

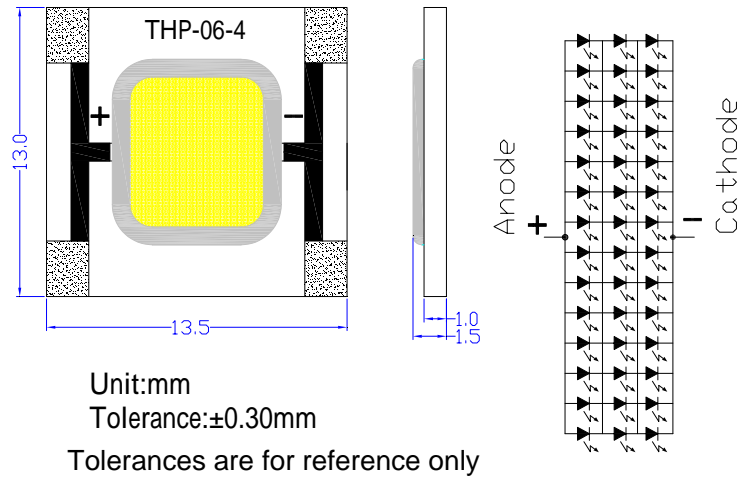
■ **Features**

- High-power LED
- Long lifetime operation
- Based on ceramic substrate to achieve long operating life
- Typical luminous flux performance 420lm@600mA
- Possible to attach to heat sink directly without using print circuit board.

■ **Applications**

- Indoor & outdoor lighting
- Stage lighting
- Reading lamps
- Display cases, furniture illumination, marker
- Architectural illumination
- Spotlights

■ **Outline Dimension**



Unit:mm  
Tolerance:±0.30mm

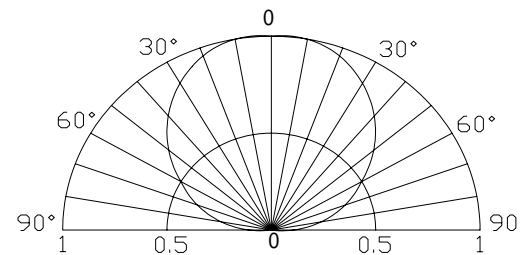
Tolerances are for reference only

■ **Absolute Maximum Rating**

( $T_a=25$  )

| Item                       | Symbol    | Value     | Unit |
|----------------------------|-----------|-----------|------|
| DC Forward Current *1      | $I_F$     | 700       | mA   |
| Pulse Forward Current*2    | $I_{FP}$  | 1400      | mA   |
| Reverse Voltage            | $V_R$     | 15        | V    |
| Power Dissipation*1        | $P_D$     | 6,840     | mW   |
| Operating Temperature      | $T_{opr}$ | -30 ~ +85 |      |
| Storage Temperature        | $T_{stg}$ | -40~ +100 |      |
| Lead Soldering Temperature | $T_{sol}$ | 260 /5sec | -    |

■ **Directivity**



\*1, Power dissipation and forward current are the value when the module temperature is set lower than the rating by using an adequate heat sink.

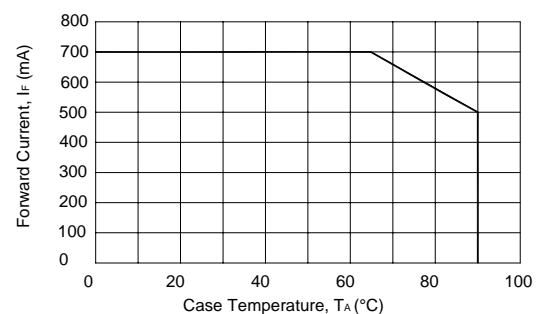
\*2, Pulse width Max.10ms Duty ratio max 1/10

**Electrical -Optical Characteristics**

( $T_a=25$  )

| Item                      | Symbol          | Condition   | Min. | Typ. | Max. | Unit    |
|---------------------------|-----------------|-------------|------|------|------|---------|
| DC Forward Voltage        | $V_F$           | $I_F=600mA$ | 9.0  | 10.2 | 11.4 | V       |
| DC Reverse Current        | $I_R$           | $V_R=15V$   | -    | -    | 100  | $\mu A$ |
| Luminous Flux             | $\nu$           | $I_F=600mA$ | 360  | 420  | -    | lm      |
| Color Temperature         | CCT             | $I_F=600mA$ | -    | 6500 | -    | K       |
| Chromaticity Coordinates* | x               | $I_F=600mA$ | -    | 0.31 | -    |         |
|                           | y               | $I_F=600mA$ | -    | 0.33 | -    |         |
| 50% Power Angle           | $2\theta_{1/2}$ | $I_F=600mA$ | -    | 120  | -    | deg     |

<Fig.a> Forward Current Derating Curve

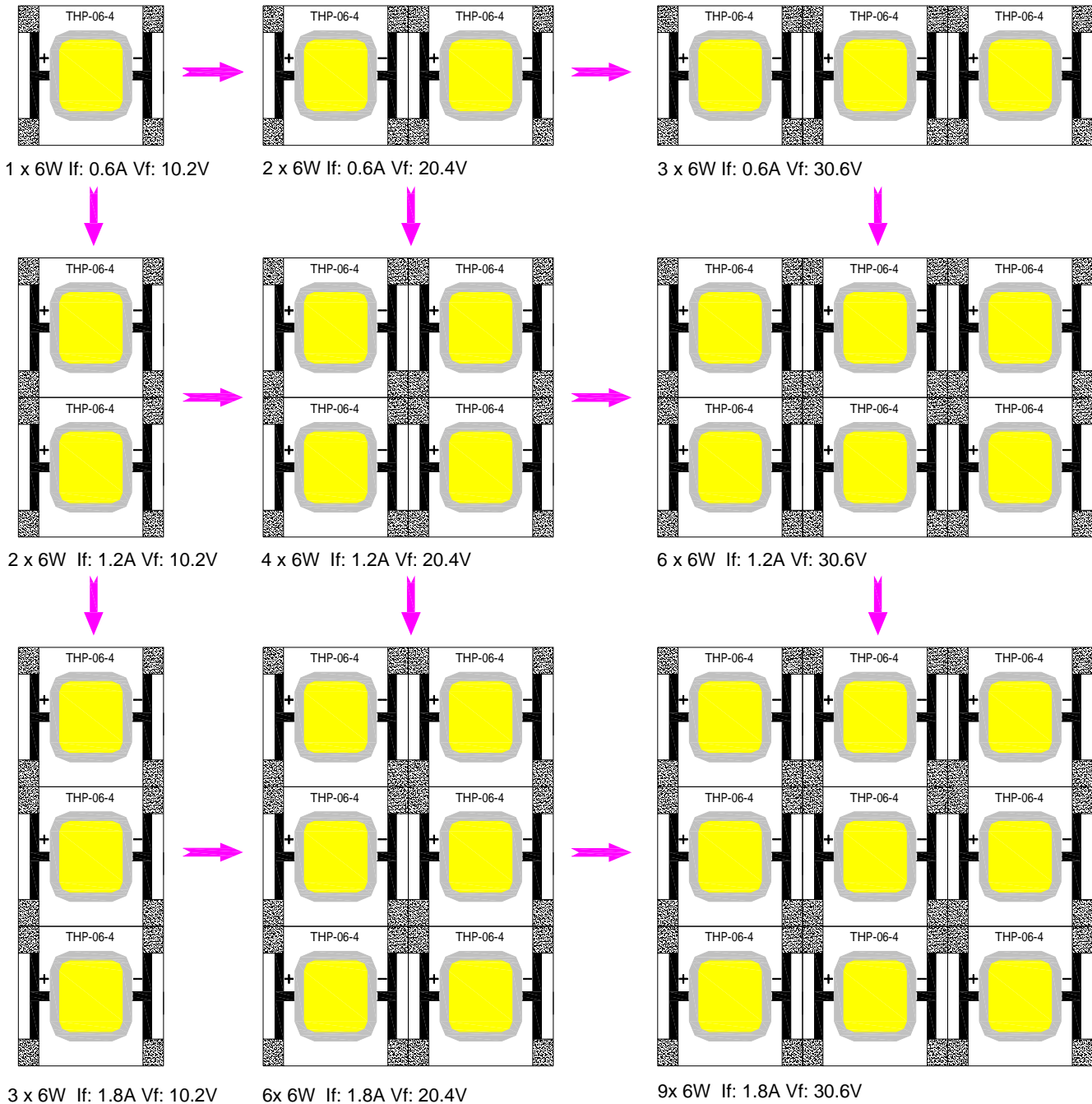


Note: Don't drive at rated current more than 5s without heat sink for High Power series.

\* Tolerance of chromaticity coordinates is ±10% , \* Tolerance of Luminous Flux is ±20%

**Customer DIY**

Customers can refer to the following do DIY



Customer DIY

## Heat design

The following pictures show some measurements of mounted 5W Led on the heat sink for each board A and B (See Fig 1) with using thermograph to make an observation about heat distribution. Each boards is tested at various current conditions.

As a result, LED needs larger heat sink as much as possible to reduce its own case temperature.

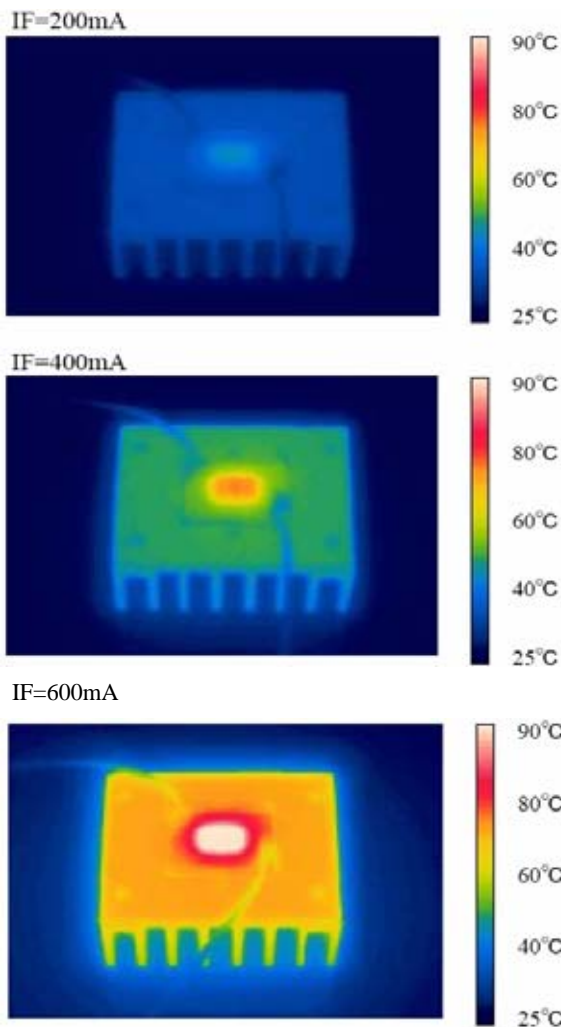
**Fig. 1 Configuration pattern examples for board assembly**

| Board | LED power | Material | Surface area (mm <sup>2</sup> ) Min. |
|-------|-----------|----------|--------------------------------------|
| A     | 5W        | Al       | 20,600                               |
| B     | 10W       | Al       | 41,200                               |
| C     | 25W       | Al       | 103,000                              |
| D     | 50W       | Al       | 206,000                              |
| E     | 100W      | Al       | 412,000                              |
| F     | 200W      | Al       | 824,000                              |
| G     | 300W      | Al       | 1236,000                             |

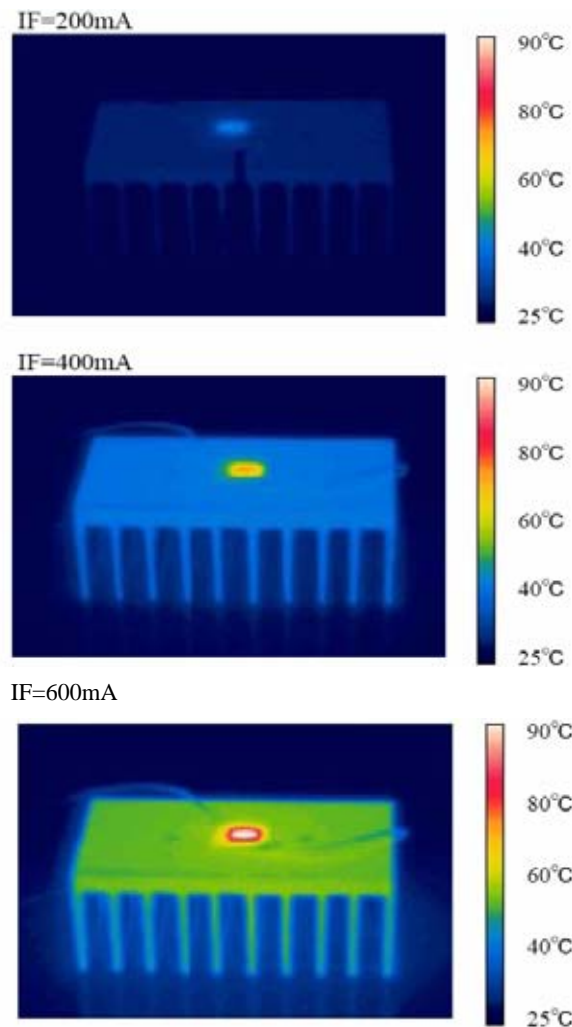
Above tested LED device is attached with adhesive sheet to the heatsink.

For reference's sake, T<sub>j</sub> absolute maximum rating is defined at 115 °C as a prerequisite on design process of 5W LED.

**<Fig.2> Board A (surface area=10,300mm<sup>2</sup>)**



**<Fig.3> Board B (surface area=20,600mm<sup>2</sup>)**



LED & Application Technologies



**Tops 6 Power Pure White Ceramic  
LED**

## Heat design → Design flow chart

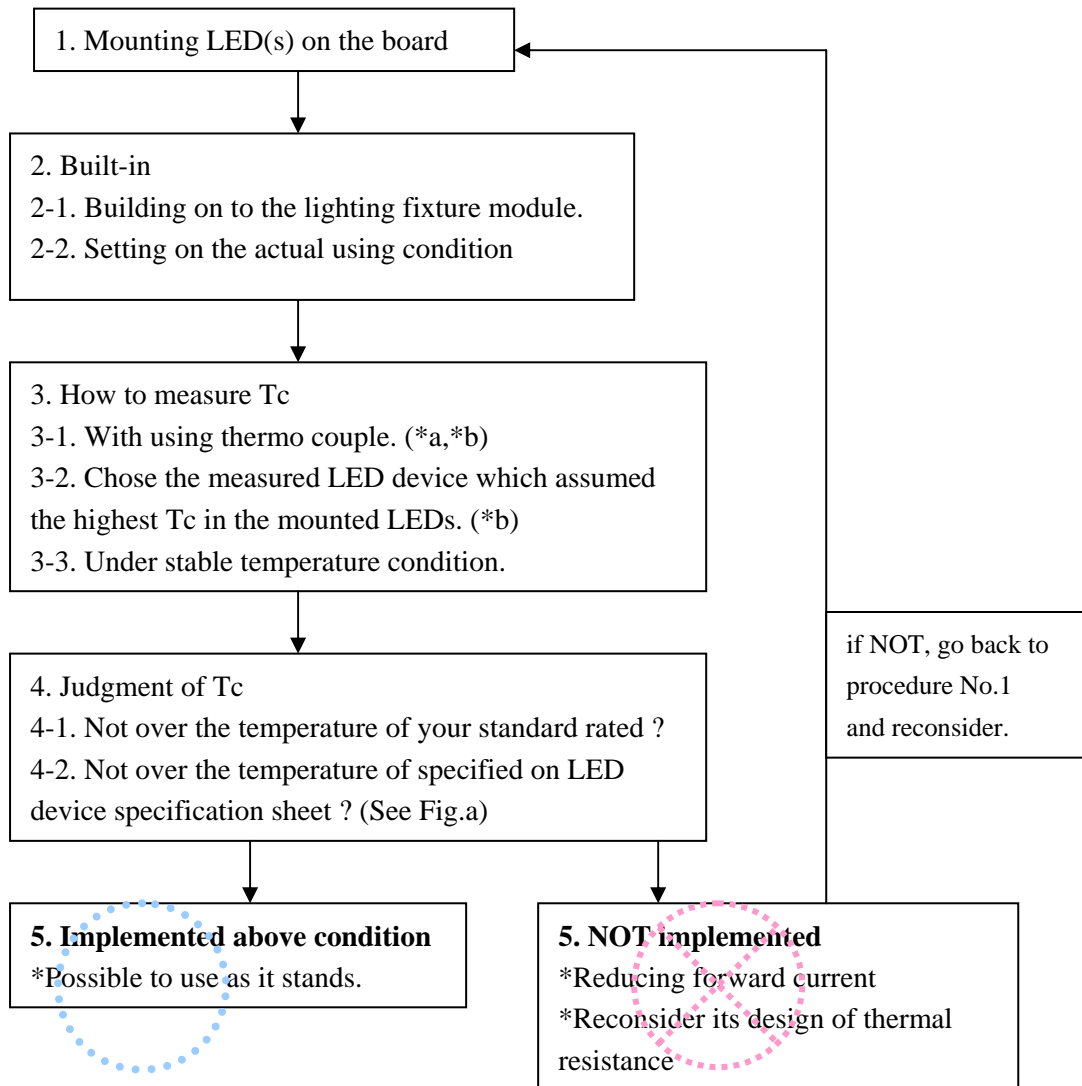
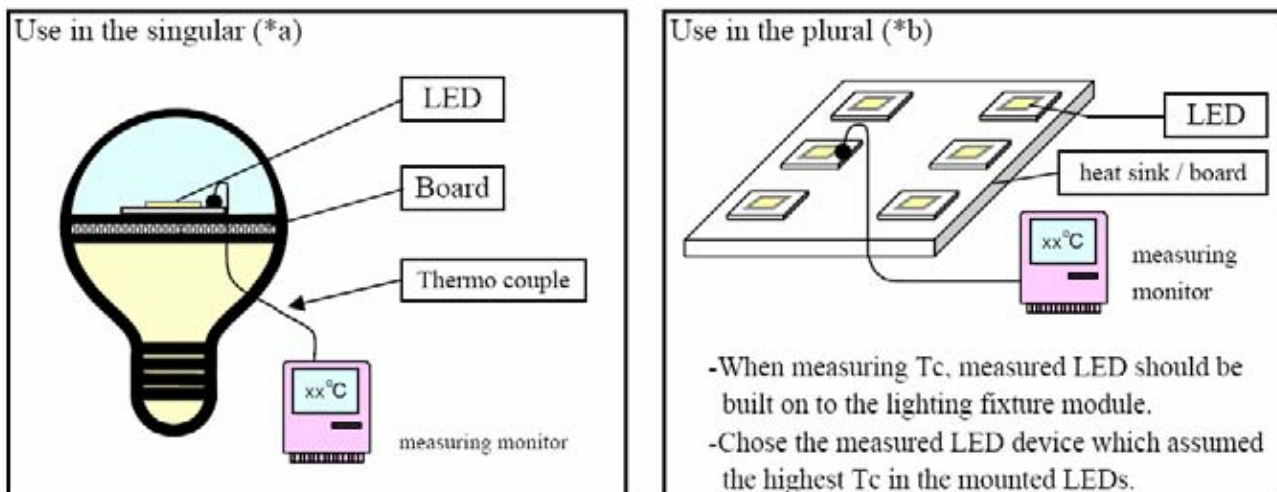
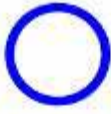


Fig.4



**Handling**→Manually handling

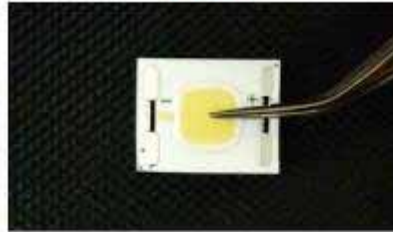
Use tweezers to catch hold of LEDs at the base substrate part. Do not touch the lens with the tweezers and fingers. Do not press on the lens.



Correct



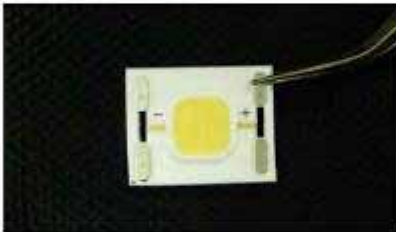
Wrong



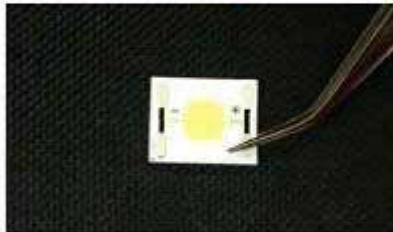
Do not touch the yellow emission resin part.



Correct



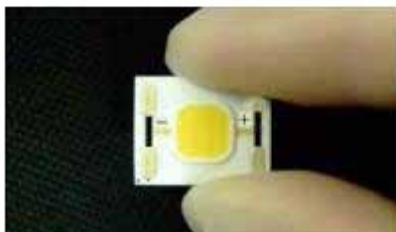
Wrong



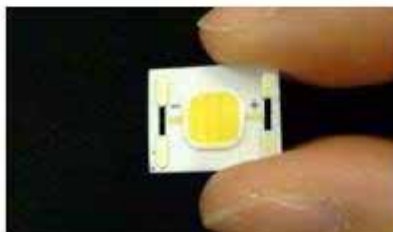
Do not touch both electrodes.



Correct

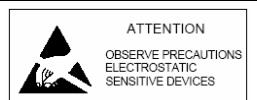


Wrong



Do not touch with naked finger. Strongly recommended to use a fingertip.

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**Tops 6 Power Pure White Ceramic  
LED**

## How to mounting

Generally, there are 2 ways to mount Ceramic Series LED. Fig.5 shows just the way to attach to heatsink.

And Fig.6 shows the way to clip with using cover plate as below.

Ceramic Series LED to the heat sink or board, applying heat conduction sheet (or some kind of grease) between LED device and heat sink is highly recommended to make good use both heat sink and LED device as its potential.

