

No.3707

# 2SA1769/2SC4613

PNP/NPN Epitaxial Planar Silicon Transistors

## 160V/700mA Switching Applications

**Applications**

- Color TV audio output, converter, inverter.

**Features**

- Adoption of MBIT processes.
- High breakdown voltage and large current capacity.
- Fast switching speed.

( ) : 2SA1769

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

|                              |                  |             | 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>   | (-)0.7      | A    |
| Collector Current (Pulse)    | I <sub>CP</sub>  | (-)1.5      | A    |
| Collector Dissipation        | P <sub>C</sub>   | 1.5         | W    |
|                              |                  | 10          | W    |
| Junction Temperature         | T <sub>j</sub>   | 150         | °C   |
| Storage Temperature          | T <sub>stg</sub> | -55 to +150 | °C   |

T<sub>c</sub> = 25°C

**Electrical Characteristics at Ta = 25°C**

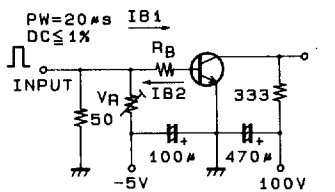
|                          |                      |                                                     | min                 | typ     | max    | unit |
|--------------------------|----------------------|-----------------------------------------------------|---------------------|---------|--------|------|
| Collector Cutoff Current | I <sub>CBO</sub>     | V <sub>CB</sub> = (-)120V, I <sub>E</sub> = 0       |                     |         | (-)0.1 | μA   |
| Emitter Cutoff Current   | I <sub>EBO</sub>     | V <sub>CE</sub> = (-)4V, I <sub>C</sub> = 0         |                     |         | (-)0.1 | μA   |
| DC Current Gain          | h <sub>FE</sub> (1)  | V <sub>CE</sub> = (-)5V, I <sub>C</sub> = (-)100mA  | 100※                |         | 400※   |      |
|                          |                      |                                                     | h <sub>FE</sub> (2) |         | 90     |      |
| Gain-Bandwidth Product   | f <sub>T</sub>       | V <sub>CE</sub> = (-)10V, I <sub>C</sub> = (-)50mA  |                     | 120     |        | MHz  |
| C-E Saturation Voltage   | V <sub>CE(sat)</sub> | I <sub>C</sub> = (-)250mA, I <sub>B</sub> = (-)25mA |                     | 0.12    | 0.4    | V    |
|                          |                      |                                                     |                     | (-0.2)  | (-0.5) |      |
| B-E Saturation Voltage   | V <sub>BE(sat)</sub> | I <sub>C</sub> = (-)250mA, I <sub>B</sub> = (-)25mA |                     | (-)0.85 | (-)1.2 | V    |
| C-B Breakdown Voltage    | V <sub>(BR)CBO</sub> | I <sub>C</sub> = (-)10μA, I <sub>E</sub> = 0        | (-)180              |         |        | V    |
| C-E Breakdown Voltage    | V <sub>(BR)CEO</sub> | I <sub>C</sub> = (-)1mA, R <sub>BE</sub> = ∞        | (-)160              |         |        | V    |
| E-B Breakdown Voltage    | V <sub>(BR)EBO</sub> | I <sub>E</sub> = (-)10μA, I <sub>C</sub> = 0        | (-)6                |         |        | V    |

※ : The 2SA1769/2SC4613 are classified by 100mA h<sub>FE</sub> as follows.

Continued on next page.

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

**Switching Time Test Circuit**

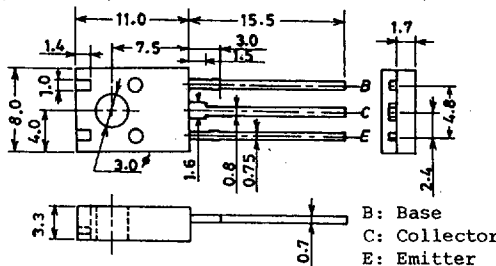


20I<sub>B1</sub> = -20I<sub>B2</sub> = I<sub>C</sub> = 300mA  
(For PNP, the polarity is reversed).

Unit (Resistance : Ω, Capacitance : F)

**Package Dimensions 2042A**

(unit: mm)



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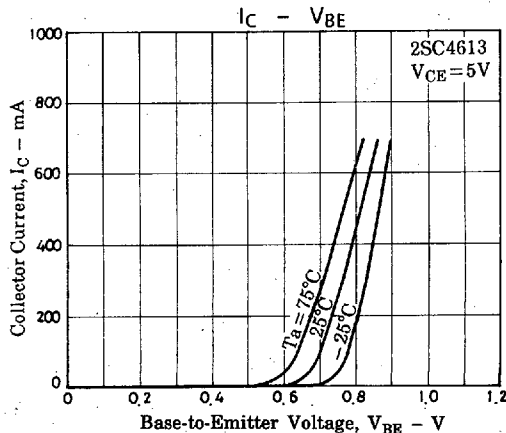
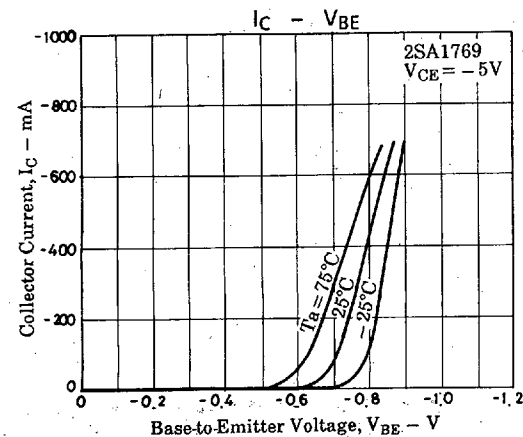
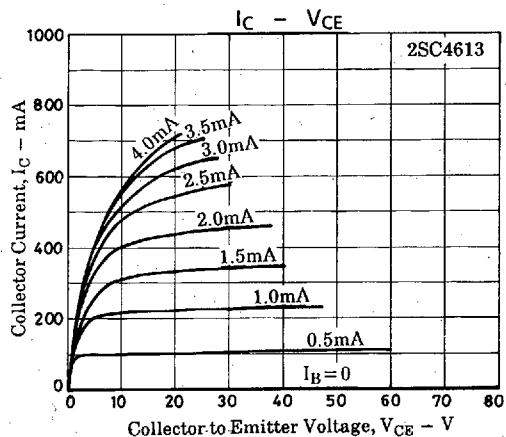
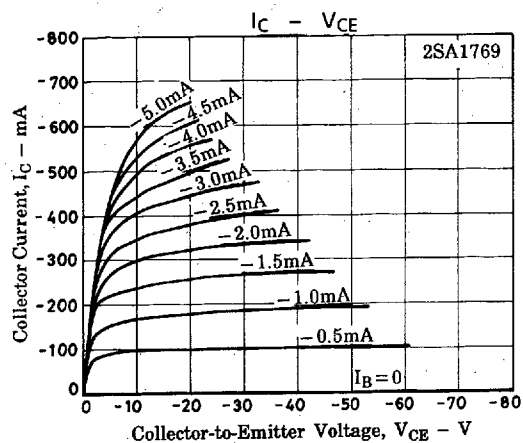
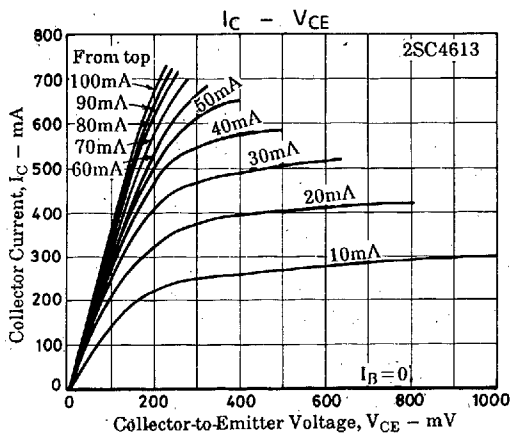
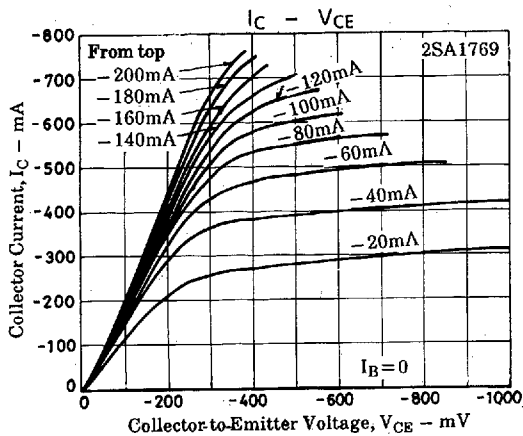
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|                    |           |                             | min | typ   | max | unit |
|--------------------|-----------|-----------------------------|-----|-------|-----|------|
| Output Capacitance | Cob       | $V_{CB} = (-)10V, f = 1MHz$ |     | 8     |     | pF   |
|                    |           |                             |     | (11)  |     | pF   |
| Turn-ON Time       | $t_{on}$  | See specified Test Circuit. |     | 50    |     | ns   |
|                    |           |                             |     | (60)  |     | ns   |
| Storage Time       | $t_{stg}$ | "                           |     | 1000  |     | ns   |
|                    |           |                             |     | (900) |     | ns   |
| Fall Time          | $t_f$     | "                           |     | 60    |     | ns   |
|                    |           |                             |     | (60)  |     | ns   |



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