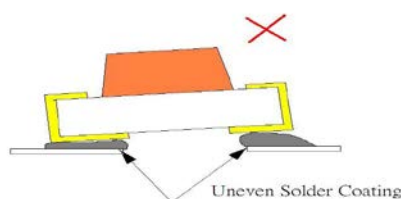


# APPLICATION NOTE

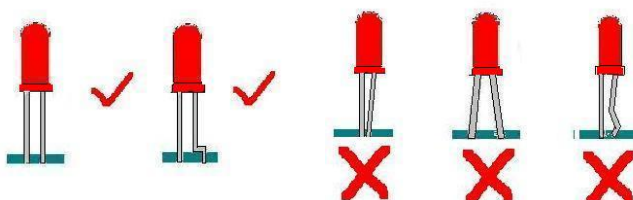
## Soldering

1. We recommend **manual soldering operations** only for **repair** and **rework** purposes. The soldering iron should not exceed **30W** in power. The maximum soldering temperature is **300°C** for Pb-Sn solder and **350°C** for lead-free solder for normal lamps and displays. For blue (**470nm**), and pure-green (**525nm**) LEDs, the maximum soldering iron temperature is **280°C**. Do not place the soldering iron on the component for more than **3 seconds**.
2. The **tip** of the soldering iron should **never touch** the lens epoxy.
3. Do not **apply stress to the leads** when the component is heated above **85°C**, otherwise internal wire bonds may be damaged.
4. After soldering, allow at least **three minutes** for the component to cool to room temperature before further operations

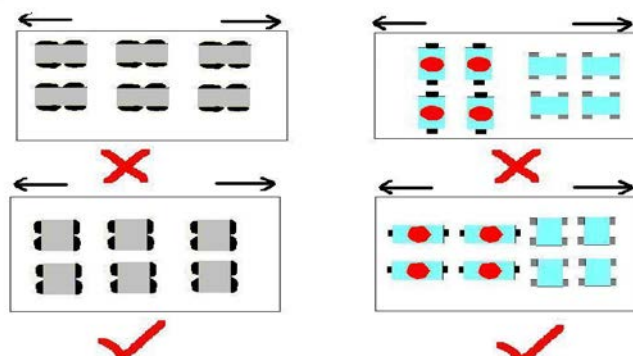
5. **SMD products** must be mounted according to specified soldering pad patterns. Refer to the product datasheet for details. Solder paste **must be evenly** applied to each soldering pad to insure proper bonding and positioning of the component.



6. **Pin hole pitch on PCB** must match lead pin pitch so as not to cause any stress on lead wires. **No stress** can be applied to lead pins when they are heated, otherwise disconnection may occur.



7. During soldering, **SMD components** should be mounted such that the leads are **placed perpendicular** to the direction of **PCB travel** to insure the solder on each lead melts **simultaneously** during reflow.



## Lead Forming

1. Any lead **forming** or **bending** must be done **before soldering**, never during or after soldering.
2. **Avoid placing stress** the LED lens in order to prevent fracture in the lens epoxy and to prevent damage to the internal wire bonding.
3. During lead forming, **use tools or jigs** to hold the leads securely so that the bending force will not be transmitted to the LED lens and its internal structures.



4. Avoid bending the leads at the same point **more than once**.
5. There must be a **minimum of 5mm** clearance between the base of the LED lens and the lead bend.
6. Avoid **lead forming** once the component has been mounted onto the PCB.

# APPLICATION NOTE

## Cleaning

1. Do not use **harsh Organic solvents** such as **Trichloroethylene, Acetone, Chlorosen** , and **Diflon S3MC** for cleaning because they may cloud or damage the LED lens.
2. **Isopropyl alcohol** or **Deionized water** are recommended solvents for cleaning.
3. Special attention should be taken if other chemicals are used for cleaning because other solvents may damage the **epoxy** in the **lens or housing**.
4. The cleaning process should take place **at room temperature** and the devices should not be washed
5. for **more than one minute**. When water is used in the cleaning process, immediately remove excess moisture from the LED via **forced-air drying** afterwards.

## ESD

### Static Electricity and Voltage Spikes in InGaN/GaN Products

**InGaN/GaN products** are sensitive to **ElectroStatic Discharge (ESD)** and other transient voltage spikes. **ESD and voltage spikes** can affect the component's reliability, **increase** reverse current, and **decrease** forward voltage. This may result in reduced light intensity or cause component failure. **Yetda InGaN/GaN products** are stored in **anti-static packaging** for protection during transport and storage. Please note the **anti-static measures** below when handling **Yetda InGaN/GaN products**:

### Design Precautions

Products using **InGaN/GaN components** must incorporate protection circuitry to prevent **ESD and voltage spikes** from reaching the vulnerable component.

### ESD Protection During Production

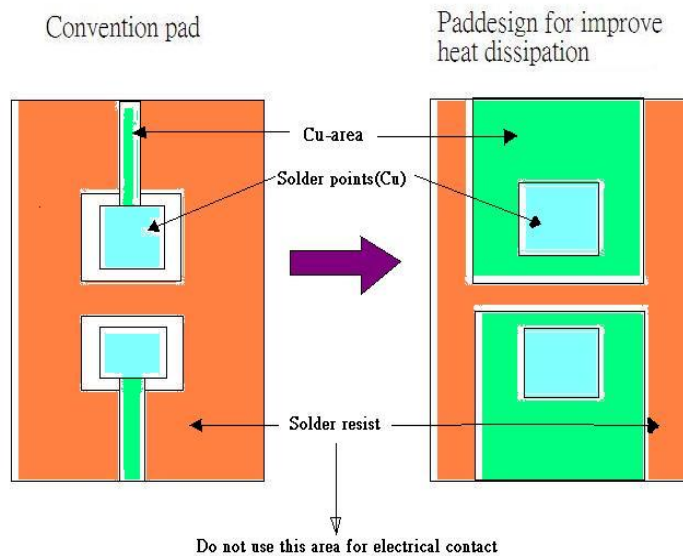
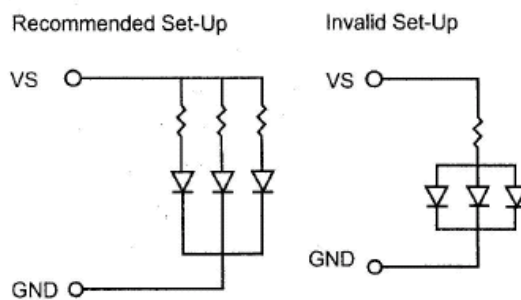
**Static discharge** can result when **static-sensitive products** come in contact with the operator or other conductors. **The Following procedures** may decrease the possibility of **ESD damage** :

- (1) **Minimize friction** between the product and surroundings to avoid static buildup.
- (2) All production machinery and test instruments must be **electrically grounded**.
- (3) Operators must wear **anti-static bracelets**.
- (4) Wear **anti-static suit** when entering work areas with conductive machinery.
- (5) Set up **ESD protection areas** using **grounded metal plating** for component handling.
- (6) All workstations that handle **IC and ESD-sensitive components** must maintain an electrostatic potential of **150V or less**.
- (7) Maintain a humidity level of **50% or higher** in production areas.
- (8) Use **anti-static packaging** for transport and storage.
- (9) All **anti-static equipment** and **procedures** should be periodically inspected and evaluated for proper functionality.

# APPLICATION NOTE

## Miscellaneous Design Notes

1. **Protective current-limiting resistors** may be necessary to operate the LEDs within the specified range.
2. LEDs mounted in parallel should each be placed in **series with its own current-limiting resistor**.
3. The driving circuit should be designed to avoid **reverse voltages** and **transient voltage spikes** when the circuit is powered up or shut down.
4. Optimal usage of **high-power LED devices** requires careful design by the end-user to optimize heat dissipation, such as **increasing the size of the metal backing around the soldering pad**. Refer to the product datasheet for specific design recommendations regarding heat dissipation.
5. **High temperatures** can reduce device performance and reliability. Keep LED devices away from **heat sources** for best performance.



## Restrictions on Product Use

1. The information contained within this document is subject to change without notice. Before referencing this document, please confirm that it is **the most current version available**.
2. **Not all devices and product families** are available in every country.
3. The light output from **UV, blue, white, and other high-power LEDs** may cause **injury to the human eye** when viewed directly.
4. LED devices may contain **Gallium Arsenide (GaAs)** material. **GaAs** is harmful if ingested. **GaAs** dust and fumes are toxic. **Do not break, cut, or pulverize** LED devices. **Do not dissolve** LEDs in chemical solvents.
5. Semiconductor devices can fail or malfunction due to their sensitivity to **electrical fluctuation and physical stress**. It is the responsibility of the user to observe all safety standards when using Yetda products, in order to avoid situations in which the malfunction or failure of a Yetda product could cause injury property damage, or the loss of human life. In developing designs, please insure that Yetda products are **used within specified operating conditions** as set forth in the most recent **product specification datasheet**.