

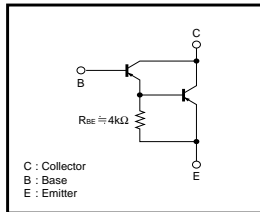
# Power transistor (−40V, −2A)

## 2SB1183 / 2SB1239

### ●Features

- 1) Darlington connection for high DC current gain.
- 2) Built-in 4kΩ resistor between base and emitter.
- 3) Complements the 2SD1759 / 2SD1861.

### ●Equivalent circuit

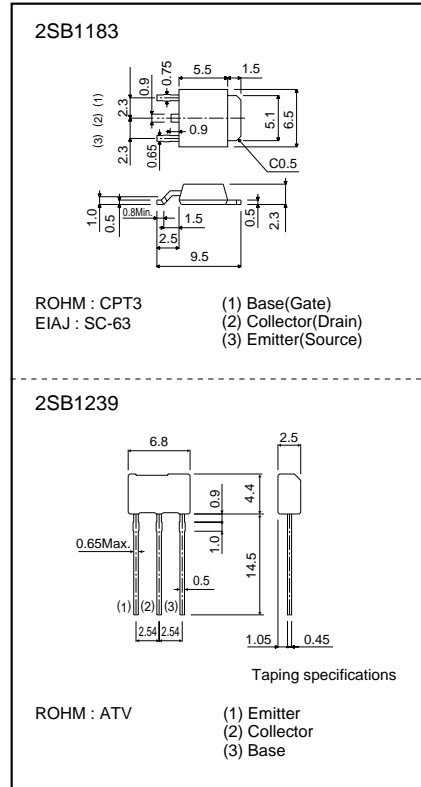


### ●Absolute maximum ratings (Ta=25°C)

| Parameter                   | Symbol           | Limits | Unit                    |
|-----------------------------|------------------|--------|-------------------------|
| Collector-base voltage      | V <sub>CB0</sub> | −40    | V                       |
| Collector-emitter voltage   | V <sub>CER</sub> | −40    | V                       |
| Emitter-base voltage        | V <sub>EBO</sub> | −5     | V                       |
| Collector current           | I <sub>C</sub>   | −2     | A(DC)                   |
|                             |                  | −3     | A(Pulse) *1             |
| Collector power dissipation | P <sub>C</sub>   | 1      | W                       |
|                             |                  | 10     | W(T <sub>C</sub> =25°C) |
| Junction temperature        | T <sub>J</sub>   | 150    | °C                      |
|                             |                  | −55    | °C                      |
| Storage temperature         | T <sub>stg</sub> | −55    | °C                      |

\*1 Single pulse P<sub>w</sub>=10ms  
\*2 Printed circuit board 1.7 mm thick, collector plating 100mm<sup>2</sup> or larger.

### ●External dimensions (Units : mm)



### ●Packaging specifications and hFE

| Type                         | 2SB1183 | 2SB1239 |
|------------------------------|---------|---------|
| Package                      | CPT3    | ATV     |
| hFE                          | 1k~200k | 1k~     |
| Code                         | TL      | T146    |
| Basic ordering unit (pieces) | 2500    | 2500    |

### ●Electrical characteristics (Ta=25°C)

| Parameter                            | Symbol               | Min. | Typ. | Max.  | Unit | Conditions  |
|--------------------------------------|----------------------|------|------|-------|------|---|
| Collector-base breakdown voltage     | BV <sub>CB0</sub>    | −40  | −    | −     | V    | I <sub>C</sub> =−50μA                             |
| Collector-emitter breakdown voltage  | BV <sub>CER</sub>    | −40  | −    | −     | V    | I <sub>C</sub> =−1mA, R <sub>SE</sub> =10kΩ       |
| Emitter-base breakdown voltage       | BV <sub>EBO</sub>    | −5   | −    | −     | V    | I <sub>E</sub> =−50μA                             |
| Collector cutoff current             | I <sub>CBO</sub>     | −    | −    | −1    | μA   | V <sub>CB</sub> =−24V                             |
| Emitter cutoff current               | I <sub>EBO</sub>     | −    | −    | −1    | μA   | V <sub>EB</sub> =−4V                              |
| Collector-emitter saturation voltage | V <sub>CE(sat)</sub> | −    | −    | −1.5  | V    | I <sub>C</sub> /I <sub>B</sub> =−0.6A/−1.2mA      |
| DC current transfer ratio            | h <sub>FE</sub>      | 1000 | −    | 20000 | −    | V <sub>CE</sub> /I <sub>C</sub> =−2V/−0.5A        |
|                                      |                      | 1000 | −    | −     | −    |   |
| Output capacitance                   | C <sub>ob</sub>      | −    | 11   | −     | pF   | V <sub>CB</sub> =−10V, I <sub>E</sub> =0A, f=1MHz |