

D.O.B module Application Note:

The D.O.B module needs suitable heat-sink in order to dissipate heat.

There are two ways to install the D.O.B module on the heat sink.

1. By using mechanical parts

Using screw or rivet to fix the module on the heat sink.

You could refer to the following steps:

- a. Choose high thermal conductive grease and apply it uniformly between the module and heat sink.
- b. Use screws or rivets to fix the module firmly on the heat sink.
- c. DONE. You can turn on the power right away.



2. By using High thermal conductive glue or High thermal conductive tape

Apply the material between the D.O.B module on the heat sink.

There are a little bit difference between high thermal conductive glue and high thermal conductive tape. (We suggest $K > 2.0$ and thickness $< 0.15\text{mm}$)

Glue needs longer time to become firm, otherwise it may cause air gap between the module and heat sink.

Tape is much easier, simply apply the tape between the module and heat sink, and also beware of avoiding the air gap.



Above all, the 1st solution is robust for the reliability.

Since the thermal grease can lower the thermal than other material, and it provides highest thermal conductivity and lowest thermal resistance.

(Thermal grease (also called CPU grease, heat paste, heat sink compound, heat sink paste, thermal compound, thermal gel, thermal interface material, thermal paste, or grey goo)

However, 2nd solution is much easier. The material should be selected much carefully.

Because of the material characteristic is worse than thermal grease.

There are 3 key factors you need to take care for the thermal

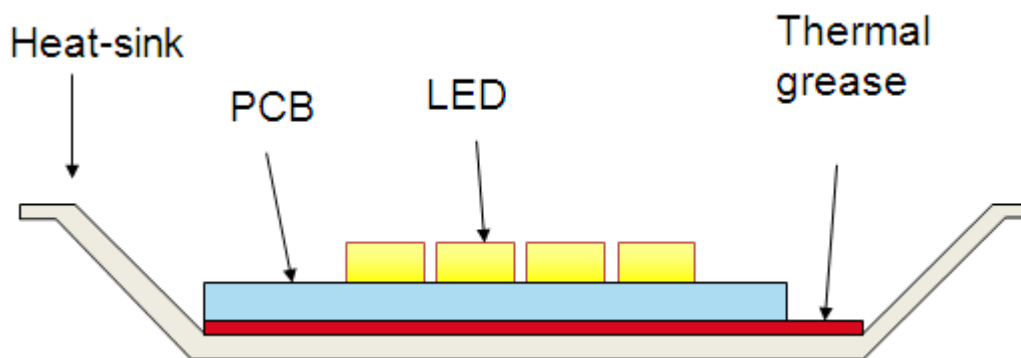
- Thermal conductivity (W/mK)
- Thermal resistance
- Thickness

After you install the module, just make sure the LED temperature working below 80~105 degree C(it depends on the each LED supplier specs) at worst case ambient temperature.

The lower thermal performance result in the longer life time.

To make sure the LED junction temperature will not over the SPEC, we shall use the aluminum heat-sink and measure the heat-sink temperature.

Please follow the below criteria:



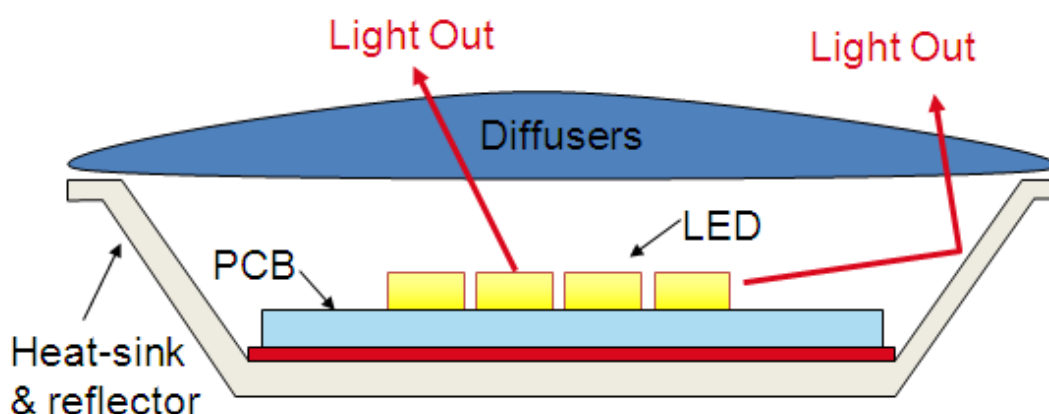
- At ambient 25 °C temperature
- LED junction can't over 120 °C
- PCB temperature can't over 85 °C
- Heat-sink Temperature can't over 70 °C
- The heat sink area is around 16cm² / watt

Note: Please fill thermal grease or material between PCB and Heat-sink to prevent any gap problem.

Light Output Calculation

The LED DOB module can generate 900Lm / 10W DOB , 1050Lm / 12W DOB , 2100Lm / 25W DOB. But we need to consider the losses of the reflector and light diffusers.

Normally the reflector will loss around 5~10% and diffusers will loss 10~20% when using in Down Light application.



The Total light out loss is around 15-30% depending on different materials.

For example:

12W DOB is 1050 Lm , the actual light output is around $1050 \times 70\% = 750$ Lm.

When we using in down light application.

Applications:

 <p>9.5cm</p> <p>7.5cm</p>	 <p>25cm</p>
<p>10W DOB application In adjustable down light</p>	<p>12W DOB application in 25cm ceiling light.</p>
 <p>15cm</p>	 <p>20cm</p>
<p>12W DOB application In 15cm down light.</p>	<p>25W DOB application In 20 cm down light.</p>