



SANYO Semiconductors

## DATA SHEET

# 2SC3807

NPN Epitaxial Planar Silicon Transistor

## High-hFE, 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  $V_{EBO}$  ( $V_{EBO}\geq 15V$ ).

### 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 | $V_{CE0}$ |                  | 25          | V          |
| Emitter-to-Base Voltage      | $V_{EB0}$ |                  | 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 | $^\circ C$ |

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# 2SC3807

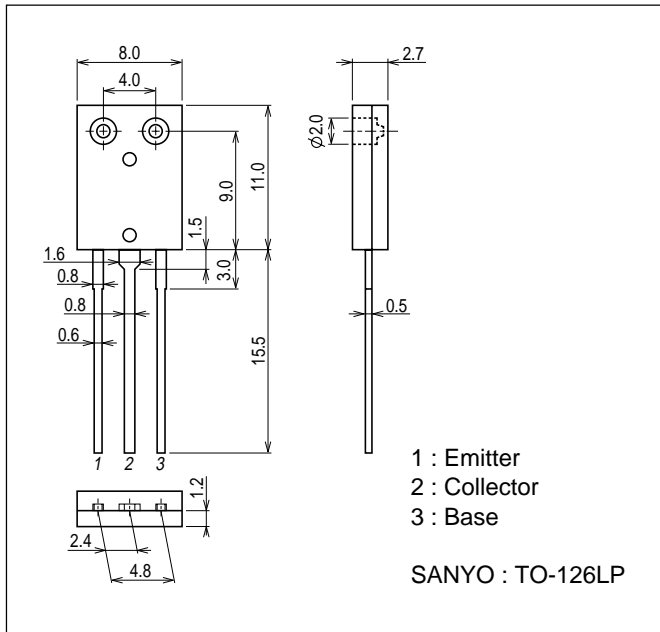
## Electrical Characteristics at Ta=25°C

| Parameter                               | Symbol               | Conditions                                 | Ratings |      |      | Unit |
|---|----------------------|--|---------|------|------|------|
|   |                      |  | min     | typ  | max  |      |
| Collector Cutoff Current                | ICBO                 | V <sub>CB</sub> =20V, I <sub>E</sub> =0A   |         |      | 0.1  | μA   |
| Emitter Cutoff Current                  | IEBO                 | V <sub>EB</sub> =10V, I <sub>C</sub> =0A   |         |      | 0.1  | μA   |
| DC Current Gain                         | hFE1                 | V <sub>CE</sub> =5V, I <sub>C</sub> =500mA | 800     | 1500 | 3200 |      |
|   | hFE2                 | V <sub>CE</sub> =5V, I <sub>C</sub> =1A    | 600     |      |      |      |
| Gain-Bandwidth Product                  | f <sub>T</sub>       | V <sub>CE</sub> =10V, I <sub>C</sub> =50mA |         | 260  |      | MHz  |
| Output Capacitance                      | C <sub>ob</sub>      | V <sub>CB</sub> =10V, f=1MHz               |         | 27   |      | pF   |
| Collector-to-Emitter Saturation Voltage | V <sub>CE(sat)</sub> | I <sub>C</sub> =1A, I <sub>B</sub> =20mA   |         | 0.15 | 0.5  | V    |
| Base-to-Emitter Saturation Voltage      | V <sub>BE(sat)</sub> | I <sub>C</sub> =1A, I <sub>B</sub> =20mA   |         | 0.85 | 1.2  | V    |
| Collector-to-Base Breakdown Voltage     | V(BR)CBO             | I <sub>C</sub> =10μA, I <sub>E</sub> =0A   | 30      |      |      | V    |
| Collector-to-Emitter Breakdown Voltage  | V(BR)CEO             | I <sub>C</sub> =1mA, R <sub>BE</sub> =∞    | 25      |      |      | V    |
| Emitter-to-Base Breakdown Voltage       | V(BR)EBO             | I <sub>E</sub> =10μA, I <sub>C</sub> =0A   | 15      |      |      | V    |
| Turn-ON Time                            | t <sub>on</sub>      | See specified Test Circuit.                |         | 0.14 |      | μs   |
| Storage Time                            | t <sub>stg</sub>     | See specified Test Circuit.                |         | 1.35 |      | μs   |
| Fall Time                               | t <sub>f</sub>       | See specified Test Circuit.                |         | 0.1  |      | μs   |

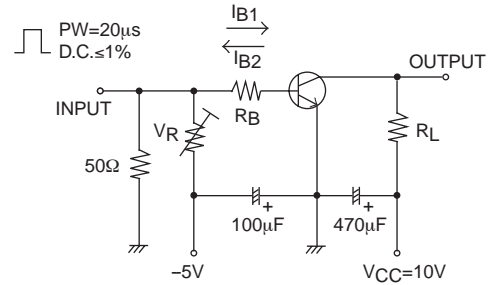
## Package Dimensions

unit : mm (typ)

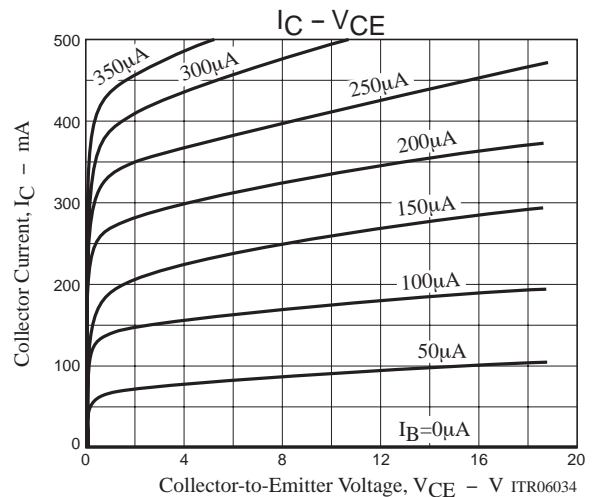
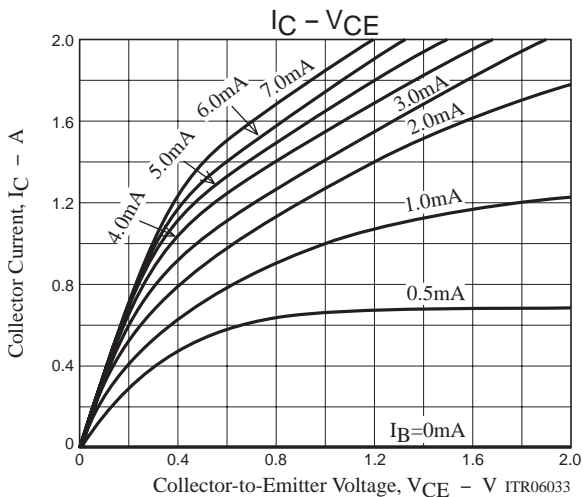
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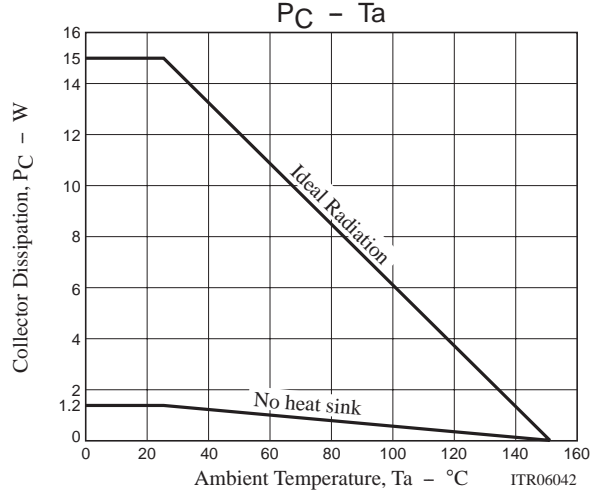
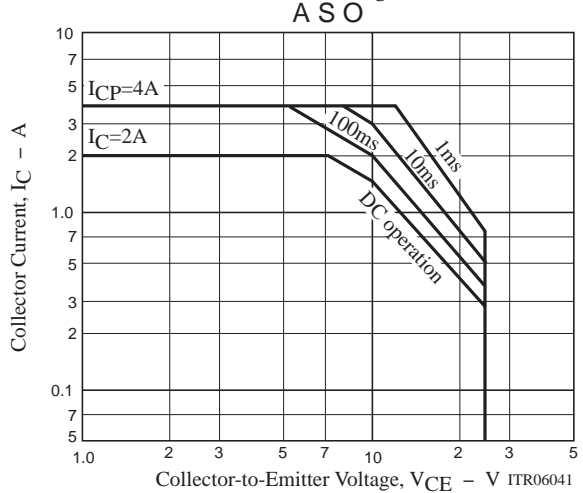
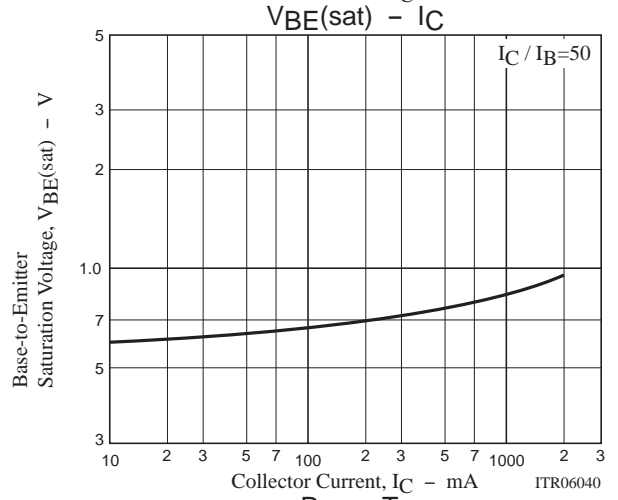
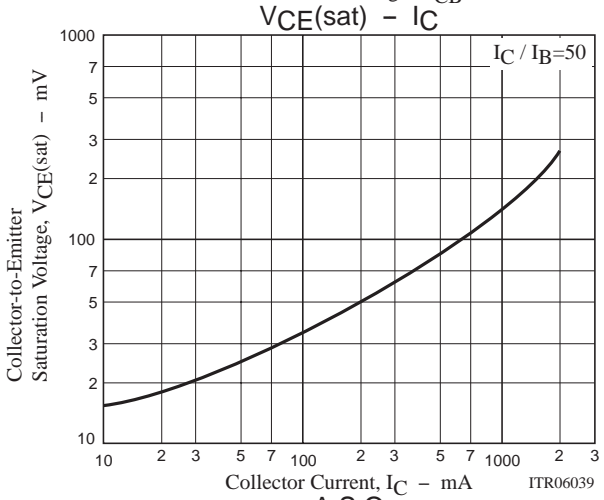
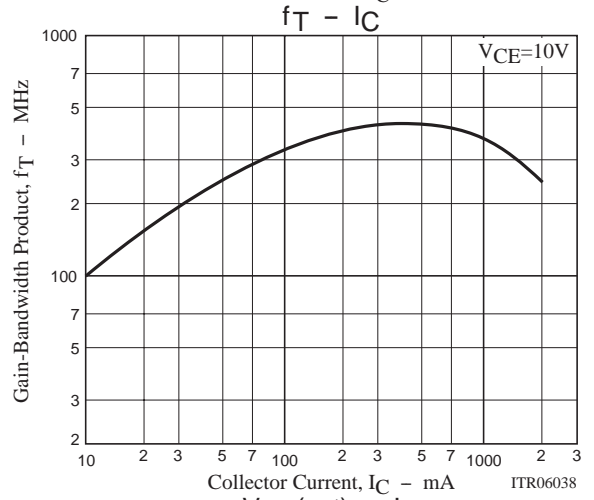
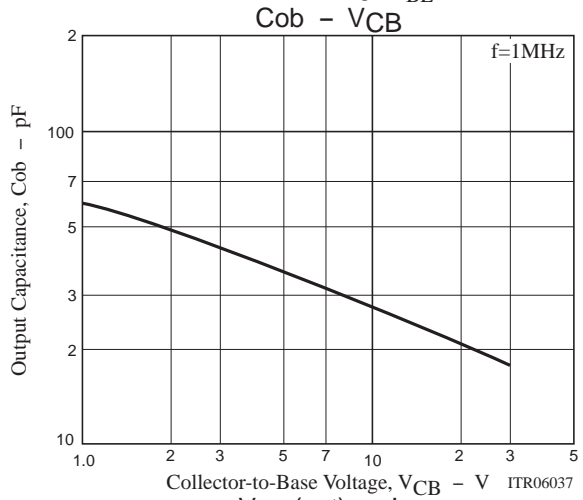
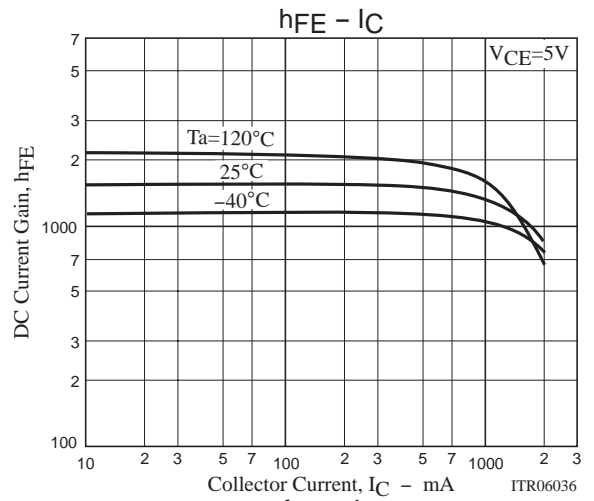
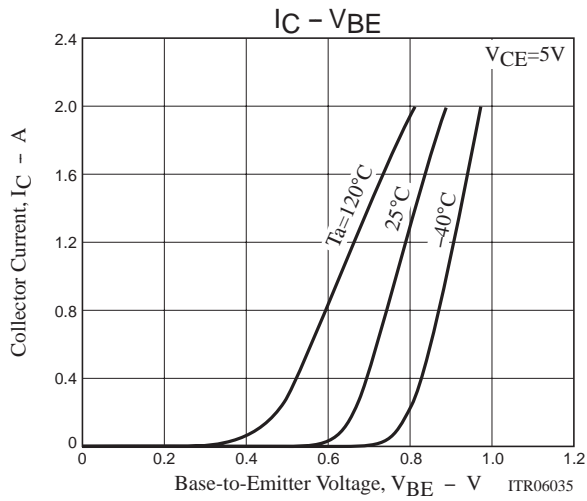


## Switching Time Test Circuit



$$7I_{B1} = -7I_{B2} = I_C = 700\text{mA}$$





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