



# 15C02CH

## Low-Frequency General-Purpose Amplifier Applications

### Applications

- Low-frequency amplifier, high-speed switching, small motor drive.

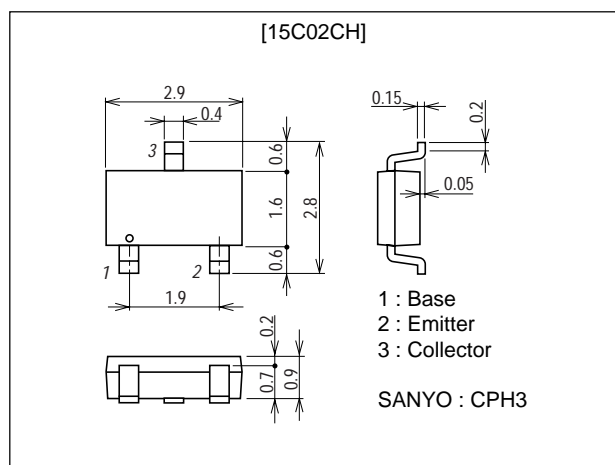
### Features

- Large current capacitance.
- Low collector-to-emitter saturation voltage.
- Ultrasmall package facilitates miniaturization in end products.

### Package Dimensions

unit : mm

2150A



### 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>   |  | 1           | A    |
| Collector Current (Pulse)    | I <sub>CP</sub>  |  | 2           | A    |
| Collector Dissipation        | P <sub>C</sub>   | Mounted on a ceramic board (600mm <sup>2</sup> X0.8mm) | 700         | mW   |
| 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>CB0</sub>     | V <sub>CB</sub> =12V, I <sub>E</sub> =0     |         |     | 100 | nA   |
| Emitter Cutoff Current                  | I <sub>EBO</sub>     | V <sub>EB</sub> =4V, I <sub>C</sub> =0      |         |     | 100 | nA   |
| DC Current Gain                         | h <sub>FE</sub>      | V <sub>CE</sub> =2V, I <sub>C</sub> =50mA   | 300     |     | 800 |      |
| Gain-Bandwidth Product                  | f <sub>T</sub>       | V <sub>CE</sub> =2V, I <sub>C</sub> =50mA   |         | 440 |     | MHz  |
| Output Capacitance                      | C <sub>ob</sub>      | V <sub>CB</sub> =10V, f=1MHz                |         | 4   |     | pF   |
| Collector-to-Emitter Saturation Voltage | V <sub>CE(sat)</sub> | I <sub>C</sub> =400mA, I <sub>B</sub> =20mA |         | 140 | 280 | mV   |
| Base-to-Emitter Saturation Voltage      | V <sub>BE(sat)</sub> | I <sub>C</sub> =400mA, I <sub>B</sub> =20mA |         | 0.9 | 1.2 | V    |

Marking : CD

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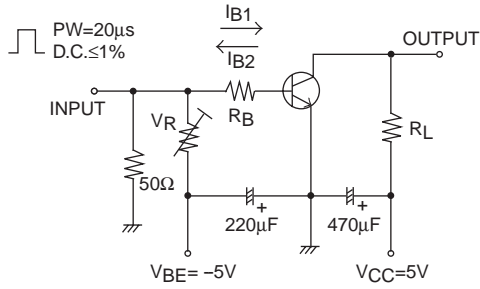
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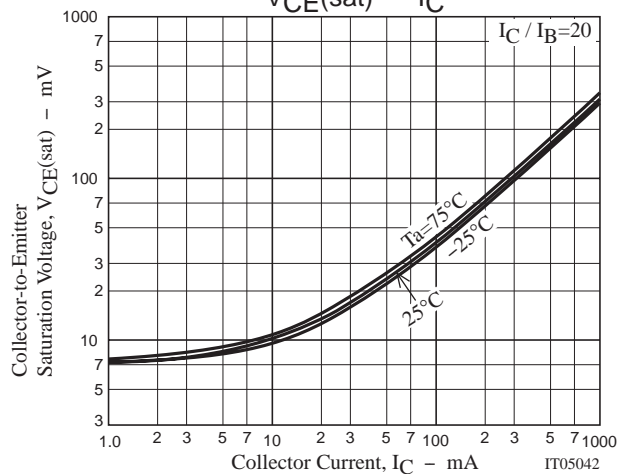
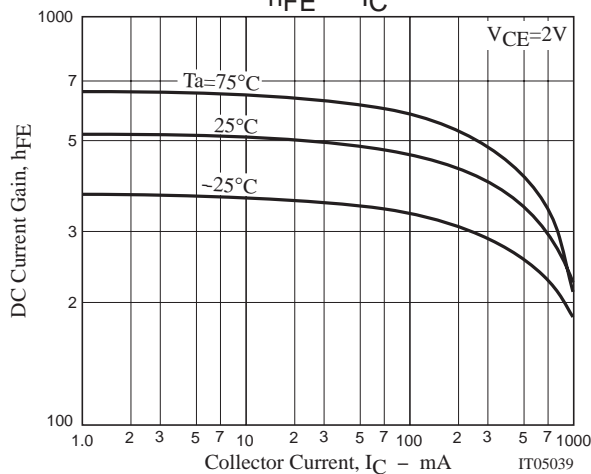
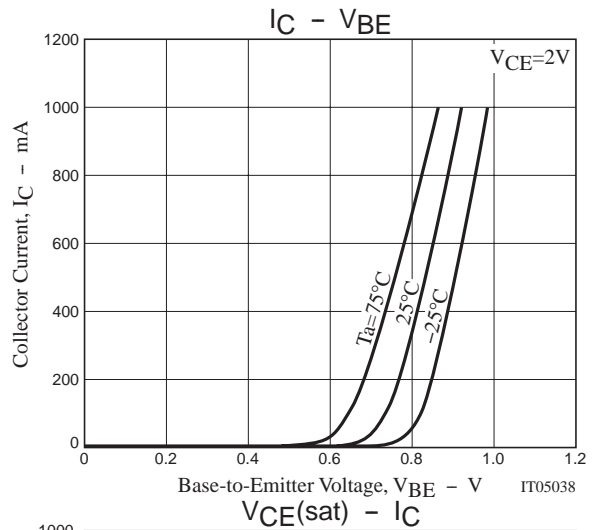
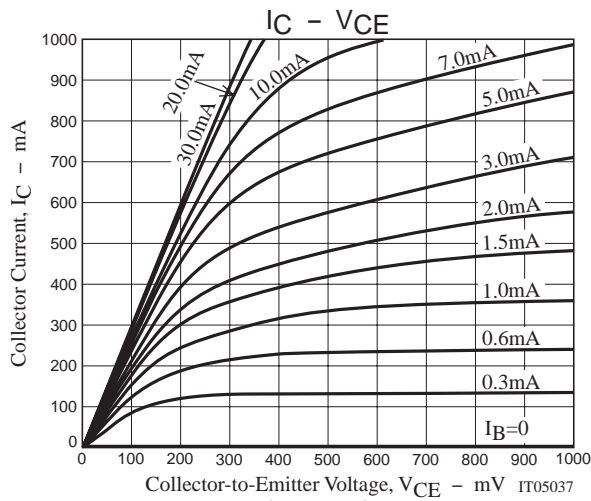
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| Parameter                              | Symbol        | Conditions                  | Ratings |     |     | Unit |
|--|---------------|-----------------------------|---------|-----|-----|------|
|  |               |                             | min     | typ | max |      |
| Collector-to-Base Breakdown Voltage    | $V_{(BR)CBO}$ | $I_C=10\mu A, I_E=0$        | 20      |     |     | V    |
| Collector-to-Emitter Breakdown Voltage | $V_{(BR)CEO}$ | $I_C=1mA, R_{BE}=\infty$    | 15      |     |     | V    |
| Emitter-to-Base Breakdown Voltage      | $V_{(BR)EBO}$ | $I_E=10\mu A, I_C=0$        | 5       |     |     | V    |
| Turn-ON Delay Time                     | $t_{on}$      | See specified Test Circuit. |         | 30  |     | ns   |
| Storage Time                           | $t_{stg}$     | See specified Test Circuit. |         | 165 |     | ns   |
| Turn-OFF Delay Time                    | $t_f$         | See specified Test Circuit. |         | 25  |     | ns   |

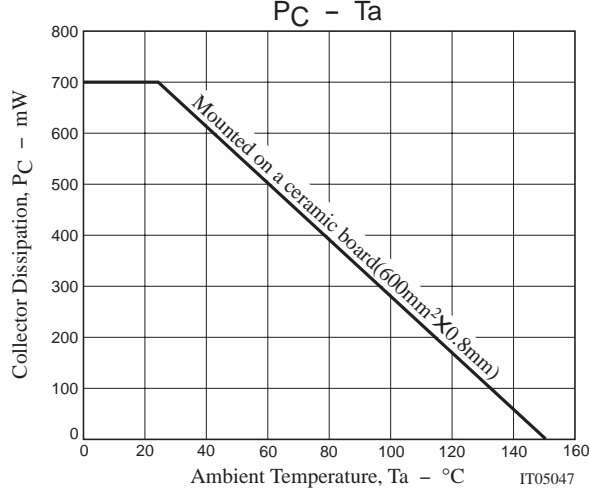
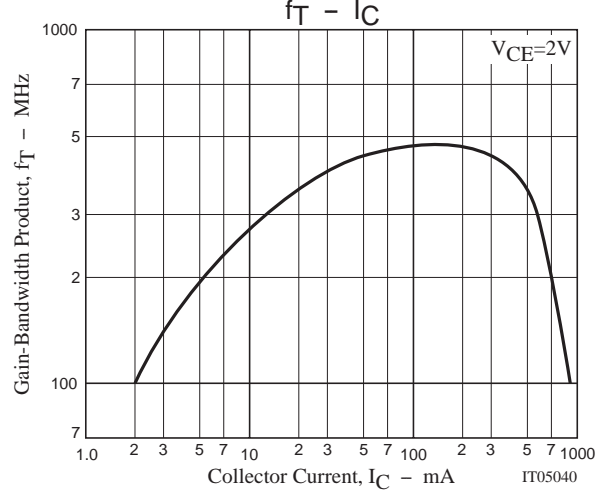
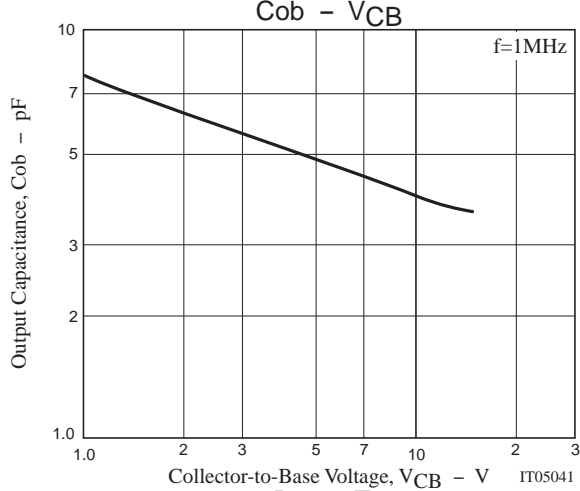
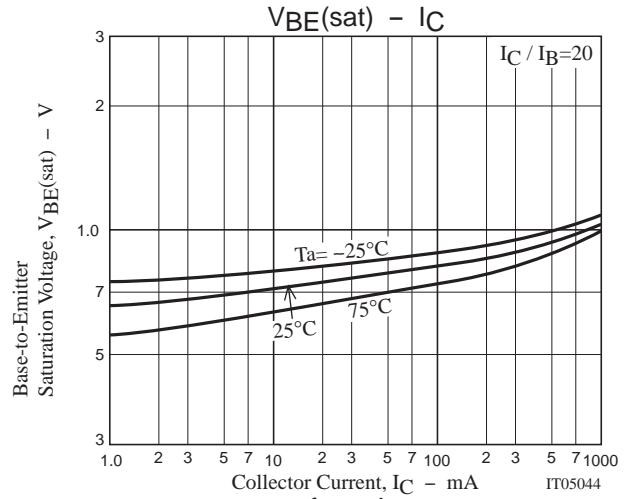
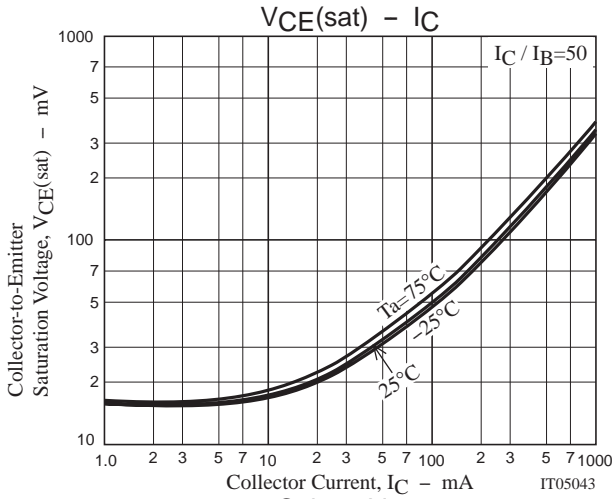
## Switching Time Test Circuit



$$I_C=20I_{B1}= -20I_{B2}=400mA$$



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