

**2SC3807**

## High $h_{FE}$ , Low-Frequency General-Purpose Amplifier Applications

### Applications

- Low frequency general-purpose amplifiers, drivers.

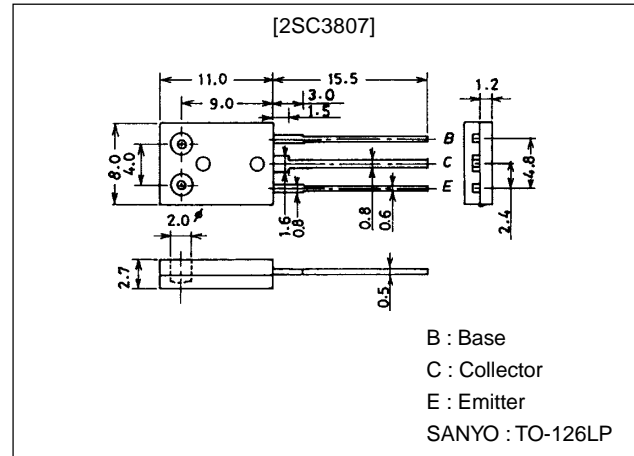
### Features

- Large current capacity ( $I_C=2A$ ).
- Adoption of MBIT process.
- High DC current gain ( $h_{FE}=800$  to  $3200$ ).
- Low collector-to-emitter saturation voltage ( $V_{CE(sat)} \leq 0.5V$ ).
- High  $V_{EBO}$  ( $V_{EBO} \geq 15V$ ).

### Package Dimensions

unit:mm

2043A



### Specifications

#### Absolute Maximum Ratings at $T_a = 25^\circ C$

| Parameter                    | Symbol    | Conditions       | Ratings     | Unit       |
|------------------------------|-----------|------------------|-------------|------------|
| Collector-to-Base Voltage    | $V_{CB0}$ |                  | 30          | V          |
| Collector-to-Emitter Voltage | $V_{CEO}$ |                  | 25          | V          |
| Emitter-to-Base Voltage      | $V_{EBO}$ |                  | 15          | V          |
| Collector Current            | $I_C$     |                  | 2           | A          |
| Collector Current (Pulse)    | $I_{CP}$  |                  | 4           | A          |
| Collector Dissipation        | $P_C$     |                  | 1.2         | W          |
|                              |           | $T_c=25^\circ C$ | 15          | W          |
| Junction Temperature         | $T_J$     |                  | 150         | $^\circ C$ |
| Storage Temperature          | $T_{stg}$ |                  | -55 to +150 | $^\circ C$ |

#### Electrical Characteristics at $T_a = 25^\circ C$

| Parameter                | Symbol    | Conditions             | Ratings |      |      | Unit    |
|--------------------------|-----------|------------------------|---------|------|------|---------|
|                          |           |                        | min     | typ  | max  |         |
| Collector Cutoff Current | $I_{CBO}$ | $V_{CB}=20V, I_E=0$    |         |      | 0.1  | $\mu A$ |
| Emitter Cutoff Current   | $I_{EBO}$ | $V_{EB}=10V, I_C=0$    |         |      | 0.1  | $\mu A$ |
| DC Current Gain          | $h_{FE1}$ | $V_{CE}=5V, I_C=500mA$ | 800     | 1500 | 3200 |         |
|                          | $h_{FE2}$ | $V_{CE}=5V, I_C=1A$    | 600     |      |      |         |
| Gain-Bandwidth Product   | $f_T$     | $V_{CE}=10V, I_C=50mA$ |         | 260  |      | MHz     |
| Output Capacitance       | $C_{ob}$  | $V_{CB}=10V, f=1MHz$   |         | 27   |      | pF      |

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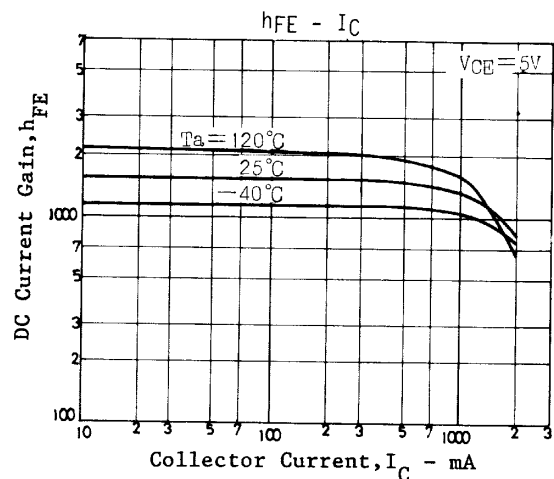
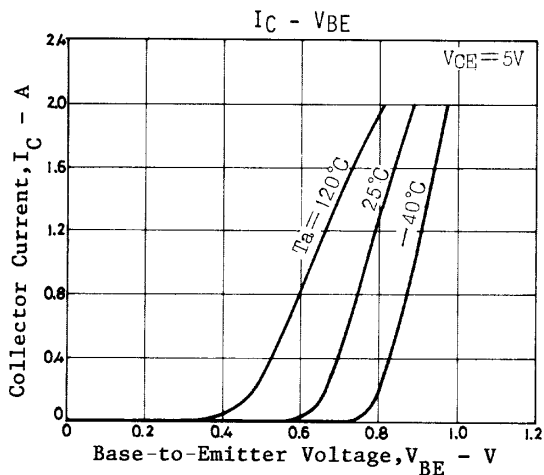
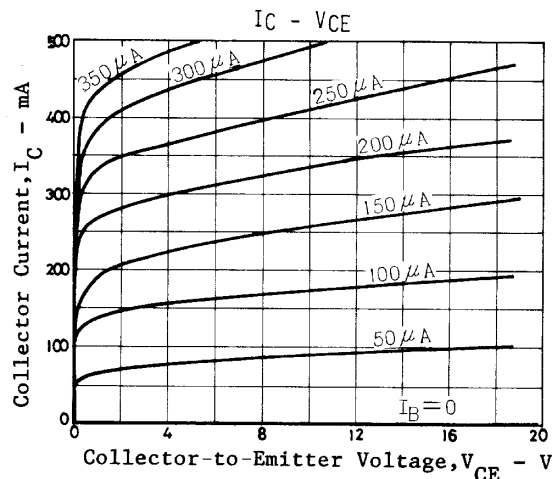
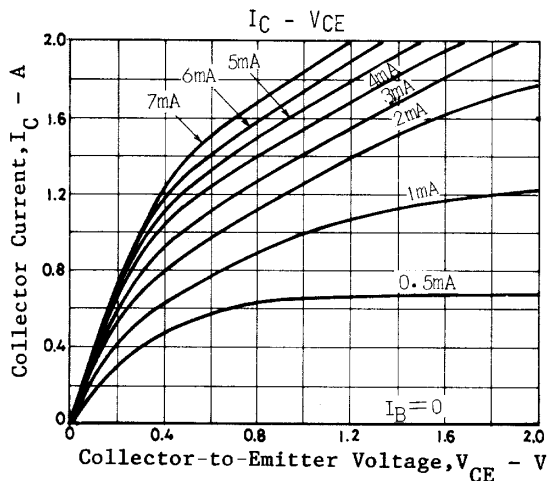
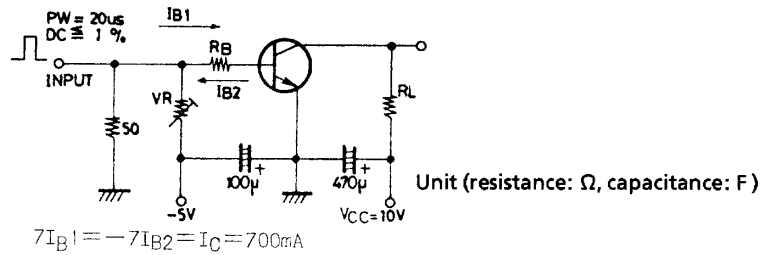
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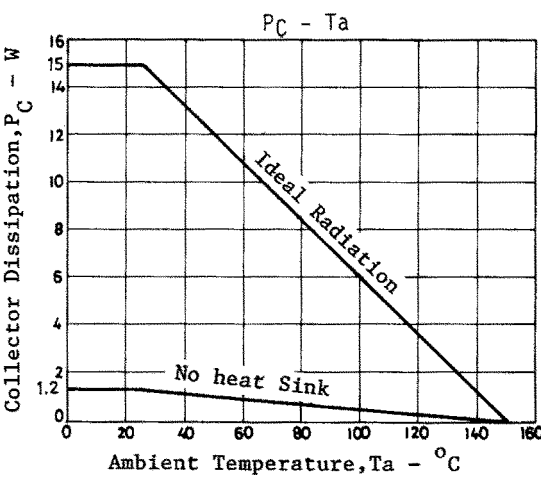
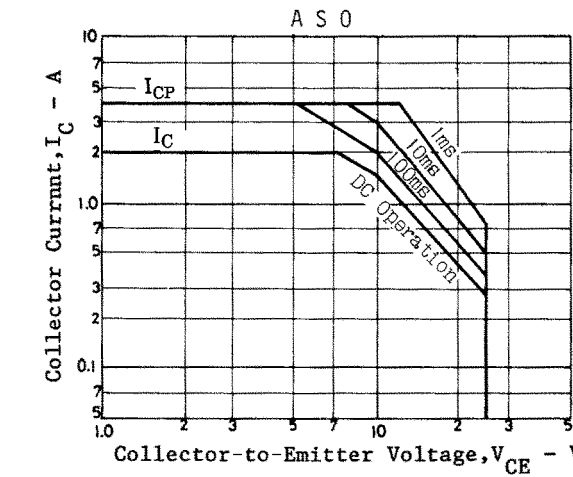
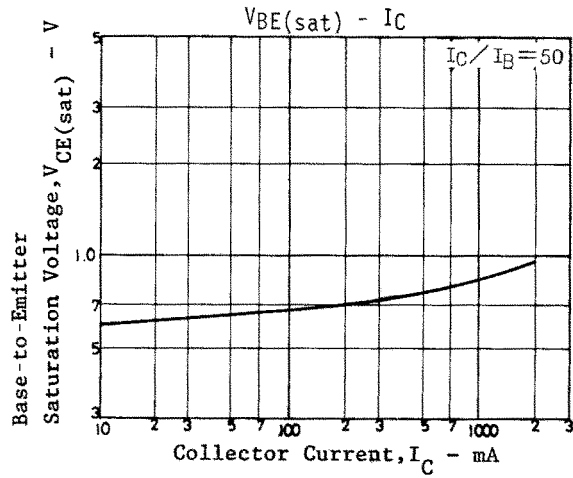
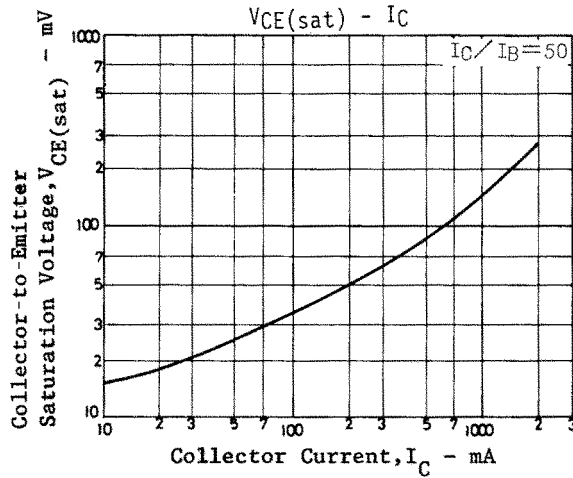
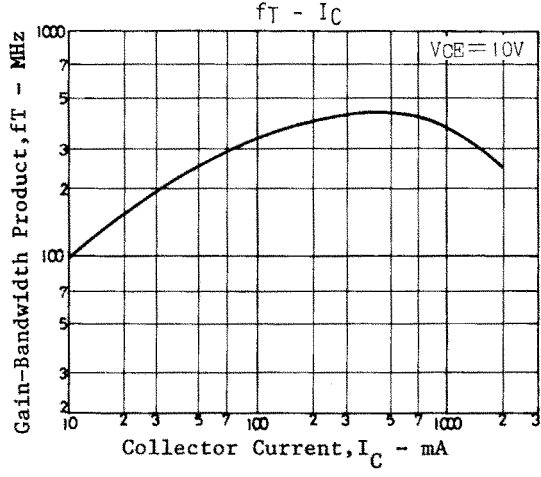
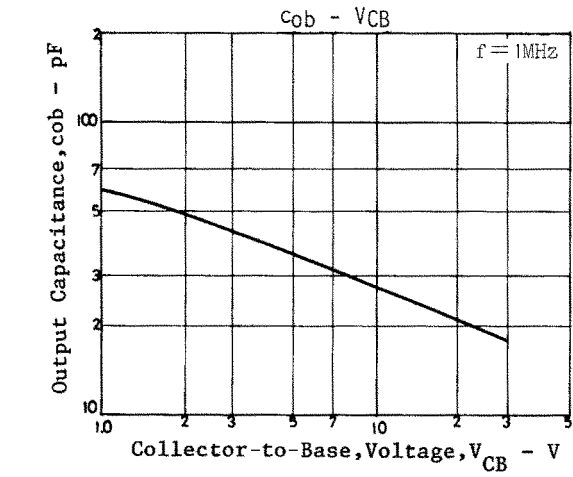
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| Parameter                               | Symbol        | Conditions                  | Ratings |      |     | Unit    |
|---|---------------|-----------------------------|---------|------|-----|---------|
|   |               |                             | min     | typ  | max |         |
| Collector-to-Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C=1A, I_B=20mA$          |         | 0.15 | 0.5 | V       |
| Base-to-Emitter Saturation Voltage      | $V_{BE(sat)}$ | $I_C=1A, I_B=20mA$          |         | 0.85 | 1.2 | V       |
| Collector-to-Base Breakdown Voltage     | $V_{(BR)CBO}$ | $I_C=10\mu A, I_E=0$        | 30      |      |     | V       |
| Collector-to-Emitter Breakdown Voltage  | $V_{(BR)CEO}$ | $I_C=1mA, R_{BE}=\infty$    | 25      |      |     | V       |
| Emitter-to-Base Breakdown Voltage       | $V_{(BR)EBO}$ | $I_E=10\mu A, I_C=0$        | 15      |      |     | V       |
| Turn-ON Time                            | $t_{on}$      | See specified test circuit. |         | 0.14 |     | $\mu s$ |
| Storage Time                            | $t_{stg}$     | See specified test circuit. |         | 1.35 |     | $\mu s$ |
| Fall Time                               | $t_f$         | See specified test circuit. |         | 0.1  |     | $\mu s$ |

## Switching Time Test Circuit



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