

**SANYO**

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  $T_a = 25^\circ\text{C}$** 

|                              |           |             | unit             |
|------------------------------|-----------|-------------|------------------|
| Collector-to-Base Voltage    | $V_{CB0}$ | (- )180     | V                |
| Collector-to-Emitter Voltage | $V_{CE0}$ | (- )160     | V                |
| Emitter-to-Base Voltage      | $V_{EB0}$ | (- )6       | V                |
| Collector Current            | $I_C$     | (- )0.7     | A                |
| Collector Current (Pulse)    | $I_{CP}$  | (- )1.5     | A                |
| Collector Dissipation        | $P_C$     | 1.5         | W                |
|                              |           | 10          | W                |
| Junction Temperature         | $T_j$     | 150         | $^\circ\text{C}$ |
| Storage Temperature          | $T_{stg}$ | -55 to +150 | $^\circ\text{C}$ |

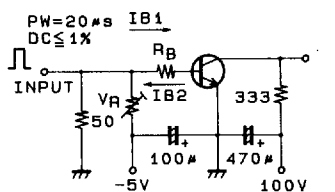
 $T_c = 25^\circ\text{C}$ **Electrical Characteristics at  $T_a = 25^\circ\text{C}$** 

|                          |               |                                                | min     | typ      | max     | unit          |
|--------------------------|---------------|------------------------------------------------|---------|----------|---------|---------------|
| Collector Cutoff Current | $I_{CBO}$     | $V_{CB} = (-)120\text{V}, I_E = 0$             |         |          | (- )0.1 | $\mu\text{A}$ |
| Emitter Cutoff Current   | $I_{EBO}$     | $V_{CE} = (-)4\text{V}, I_C = 0$               |         |          | (- )0.1 | $\mu\text{A}$ |
| DC Current Gain          | $h_{FE}(1)$   | $V_{CE} = (-)5\text{V}, I_C = (-)100\text{mA}$ | 100※    |          | 400※    |               |
|                          | $h_{FE}(2)$   | $V_{CE} = (-)5\text{V}, I_C = (-)10\text{mA}$  | 90      |          |         |               |
| Gain-Bandwidth Product   | $f_T$         | $V_{CE} = (-)10\text{V}, I_C = (-)50\text{mA}$ |         | 120      |         | MHz           |
| C-E Saturation Voltage   | $V_{CE(sat)}$ | $I_C = (-)250\text{mA}, I_B = (-)25\text{mA}$  |         | 0.12     | 0.4     | V             |
|                          |               |                                                |         | (-0.2)   | (-0.5)  |               |
| B-E Saturation Voltage   | $V_{BE(sat)}$ | $I_C = (-)250\text{mA}, I_B = (-)25\text{mA}$  |         | (- )0.85 | (- )1.2 | V             |
| C-B Breakdown Voltage    | $V_{(BR)CBO}$ | $I_C = (-)10\mu\text{A}, I_E = 0$              | (- )180 |          |         | V             |
| C-E Breakdown Voltage    | $V_{(BR)CEO}$ | $I_C = (-)1\text{mA}, R_{BE} = \infty$         | (- )160 |          |         | V             |
| E-B Breakdown Voltage    | $V_{(BR)EBO}$ | $I_E = (-)10\mu\text{A}, I_C = 0$              | (- )6   |          |         | V             |

※ : The 2SA1769/2SC4613 are classified by 100mA  $h_{FE}$  as follows.

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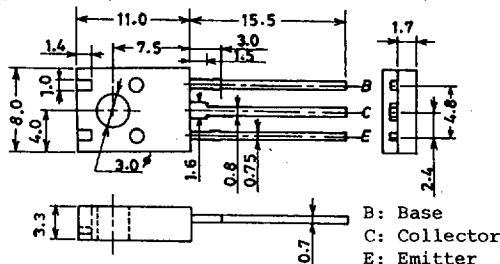
|     |   |     |     |   |     |     |   |     |
|-----|---|-----|-----|---|-----|-----|---|-----|
| 100 | R | 200 | 140 | S | 280 | 200 | T | 400 |
|-----|---|-----|-----|---|-----|-----|---|-----|

**Switching Time Test Circuit**

$20I_{B1} = -20I_{B2} = I_C = 300\text{mA}$   
 (For PNP, the polarity is reversed).

Unit (Resistance :  $\Omega$ , Capacitance : F)**Package Dimensions 2042A**

(unit: mm)



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Output Capacitance  $C_{ob}$

$V_{CB} = (-)10V, f = 1MHz$

min typ max unit

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

