OptoSupply
Light It Up

Tops 6W Warm White Ceramic LED

OS5MF3TEC1E

VER . 3

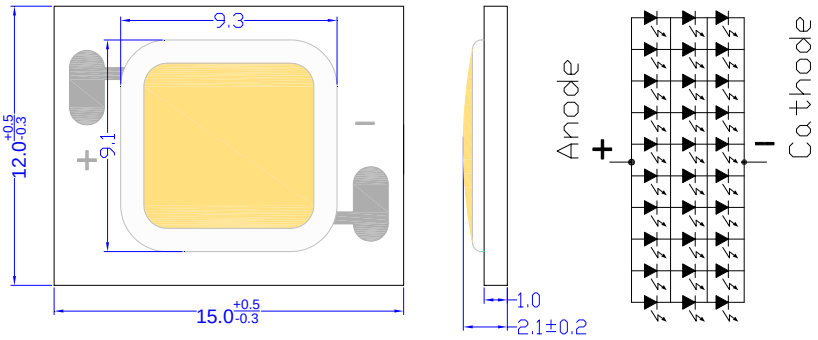
■ Features

- High-power LED
- Long lifetime operation
- Typical viewing angle : 120deg
- RoHS compliant
- 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

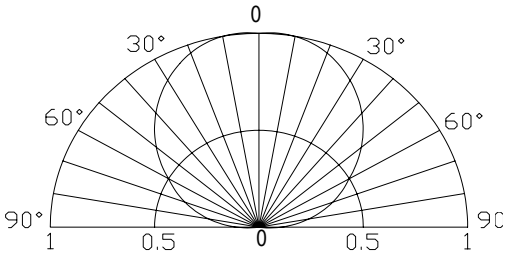
■Absolute Maximum Rating (Ta=25℃)

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	6,720	mW
Operating Temperature	Topr	-30 ~ +85	℃
Storage Temperature	Tstg	-40~ +100	℃
Lead Soldering Temperature	Tsol	260℃/5sec	-

*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

■Directivity



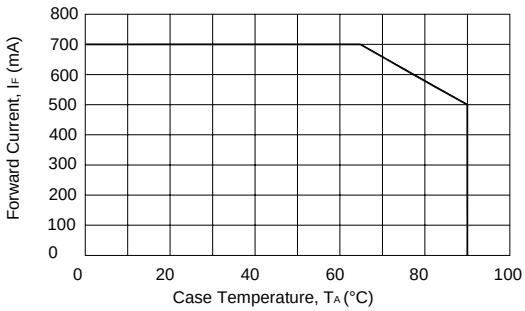
■Electrical -Optical Characteristics (Ta=25℃)

Item	Symbol	Condition	Min.	Typ.	Max.	Unit
DC Forward Voltage	V_F	I_F=600mA	9.0	9.6	10.8	V
DC Reverse Current	I_R	V_R=15V	-	-	100	μA
Luminous Flux	Φv	I_F=600mA	580	600	-	lm
Color Temperature	CCT	I_F=600mA	-	3000	-	K
Chromaticity Coordinates*	x	I_F=600mA	-	0.44	-	
	y	I_F=600mA	-	0.41	-	
50% Power Angle	2θ1/2	I_F=600mA	-	120	-	deg

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%

<Fig.a> Forward Current Derating Curve



■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.

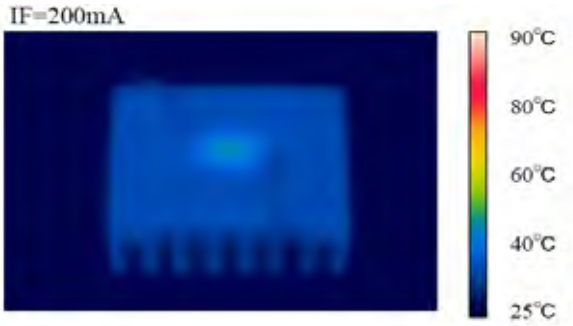
Fig. 1 Configuration pattern examples for board assembly

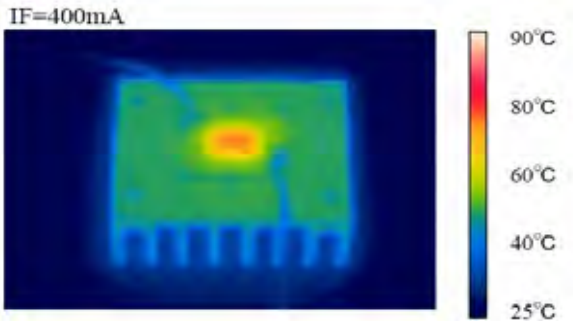
Board	LED power	Material	Surface area (mm²) Min.
A	5W	Al	10,300
B	10W	Al	20,600
C	25W	Al	51,500
D	50W	Al	103,000
E	100W	Al	206,000
F	200W	Al	412,000
G	300W	Al	618,000

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

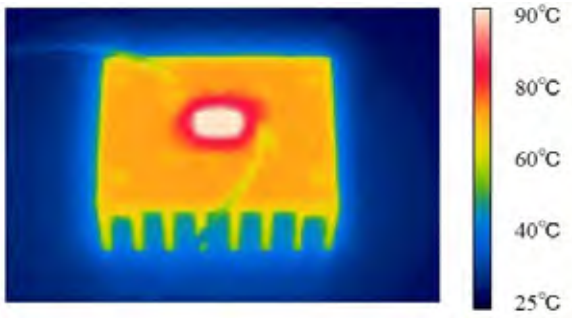
For reference's sake, Tj absolute maximum rating is defined at 115℃ as a prerequisite on design process of 5W LED.

<Fig.2> Board A (surface area=10,300mm²)

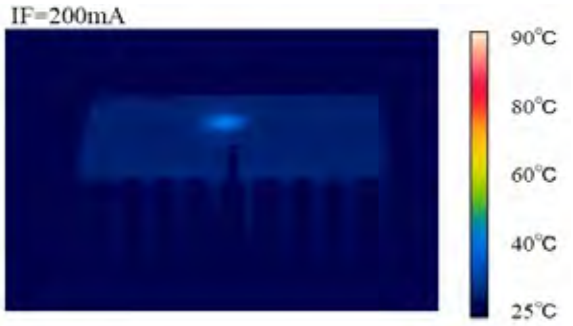


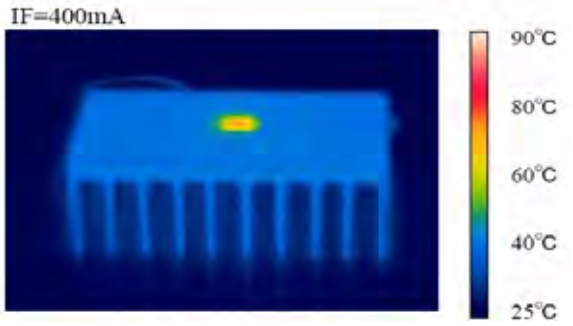


IF=600mA

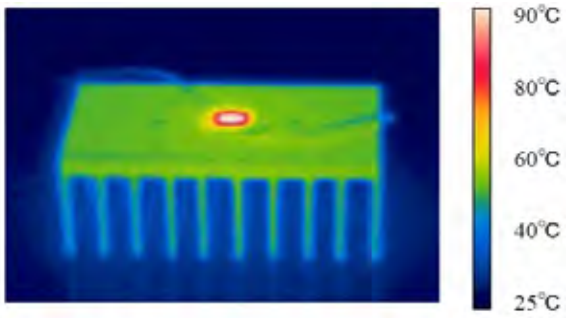


<Fig.3> Board B (surface area=20,600mm²)





IF=600mA



■Heat design→Design flow chart

1. Mounting LED(s) on the board

2. Built-in
2-1. Building on to the lighting fixture module.
2-2. Setting on the actual using condition

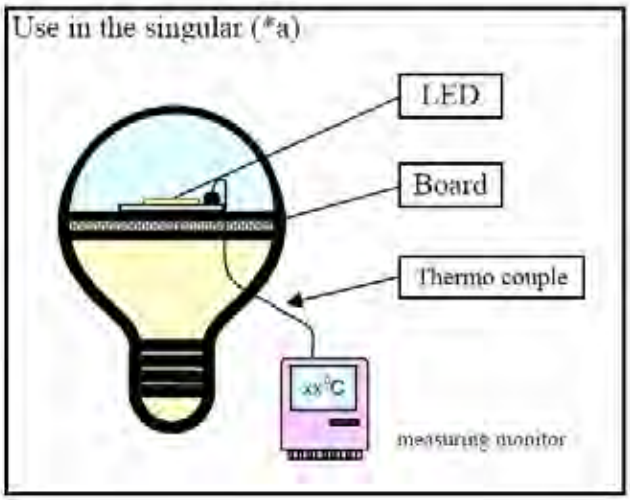
3. How to measure Tc
3-1. With using thermo couple. (*a,*b)
3-2. Chose the measured LED device which assumed the highest Tc in the mounted LEDs. (*b)
3-3. Under stable temperature condition.

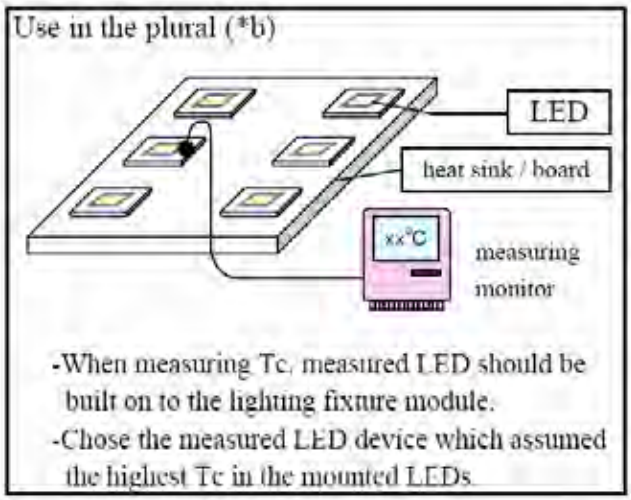
4. Judgment of Tc
4-1. Not over the temperature of your standard rated ?
4-2. Not over the temperature of specified on LED device specification sheet ? (See Fig.a)

if NOT, go back to procedure No.1 and reconsider.

5. Implemented above condition
*Possible to use as it stands.

5. NOT implemented
*Reducing forward current
*Reconsider its design of thermal resistance





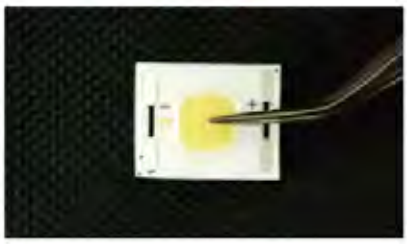
■Handling→Manually handling

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

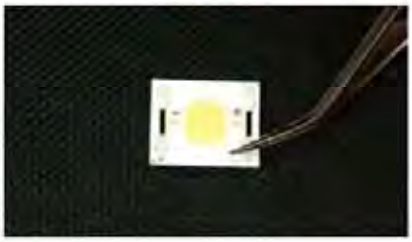


Do not touch the yellow emittion resom part.

Correct



Wrong

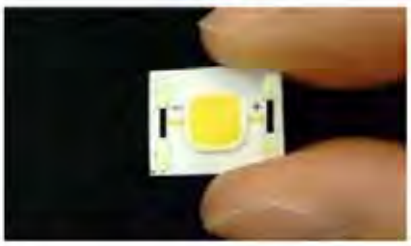


Do not touch both electrodes.

Correct



Wrong



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