



SANYO Semiconductors

## DATA SHEET

NPN Epitaxial Planar Silicon Transistor

# EC4201KF — Low-Frequency General-Purpose Amplifier Applications

## Applications

- Low-frequency Amplifier, muting circuit.

## Features

- Large current capacitance.
- Mounting height: 0.4mm.
- Small ON-resistance (Ron).

## Specifications

Absolute Maximum Ratings at Ta=25°C

| Parameter                    | Symbol           | Conditions                                     | Ratings     | Unit |
|------------------------------|------------------|--|-------------|------|
| Collector-to-Base Voltage    | V <sub>CB0</sub> |  | 20          | V    |
| Collector-to-Emitter Voltage | V <sub>CEO</sub> |  | 15          | V    |
| Emitter-to-Base Voltage      | V <sub>EBO</sub> |  | 5           | V    |
| Collector Current            | I <sub>C</sub>   |  | 500         | mA   |
| Collector Current (Pulse)    | I <sub>CP</sub>  |  | 1.0         | A    |
| Collector Dissipation        | P <sub>C</sub>   | Mounted on a glass-epoxy printed circuit board | 0.4         | W    |
| Junction Temperature         | T <sub>J</sub>   |  | 150         | °C   |
| Storage Temperature          | T <sub>stg</sub> |  | -55 to +150 | °C   |

Electrical Characteristics at Ta=25°C

| Parameter                               | Symbol               | Conditions                                  | Ratings |     |     | Unit |
|---|----------------------|---|---------|-----|-----|------|
|   |                      |   | min     | typ | max |      |
| Collector Cutoff Current                | I <sub>CBO</sub>     | V <sub>CB</sub> =15V, I <sub>E</sub> =0A    |         |     | 0.1 | μA   |
| Emitter Cutoff Current                  | I <sub>EBO</sub>     | V <sub>EB</sub> =4V, I <sub>C</sub> =0A     |         |     | 0.1 | μA   |
| DC Current Gain                         | h <sub>FE</sub>      | V <sub>CE</sub> =2V, I <sub>C</sub> =10mA   | 300     |     | 800 |      |
| Gain-Bandwidth Product                  | f <sub>T</sub>       | V <sub>CE</sub> =2V, I <sub>C</sub> =50mA   |         | 330 |     | MHz  |
| Output Capacitance                      | C <sub>ob</sub>      | V <sub>CB</sub> =10V, f=1MHz                |         | 3.2 |     | pF   |
| Collector-to-Emitter Saturation Voltage | V <sub>CE(sat)</sub> | I <sub>C</sub> =200mA, I <sub>B</sub> =10mA |         | 150 | 300 | mV   |
| Base-to-Emitter Saturation Voltage      | V <sub>BE(sat)</sub> | I <sub>C</sub> =200mA, I <sub>B</sub> =10mA |         | 0.9 | 1.2 | V    |
| Collector-to-Base Breakdown Voltage     | V <sub>(BR)CBO</sub> | I <sub>C</sub> =10μA, I <sub>E</sub> =0A    | 20      |     |     | V    |
| Collector-to-Emitter Breakdown Voltage  | V <sub>(BR)CEO</sub> | I <sub>C</sub> =1mA, R <sub>BE</sub> =∞     | 15      |     |     | V    |
| Emitter-to-Base Breakdown Voltage       | V <sub>(BR)EBO</sub> | I <sub>E</sub> =10μA, I <sub>C</sub> =0A    | 5       |     |     | V    |

Marking : JA

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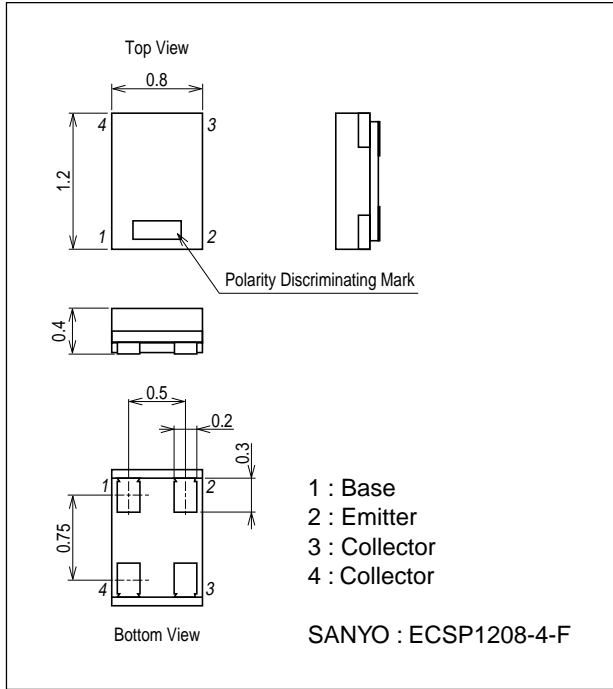
# EC4201KF

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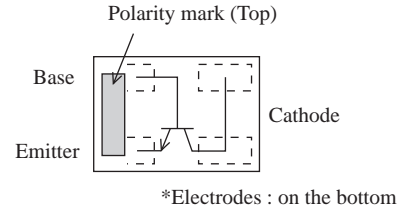
| Parameter    | Symbol    | Conditions                  | Ratings |     |     | Unit |
|--------------|-----------|-----------------------------|---------|-----|-----|------|
|              |           |                             | min     | typ | max |      |
| Turn-ON Time | $t_{on}$  | See specified Test Circuit. |         | 30  |     | ns   |
| Storage Time | $t_{stg}$ | See specified Test Circuit. |         | 77  |     | ns   |
| Fall Time    | $t_f$     | See specified Test Circuit. |         | 40  |     | ns   |

## Package Dimensions

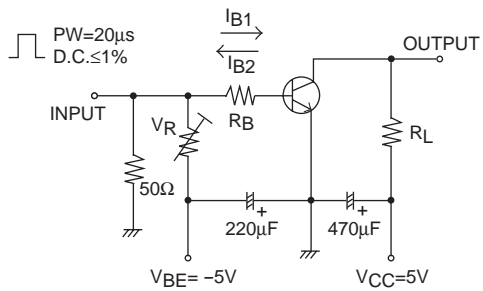
unit : mm  
7043-003



## Electrical Connection (Top view)

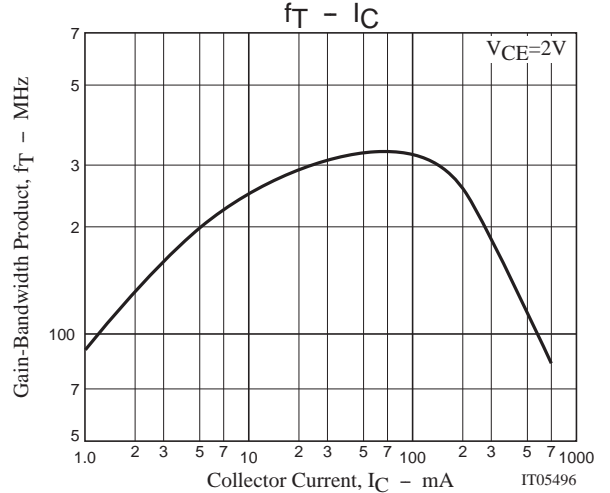
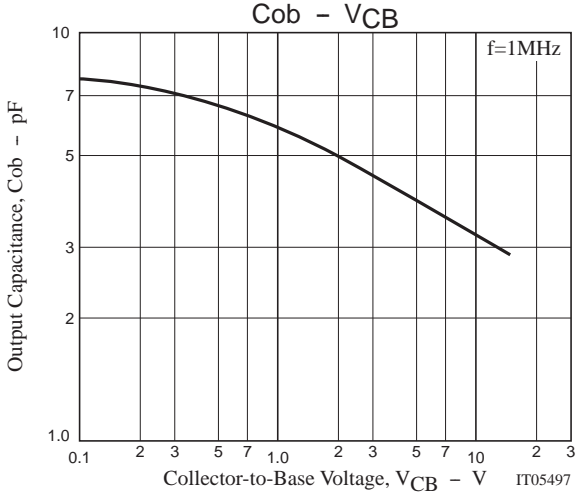
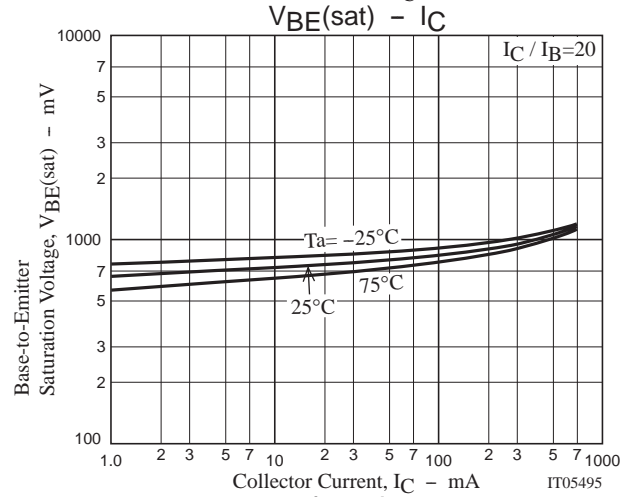
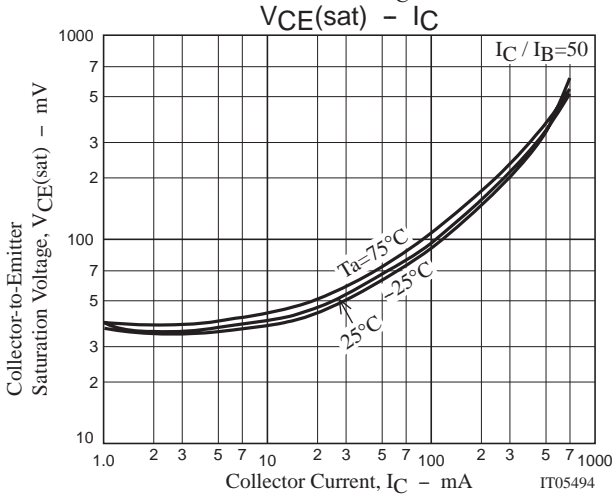
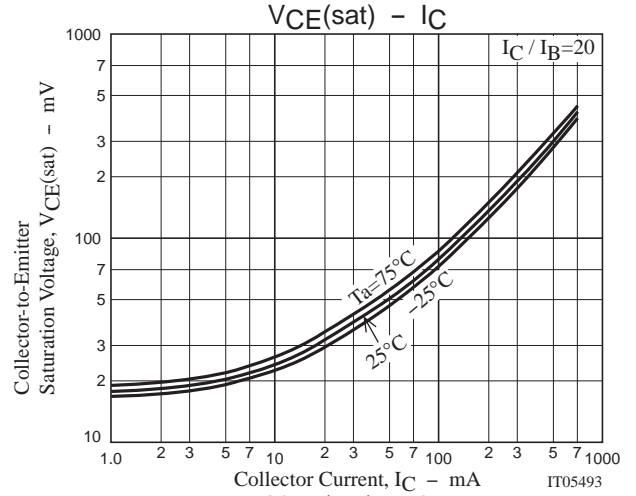
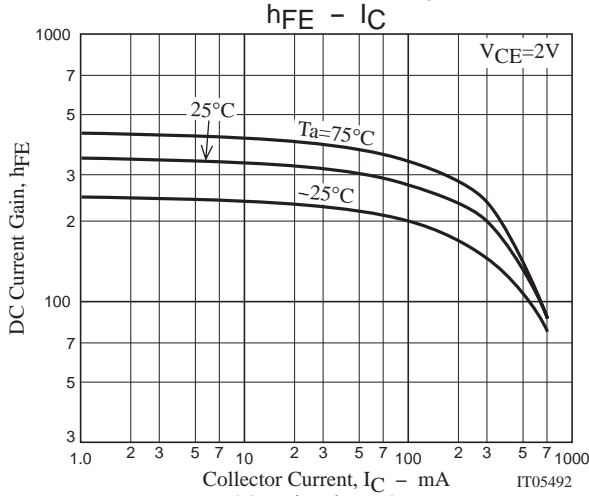
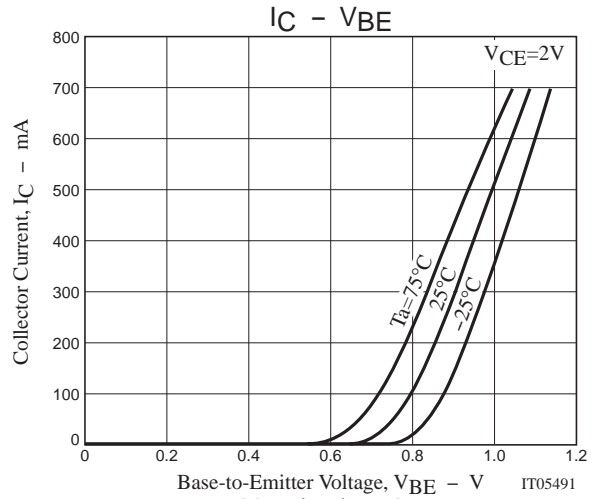
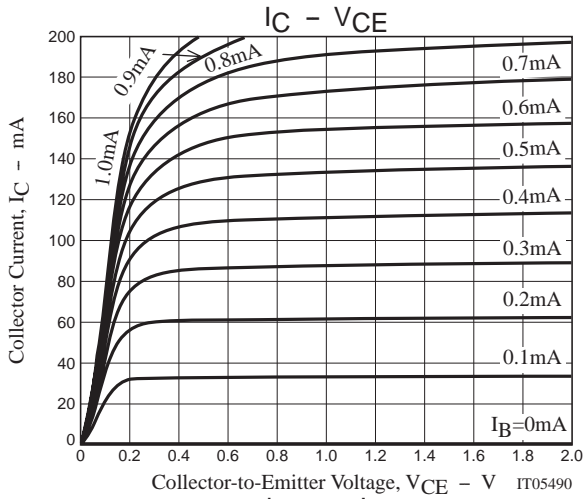


## Switching Time Test Circuit

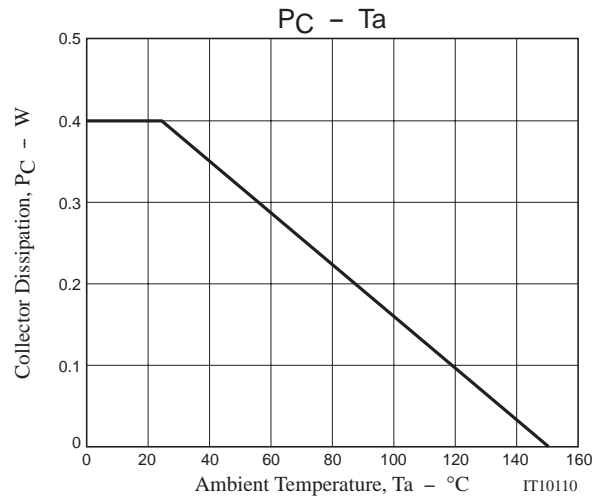
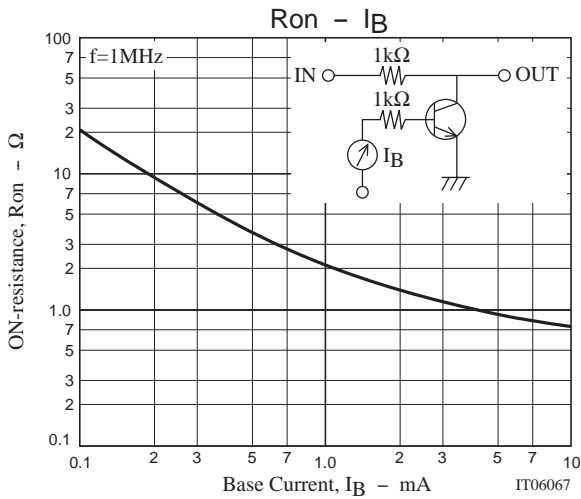


$$I_C = 20I_{B1} = -20I_{B2} = 500mA$$

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