



2SD1805

High-Current Switching Applications

Applications

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

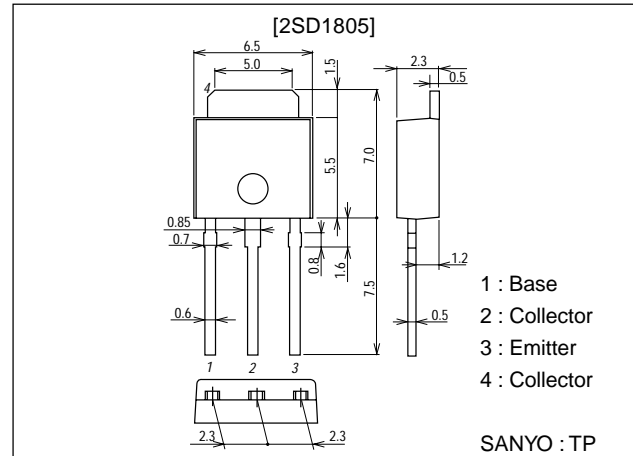
Features

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

Package Dimensions

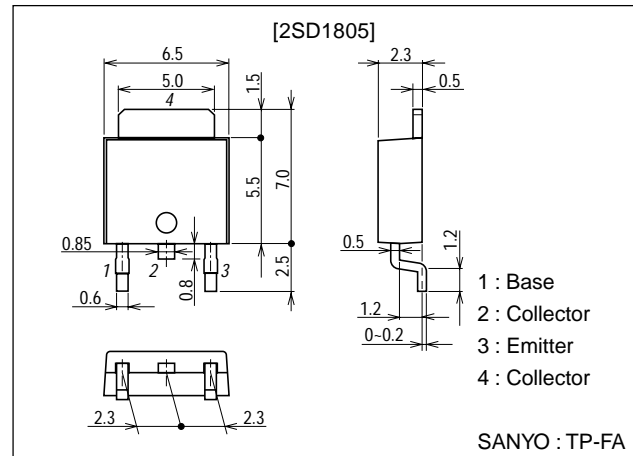
unit:mm

2045B



unit:mm

2044B



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2SD1805

Specifications

Absolute Maximum Ratings at $T_a = 25^\circ\text{C}$

| Parameter | Symbol | Conditions | Ratings | Unit |
|------------------------------|-----------|------------------------|-------------|------------------|
| Collector-to-Base Voltage | V_{CB0} | | 60 | V |
| Collector-to-Emitter Voltage | V_{CEO} | | 20 | V |
| Emitter-to-Base Voltage | V_{EBO} | | 6 | V |
| Collector Current | I_C | | 5 | A |
| Collector Current (Pulse) | I_{CP} | | 8 | A |
| Collector Dissipation | P_C | | 1 | W |
| | | $T_c=25^\circ\text{C}$ | 15 | W |
| Junction Temperature | T_J | | 150 | $^\circ\text{C}$ |
| Storage Temperature | T_{stg} | | -55 to +150 | $^\circ\text{C}$ |

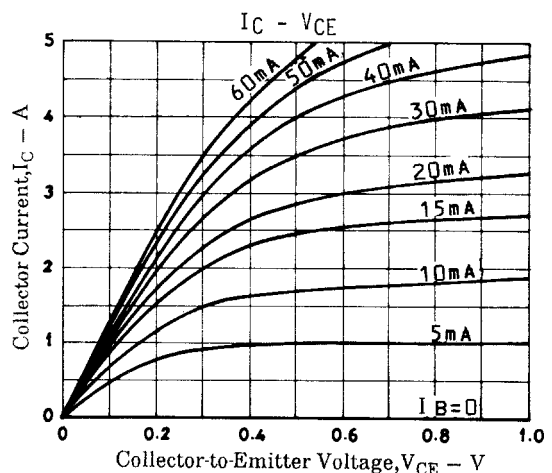
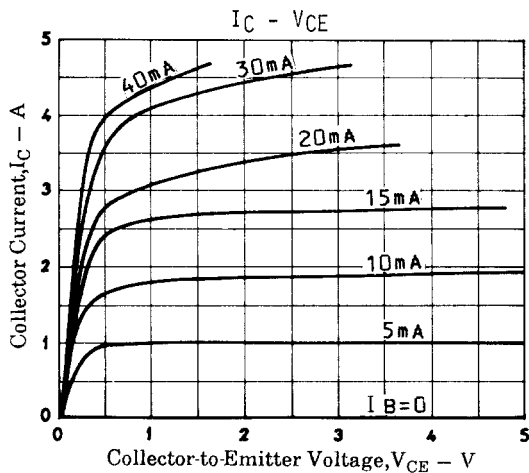
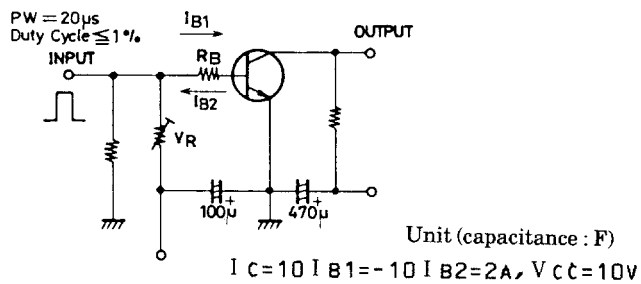
Electrical Characteristics at $T_a = 25^\circ\text{C}$

| Parameter | Symbol | Conditions | Ratings | | | Unit |
|---|---------------|--------------------------------------|---------|-----|------|------|
| | | | min | typ | max | |
| Collector Cutoff Current | I_{CBO} | $V_{CB}=50\text{V}, I_E=0$ | | | 100 | nA |
| Emitter Cutoff Current | I_{EBO} | $V_{EB}=5\text{V}, I_C=0$ | | | 100 | nA |
| DC Current Gain | h_{FE1} | $V_{CE}=2\text{V}, I_C=500\text{mA}$ | 120* | | 560* | |
| | h_{FE2} | $V_{CE}=2\text{V}, I_C=3\text{A}$ | 95 | | | |
| Gain-Bandwidth Product | f_T | $V_{CE}=10\text{V}, I_C=50\text{mA}$ | | 120 | | MHz |
| Output Capacitance | C_{ob} | $V_{CB}=10\text{V}, f=1\text{MHz}$ | | 45 | | pF |
| Collector-to-Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C=3\text{A}, I_B=60\text{mA}$ | | 220 | 500 | mV |
| Base-to-Emitter Saturation Voltage | $V_{BE(sat)}$ | $I_C=3\text{A}, I_B=60\text{mA}$ | | | 1.5 | V |
| Collector-to-Base Breakdown Voltage | $V_{(BR)CBO}$ | $I_C=10\mu\text{A}, I_E=0$ | 60 | | | V |
| Collector-to-Emitter Breakdown Voltage | $V_{(BR)CEO}$ | $I_C=1\text{mA}, R_{BE}=\infty$ | 20 | | | V |
| Emitter-to-Base Breakdown Voltage | $V_{(BR)EBO}$ | $I_E=10\mu\text{A}, I_C=0$ | 6 | | | V |
| Turn-ON Time | t_{on} | See specified Test Circuit. | | 30 | | ns |
| Storage Time | t_{stg} | See specified Test Circuit. | | 300 | | ns |
| Fall Time | t_f | See specified Test Circuit. | | 40 | | ns |

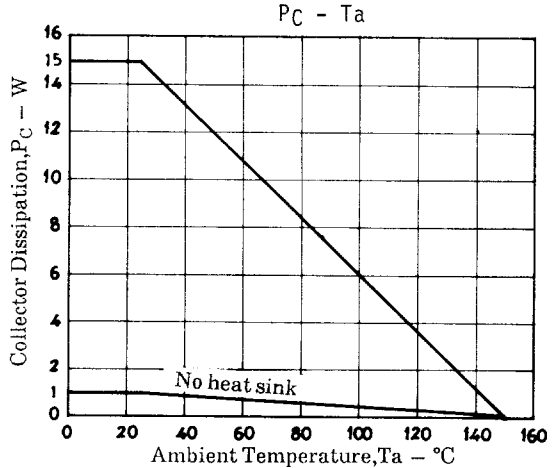
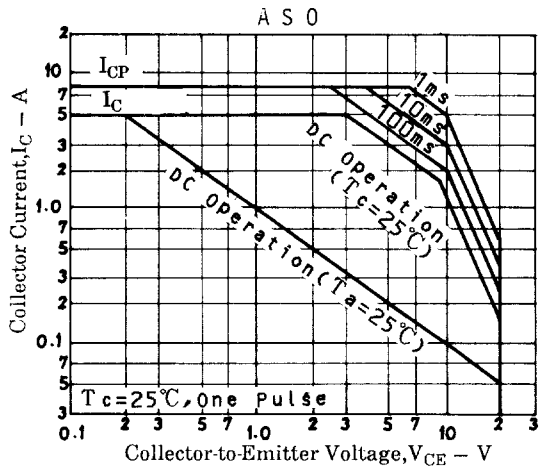
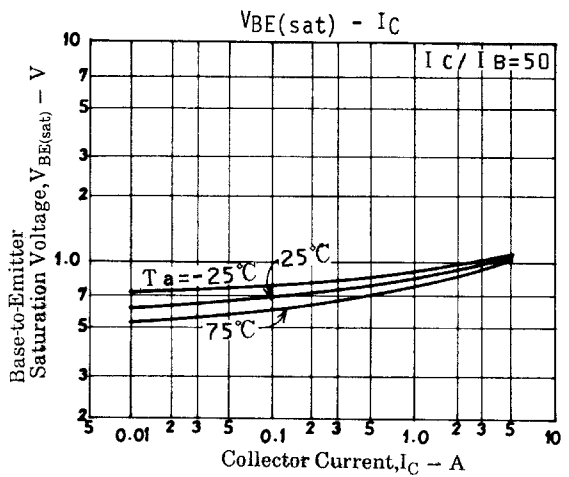
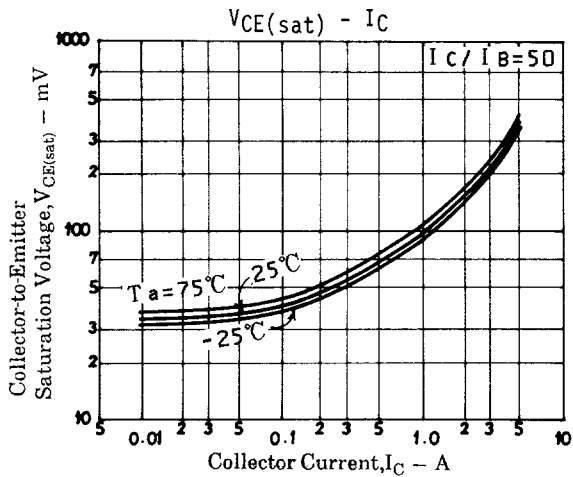
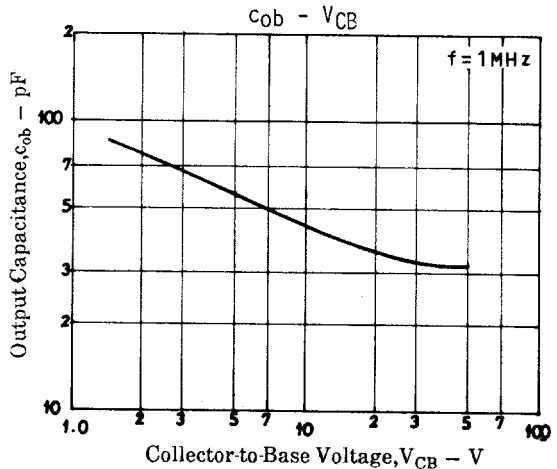
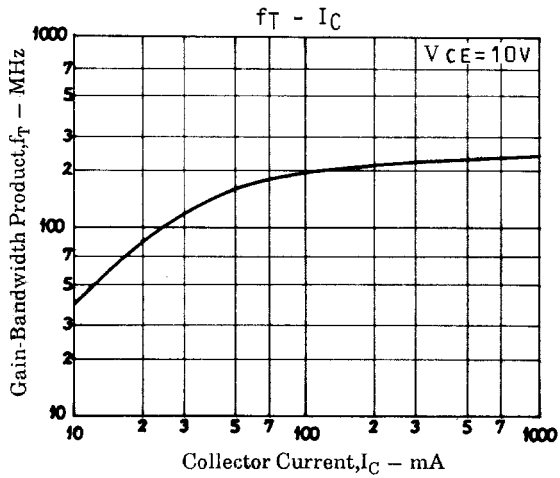
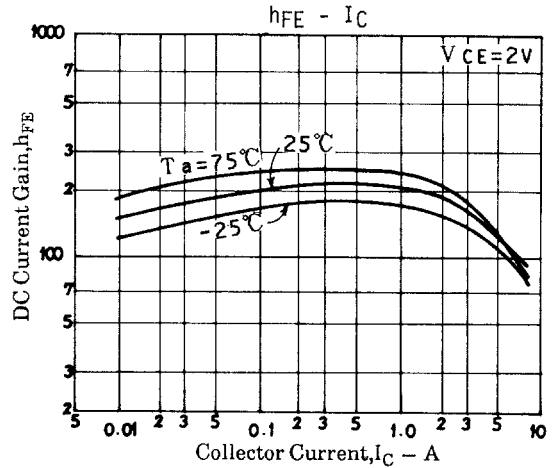
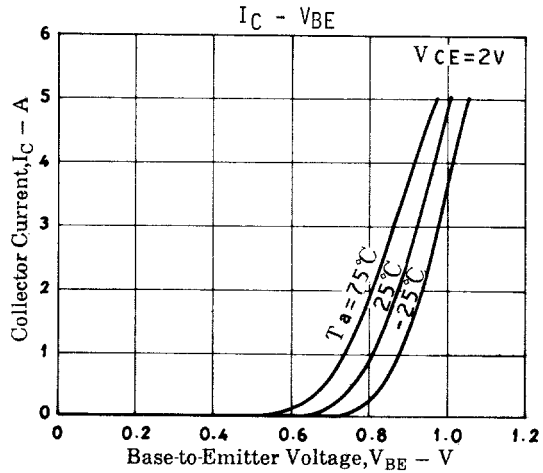
* : The 2SD1805 is classified by 500mA h_{FE} as follows :

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

Switching Time Test Circuit



2SD1805



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