

**2SD1805****High-Current Switching Applications****Applications**

- Strobes, voltage regulators, relay drivers, lamp drivers.

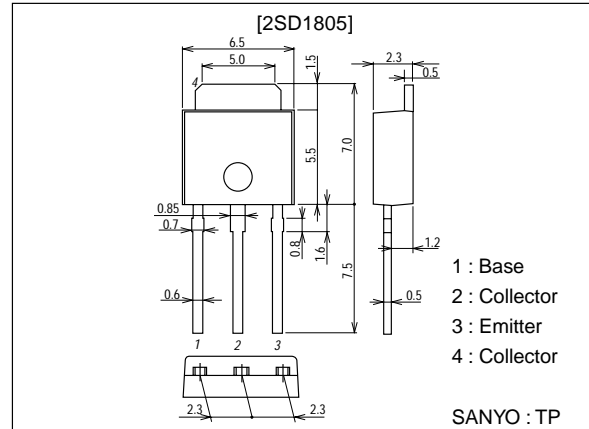
**Features**

- Low saturation voltage.
- Fast switching time.
- Large current capacity.
- Small and slim package making it easy to make 2SD1805-applied sets smaller.

**Package Dimensions**

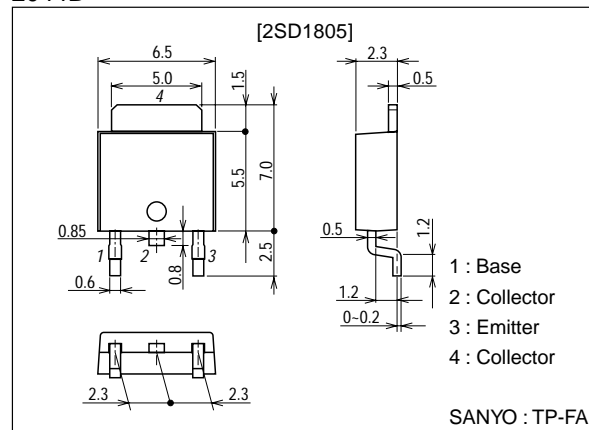
unit:mm

2045B



unit:mm

2044B



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## Specifications

### Absolute Maximum Ratings at Ta = 25°C

| Parameter                    | Symbol           | Conditions           | Ratings     | Unit |
|------------------------------|------------------|----------------------|-------------|------|
| Collector-to-Base Voltage    | V <sub>CB0</sub> |                      | 60          | V    |
| Collector-to-Emitter Voltage | V <sub>CEO</sub> |                      | 20          | V    |
| Emitter-to-Base Voltage      | V <sub>EBO</sub> |                      | 6           | V    |
| Collector Current            | I <sub>C</sub>   |                      | 5           | A    |
| Collector Current (Pulse)    | I <sub>CP</sub>  |                      | 8           | A    |
| Collector Dissipation        | P <sub>C</sub>   |                      | 1           | W    |
|                              |                  | T <sub>c</sub> =25°C | 15          | W    |
| Junction Temperature         | T <sub>j</sub>   |                      | 150         | °C   |
| Storage Temperature          | T <sub>stg</sub> |                      | -55 to +150 | °C   |

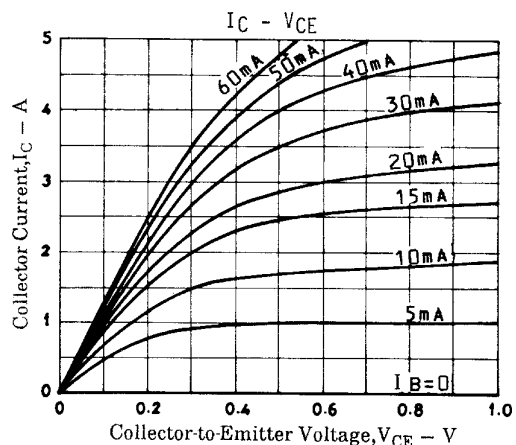
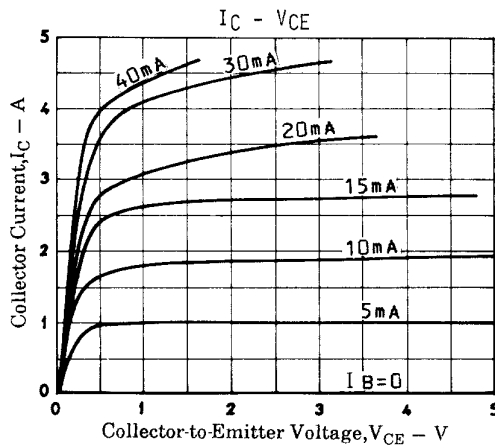
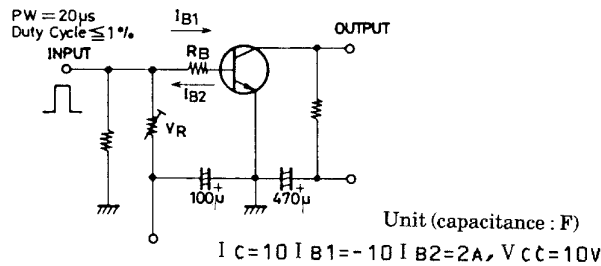
### Electrical Characteristics at Ta = 25°C

| Parameter                               | Symbol               | Conditions                                 | Ratings |     |      | Unit |
|---|----------------------|--|---------|-----|------|------|
|   |                      |  | min     | typ | max  |      |
| Collector Cutoff Current                | I <sub>CB0</sub>     | V <sub>CB</sub> =50V, I <sub>E</sub> =0    |         |     | 100  | nA   |
| Emitter Cutoff Current                  | I <sub>EBO</sub>     | V <sub>EB</sub> =5V, I <sub>C</sub> =0     |         |     | 100  | nA   |
| DC Current Gain                         | h <sub>FE1</sub>     | V <sub>CE</sub> =2V, I <sub>C</sub> =500mA | 120*    |     | 560* |      |
|   | h <sub>FE2</sub>     | V <sub>CE</sub> =2V, I <sub>C</sub> =3A    | 95      |     |      |      |
| Gain-Bandwidth Product                  | f <sub>T</sub>       | V <sub>CE</sub> =10V, I <sub>C</sub> =50mA |         | 120 |      | MHz  |
| Output Capacitance                      | C <sub>ob</sub>      | V <sub>CB</sub> =10V, f=1MHz               |         | 45  |      | pF   |
| Collector-to-Emitter Saturation Voltage | V <sub>CE(sat)</sub> | I <sub>C</sub> =3A, I <sub>B</sub> =60mA   |         | 220 | 500  | mV   |
| Base-to-Emitter Saturation Voltage      | V <sub>BE(sat)</sub> | I <sub>C</sub> =3A, I <sub>B</sub> =60mA   |         |     | 1.5  | V    |
| Collector-to-Base Breakdown Voltage     | V <sub>(BR)CBO</sub> | I <sub>C</sub> =10μA, I <sub>E</sub> =0    | 60      |     |      | V    |
| Collector-to-Emitter Breakdown Voltage  | V <sub>(BR)CEO</sub> | I <sub>C</sub> =1mA, R <sub>BE</sub> =∞    | 20      |     |      | V    |
| Emitter-to-Base Breakdown Voltage       | V <sub>(BR)EBO</sub> | I <sub>E</sub> =10μA, I <sub>C</sub> =0    | 6       |     |      | V    |
| Turn-ON Time                            | t <sub>on</sub>      | See specified Test Circuit.                |         | 30  |      | ns   |
| Storage Time                            | t <sub>stg</sub>     | See specified Test Circuit.                |         | 300 |      | ns   |
| Fall Time                               | t <sub>f</sub>       | See specified Test Circuit.                |         | 40  |      | ns   |

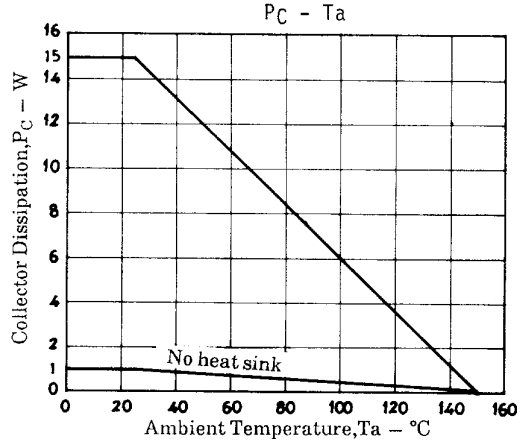
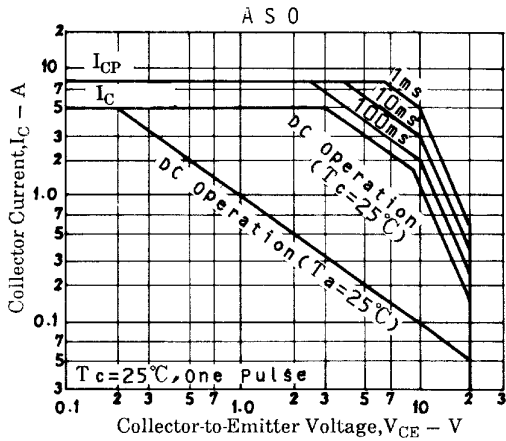
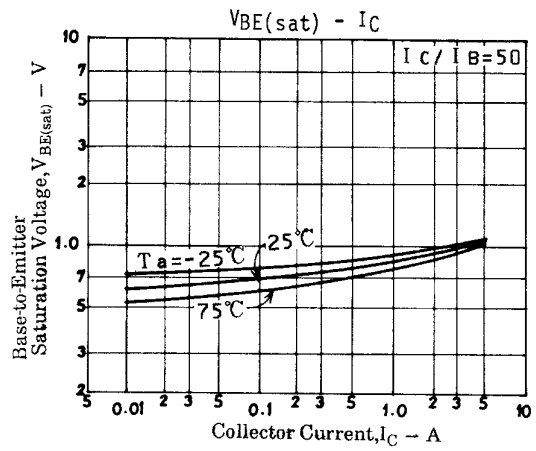
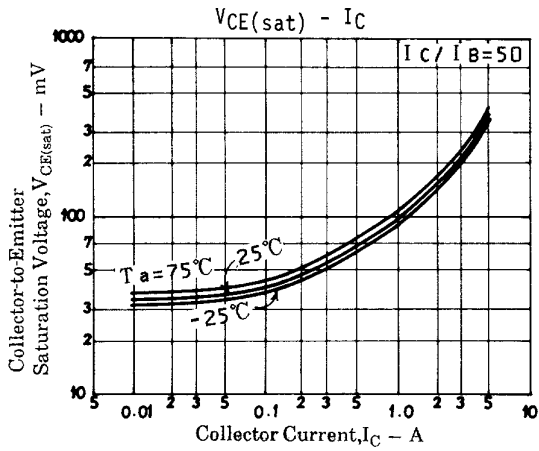
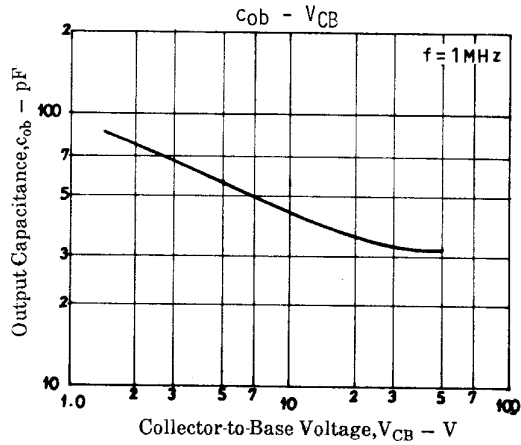
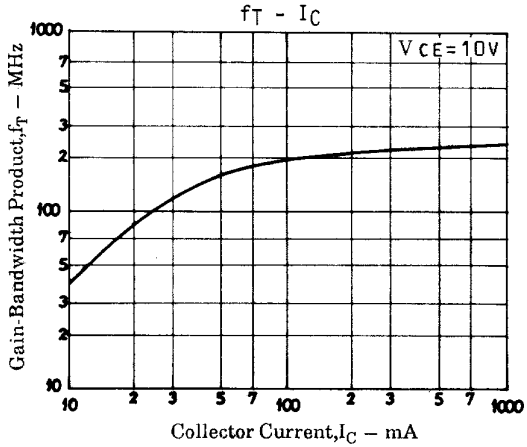
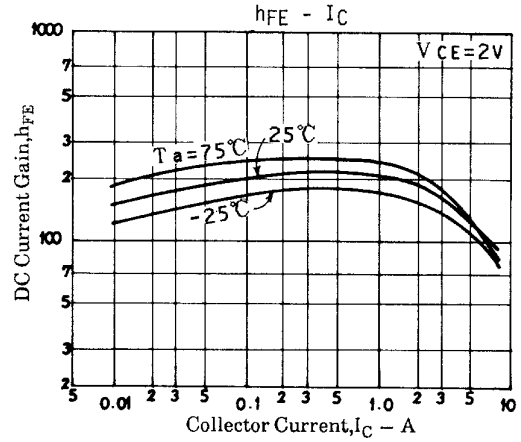
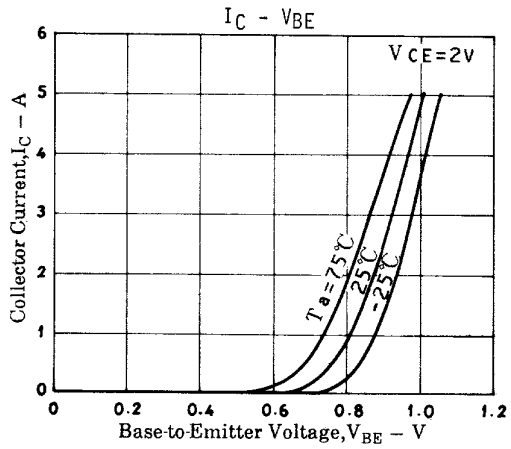
\*: The 2SD1805 is classified by 500mA h<sub>FE</sub> as follows :

|     |   |     |     |   |     |     |   |     |
|-----|---|-----|-----|---|-----|-----|---|-----|
| 120 | E | 200 | 160 | F | 320 | 280 | G | 560 |
|-----|---|-----|-----|---|-----|-----|---|-----|

### Switching Time Test Circuit



# 2SD1805



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