



SANYO Semiconductors

# DATA SHEET

## 2SA2205 — PNP Epitaxial Planar Silicon Transistor

### High-Voltage Switching Applications

#### Applications

- DC / DC converter, Relay drivers, lamp drivers, motor drivers.

#### Features

- Adoption of FBET, MBIT processes.
- Large current capacitance.
- Low collector-to-emitter saturation voltage.
- High-speed switching.
- High allowable power dissipation.

#### Specifications

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

| Parameter                    | Symbol           | Conditions           | Ratings     | Unit |
|------------------------------|------------------|----------------------|-------------|------|
| Collector-to-Base Voltage    | V <sub>CBO</sub> |                      | -100        | V    |
| Collector-to-Emitter Voltage | V <sub>CES</sub> |                      | -100        | V    |
| Collector-to-Emitter Voltage | V <sub>CEO</sub> |                      | -100        | V    |
| Emitter-to-Base Voltage      | V <sub>EBO</sub> |                      | -7          | V    |
| Collector Current            | I <sub>C</sub>   |                      | -2          | A    |
| Collector Current (Pulse)    | I <sub>CP</sub>  |                      | -3          | A    |
| Base Current                 | I <sub>B</sub>   |                      | -400        | mA   |
| Collector Dissipation        | P <sub>C</sub>   |                      | 0.8         | 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>CBO</sub> | V <sub>CB</sub> =-80V, I <sub>E</sub> =0A     |         |     | -1  | μA   |
| Emitter Cutoff Current   | I <sub>EBO</sub> | V <sub>EB</sub> =-4V, I <sub>C</sub> =0A      |         |     | -1  | μA   |
| DC Current Gain          | h <sub>FE</sub>  | V <sub>CE</sub> =-5V, I <sub>C</sub> =-100mA  | 200     |     | 400 |      |
| Gain-Bandwidth Product   | f <sub>T</sub>   | V <sub>CE</sub> =-10V, I <sub>C</sub> =-500mA |         | 300 |     | MHz  |
| Output Capacitance       | C <sub>ob</sub>  | V <sub>CB</sub> =-10V, f=1MHz                 |         | 20  |     | pF   |

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**SANYO Semiconductor Co., Ltd.**

TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

# 2SA2205

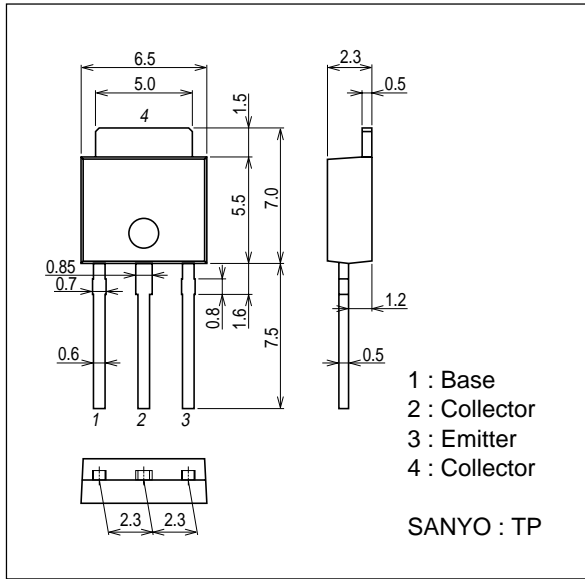
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| Parameter                               | Symbol        | Conditions                          | Ratings |       |      | Unit |
|---|---------------|-------------------------------------|---------|-------|------|------|
|   |               |                                     | min     | typ   | max  |      |
| Collector-to-Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C = -1A, I_B = -100mA$           |         | -120  | -240 | mV   |
| Base-to-Emitter Saturation Voltage      | $V_{BE(sat)}$ | $I_C = -1A, I_B = -100mA$           |         | -0.85 | -1.2 | V    |
| Collector-to-Base Breakdown Voltage     | $V_{(BR)CBO}$ | $I_C = -10\mu A, I_E = 0A$          | -100    |       |      | V    |
| Collector-to-Emitter Breakdown Voltage  | $V_{(BR)CES}$ | $I_C = -100\mu A, R_{BE} = 0\Omega$ | -100    |       |      | V    |
| Collector-to-Emitter Breakdown Voltage  | $V_{(BR)CEO}$ | $I_C = -1mA, R_{BE} = \infty$       | -100    |       |      | V    |
| Emitter-to-Base Breakdown Voltage       | $V_{(BR)EBO}$ | $I_E = -10\mu A, I_C = 0A$          | -7      |       |      | V    |
| Turn-On Time                            | $t_{on}$      | See specified Test Circuit.         |         | 40    |      | ns   |
| Storage Time                            | $t_{stg}$     | See specified Test Circuit.         |         | 600   |      | ns   |
| Fall Time                               | $t_f$         | See specified Test Circuit.         |         | 30    |      | ns   |

## Package Dimensions

unit : mm (typ)

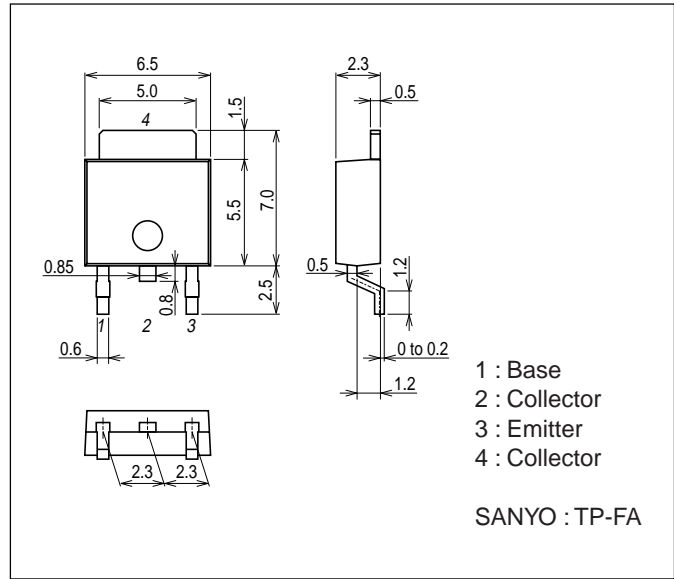
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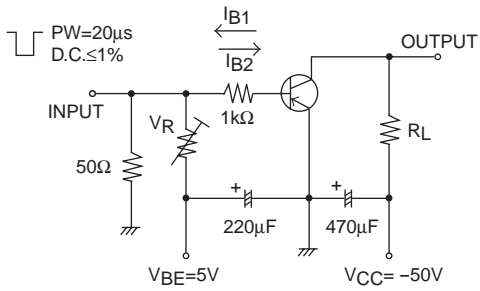
## Package Dimensions

unit : mm (typ)

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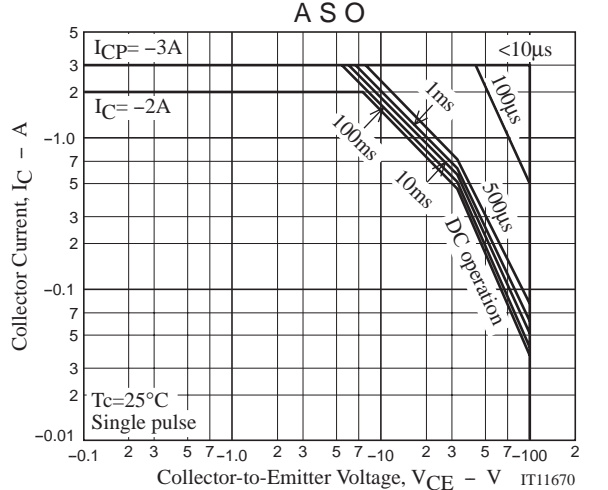
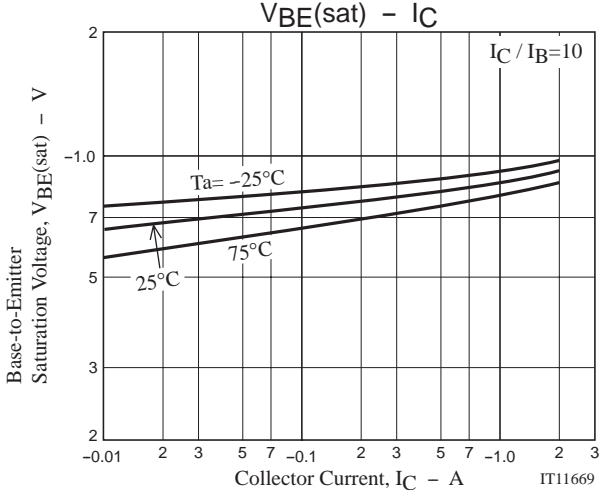
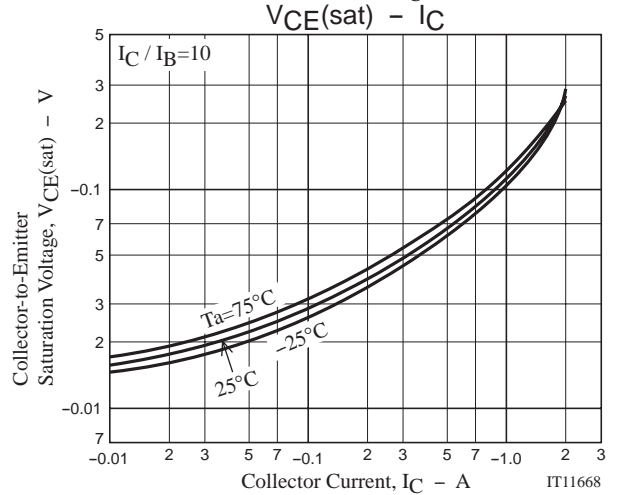
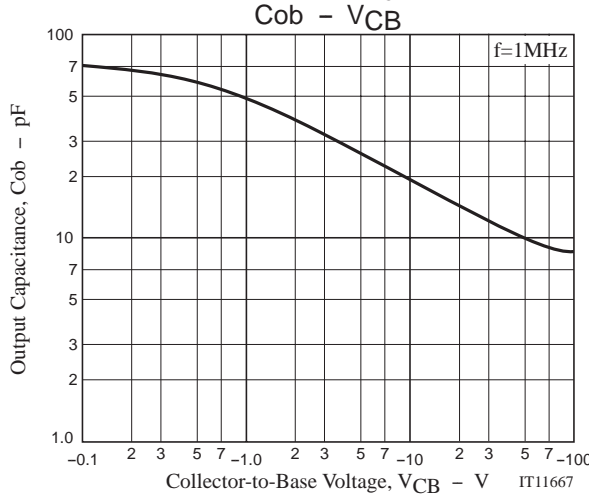
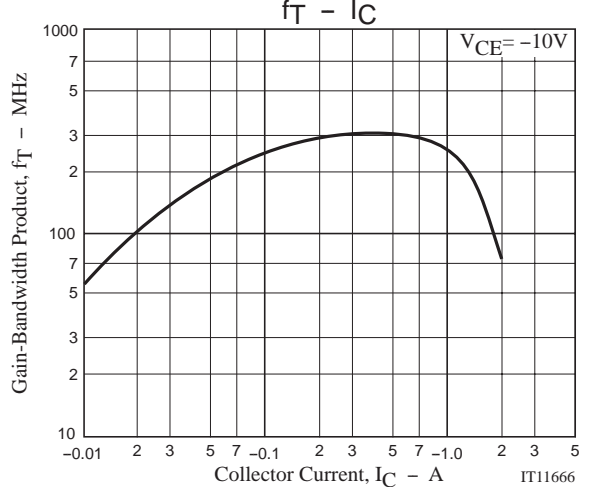
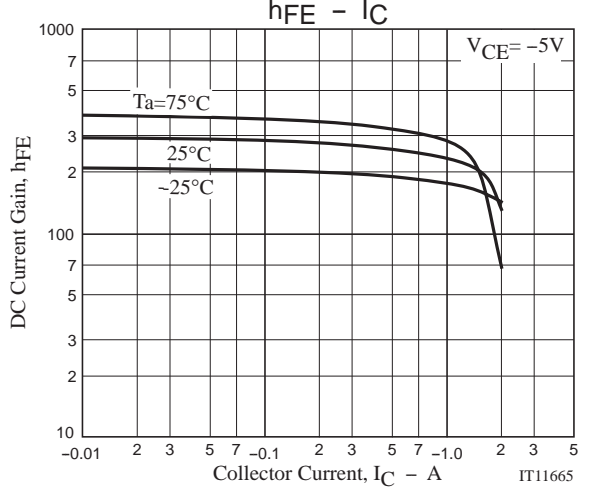
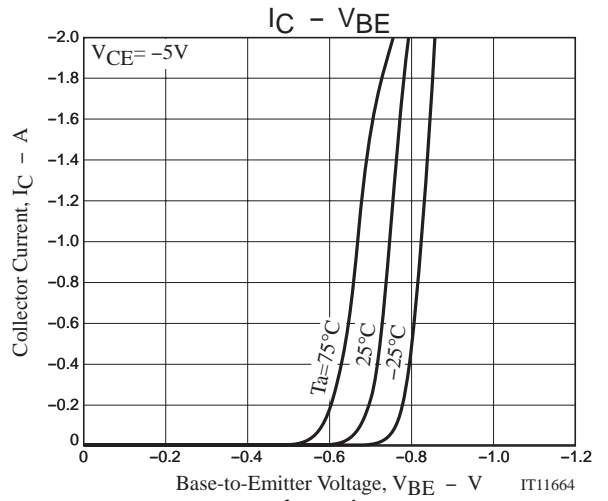
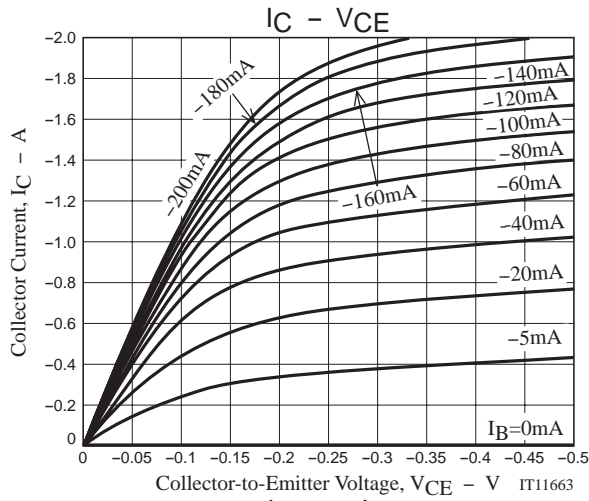


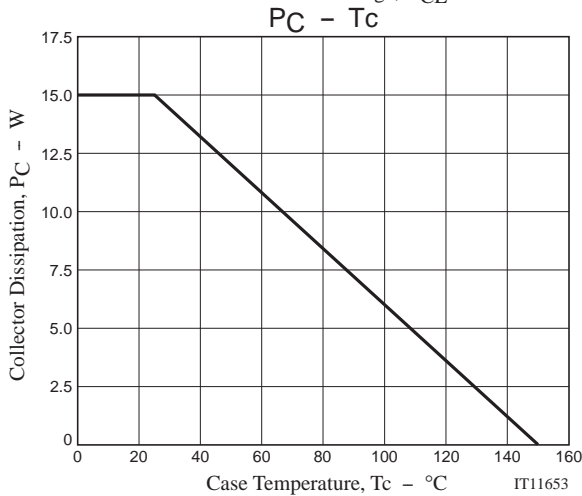
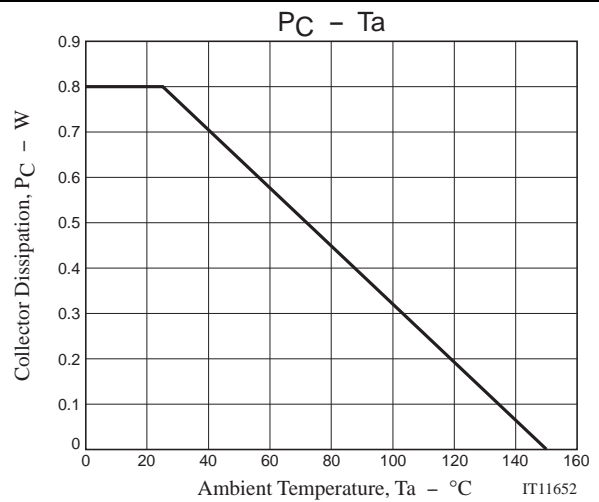
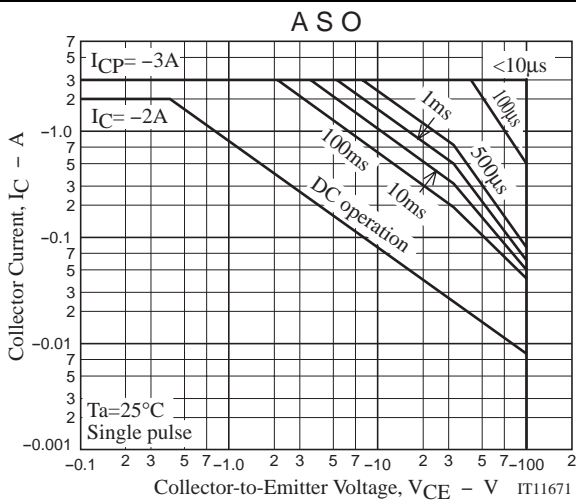
## Switching Time Test Circuit



$$I_C = -10I_{B1} = 10I_{B2} = -0.5A$$

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