



SANYO Semiconductors

## DATA SHEET

# CPH3248

 — NPN Epitaxial Planar Silicon Transistor  
**High-Voltage Switching Applications**

## Applications

- DC / DC converters, relay drivers, lamp drivers, motor drivers, inverters.

## Features

- Adoption of FBET, MBIT processes.
- Large current capacitance.
- Low collector-to-emitter saturation voltage.
- High-speed switching.
- Ultrasmall package permitting applied sets to be small and slim (mounting height: 0.9mm).
- High allowable power dissipation.

## Specifications

### Absolute Maximum Ratings at Ta=25°C

| Parameter                    | Symbol           | Conditions   | Ratings     | Unit |
|------------------------------|------------------|--|-------------|------|
| Collector-to-Base Voltage    | V <sub>CB0</sub> |  | 120         | V    |
| Collector-to-Emitter Voltage | V <sub>CES</sub> |  | 120         | V    |
| Collector-to-Emitter Voltage | V <sub>CEO</sub> |  | 100         | V    |
| Emitter-to-Base Voltage      | V <sub>EBO</sub> |  | 6.5         | V    |
| Collector Current            | I <sub>C</sub>   |  | 2           | A    |
| Collector Current (Pulse)    | I <sub>CP</sub>  |  | 3           | A    |
| Base Current                 | I <sub>B</sub>   |  | 400         | mA   |
| Collector Dissipation        | P <sub>C</sub>   | Mounted on a ceramic board (600mm <sup>2</sup> X0.8mm) | 0.9         | 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> =80V, I <sub>E</sub> =0A    |         |     | 1   | μA   |
| Emitter Cutoff Current   | I <sub>EBO</sub> | V <sub>EB</sub> =4V, I <sub>C</sub> =0A     |         |     | 1   | μA   |
| DC Current Gain          | h <sub>FE</sub>  | V <sub>CE</sub> =5V, I <sub>C</sub> =100mA  | 300     |     | 600 |      |
| Gain-Bandwidth Product   | f <sub>T</sub>   | V <sub>CE</sub> =10V, I <sub>C</sub> =300mA |         | 300 |     | MHz  |
| Output Capacitance       | C <sub>ob</sub>  | V <sub>CB</sub> =10V, f=1MHz                |         | 13  |     | pF   |

Marking : DT

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# CPH3248

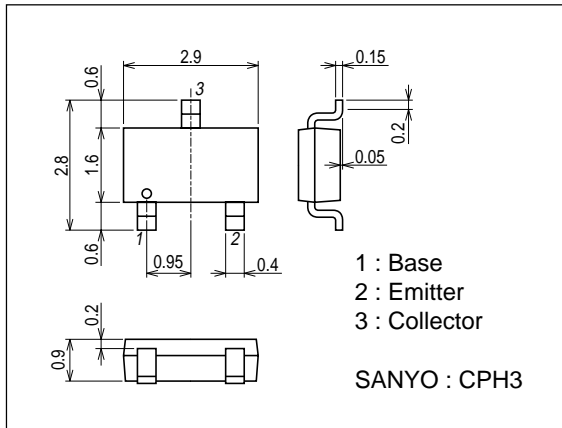
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| Parameter                               | Symbol        | Conditions                     | Ratings |      |     | Unit |
|---|---------------|--------------------------------|---------|------|-----|------|
|   |               |                                | min     | typ  | max |      |
| Collector-to-Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C=1A, I_B=100mA$            |         | 90   | 150 | mV   |
| Base-to-Emitter Saturation Voltage      | $V_{BE(sat)}$ | $I_C=1A, I_B=100mA$            |         | 0.85 | 1.2 | V    |
| Collector-to-Base Breakdown Voltage     | $V_{(BR)CBO}$ | $I_C=10\mu A, I_E=0A$          | 120     |      |     | V    |
| Collector-to-Emitter Breakdown Voltage  | $V_{(BR)CES}$ | $I_C=100\mu A, R_{BE}=0\Omega$ | 120     |      |     | V    |
| Collector-to-Emitter Breakdown Voltage  | $V_{(BR)CEO}$ | $I_C=1mA, R_{BE}=\infty$       | 100     |      |     | V    |
| Emitter-to-Base Breakdown Voltage       | $V_{(BR)EBO}$ | $I_E=10\mu A, I_C=0A$          | 6.5     |      |     | V    |
| Turn-ON Time                            | $t_{on}$      | See specified Test Circuit.    |         | 40   |     | ns   |
| Storage Time                            | $t_{stg}$     | See specified Test Circuit.    |         | 1100 |     | ns   |
| Fall Time                               | $t_f$         | See specified Test Circuit.    |         | 40   |     | ns   |

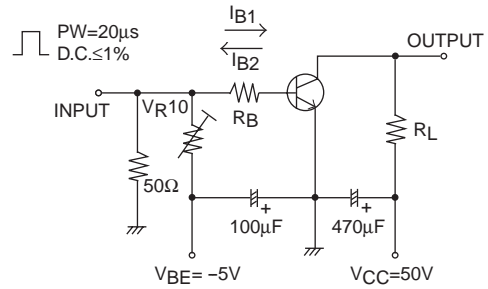
## Package Dimensions

unit : mm

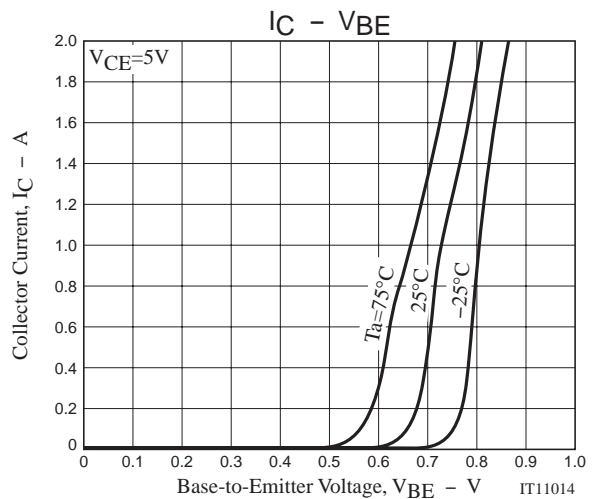
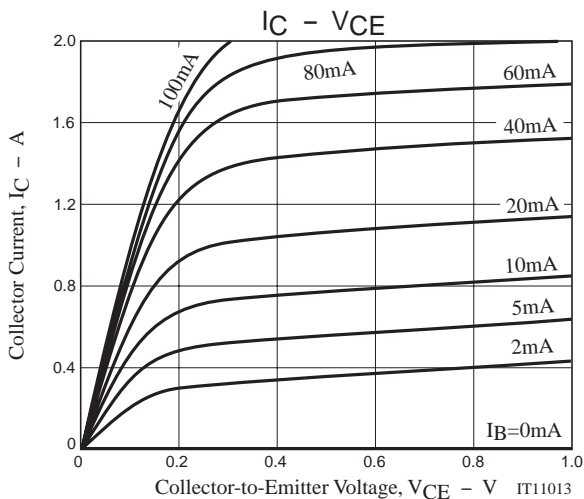
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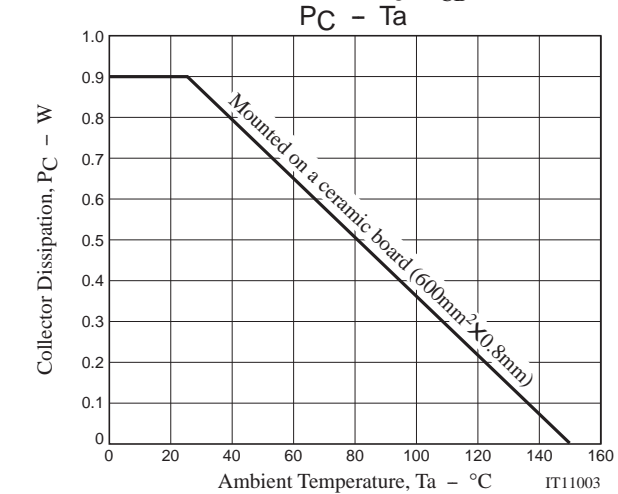
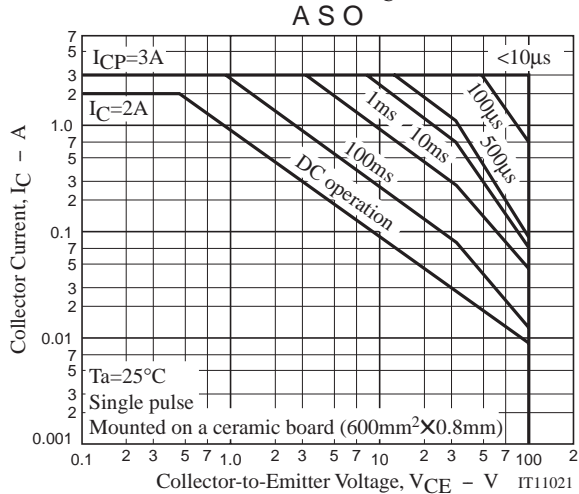
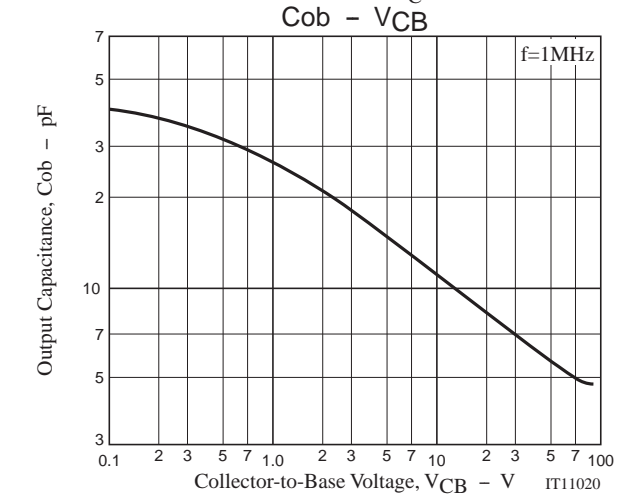
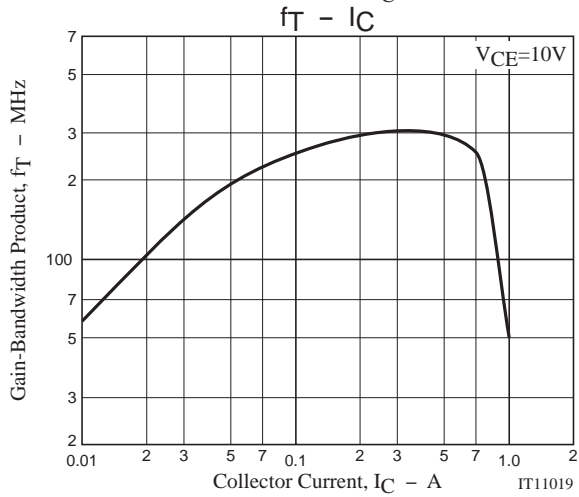
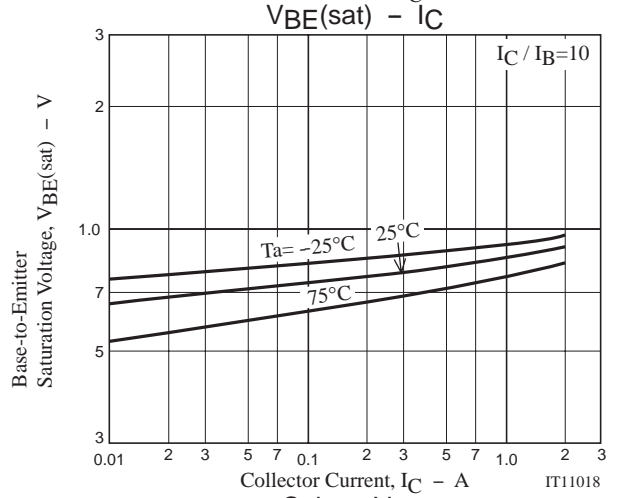
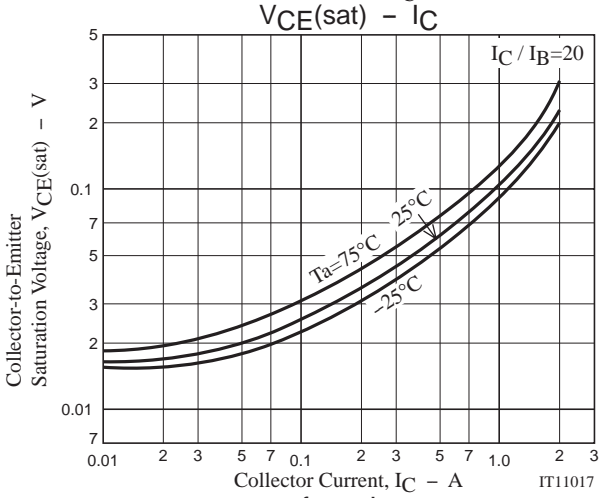
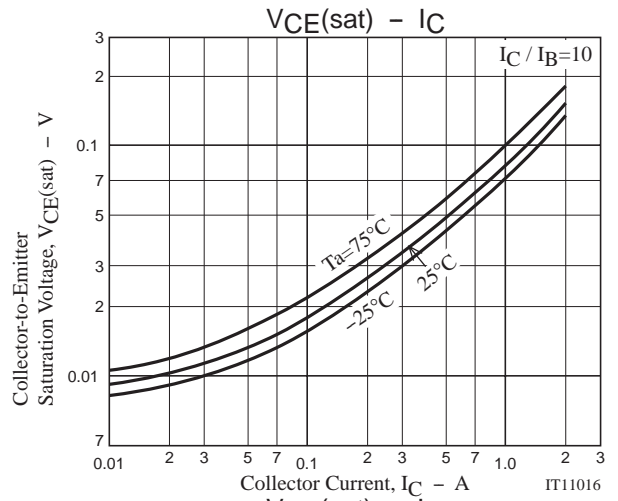
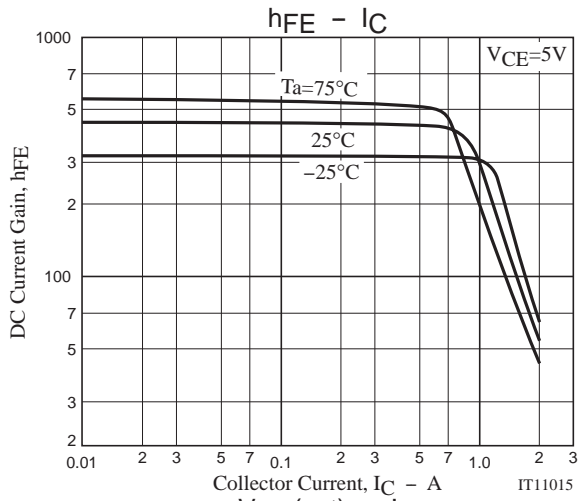


## Switching Time Test Circuit



$$10I_{B1} = -10I_{B2} = I_C = 0.5A$$





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