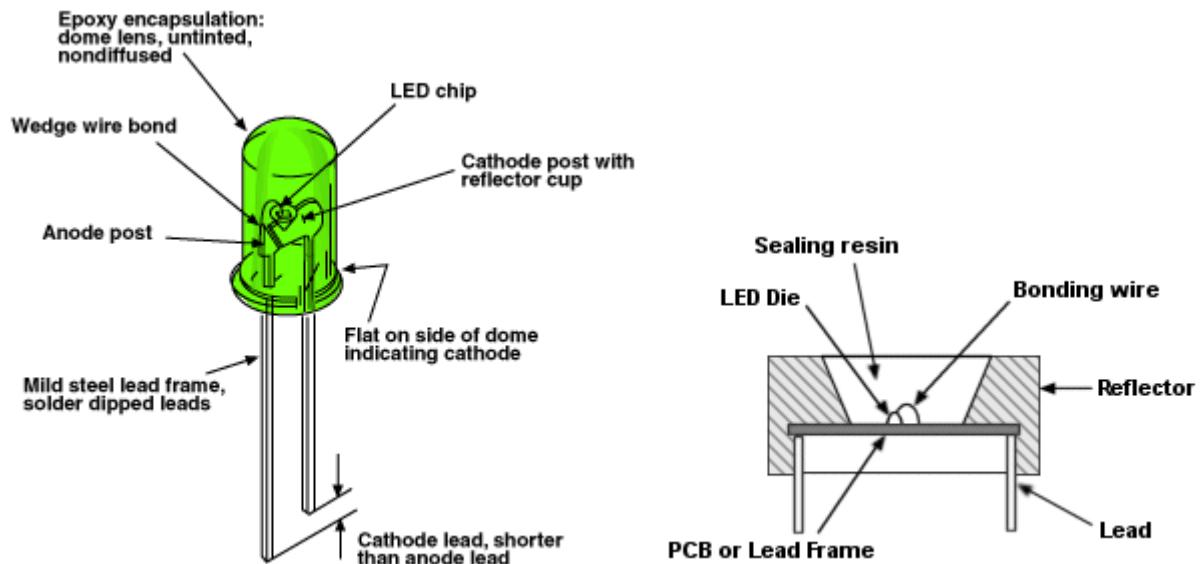


BS- Wissenswertes über LEDs (englisch)

General Information

Features:

LED Device is an optoelectronic semiconductor component which converts electrical energy to emit light (photon):



The general advantages of LED Device (compared to incandescent light are:

- Lower power consumption
- Longer lifetime (averaged more than 300,000 hours)
- Compact size which is suitable for instrumentation and graphic representations

LED Devices have been widely applied as an indicator element for home/consumer appliances and industrial instrumentation. Due to recent progress in brightness enhancement, more and more applications have been found in indoor/outdoor graphic representations.

AOP Quality Control & Assurance Systems:

- Inspection Criteria: All of AOP's products are monitored under the MIL-STD-105D, LEVEL II standards.
- The following reliability tests are conducted for all of AOP's LED devices:
 - Vibration Test
 - Temperature / Humidity Storage Test
 - Temperature Cycle Test
 - Thermal Shock Test
 - Drop Test
 - Operational Life Test
 - Solderability Test
 - Solder Resistance Test

For detailed information, please contact your regional distributors or AOP Headquarters.

Comparison of Luminous Intensity

Due to the lack of consistent international criteria for brightness measurement, a direct comparison of brightness data among different references is given. Because each of the LED Die could have different value of forward voltage V_F and luminous intensity I_V , two sorting operations are conducted in the manufacturing process. The first one is conducted before the

LED dice are selected to be used for each production lot. In this process, LED Dice are chosen in a macro extent to ensure that the forward voltage and luminous intensity variations in such lots are minimal. Consequently, the brightness variation for each device is minimized to an extent which is not significant to the human-eyes' visual effect. The second sorting is conducted after the LED Devices are fully assembled. during this process, the brightness of each device is measured and then sorted in a micro extent by BIN grade.

Chemical Resistance

Do not allow the LED device to be contacted by chemicals (such as Acetone, Trichlorethylene, or Tetrachlor) which could harm the surface of resin. Whenever cleaning is necessary, please use Alcohol, Chlorosen, Difron solvents 3-E, Frigen 113TR, Arklone P, Kaltron 113 MDR, Fluqene 113, Chlocene, or Freon TE with temperature of less than 45 degrees centigrade and with cleaning time less than 30 seconds.

Lead Forming of LED Lamp

1. Lead forming must be conducted before soldering.
2. Any physical stress applied to resin through leads due to P.C.B. warp, cutting, or bending leads might cause the disconnection of circuit inside resin. Please assure no excessive stress to the lamp all the time.
3. For axial type of LED lamp, please make sure that leads are held firmly during forming, and should avoid forming leads on the base or resin as the turning-point of fulcrum.

Soldering of LED Lamp

For manual soldering: not more than 3 seconds @260, +50C, Under 30W.

For wave soldering: not more than 5 seconds @260, +50C.

For reflow soldering: not more than 5 seconds @245, +50C, after preheating from 70 to 800C, with in 30 seconds.

Note:

- (1) The bottom base of resin should be at least 1.6mm above soldering surface.
- (2) Avoid any stress applied to leads while they are heated. It should take at least 3 minutes for the LED lamp to return to normal temperature after soldering operation.
- (3) Do not allow warping the mounted PCB after soldering.

Soldering of LED Displays

Soldering Bath: not more than 5 seconds @260°C. The bottom ends of plastic reflector should be at least 3mm above the solder surface.

Soldering Iron: not more than 3 seconds @300° under 30 W.

Physical Stress Precaution

The plastic reflectors (typically ABS) for LED devices are not heat resistant. Therefore, never apply physical stress onto the devices at high temperature. **Electric Current Shock Precaution**

In order to prevent electric current shock, a current-limiting resistor should always be externally installed in series with each LED die, or dot, or segment. An improper current

shock may cause burn-out, abnormal brightness decay, and/or burn-off of bonding wires, and LED dice.

Packaging of LED Lamps

1. The standard package of our LED lamps for most standard type is 1,000 pieces per poly-bag as the inner packing. Depending on size of lamp, bags are packed in carton for protection during delivery.
2. Special packaging arrangements are available prior to delivery.
3. For Tape & Reel LED Lamps, please refer to the detailed package specification sheet.

Packaging of LED Displays

Most of AOP's LED displays (except Clock/Frequency/Panel Displays) are packed in anti-static IC tubes and double packaging in cartons for transportation protection.

Clock/Frequency Panel Displays are packed in polyfoam compartment and cartons for transportation protection. Special packaging arrangements are available prior to delivery.