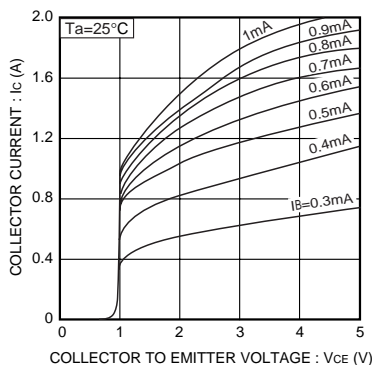


Fig.1 Grounded emitter output characteristics

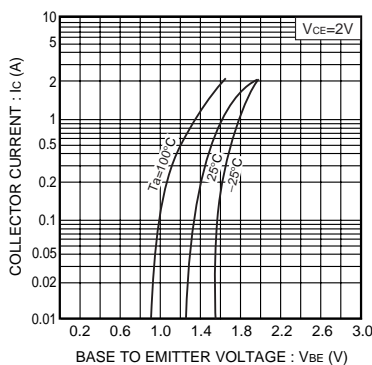


Fig.2 Grounded emitter propagation characteristics

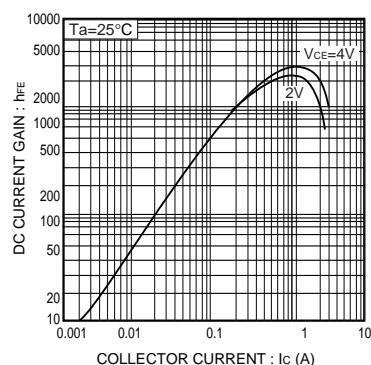


Fig.3 DC current gain vs. collector current

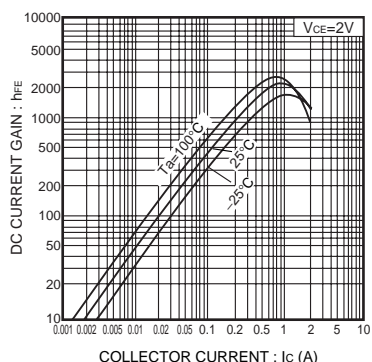


Fig.4 DC current gain vs. collector current

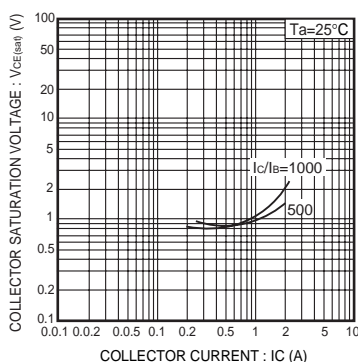


Fig.5 Collector-emitter saturation voltage vs. collector current

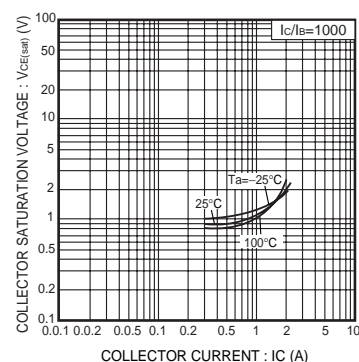


Fig.6 Collector-emitter saturation voltage vs. collector current

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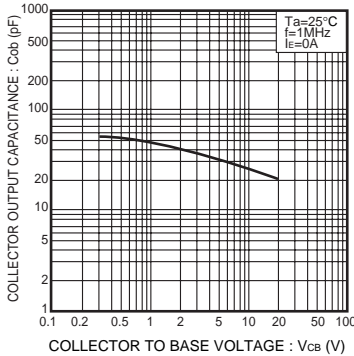


Fig.7 Collector output capacitance vs. collector-base voltage

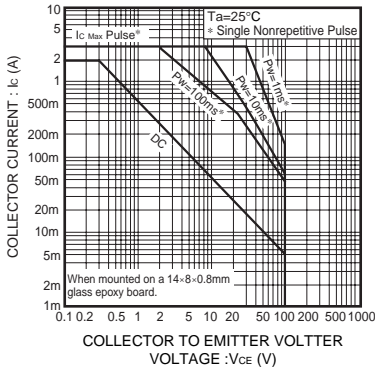


Fig.8 Safe operating area (2SD2195)

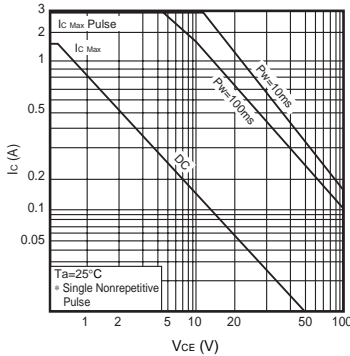


Fig.9 Safe operating area(2SD1867)

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