

Ordering number:EN3578

PNP/NPN Epitaxial Planar Silicon Transistors



# 2SA1770/2SC4614

## High-Voltage Switching Applications

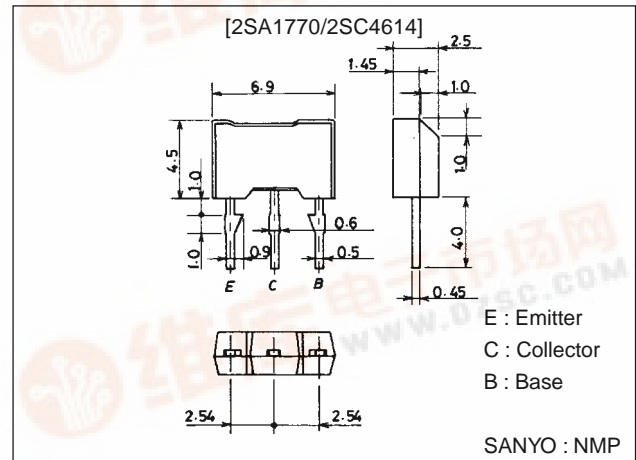
### Features

- Adoption of MBIT process.
- High breakdown voltage and large current capacity.

### Package Dimensions

unit:mm

2064



( ) : 2SA1770

### Specifications

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

| Parameter                    | Symbol           | Conditions | Ratings     | Unit |
|------------------------------|------------------|------------|-------------|------|
| Collector-to-Base Voltage    | V <sub>CB0</sub> |            | (-180)      | V    |
| Collector-to-Emitter Voltage | V <sub>CEO</sub> |            | (-160)      | V    |
| Emitter-to-Base Voltage      | V <sub>EBO</sub> |            | (-6)        | V    |
| Collector Current            | I <sub>C</sub>   |            | (-1.5)      | A    |
| Collector Current (Pulse)    | I <sub>CP</sub>  |            | (-2.5)      | A    |
| Collector Dissipation        | P <sub>C</sub>   |            | 1           | 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> =(-)120V, I <sub>E</sub> =0       |         |        | (-1)   | μA   |
| Emitter Cutoff Current                  | I <sub>EBO</sub>     | V <sub>EB</sub> =(-)4V, I <sub>C</sub> =0         |         |        | (-1)   | μA   |
| DC Current Gain                         | h <sub>FE1</sub>     | V <sub>CE</sub> =(-)5V, I <sub>C</sub> =(-)100mA  | 100*    |        | 400*   |      |
|   | h <sub>FE2</sub>     | V <sub>CE</sub> =(-)5V, I <sub>C</sub> =(-)10mA   | 80      |        |        |      |
| 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                   |         | (22)14 |        | pF   |
| Collector-to-Emitter Saturation Voltage | V <sub>CE(sat)</sub> | I <sub>C</sub> =(-)500mA, I <sub>B</sub> =(-)50mA |         | (-200) | (-500) | mV   |
|   |                      |   |         | 130    | 450    | mV   |
| Base-to-Emitter Saturation Voltage      | V <sub>BE(sat)</sub> | I <sub>C</sub> =(-)500mA, I <sub>B</sub> =(-)50mA | (-0.85) | (-1.2) |        | V    |

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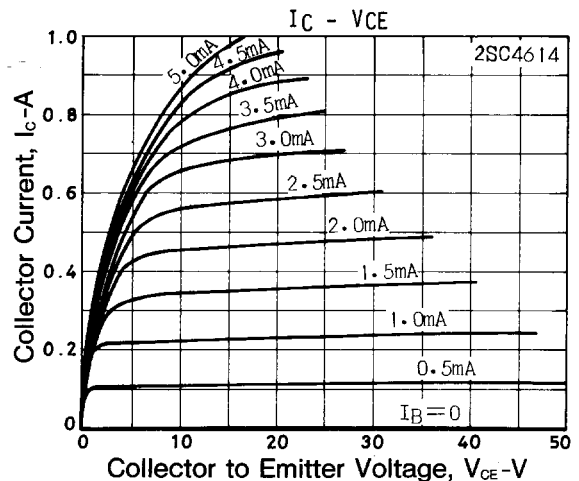
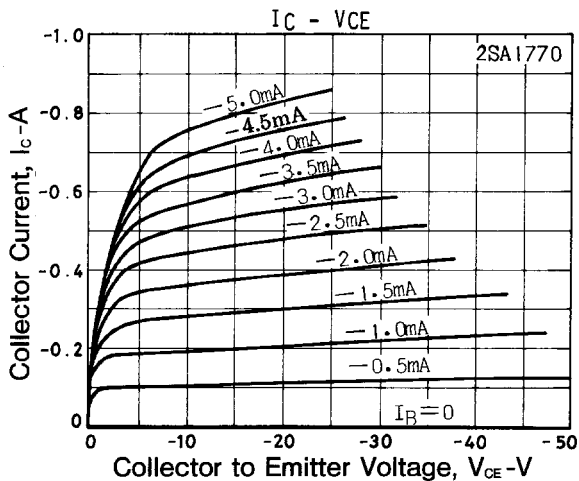
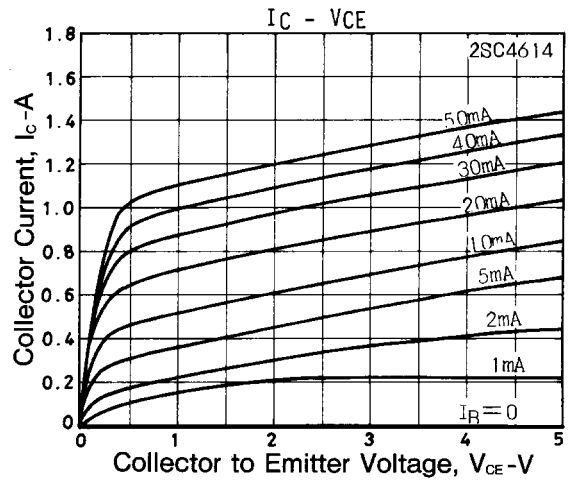
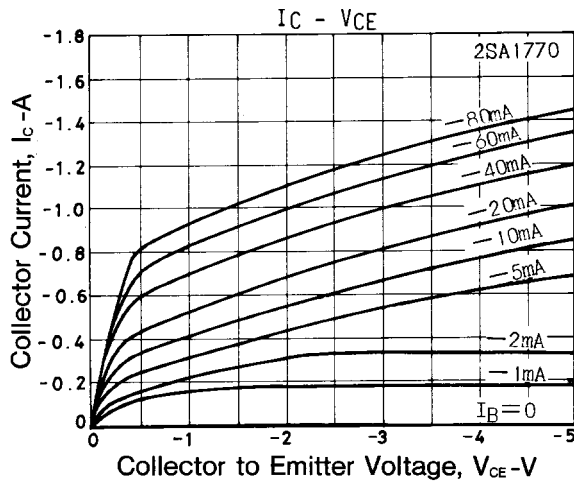
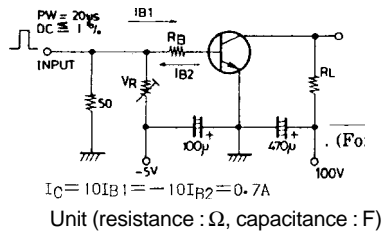
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| Parameter                              | Symbol        | Conditions                      | Ratings |        |     | Unit    |
|--|---------------|---------------------------------|---------|--------|-----|---------|
|  |               |                                 | min     | typ    | max |         |
| Collector-to-Base Breakdown Voltage    | $V_{(BR)CBO}$ | $I_C = (-)10\mu A, I_E = 0$     | (-)180  |        |     | V       |
| Collector-to-Emitter Breakdown Voltage | $V_{(BR)CEO}$ | $I_C = (-)1mA, R_{BE} = \infty$ | (-)160  |        |     | V       |
| Emitter-to-Base Breakdown Voltage      | $V_{(BR)EBO}$ | $I_E = (-)10\mu A, I_C = 0$     | (-)6    |        |     | V       |
| Turn-ON Time                           | $t_{on}$      | See specified Test Circuit      |         | (40)40 |     | ns      |
| Storage Time                           | $t_{stg}$     | See specified Test Circuit      |         | (0.7)  |     | $\mu s$ |
|  |               |                                 |         | 1.2    |     | $\mu s$ |
| Fall Time                              | $t_f$         | See specified Test Circuit      |         | (40)80 |     | ns      |

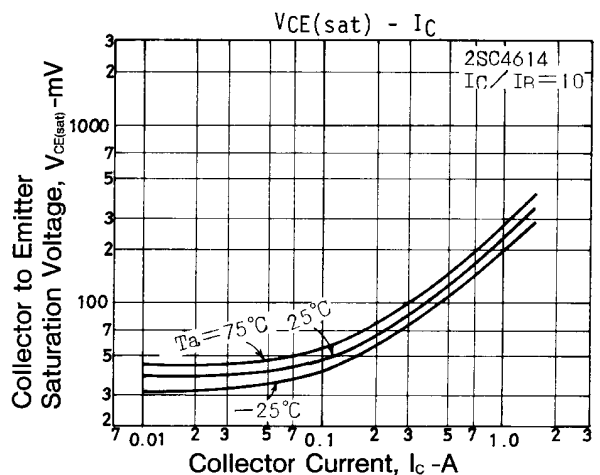
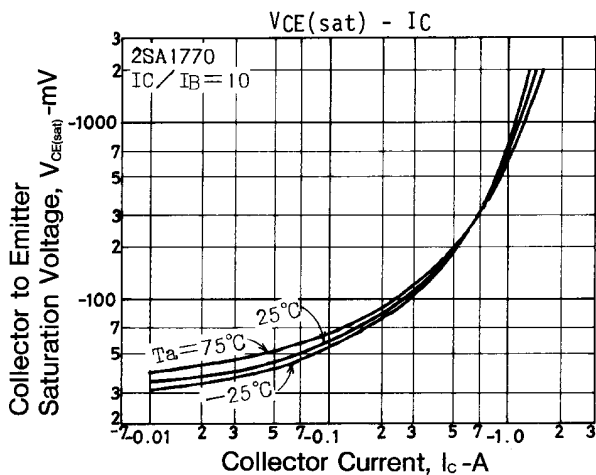
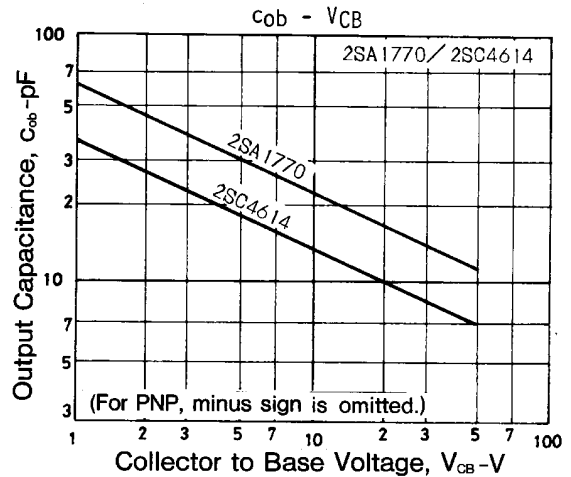
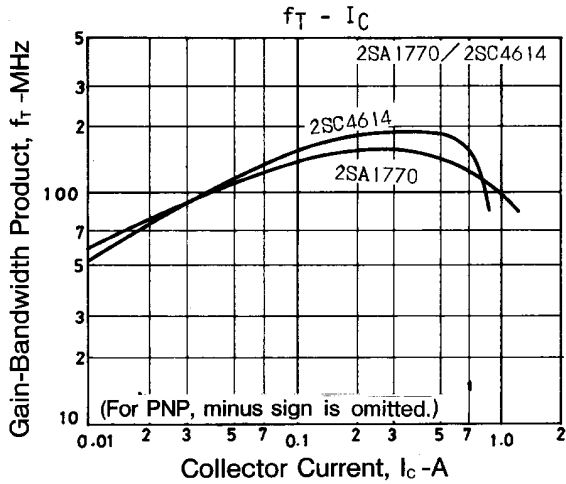
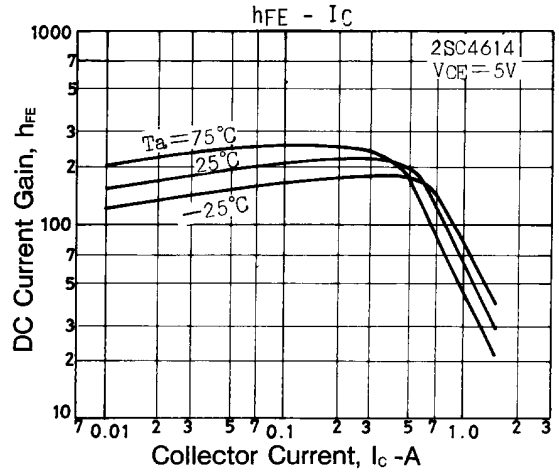
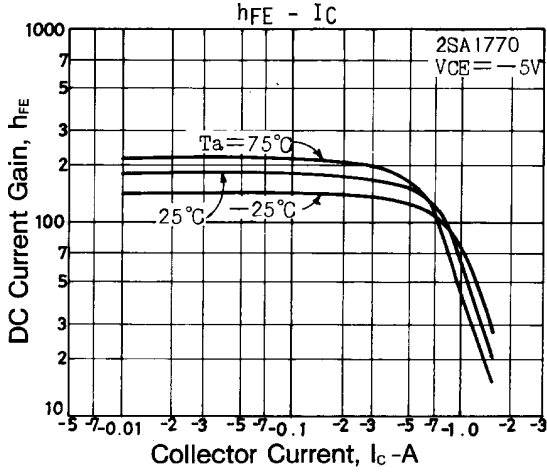
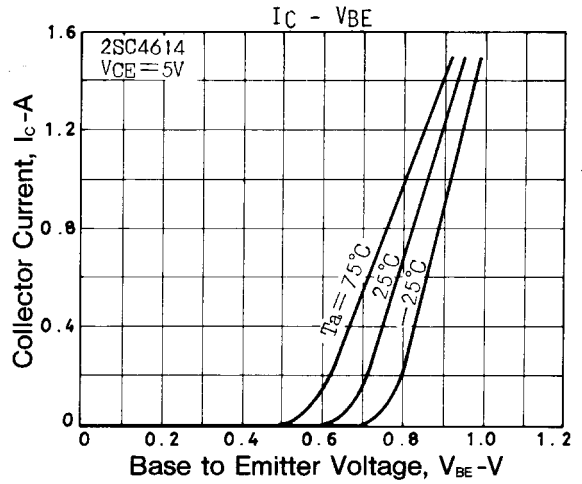
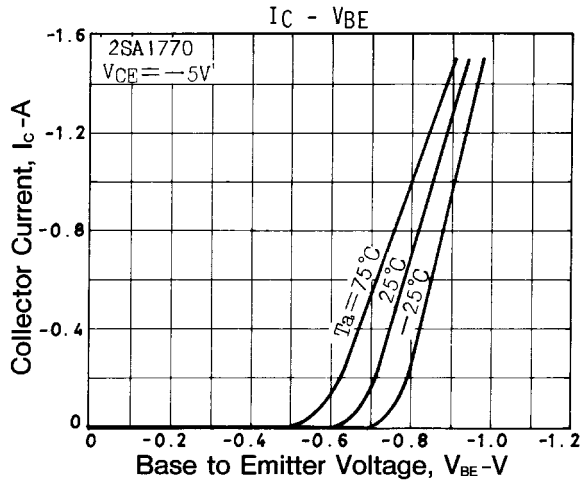
\* ; The 2SA1770/2SC4614 are classified by 100mA  $h_{FE}$  as follows :

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

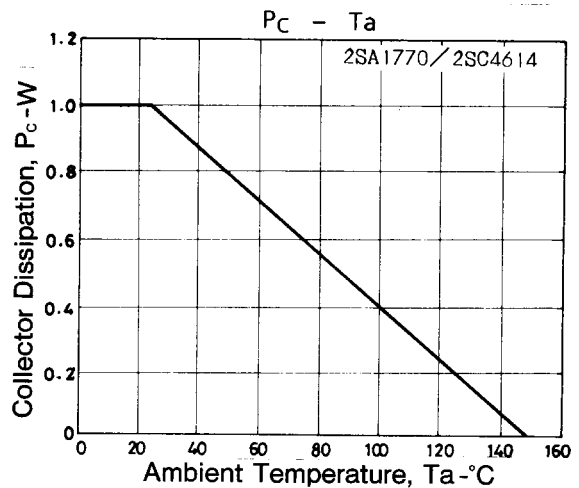
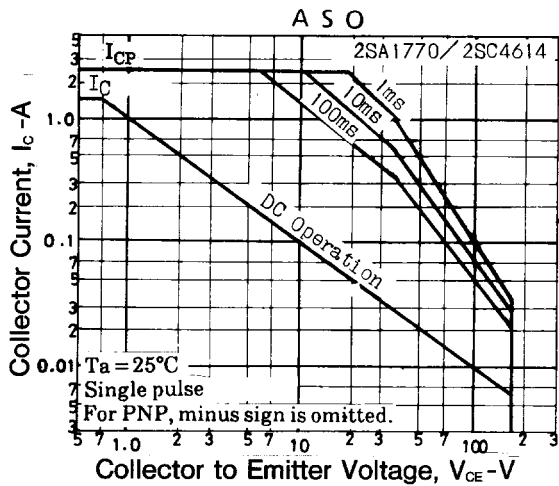
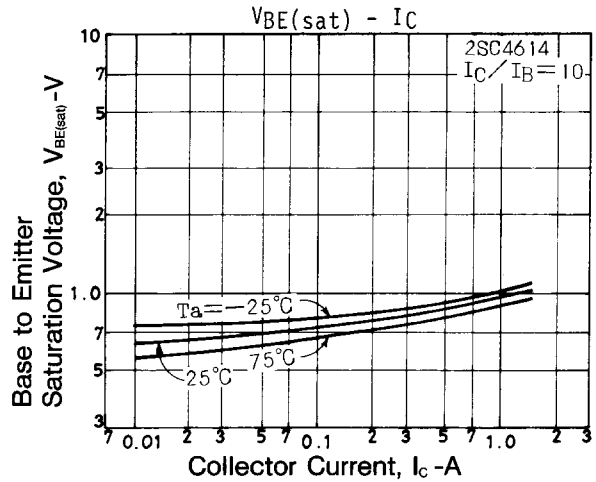
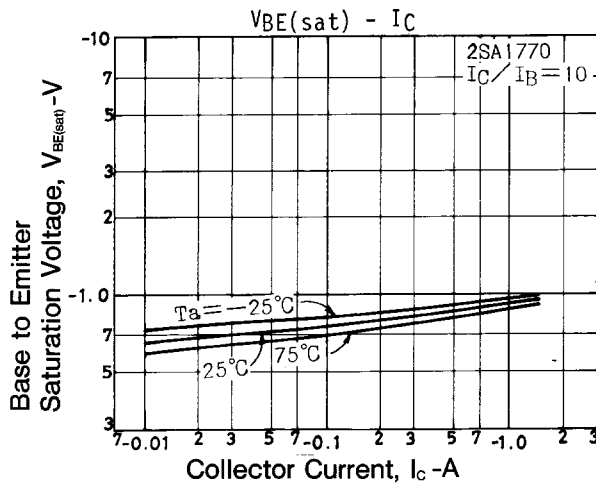
### Switching Time Test Circuit



# 2SA1770/2SC4614



## 2SA1770/2SC4614



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