



# CPH6501 — NPN Epitaxial Planar Silicon Transistor

## DC / DC Converter Applications

### Applications

- Relay drivers, lamp drivers, motor drivers

### Features

- Composite type with two NPN transistors contained in one package, facilitating high-density mounting
- The CPH6501 consists of with two chips which are equivalent to the CPH3215.
- Ultrasmall-sized package permitting facilitates miniaturization in end products (0.9mm)

### Specifications

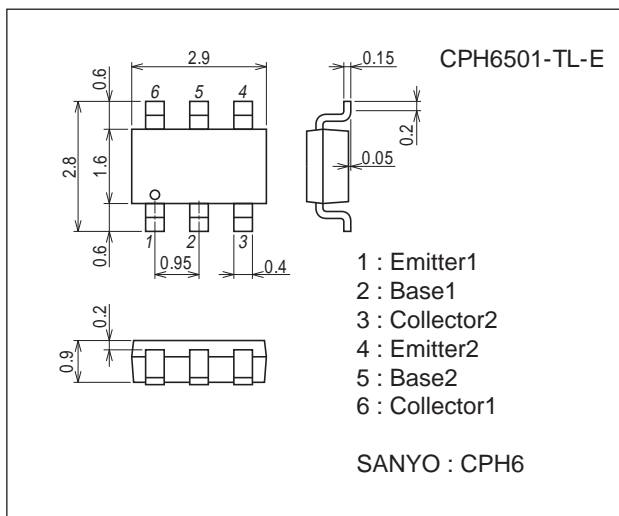
**Absolute Maximum Ratings** at Ta=25°C

| Parameter                    | Symbol | Conditions  | Ratings     | Unit |
|------------------------------|--------|---|-------------|------|
| Collector-to-Base Voltage    | VCBO   |   | 40          | V    |
| Collector-to-Emitter Voltage | VCEO   |   | 30          | V    |
| Emitter-to-Base Voltage      | VEBO   |   | 5           | V    |
| Collector Current            | IC     |   | 1.5         | A    |
| Collector Current (Pulse)    | ICP    |   | 3           | A    |
| Base Current                 | IB     |   | 300         | mA   |
| Collector Dissipation        | PC     | When mounted on ceramic substrate (600mm <sup>2</sup> ×0.8mm) | 0.9         | W    |
| Total Power Dissipation      | PT     | When mounted on ceramic substrate (600mm <sup>2</sup> ×0.8mm) | 1.2         | W    |
| Junction Temperature         | Tj     |   | 150         | °C   |
| Storage Temperature          | Tstg   |   | -55 to +150 | °C   |

### Package Dimensions

unit : mm (typ)

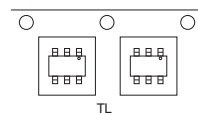
7018A-006



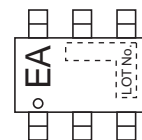
### Product & Package Information

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

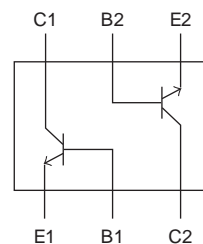
### Packing Type: TL



### Marking



### Electrical Connection

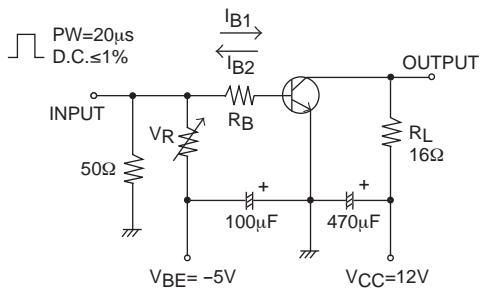


# CPH6501

## Electrical Characteristics at $T_a=25^\circ\text{C}$

| Parameter                               | Symbol        | Conditions                            | Ratings |      |     | Unit          |
|---|---------------|---------------------------------------|---------|------|-----|---------------|
|   |               |                                       | min     | typ  | max |               |
| Collector Cutoff Current                | $I_{CBO}$     | $V_{CB}=30\text{V}, I_E=0\text{A}$    |         |      | 0.1 | $\mu\text{A}$ |
| Emitter Cutoff Current                  | $I_{EBO}$     | $V_{EB}=4\text{V}, I_C=0\text{A}$     |         |      | 0.1 | $\mu\text{A}$ |
| DC Current Gain                         | $h_{FE}$      | $V_{CE}=2\text{V}, I_C=100\text{mA}$  | 200     |      | 560 |               |
| Gain-Bandwidth Product                  | $f_T$         | $V_{CE}=10\text{V}, I_C=300\text{mA}$ |         | 500  |     | MHz           |
| Output Capacitance                      | $C_{ob}$      | $V_{CB}=10\text{V}, f=1\text{MHz}$    |         | 8    |     | pF            |
| Collector-to-Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C=750\text{mA}, I_B=15\text{mA}$   |         | 150  | 225 | mV            |
| Base-to-Emitter Saturation Voltage      | $V_{BE(sat)}$ | $I_C=750\text{mA}, I_B=15\text{mA}$   |         | 0.85 | 1.2 | V             |
| Collector-to-Base Breakdown Voltage     | $V_{(BR)CBO}$ | $I_C=10\mu\text{A}, I_E=0\text{A}$    | 40      |      |     | V             |
| Collector-to-Emitter Breakdown Voltage  | $V_{(BR)CEO}$ | $I_C=1\text{mA}, R_{BE}=\infty$       | 30      |      |     | V             |
| Emitter-to-Base Breakdown Voltage       | $V_{(BR)EBO}$ | $I_E=10\mu\text{A}, I_C=0\text{A}$    | 5       |      |     | V             |
| Turn-On Time                            | $t_{on}$      | See specified Test Circuit.           |         | 35   |     | ns            |
| Storage Time                            | $t_{stg}$     |                                       |         | 205  |     | ns            |
| Fall Time                               | $t_f$         |                                       |         | 30   |     | ns            |

## Switching Time Test Circuit

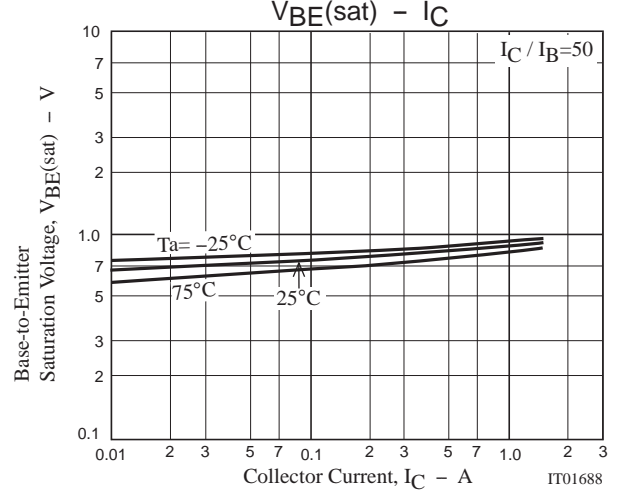
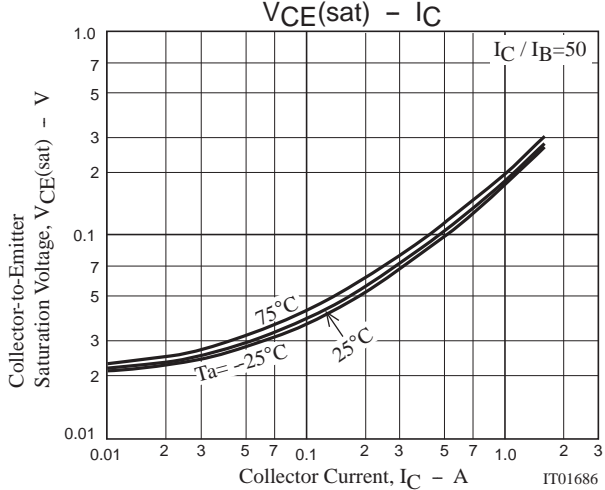
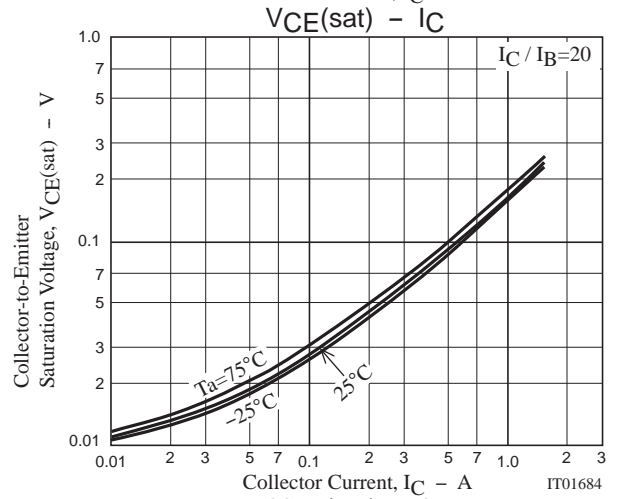
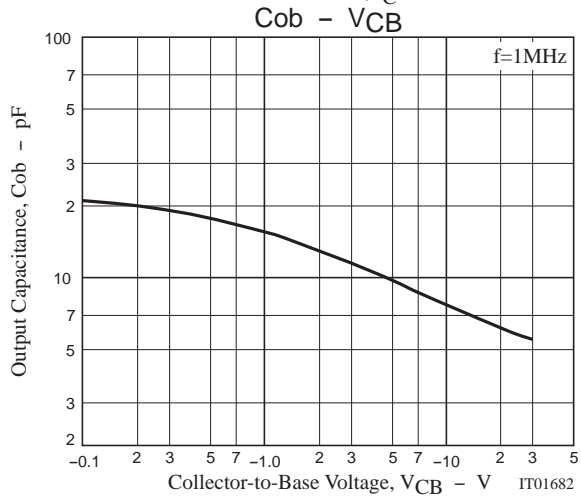
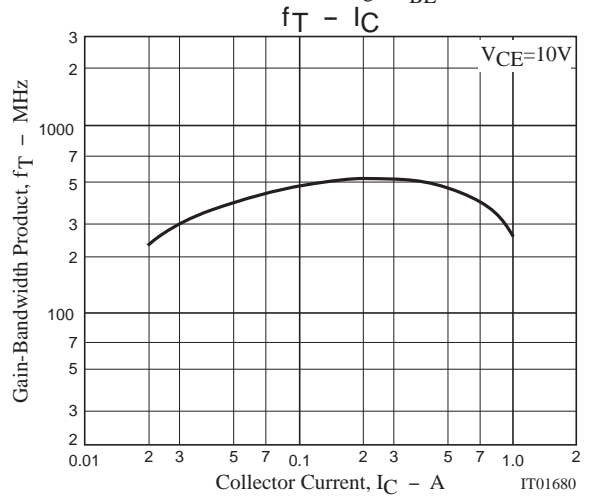
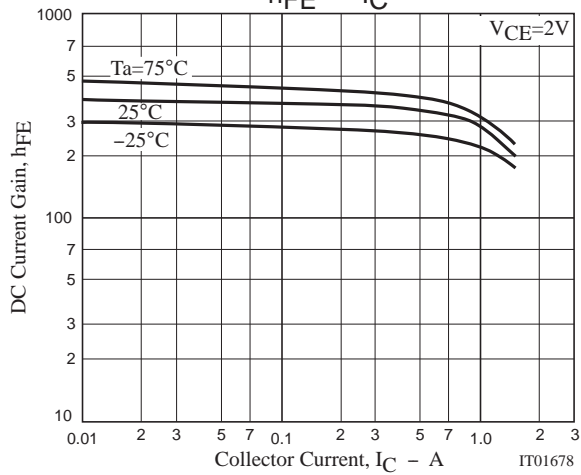
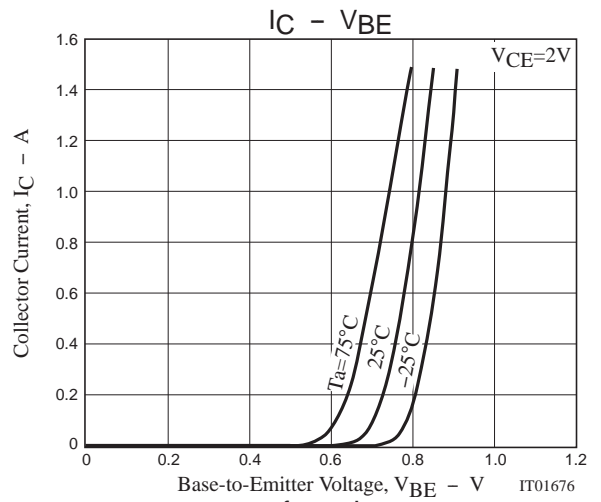
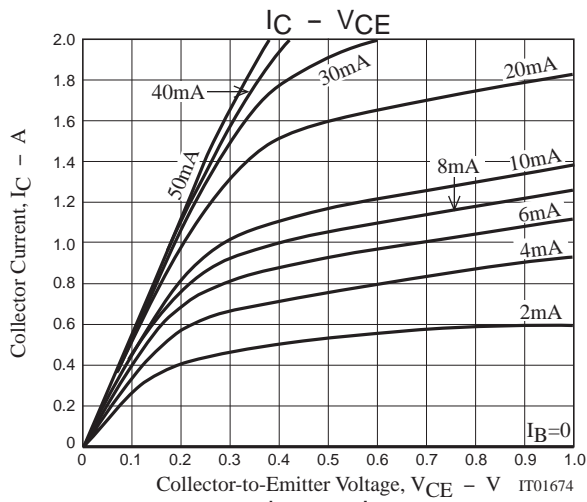


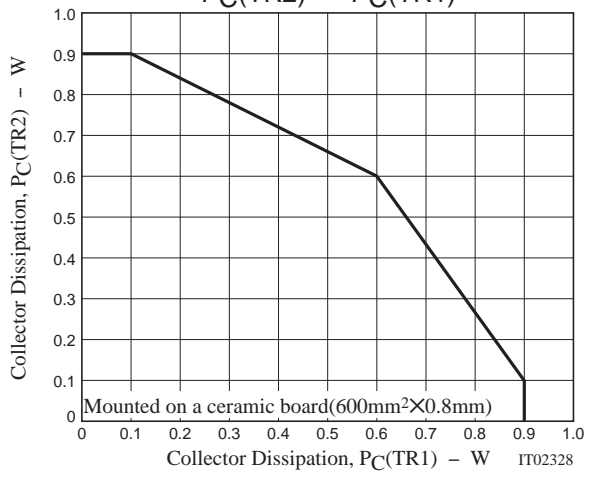
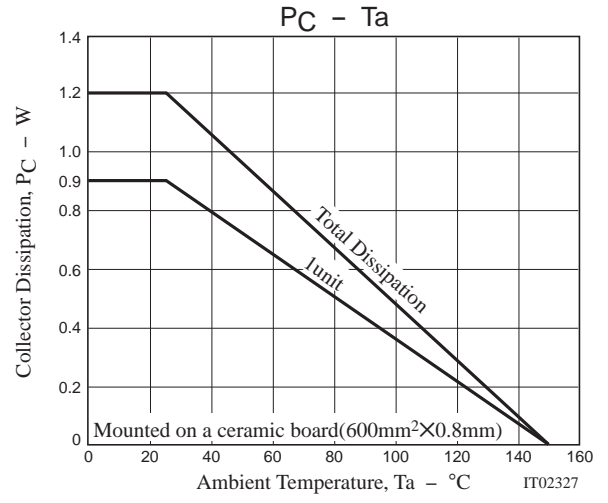
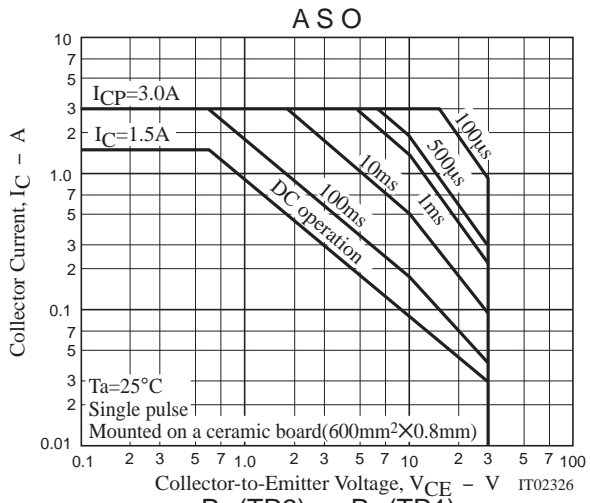
$$20I_{B1} = -20I_{B2} = I_C = 750\text{mA}$$

## Ordering Information

| Device       | Package | Shipping       | memo    |
|--------------|---------|----------------|---------|
| CPH6501-TL-E | CPH6    | 3,000pcs./reel | Pb Free |

# CPH6501





# CPH6501

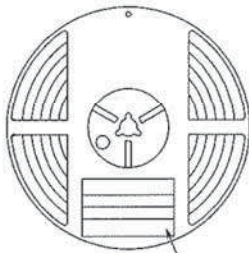
## Embossed Taping Specification

CPH6501-TL-E

### 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

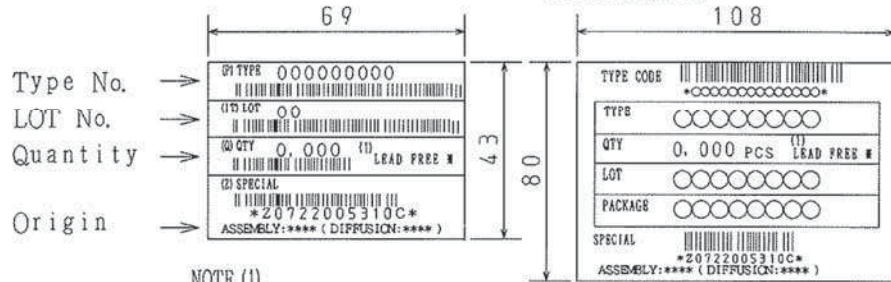


Reel label

Reel label, Inner box label  
(unit:mm)

Outer box label

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



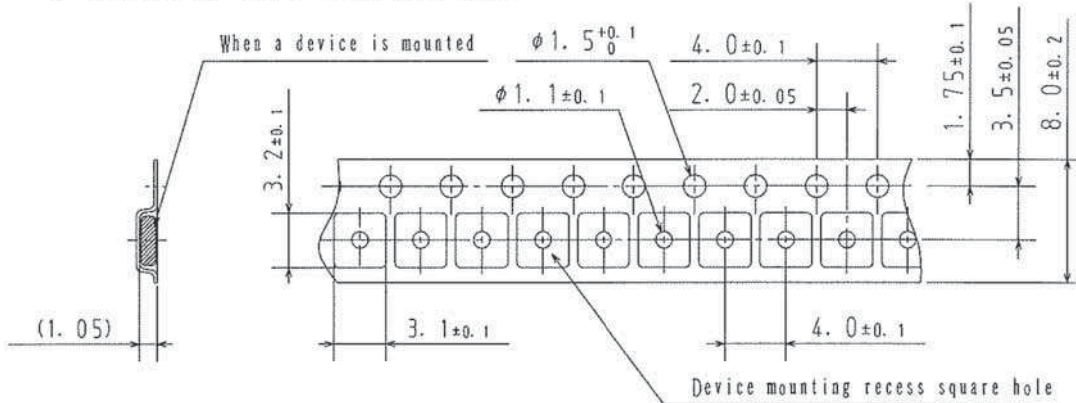
NOTE (1)

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

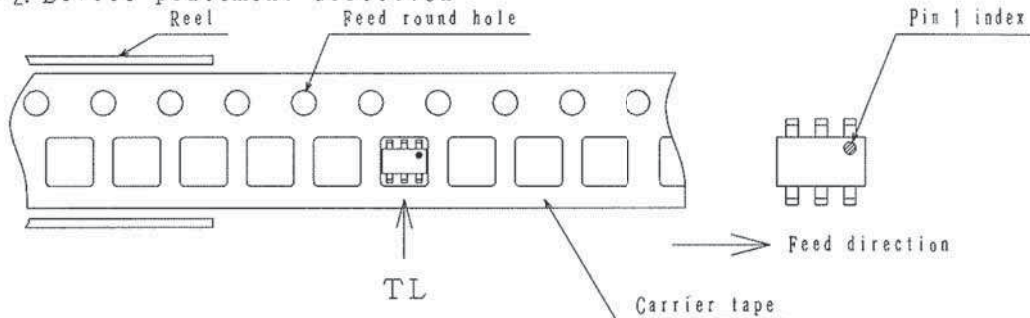
| Label       | JEITA Phase    |
|-------------|----------------|
| LEAD FREE 3 | JEITA Phase 3A |
| LEAD FREE 4 | JEITA Phase 3  |

### 2. Taping configuration

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



#### 2-2. Device placement direction

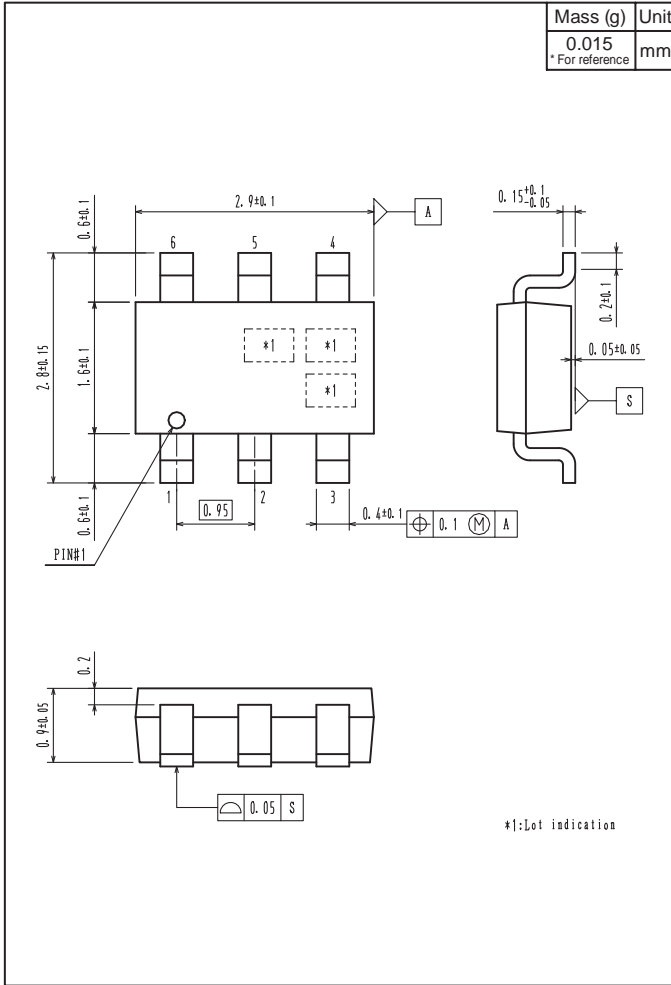


Those with pin 1 index on the feed hole side.....TL

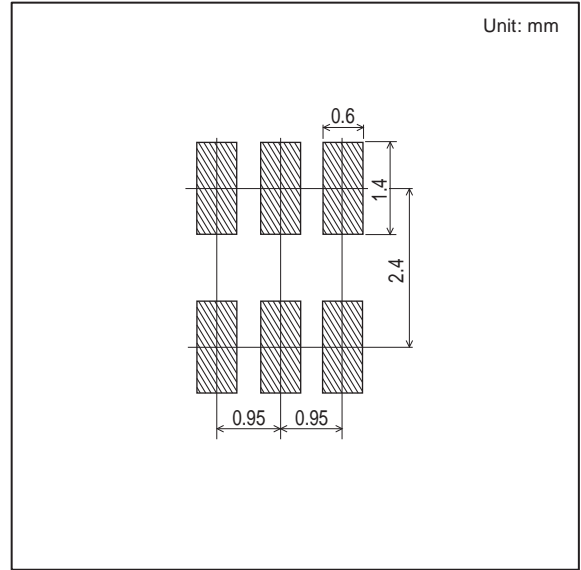
# CPH6501

## Outline Drawing

CPH6501-TL-E



## Land Pattern Example



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