



Safety Use Instructions of High power LED products

In the application of high-power LED products and components, heat dissipation, electrostatic shielding, welding have great impact to its properties , they should be think highly by the ended users.

Heat dissipation

With the present technology restriction of the semiconductor emitting diode chip, The efficiency of LED' s photoelectric conversion nee to improved , especially high-Power LED , because its power is higher ,about more than 60% of electrical energy turns

into heat and then release(but with the technology development , the efficiency of photoelectric conversion is increasing) . which requires the terinal customers to make sure that the heat is dissipated well in the application in order to ensure that the high power LED products are work normally.

1 .Requirements of the heat sink

Exterior and material: if the seal of finished product is not demanded too high And can occur convection directly with outside air , it is recommended to use Aluminum or copper cooling fin .

2 Effective cooling sacrificial area

For 1W white color high power leds (same as other colors). It is recommend the total Effective cooling surface should equal to or greater than 50-60 square centimeter; For 3W products, should equal to or greater than 150 square centimeters ; the higher the Power is , the larger the surface should be anyhow , be sure that temperature of the cooling

fin is less than 60°C

3 Connection ways

Be sure that two surfaces is neat and can contact well when connecting the substrate and

The cooling fin . In order to strengthen the combination of the two surfaces , it is suggested

Coating a layer with heat conduction silicon grease on the surface (the coefficient of heat conductivity of silicon grease $>3.0 \text{ W/ m.k}$). thermal silicon grease requirements should be applied evenly and q.s . , then press fit and fix with screws .

Electrostatic shielding

LED, belonging to semiconductor device, is sensitive to electrostatic , so it is necessary to prevent electrostatic generation and eliminate static electricity , especially the white , green , blue and purple LED .

1 Electrostatic generation

(1) the friction: in daily life ,the most common method , any two different material objects

contacted again after separated can produce static . that is friction born electricity .
The better
The insulation of the material is . the easier friction electricity born . In addition, any
tow
different objects contacted again after the separated also can produce static.

(2)induction: concerning conductive materials, for electronic can flow freely on its
surface.

If placed in an electric field, as same reactive , opposites attract, positive ions and
anion will

Transfer , charge can produce too .

(3)conduction: considering conductive material, as electrons can free flow on its
surface. If contacted with a charged object the charge will transfer.

2. The harm of static

(1) the heat generated by a sudden electric field or current will hurt in still on . but the
brightness is lower and life is reduced .

(2) because of LED insulating layer is destroyed by an electric field or current, the
Component cannot work (or destroyed). And the light is performed as a death one.

3 Protection and elimination of static

In the whole procedure (including production , testing packaging , etc .) . all
employees who is directly contact with the LED should take measures to prevent or
eliminate electrostatic .

There are several ways:

(1)workshop should be laid anti-static floor and completely connect the ground .

(2)worktable should be anti-static , and the production machines is grounded well.

(3)operators should wear anti-static suits take anti-static wristband , gloves or foot
loop.

(4)workshop should be applied with ion blower fan.

(5)electric soldering iron should be well grounder

(6)packaging should be antistatic materials.

Welding

1, when welding please use constant temperature soldering iron, the welding
temperature

should below 260°C , and the contact time should not exceed 3S each time.

- 2 if it is a silicon encapsulating high power LED , the highest heat-resisting temperature of silicone is 180°C , so welding temperature can not exceed 170°C;please using low-temperature soldering iron and low temperature solder paste(silk) and the soldering time does not exceed 3S each time.
3. if using soft colloid, the reflow soldering temperature should maintain at 260°C, Do not forcibly pressure bead's colloid part , in case of internal structure be damaged.