



SANYO Semiconductors

## DATA SHEET

An ON Semiconductor Company

# CPH6539 — NPN Epitaxial Planar Silicon Transistor

## DC / DC Converter Applications

### Features

- Small-sized package with two NPN transistors (CPH3215 equivalency) contained in one package
- $V_{CEO}=30V$ ,  $I_C=1.5A$
- Low Collector-to-Emitter Saturation Voltage  $V_{CE(sat)}=0.16V(\text{typ.})@I_C=0.75A$
- High-speed switching  $t_f=30ns(\text{typ.})@I_C=0.75A$
- Halogen free Compliance

### Specifications

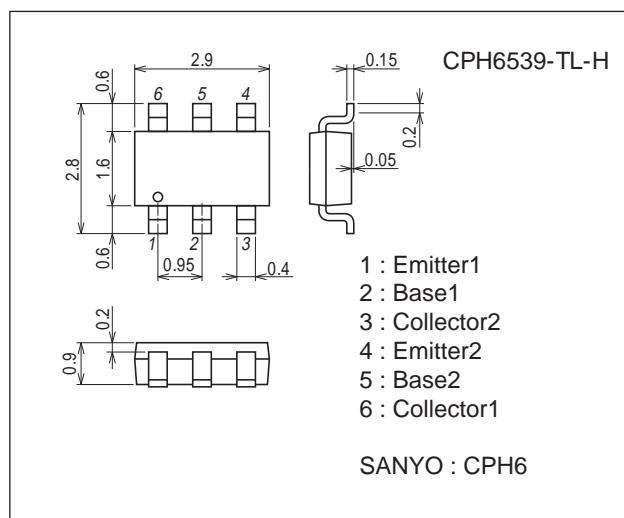
Absolute Maximum Ratings at  $T_a=25^\circ C$ 

| Parameter                    | Symbol    | Conditions  | Ratings     | Unit |
|------------------------------|-----------|---|-------------|------|
| Collector-to-Base Voltage    | $V_{CBO}$ |   | 40          | V    |
| Collector-to-Emitter Voltage | $V_{CEO}$ |   | 30          | V    |
| Emitter-to-Base Voltage      | $V_{EBO}$ |   | 5           | V    |
| Collector Current            | $I_C$     |   | 1.5         | A    |
| Collector Current (Pulse)    | $I_{CP}$  |   | 3           | A    |
| Base Current                 | $I_B$     |   | 300         | mA   |
| Collector Dissipation        | $P_C$     | When mounted on ceramic substrate (600mm <sup>2</sup> ×0.8mm) | 0.9         | W    |
| Total Power Dissipation      | $P_T$     | When mounted on ceramic substrate (600mm <sup>2</sup> ×0.8mm) | 1.2         | W    |
| Junction Temperature         | $T_J$     |   | 150         | °C   |
| Storage Temperature          | $T_{stg}$ |   | -55 to +150 | °C   |

### Package Dimensions

unit : mm (typ)

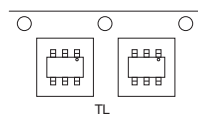
7018A-006



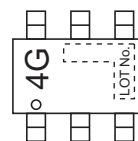
### Product & Package Information

- Package : CPH6
- JEITA, JEDEC : SC-74, SOT-26, SOT-457
- Minimum Packing Quantity : 3,000 pcs./reel

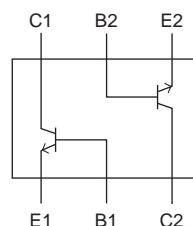
### Packing Type: TL



### Marking



### Electrical Connection

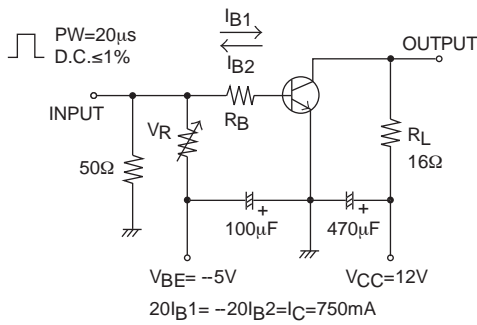


# CPH6539

## Electrical Characteristics at Ta=25°C

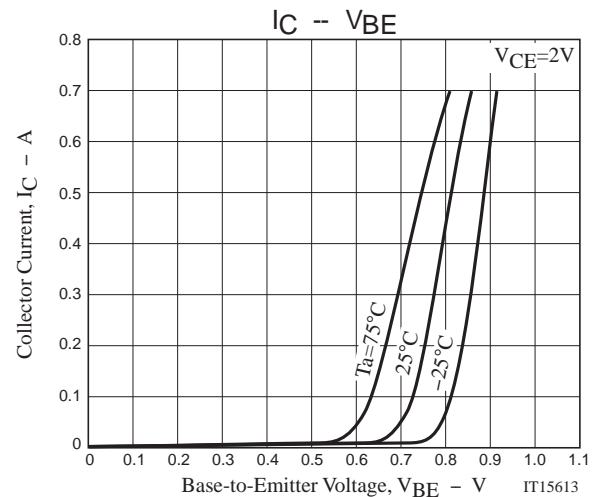
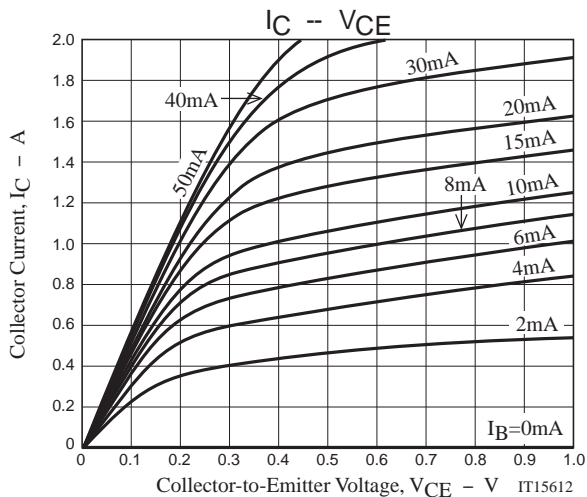
| Parameter                               | Symbol               | Conditions                                  | Ratings |      |     | Unit |
|---|----------------------|---|---------|------|-----|------|
|   |                      |   | min     | typ  | max |      |
| Collector Cutoff Current                | ICBO                 | V <sub>CB</sub> =30V, I <sub>E</sub> =0A    |         |      | 0.1 | μA   |
| Emitter Cutoff Current                  | IEBO                 | 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> =100mA  | 200     |      | 560 |      |
| Gain-Bandwidth Product                  | f <sub>T</sub>       | V <sub>CE</sub> =10V, I <sub>C</sub> =300mA |         | 500  |     | MHz  |
| Output Capacitance                      | C <sub>ob</sub>      | V <sub>CB</sub> =10V, f=1MHz                |         | 8    |     | pF   |
| Collector-to-Emitter Saturation Voltage | V <sub>CE(sat)</sub> | I <sub>C</sub> =750mA, I <sub>B</sub> =15mA |         | 160  | 250 | mV   |
| Base-to-Emitter Saturation Voltage      | V <sub>BE(sat)</sub> | I <sub>C</sub> =750mA, I <sub>B</sub> =15mA |         | 0.85 | 1.2 | V    |
| Collector-to-Base Breakdown Voltage     | V <sub>(BR)CBO</sub> | I <sub>C</sub> =10μA, I <sub>E</sub> =0A    | 40      |      |     | V    |
| Collector-to-Emitter Breakdown Voltage  | V <sub>(BR)CEO</sub> | I <sub>C</sub> =1mA, R <sub>BE</sub> =∞     | 30      |      |     | V    |
| Emitter-to-Base Breakdown Voltage       | V <sub>(BR)EBO</sub> | I <sub>E</sub> =10μA, I <sub>C</sub> =0A    | 5       |      |     | V    |
| Turn-On Time                            | t <sub>on</sub>      | See specified Test Circuit.                 |         | 35   |     | ns   |
| Storage Time                            | t <sub>stg</sub>     |   |         | 205  |     | ns   |
| Fall Time                               | t <sub>f</sub>       |   |         | 30   |     | ns   |

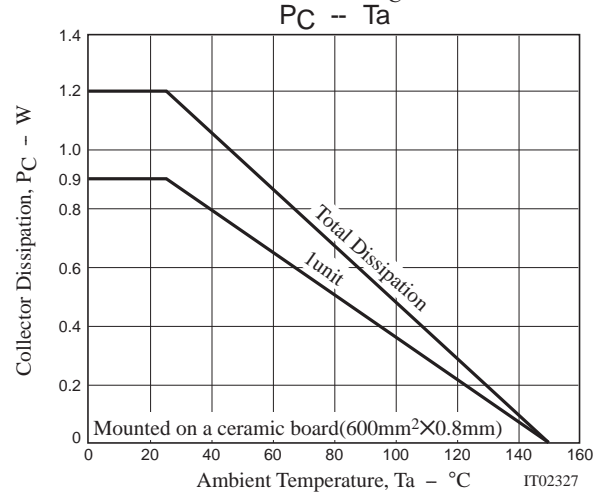
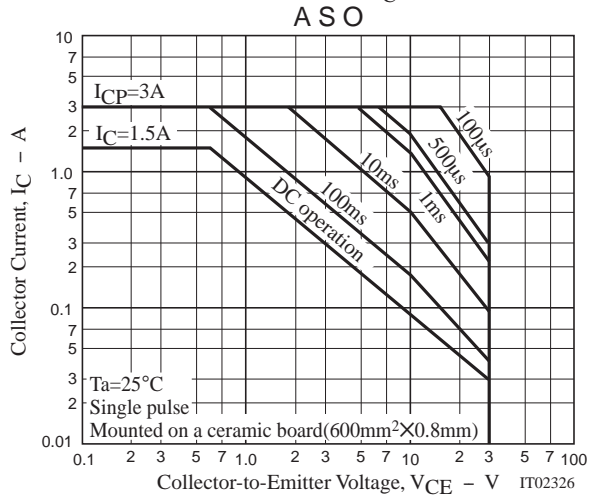
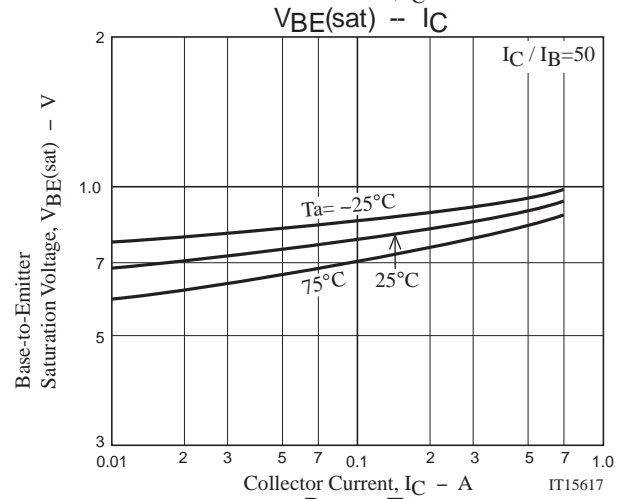
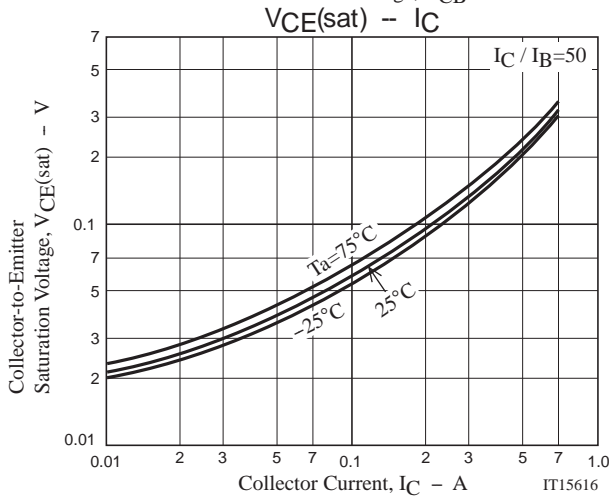
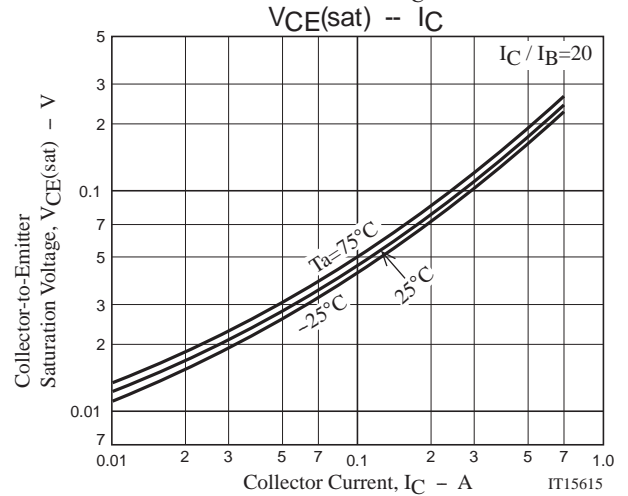
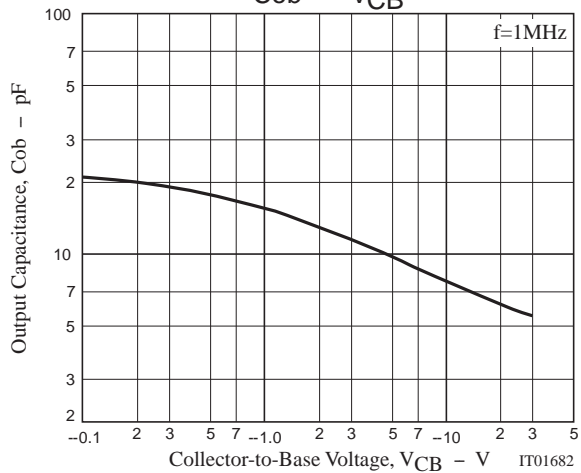
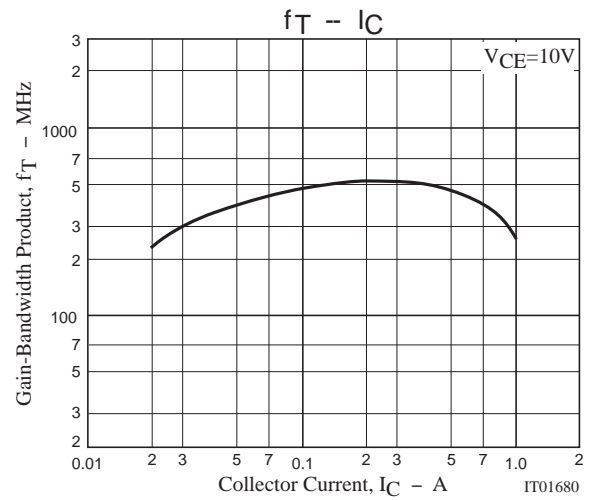
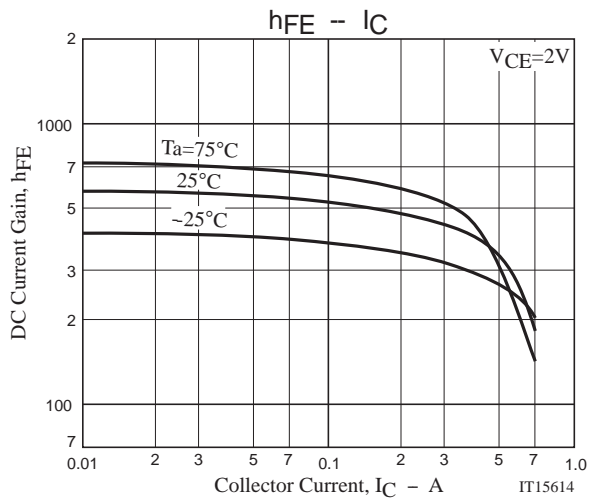
## Switching Time Test Circuit



## Ordering Information

| Device       | Package | Shipping       | memo                     |
|--------------|---------|----------------|--------------------------|
| CPH6539-TL-H | CPH6    | 3,000pcs./reel | Pb Free and Halogen Free |





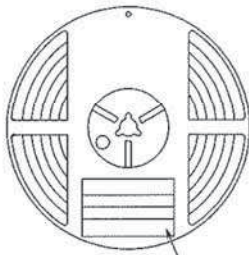
# Embossed Taping Specification

CPH6539-TL-H

## 1. Packing Format

| Package Name | Carrier Tape Type | Maximum Number of devices contained (pcs) |           |           | Packing format  |  |
|--------------|-------------------|---|-----------|-----------|---|--|
|              |                   | Reel                                      | Inner box | Outer box | Inner BOX (C-1)   | Outer BOX (A-7)  |
| CPH6         | CPH6              | 3,000                                     | 15,000    | 90,000    | 5 reels contained<br>Dimensions:mm (external)<br>183×72×185 | 6 inner boxes contained<br>Dimensions:mm (external)<br>440×195×210 |

### Packing method



Reel label

Type No.  
LOT No.  
Quantity  
Origin

Reel label, Inner box label  
(unit:mm)

|                                |  |
|--------------------------------|--|
| 69                             |  |
| TYPE 000000000                 |  |
| LOT 00                         |  |
| QTY 0,000 (1) LEAD FREE #      |  |
| SPECIAL                        |  |
| *20722005310C*                 |  |
| ASSEMBLY:**** (DIFFUSION:****) |  |

Outer box label

It is a label at the time of factory shipments.  
The form of a label may change in physical distribution process.

|                                |  |
|--------------------------------|--|
| 108                            |  |
| TYPE CODE                      |  |
| TYPE                           |  |
| QTY 0,000 PCS (1) LEAD FREE #  |  |
| LOT                            |  |
| PACKAGE                        |  |
| SPECIAL                        |  |
| *20722005310C*                 |  |
| ASSEMBLY:**** (DIFFUSION:****) |  |

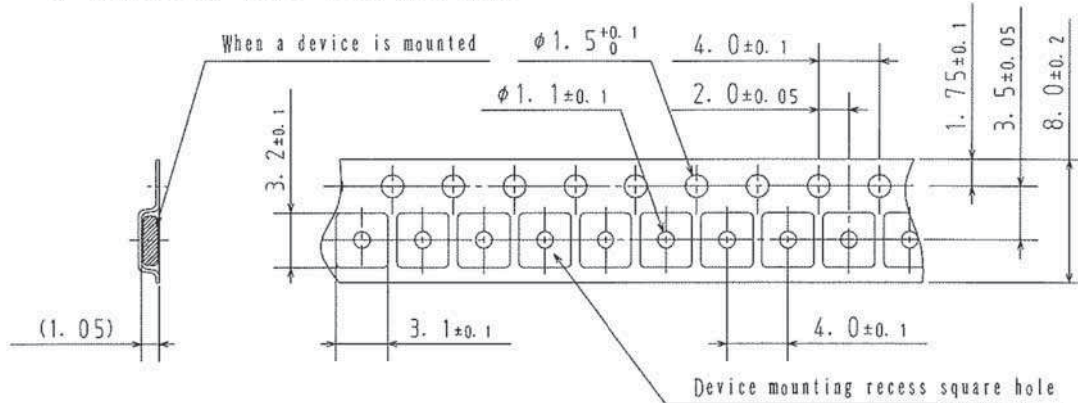
NOTE (1)

The LEAD FREE # description shows that the surface treatment of the terminal is lead free.

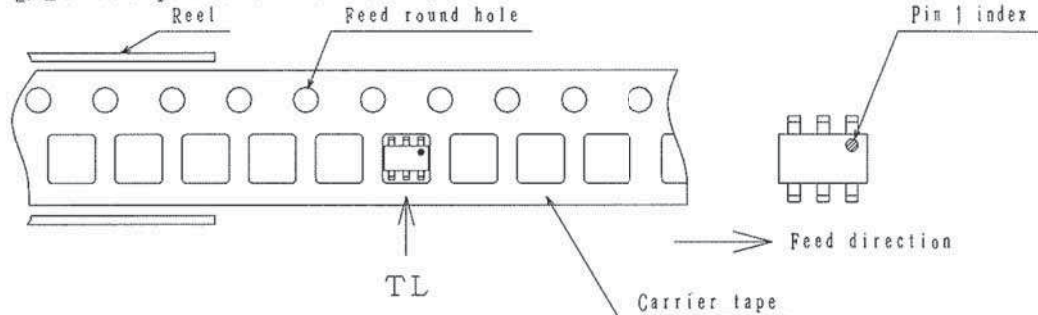
| Label       | JEITA Phase    |
|-------------|----------------|
| LEAD FREE 3 | JEITA Phase 3A |
| LEAD FREE 4 | JEITA Phase 3  |

## 2. Taping configuration

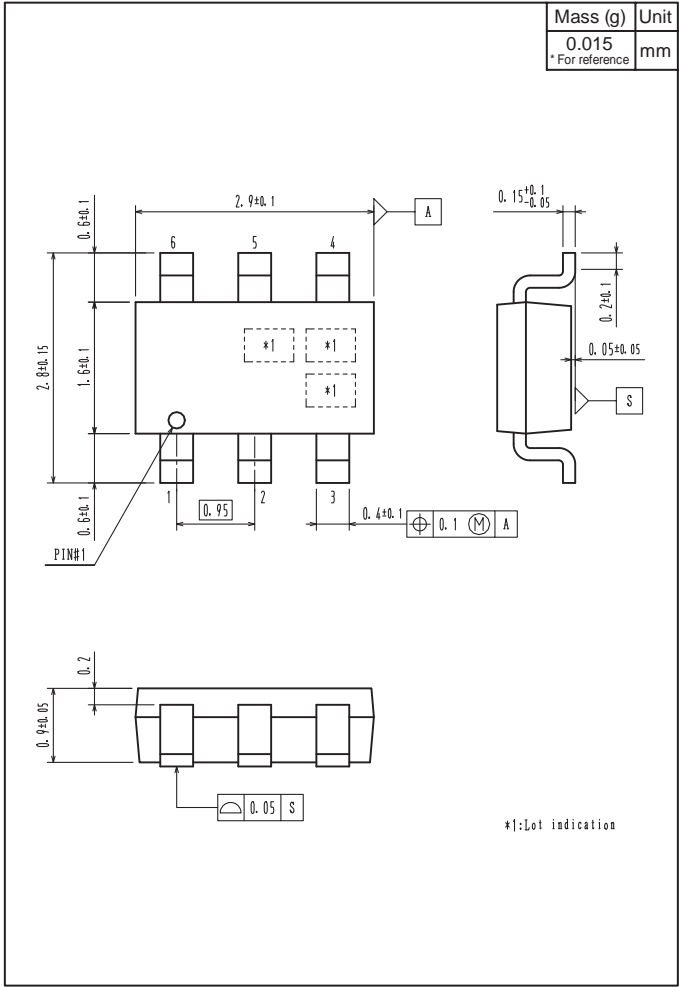
### 2-1. Carrier tape size (unit:mm)



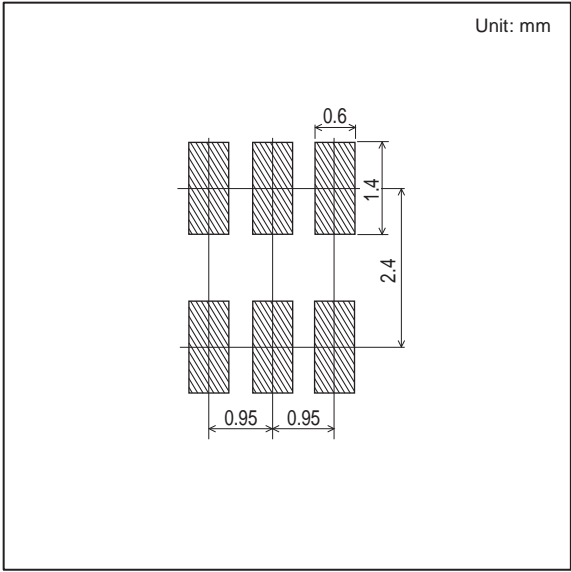
### 2-2. Device placement direction



Outline Drawing  
CPH6539-TL-H



Land Pattern Example



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