

# 2SD1820, 2SD1820A

Silicon NPN epitaxial planer type

For general amplification

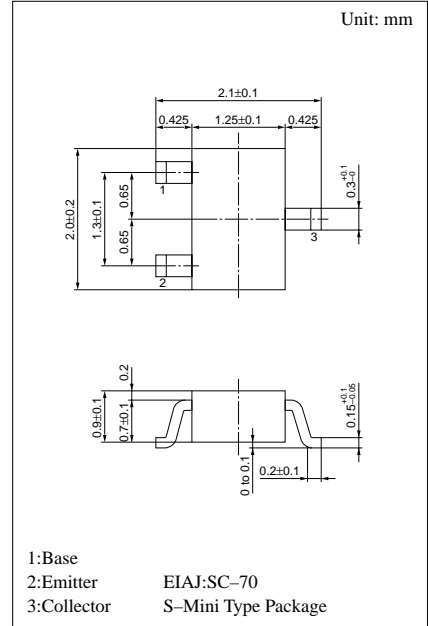
Complementary to 2SB1219 and 2SB1219A

## Features

- Low collector to emitter saturation voltage  $V_{CE(sat)}$ .
- S-Mini type package, allowing downsizing of the equipment and automatic insertion through the tape packing and the magazine packing.

## Absolute Maximum Ratings (Ta=25°C)

| Parameter                    | Symbol           | Ratings    | Unit |
|------------------------------|------------------|------------|------|
| Collector to base voltage    | V <sub>CBO</sub> | 30         | V    |
| 2SD1820A                     |                  | 60         |      |
| Collector to emitter voltage | V <sub>CEO</sub> | 25         | V    |
| 2SD1820A                     |                  | 50         |      |
| Emitter to base voltage      | V <sub>EBO</sub> | 5          | V    |
| Peak collector current       | I <sub>CP</sub>  | 1          | A    |
| Collector current            | I <sub>C</sub>   | 500        | mA   |
| Collector power dissipation  | P <sub>C</sub>   | 150        | mW   |
| Junction temperature         | T <sub>j</sub>   | 150        | °C   |
| Storage temperature          | T <sub>stg</sub> | -55 ~ +150 | °C   |



Marking symbol : W(2SD1820)  
X(2SD1820A)

## Electrical Characteristics (Ta=25°C)

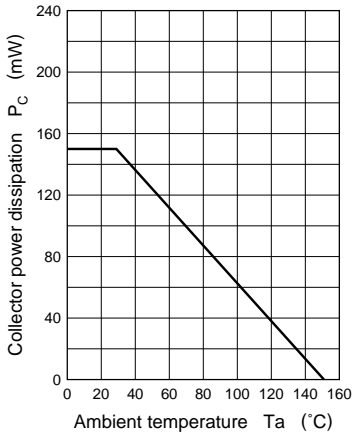
| Parameter                               | Symbol                         | Conditions   | min | typ  | max | Unit |
|---|--------------------------------|--|-----|------|-----|------|
| Collector cutoff current                | I <sub>CBO</sub>               | V <sub>CB</sub> = 20V, I <sub>E</sub> = 0                                |     |      | 0.1 | μA   |
| Collector to base voltage               | V <sub>CBO</sub>               | I <sub>C</sub> = 10μA, I <sub>E</sub> = 0                                | 30  |      |     | V    |
|   |                                |  | 60  |      |     |      |
| Collector to emitter voltage            | V <sub>CEO</sub>               | I <sub>C</sub> = 2mA, I <sub>B</sub> = 0                                 | 25  |      |     | V    |
|   |                                |  | 50  |      |     |      |
| Emitter to base voltage                 | V <sub>EBO</sub>               | I <sub>E</sub> = 10μA, I <sub>C</sub> = 0                                | 5   |      |     | V    |
| Forward current transfer ratio          | h <sub>FE1</sub> <sup>*1</sup> | V <sub>CE</sub> = 10V, I <sub>C</sub> = 150mA <sup>*2</sup>              | 85  | 160  | 340 |      |
|   | h <sub>FE2</sub>               | V <sub>CE</sub> = 10V, I <sub>C</sub> = 500mA <sup>*2</sup>              | 40  |      |     |      |
| Collector to emitter saturation voltage | V <sub>CE(sat)</sub>           | I <sub>C</sub> = 300mA, I <sub>B</sub> = 30mA <sup>*2</sup>              |     | 0.35 | 0.6 | V    |
| Transition frequency                    | f <sub>T</sub>                 | V <sub>CB</sub> = 10V, I <sub>E</sub> = -50mA <sup>*2</sup> , f = 200MHz |     | 200  |     | MHz  |
| Collector output capacitance            | C <sub>ob</sub>                | V <sub>CB</sub> = 10V, I <sub>E</sub> = 0, f = 1MHz                      |     | 6    | 15  | pF   |

<sup>\*2</sup> Pulse measurement

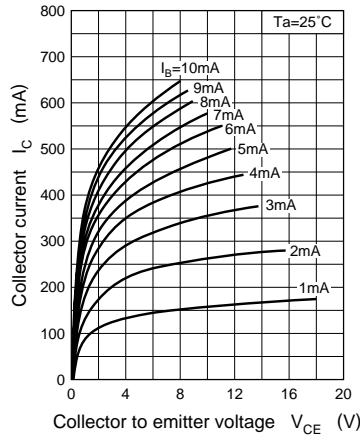
<sup>\*1</sup>h<sub>FE1</sub> Rank classification

| Rank             | Q        | R         | S         |    |
|------------------|----------|-----------|-----------|----|
| h <sub>FE1</sub> | 85 ~ 170 | 120 ~ 240 | 170 ~ 340 |    |
| Marking          | 2SD1820  | WQ        | WR        | WS |
| Symbol           | 2SD1820A | XQ        | XR        | XS |

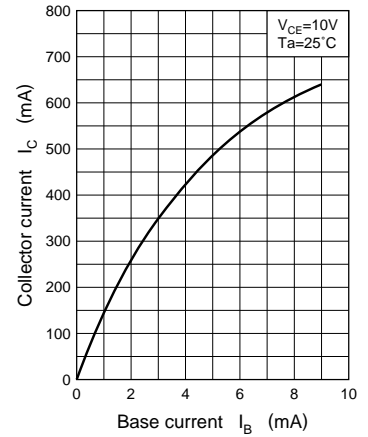
$P_C - T_a$



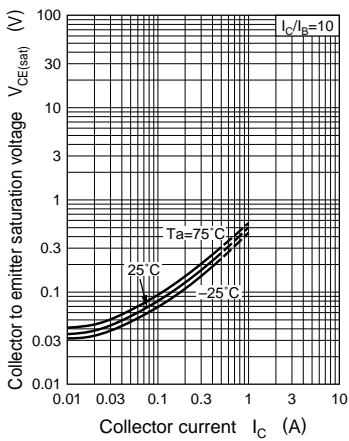
$I_C - V_{CE}$



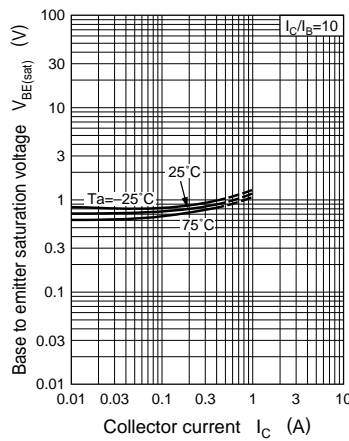
$I_C - I_B$



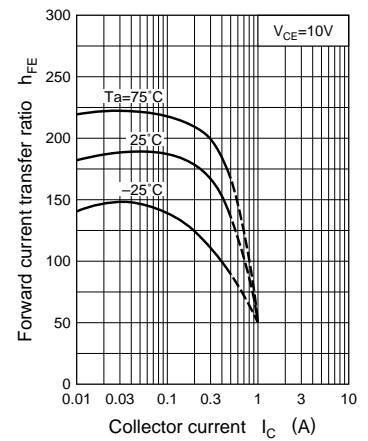
$V_{CE(sat)} - I_C$



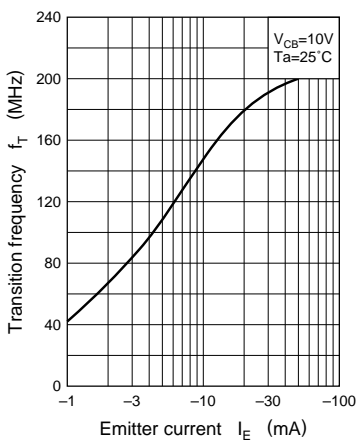
$V_{BE(sat)} - I_C$



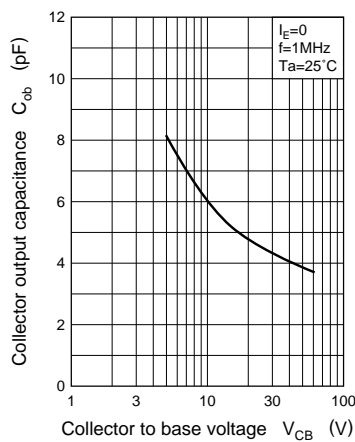
$h_{FE} - I_C$



$f_T - I_E$



$C_{ob} - V_{CB}$



$V_{CER} - R_{BE}$

