

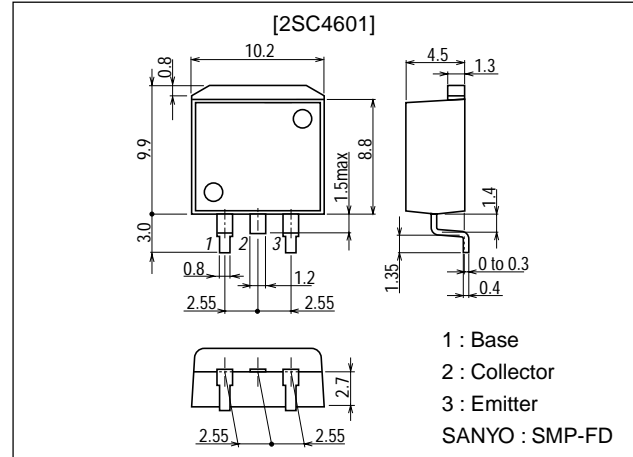
**2SC4601****Switching Regulator Applications****Features**

- Surface mount type device making the following possible.
- Reduction in the number of manufacturing processes for 2SC4601-applied equipment.
- High density surface mount applications.
- Small size of 2SC4601-applied equipment.
- High breakdown voltage, high reliability.
- Fast switching speed.
- Wide ASO.
- Adoption of MBIT process.

**Package Dimensions**

unit:mm

2069C

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

| Parameter                    | Symbol    | Conditions                                   | Ratings     | Unit       |
|------------------------------|-----------|--|-------------|------------|
| Collector-to-Base Voltage    | $V_{CBO}$ |  | 1100        | V          |
| Collector-to-Emitter Voltage | $V_{CEO}$ |  | 800         | V          |
| Emitter-to-Base Voltage      | $V_{EBO}$ |  | 7           | V          |
| Collector Current            | $I_C$     |  | 1.5         | A          |
| Collector Current (Pulse)    | $I_{CP}$  | $PW \leq 300 \mu s$ , duty cycle $\leq 10\%$ | 5           | A          |
| Base Current                 | $I_B$     |  | 0.8         | A          |
| Collector Dissipation        | $P_C$     |  | 1.65        | W          |
|                              |           | $T_C = 25^\circ C$                           | 40          | W          |
| Junction Temperature         | $T_J$     |  | 150         | $^\circ C$ |
| Storage Temperature          | $T_{stg}$ |  | -55 to +150 | $^\circ C$ |

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

| Parameter                | Symbol    | Conditions                   | Ratings |     |     | Unit    |
|--------------------------|-----------|------------------------------|---------|-----|-----|---------|
|                          |           |                              | min     | typ | max |         |
| Collector Cutoff Current | $I_{CBO}$ | $V_{CB} = 800V$ , $I_E = 0$  |         |     | 10  | $\mu A$ |
| Emitter Cutoff Current   | $I_{EBO}$ | $V_{EB} = 5V$ , $I_C = 0$    |         |     | 10  | $\mu A$ |
| DC Current Gain          | $h_{FE1}$ | $V_{CE} = 5V$ , $I_C = 0.1A$ | 10*     |     | 40* |         |
|                          | $h_{FE2}$ | $V_{CE} = 5V$ , $I_C = 0.5A$ | 8       |     |     |         |

\* : For the  $h_{FE1}$  of the 2SC4601, specify two ranks or more in principle.

|    |   |    |    |   |    |    |   |    |
|----|---|----|----|---|----|----|---|----|
| 10 | K | 20 | 15 | L | 30 | 20 | M | 40 |
|----|---|----|----|---|----|----|---|----|

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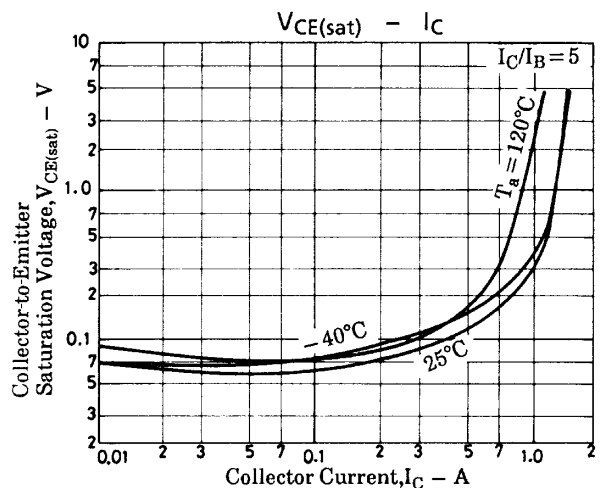
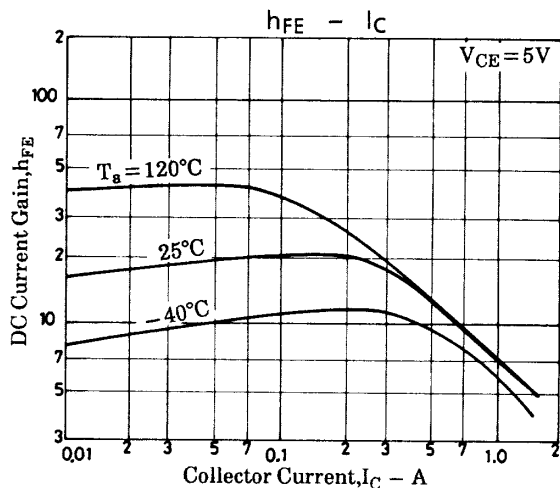
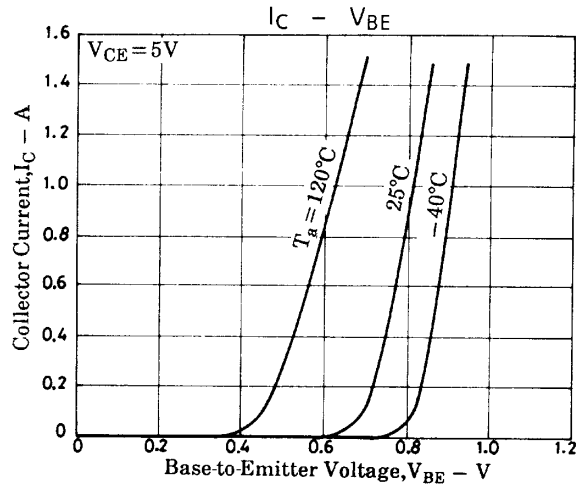
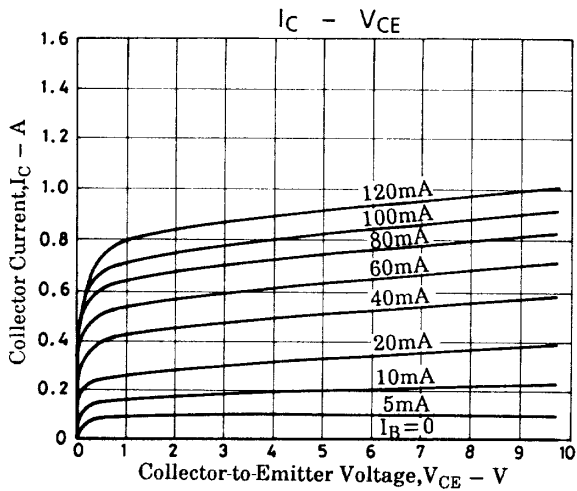
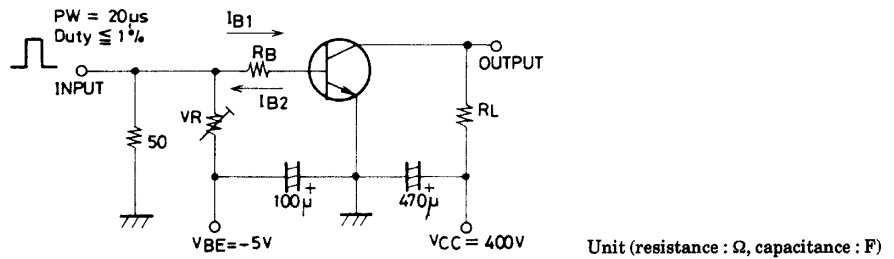
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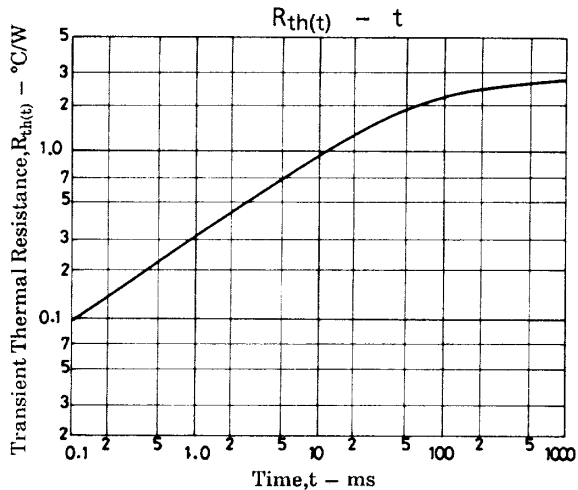
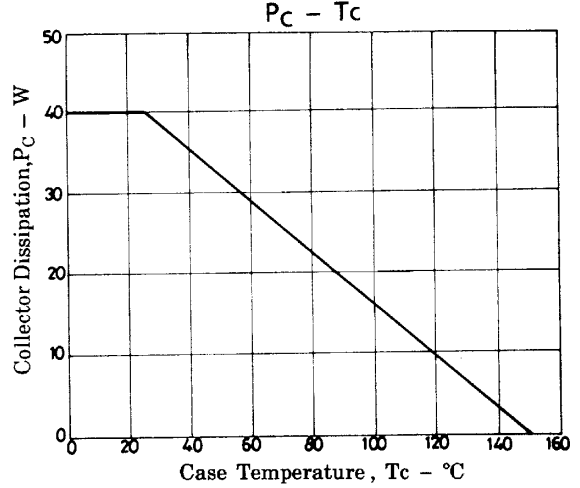
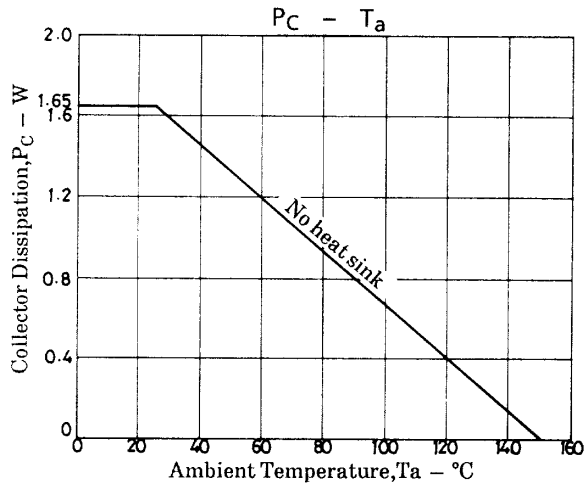
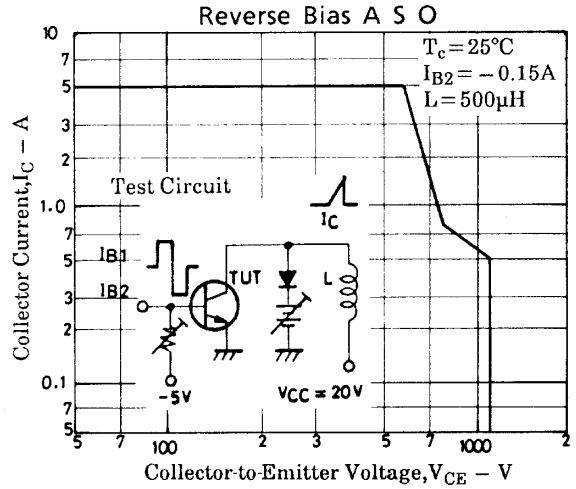
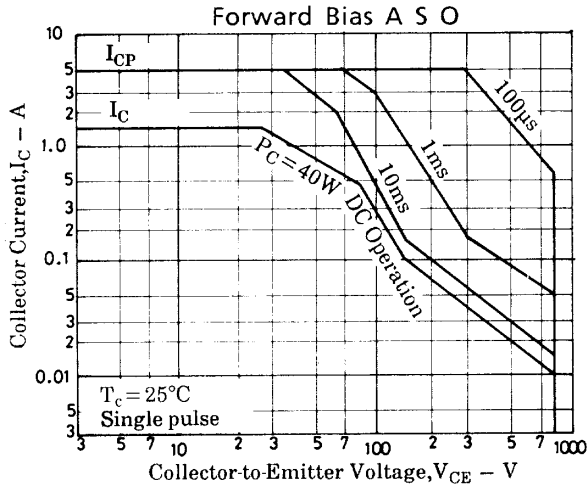
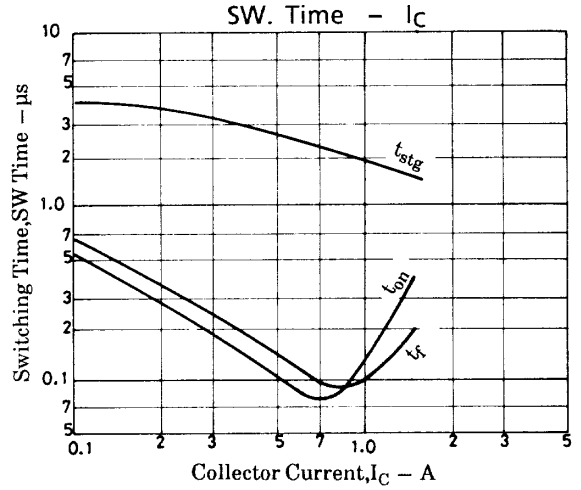
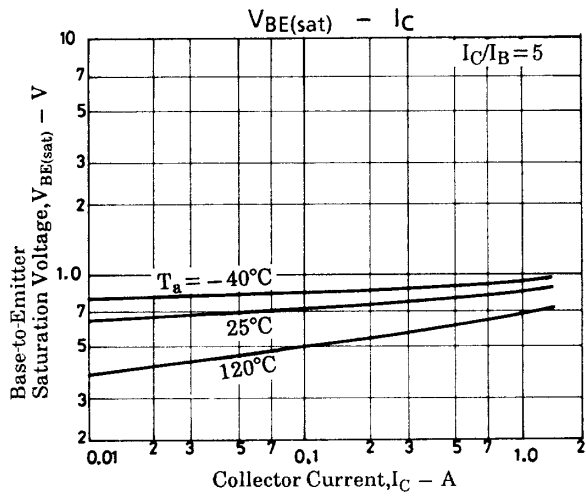
# 2SC4601

| Parameter                               | Symbol         | Conditions  | Ratings |     |     | Unit    |
|---|----------------|---|---------|-----|-----|---------|
|   |                |   | min     | typ | max |         |
| Gain-Bandwidth Product                  | $f_T$          | $V_{CE}=10V, I_C=0.1A$  |         | 15  |     | MHz     |
| Output Capacitance                      | $C_{ob}$       | $V_{CB}=10V, f=1MHz$  |         | 35  |     | pF      |
| Collector-to-Emitter Saturation Voltage | $V_{CE(sat)}$  | $I_C=0.75A, I_B=0.15A$  |         |     | 2.0 | V       |
| Base-to-Emitter Saturation Voltage      | $V_{BE(sat)}$  | $I_C=0.75A, I_B=0.15A$  |         |     | 1.5 | V       |
| Collector-to-Base Breakdown Voltage     | $V_{(BR)CBO}$  | $I_C=1mA, I_E=0$  | 1100    |     |     | V       |
| Collector-to-Emitter Breakdown Voltage  | $V_{(BR)CEO}$  | $I_C=5mA, R_{BE}=\infty$  | 800     |     |     | V       |
| Emitter-to-Base Breakdown Voltage       | $V_{(BR)EBO}$  | $I_E=1mA, I_C=0$  | 7       |     |     | V       |
| Collector-to-Emitter Sustain Voltage    | $V_{CEO(sus)}$ | $I_C=0.75A, I_{B1}=-I_{B2}=0.15A, L=5mH, \text{clamped}$        | 800     |     |     | V       |
| Turn-ON Time                            | $t_{on}$       | $I_C=1A, I_{B1}=0.2A, I_{B2}=-0.4A, R_L=400\Omega, V_{CC}=400V$ |         |     | 0.5 | $\mu s$ |
| Storage Time                            | $t_{stg}$      | $I_C=1A, I_{B1}=0.2A, I_{B2}=-0.4A, R_L=400\Omega, V_{CC}=400V$ |         |     | 3.0 | $\mu s$ |
| Fall Time                               | $t_f$          | $I_C=1A, I_{B1}=0.2A, I_{B2}=-0.4A, R_L=400\Omega, V_{CC}=400V$ |         |     | 0.3 | $\mu s$ |

## Switching Time Test Circuit



# 2SC4601



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