



2SA1641

High-Current Switching Applications

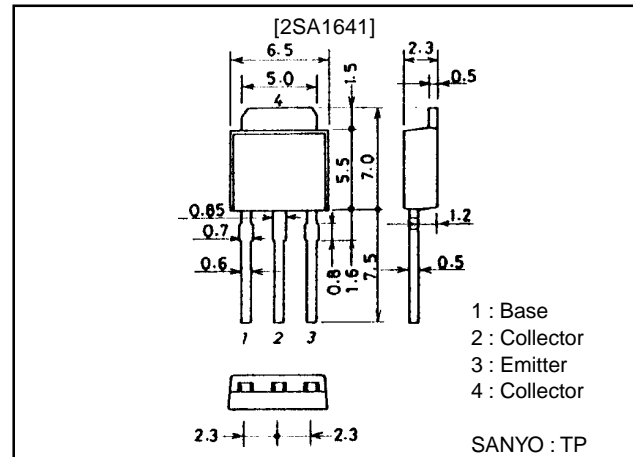
Features

- Adoption of FBET, MBIT processes.
- Low saturation voltage.
- Fast switching speed.
- Large current capacity.
- Small and slim package making it easy to make 2SA1641-used set smaller.

Package Dimensions

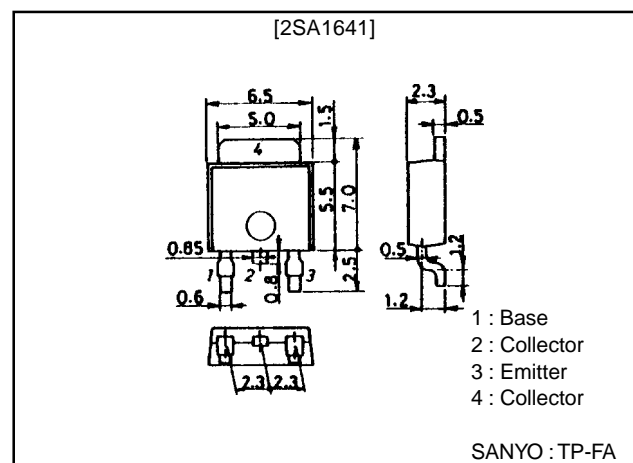
unit:mm

2045B



unit:mm

2044B



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2SA1641

Specifications

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

| Parameter | Symbol | Conditions | Ratings | Unit |
|------------------------------|-----------|------------------------|-------------|------------------|
| Collector-to-Base Voltage | V_{CB0} | | -25 | V |
| Collector-to-Emitter Voltage | V_{CEO} | | -20 | V |
| Emitter-to-Base Voltage | V_{EBO} | | -5 | V |
| Collector Current | I_C | | -8 | A |
| Collector Current (Pulse) | I_{CP} | | -12 | A |
| Base Current | I_B | | -1.5 | 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 | $^\circ\text{C}$ |

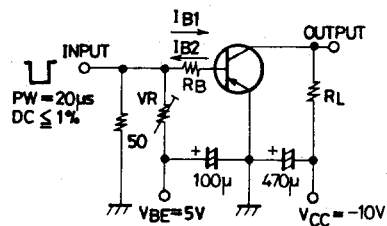
Electrical Characteristics at $T_a = 25^\circ\text{C}$

| Parameter | Symbol | Conditions | Ratings | | | Unit |
|---|---------------|--|---------|------|------|---------------|
| | | | min | typ | max | |
| Collector Cutoff Current | I_{CBO} | $V_{CB}=-20\text{V}, I_E=0$ | | | -1 | μA |
| Emitter Cutoff Current | I_{EBO} | $V_{EB}=-4\text{V}, I_C=0$ | | | -1 | μA |
| DC Current Gain | h_{FE1} | $V_{CE}=-2\text{V}, I_C=-500\text{mA}$ | 100* | | 400* | |
| | h_{FE2} | $V_{CE}=-2\text{V}, I_C=-6\text{A}$ | 60 | | | |
| Gain-Bandwidth Product | f_T | $V_{CE}=-2\text{V}, I_C=-500\text{mA}$ | | 200 | | MHz |
| Collector-to-Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C=-5\text{A}, I_B=-250\text{mA}$ | -220 | -400 | | mV |
| Base-to-Emitter Saturation Voltage | $V_{BE(sat)}$ | $I_C=-5\text{A}, I_B=-250\text{mA}$ | -1 | -1.3 | | V |
| Collector Output Capacitance | C_{ob} | $V_{CB}=-10\text{V}, f=1\text{MHz}$ | | 85 | | pF |
| Collector-to-Base Breakdown Voltage | $V_{(BR)CBO}$ | $I_C=-10\mu\text{A}, I_E=0$ | -25 | | | V |
| Collector-to-Emitter Breakdown Voltage | $V_{(BR)CEO}$ | $I_C=-1\text{mA}, R_{BE}=\infty$ | -20 | | | V |
| Emitter-to-Base Breakdown Voltage | $V_{(BR)EBO}$ | $I_E=-10\mu\text{A}, I_C=0$ | -5 | | | V |
| Turn-ON Time | t_{on} | See specified Test Circuit | | 30 | 300 | ns |
| Storage Time | t_{stg} | See specified Test Circuit | | 200 | 800 | ns |
| Fall Time | t_f | See specified Test Circuit | | 15 | 150 | ns |

* : The 2SA1641 is classified by 500mA h_{FE} as follows :

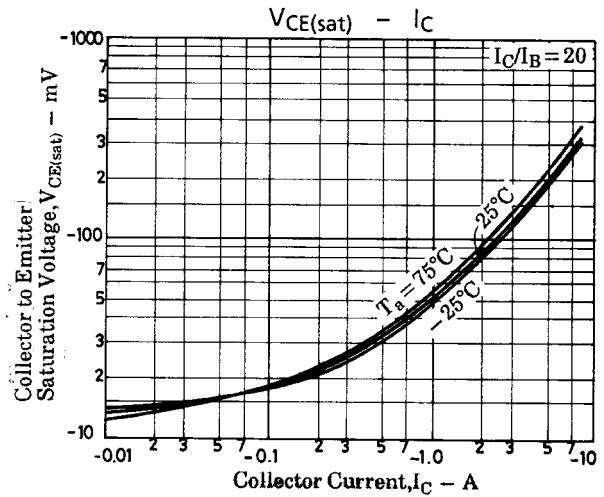
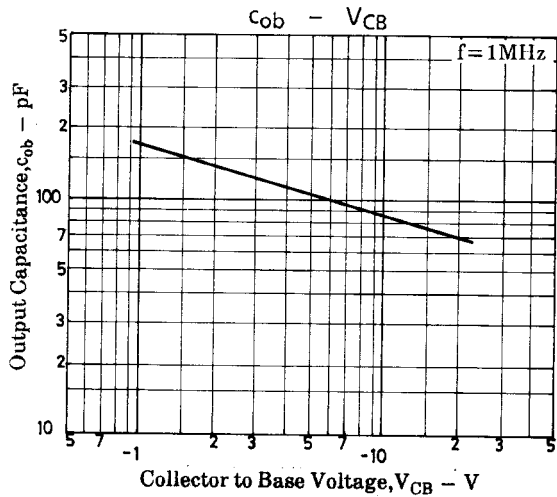
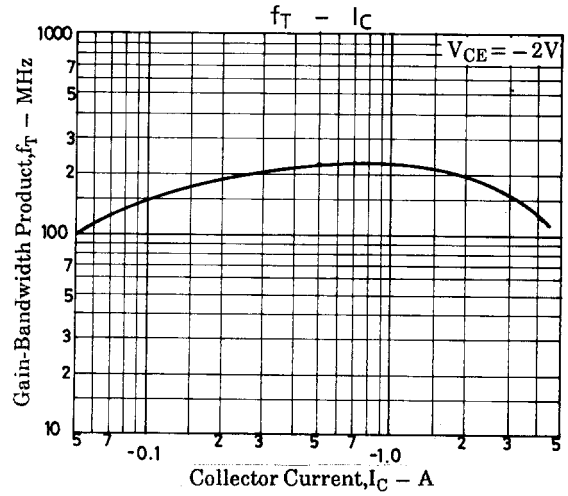
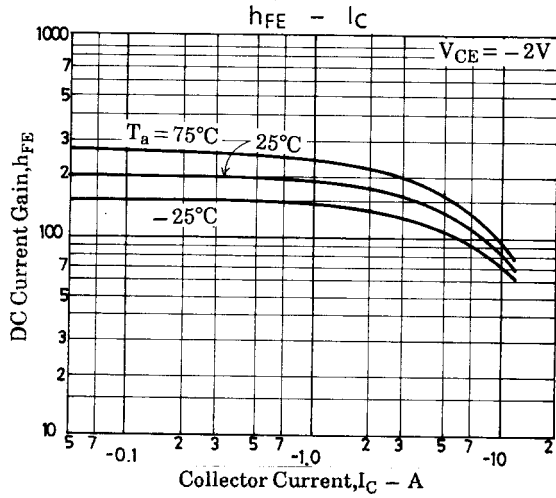
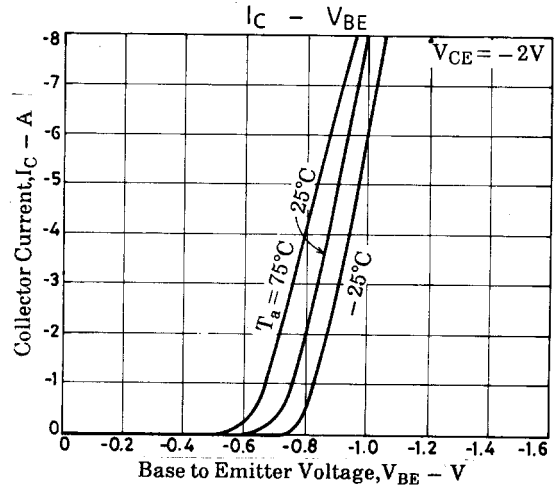
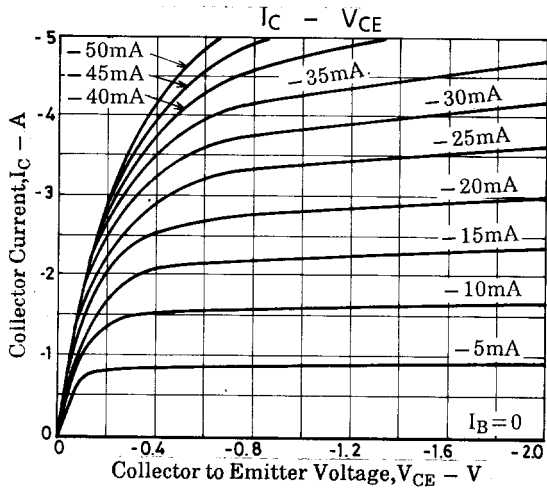
| | | | | | | | | |
|-----|---|-----|-----|---|-----|-----|---|-----|
| 100 | R | 200 | 140 | S | 280 | 200 | T | 400 |
|-----|---|-----|-----|---|-----|-----|---|-----|

Switching Time Test Circuit

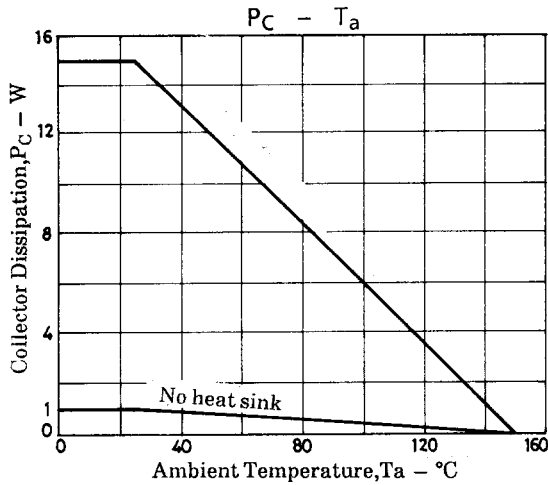
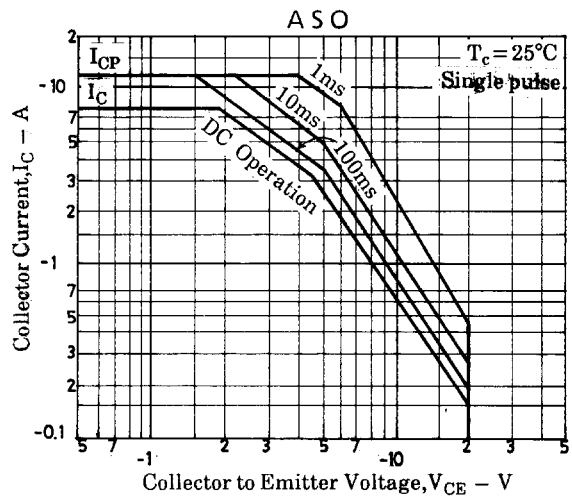
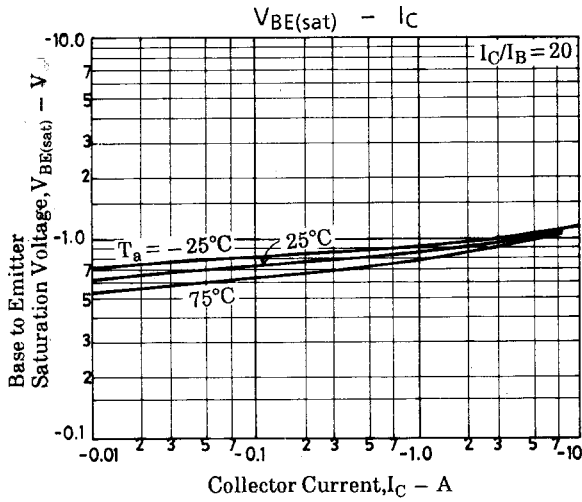


$20I_{B1} = -20I_{B2} = I_C = -5\text{A}$
 Unit (resistance : Ω , capacitance : F)

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