



LIGITEK

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1W Power Light LED

LGLV-311E

DATA SHEET

DOC. NO : QW0905-LGLV-311E

REV. : A

DATE : 27 - Feb - 2009



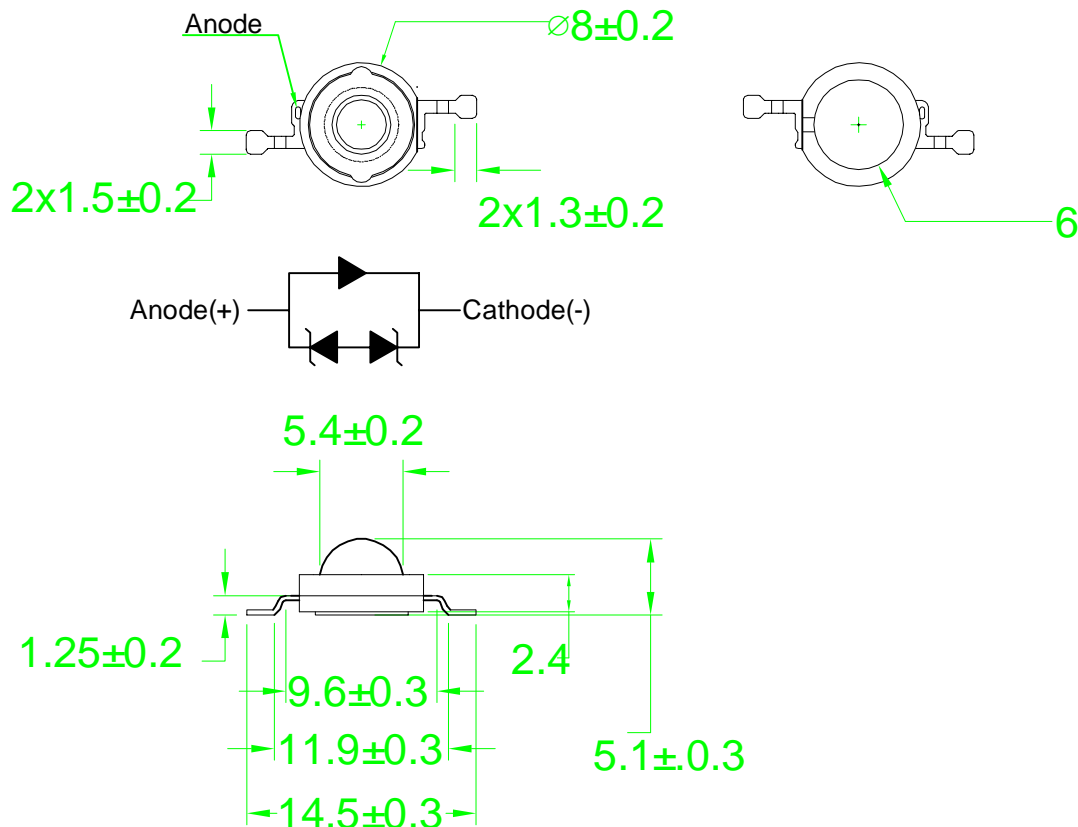
Features

- *. High Flux per LED
- *. Very long operating life(up to 100k hours).
- *. Available in White.
- *. More Energy Efficient than Incandescent and most Halogen lamps.
- *. Low voltage DC operated..
- *. Cool beam, safe to the touch.
- *. Instant light(less than 100 ns).
- *. Fully dimmable.
- *. No UV.
- *. Superior ESD protection..
- *. Soldering methods: hand Soldering.

Typical Applications

- *. Reading Light (car,bus,aircraft)
- *. Portable(flashlight,bicycle).
- *. LCD Backlights / Light Guides.
- *. Automotive Exterior (Stop-Tail-Tum,CHMSL,Mirror Side Repeat).
- *. Commercial and Residential Architectural lighting.
- *. Mini-accent / Uplighters / Downlighters / Orientation lighting
- *. Fiber Optic Alternative / Decorative / Entertainment lighting.
- *. Security / Garden lighting.
- *. Cove / Undershef / Task lighting.
- *. Traffic signaling / Beacons / Rail crossing and Wayside lighting.
- *. Decorative.
- *. Sign and channel Letter.

Dimension



- Note:1. All dimension are in millimeter.
 2. The anode side of the device is denoted by a hole in the lead frame.
 3. The slug has polarity as anode.
 4. It is strongly recommended to apply on electrically isolated heat conducting film between the slug and contact surfaces.
 5. Drawings are not to scale.
 6. All dimensions without tolerances are for reference only.



Absolute Maximum Ratings at Ta=25

| Parameter | Symbol | Ratings | UNIT |
|--|--------|------------|---------|
| | | Warm White | |
| DC Forward Current | IF | 350 | mA |
| Power Dissipation | PD | 1.4 | W |
| Peak pulse current Duty 1/10@10KHz | IFP | 500 | mA |
| LED junction Temperature | Tj | 125 | |
| Reverse Current(VR=5V) | Ir | 100 | μ A |
| ESD Sensitivity | VB | ±4000 | V |
| Storage Temperature | Tstg | -40 ~ +120 | |
| Operating Temperature | Topr | -40 ~ +100 | |
| Manual Soldering Time at 260°C(Max) | Tsol | 5 | seconds |

NOTE:

1. Proper current derating must be observed to maintain temperature below the maximum.
2. LEDs are not designed to be driven in reverse bias.

Luminous Flux Characteristics at 350mA (Ratings At 25 Ambient)

| Radiation Pattern | PART NO | Emission Color | Luminous Flux @350mA(lm) | | | Units |
|-------------------|-----------|----------------|--------------------------|------|------|-------|
| | | | Min. | Typ. | Max. | |
| Lambertian | LGLV-311E | Warm White | 39.8 | 55 | ---- | lm |

Note :

1. White emitters are built with InGaN.
2. Flux and power is measured with an accuracy of ±10%



. Forward Voltage Characteristics at 350mA

(Ratings At 25 Ambient)

| Radiation Pattern | PART NO | Emission Color | Vf | | | Units |
|-------------------|-----------|----------------|------|------|------|-------|
| | | | Min. | Typ. | Max. | |
| Lambertian | LGLV-311E | Warm White | 3.0 | 3.6 | 4.0 | V |

Note : Forward Voltage is measured with an accuracy of ±0.1V

. Color Temperature Characteristics at 350mA

(Ratings At 25 Ambient)

| Radiation Pattern | PART NO | Emission Color | CCT | | | Units |
|-------------------|-----------|----------------|------|------|------|-------|
| | | | Min. | Typ. | Max. | |
| Lambertian | LGLV-311E | Warm White | 2670 | ---- | 3800 | K |

Note : CCT±5% tester tolerance.

. Temperature Coefficient Of Forward Voltage&Thermal Resistance Junction To Board Characteristics at 350mA

(Ratings At 25 Ambient)

| Radiation Pattern | PART NO | Emission Color | $\Delta Vf/\Delta T$ | | Rth,j-B | |
|-------------------|-----------|----------------|----------------------|-------|---------|-------|
| | | | Typ. | Units | Typ. | Units |
| Lambertian | LGLV-311E | Warm White | -2 | mV/°C | 18 | °C/W |

. Emission Angle Characteristics at 350mA

(Ratings At 25 Ambient)

| PART NO | Emission Color | Lambertian | Units |
|-----------|----------------|------------|---------|
| LGLV-311E | Warm White | 130 | Degrees |

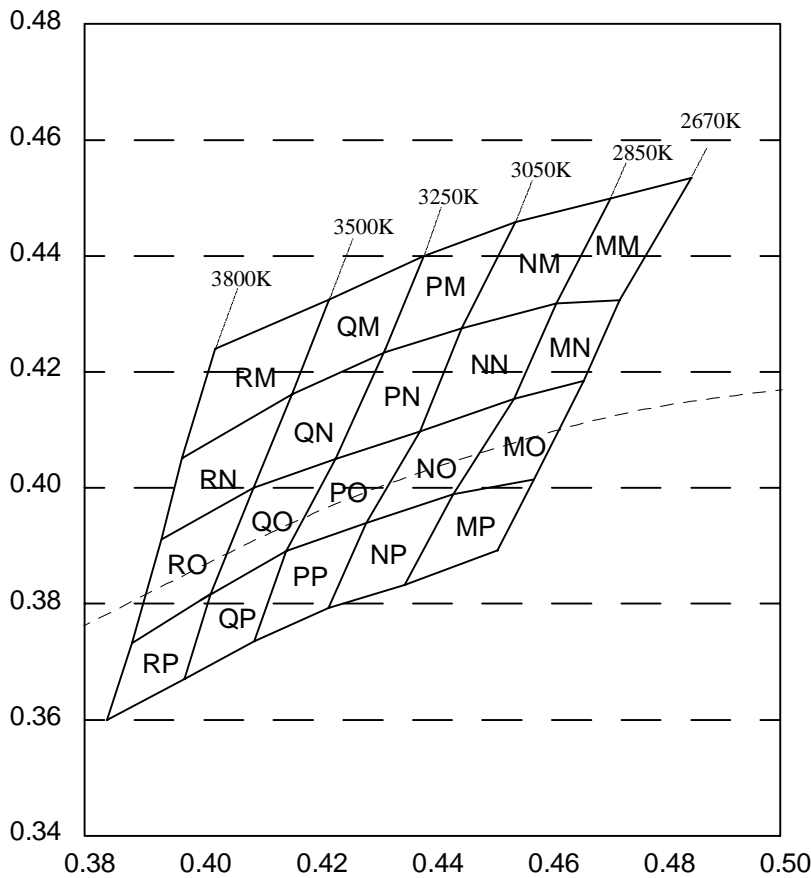


Brightness Code For High Power LED

| Group | Luminous flux(lm) | |
|-------|-------------------|------|
| | Min | Max |
| F22 | 39.8 | 51.7 |
| F23 | 51.7 | 67.2 |
| F24 | 67.2 | 87.4 |

Note : Flux is measured with an accuracy of $\pm 10\%$

White Binning Structure Graphical Representation





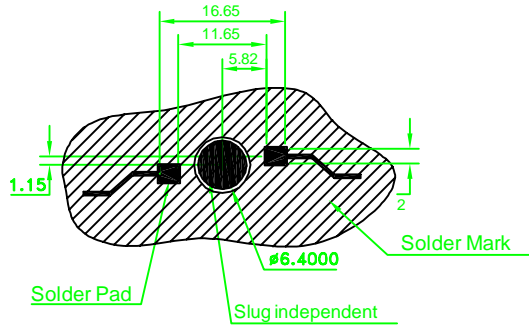
Color Bins
White Bin Structure
20 color bins, CCT range 3800K to 2670K

| Bin Code | x | y | Typ. CCT (K) |
|----------|-------|-------|--------------|
| MO | 0.453 | 0.416 | 2760 |
| | 0.444 | 0.399 | |
| | 0.458 | 0.403 | |
| | 0.467 | 0.420 | |
| MN | 0.461 | 0.433 | 2760 |
| | 0.453 | 0.416 | |
| | 0.467 | 0.420 | |
| | 0.477 | 0.437 | |
| MP | 0.458 | 0.403 | 2760 |
| | 0.444 | 0.399 | |
| | 0.436 | 0.384 | |
| | 0.449 | 0.388 | |
| MM | 0.471 | 0.451 | 2760 |
| | 0.461 | 0.433 | |
| | 0.477 | 0.437 | |
| | 0.487 | 0.454 | |
| NO | 0.438 | 0.412 | 2950 |
| | 0.429 | 0.394 | |
| | 0.444 | 0.399 | |
| | 0.453 | 0.416 | |
| NN | 0.446 | 0.429 | 2950 |
| | 0.438 | 0.412 | |
| | 0.453 | 0.416 | |
| | 0.461 | 0.433 | |
| NP | 0.444 | 0.399 | 2950 |
| | 0.429 | 0.394 | |
| | 0.422 | 0.379 | |
| | 0.436 | 0.384 | |
| NM | 0.454 | 0.446 | 2950 |
| | 0.446 | 0.429 | |
| | 0.461 | 0.433 | |
| | 0.471 | 0.451 | |
| PO | 0.424 | 0.406 | 3150 |
| | 0.416 | 0.389 | |
| | 0.429 | 0.394 | |
| | 0.438 | 0.412 | |
| PN | 0.431 | 0.423 | 3150 |
| | 0.424 | 0.407 | |
| | 0.438 | 0.412 | |
| | 0.446 | 0.429 | |
| PP | 0.429 | 0.394 | 3150 |
| | 0.416 | 0.389 | |
| | 0.410 | 0.374 | |
| | 0.422 | 0.379 | |
| PM | 0.438 | 0.440 | 3150 |
| | 0.431 | 0.423 | |
| | 0.446 | 0.429 | |
| | 0.454 | 0.446 | |
| QO | 0.409 | 0.400 | 3375 |
| | 0.402 | 0.382 | |
| | 0.416 | 0.389 | |
| | 0.424 | 0.406 | |
| QN | 0.415 | 0.416 | 3375 |
| | 0.409 | 0.400 | |
| | 0.424 | 0.407 | |
| | 0.431 | 0.423 | |
| QP | 0.416 | 0.389 | 3375 |
| | 0.402 | 0.382 | |
| | 0.397 | 0.367 | |
| | 0.410 | 0.374 | |
| QM | 0.421 | 0.433 | 3375 |
| | 0.415 | 0.416 | |
| | 0.431 | 0.423 | |
| | 0.438 | 0.440 | |
| RO | 0.392 | 0.391 | 3650 |
| | 0.387 | 0.374 | |
| | 0.402 | 0.382 | |
| | 0.409 | 0.400 | |
| RN | 0.415 | 0.416 | 3650 |
| | 0.409 | 0.400 | |
| | 0.392 | 0.391 | |
| | 0.396 | 0.404 | |
| RP | 0.387 | 0.374 | 3650 |
| | 0.383 | 0.360 | |
| | 0.397 | 0.367 | |
| | 0.402 | 0.382 | |
| RM | 0.421 | 0.433 | 3650 |
| | 0.415 | 0.416 | |
| | 0.396 | 0.404 | |
| | 0.402 | 0.423 | |

NOTE: Tolerance on each color bin(x,y)is±0.01



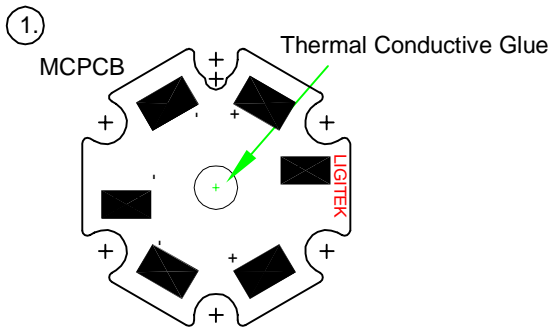
Recommended Solder Pad Design



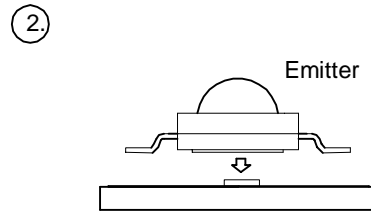
NOTE:

1. All dimensions are in mm.
2. The drawings are not to scale.
3. Solder pad can't be connected to slug.

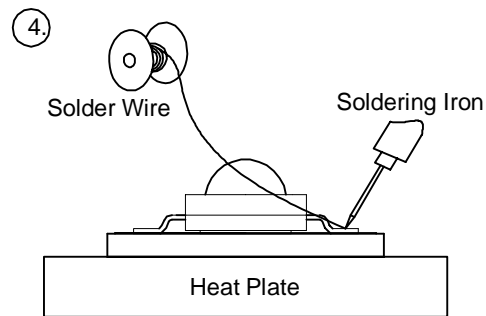
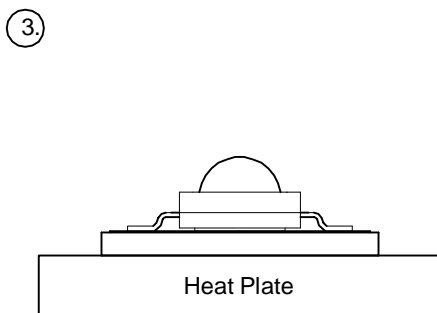
Manual Hand Soldering



Place Thermal Comductive Glue on the MCPCB.



Place Emitter on the MCPCB.



Use Soldering Iron to solder the leads of Emitter within 5 seconds.

- * For prototype builds or small series production runs it possible to place and solder the emitters by hand.
- * Solder tip temperature : 230°C max for Lead Solder and 260°C max for Lead-Free Solder.
- * Avoiding damage to the emitter or to the MCPCB dielectric layer.
Damage to the epoxy layer can cause a short circuit in the array.
- * Do not let the solder contact from solder pad to back-side of MCPCB.
This one will cause a short circuit and damage emitter.



Fig.1 Forward current vs. Forward Voltage

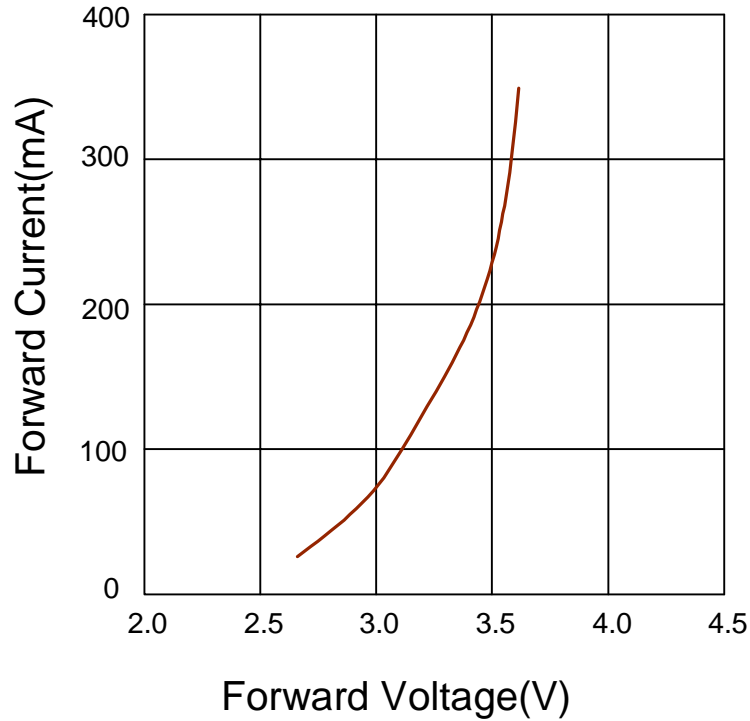


Fig.2 Operating current vs. Ambient Temperature

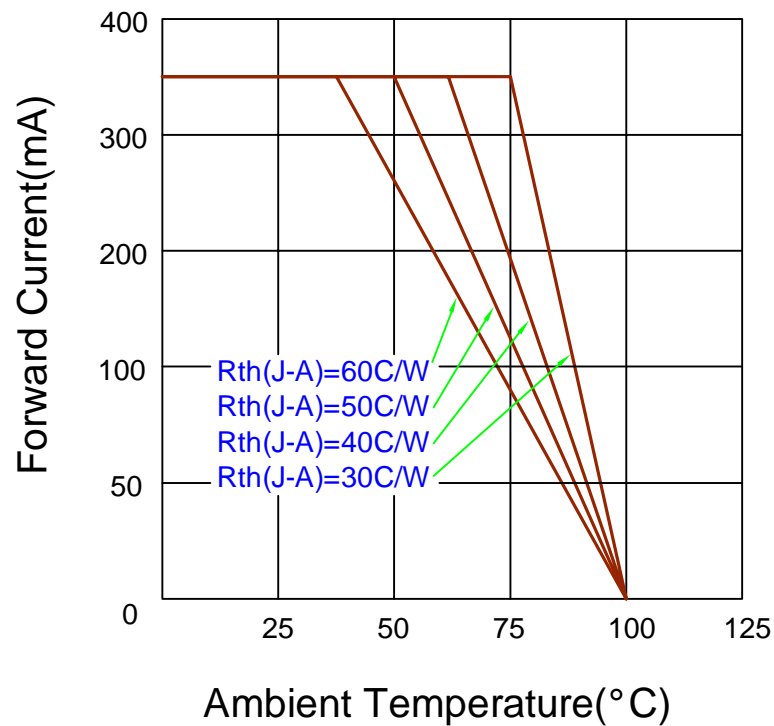




Fig.3 Forward current vs. Luminous Flux

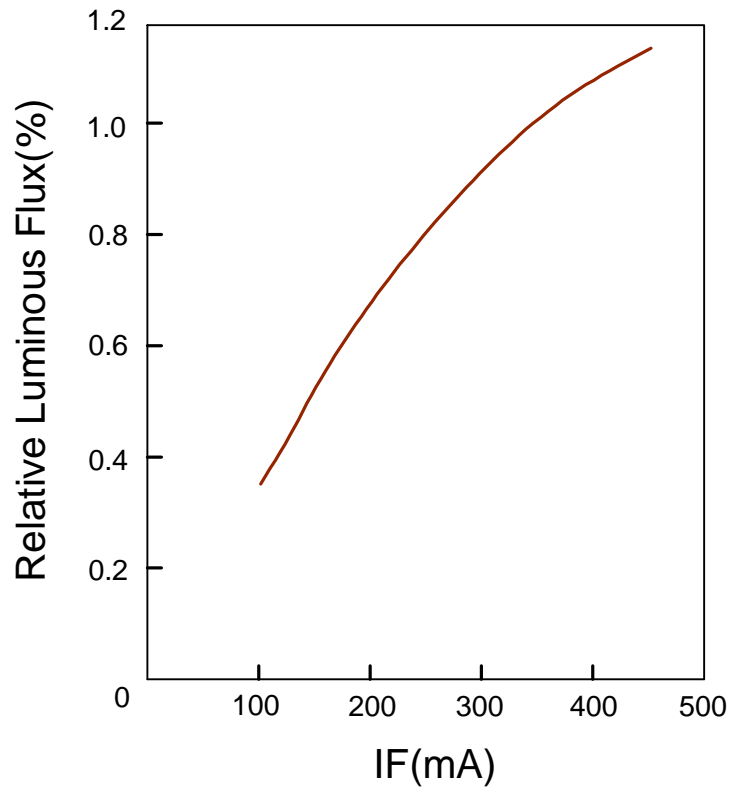


Fig.4 Junction Temperature vs. Forward Voltage

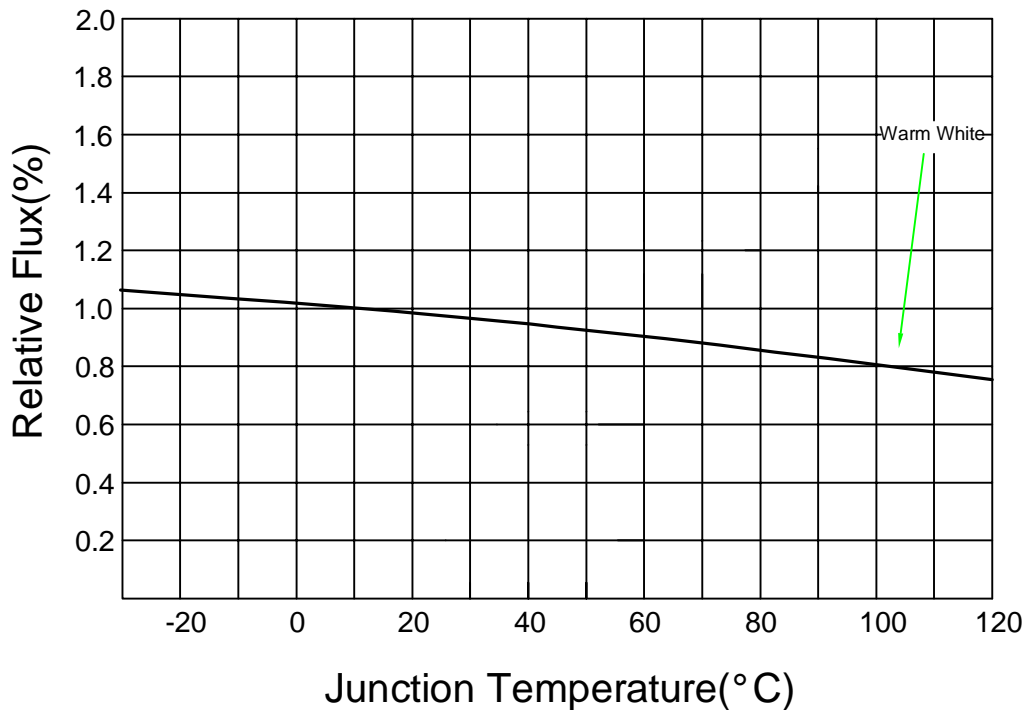




Fig.5 Luminous Spectrum(Ta=25)

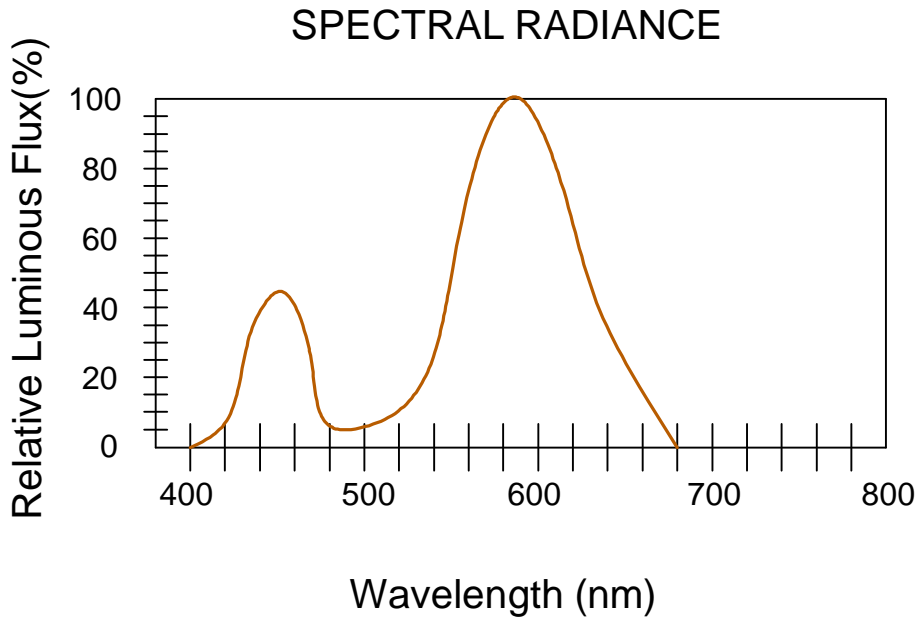
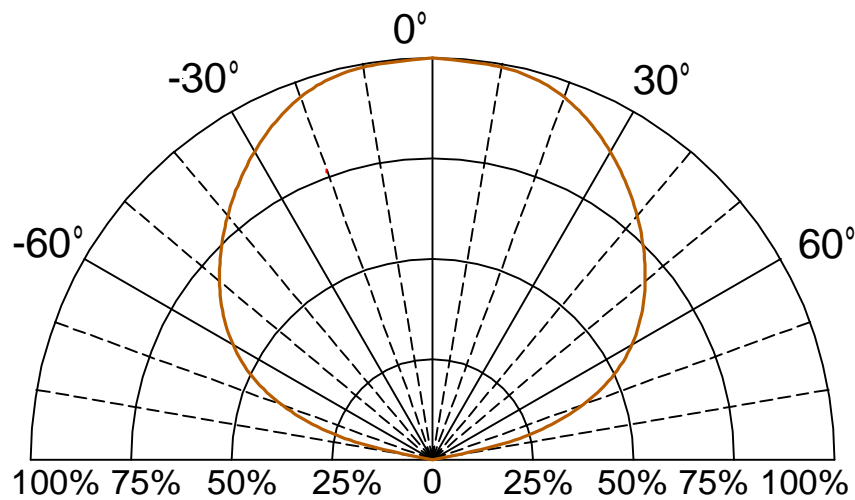


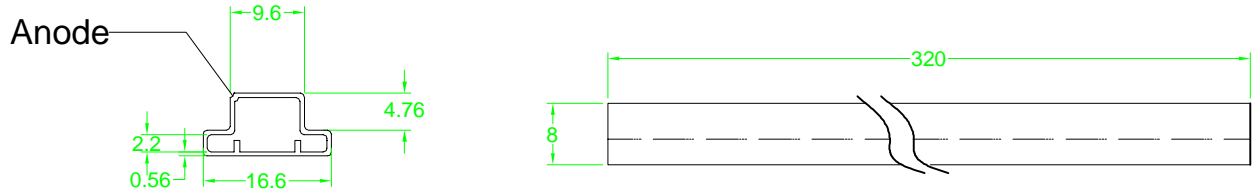
Fig.6 Directivity Radiation





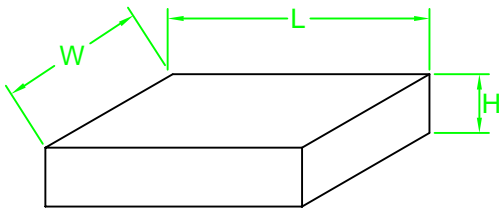
PACKING SPECIFICATION

1. 35PCS / TUBE



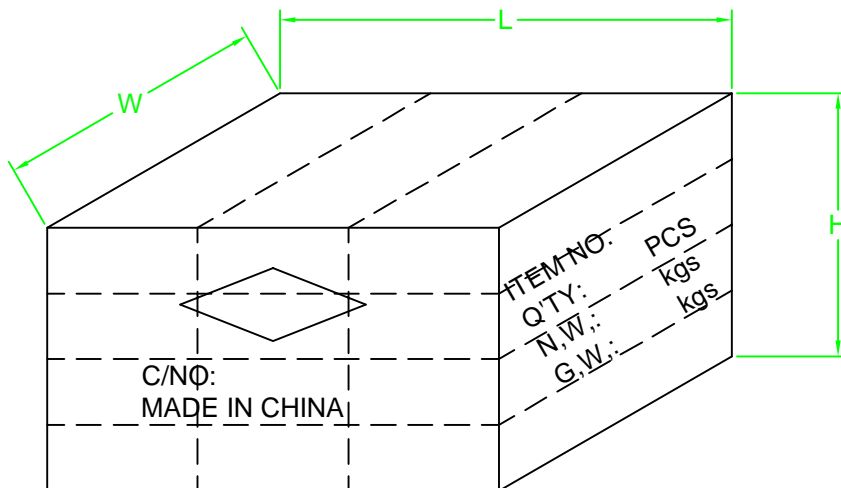
2. 30 TUBES / INNER BOX (10*3)

SIZE : L X W X H 33.5cm X 19cm X 7.5cm



3. 12 INNER BOXES / CARTON

SIZE : L X W X H 58.5cm X 34cm X 34cm





Reliability Test

| Item | Description | Stress Condition | Test Duration |
|------|---------------------------------|---|---------------|
| RTOL | Room Temperature Operation Life | 25°C, Max. If | 1000 hours |
| WHT | Wet High Temperature | 85°C/85%RH | 1000 hours |
| TC | Temperature Cycling | -40/+110°C, 30min dwell,<5min trans. | 200 cycles |
| TS | Thermal Shock | -40/+110°C, 20min dwell,<20min trans. | 200 cycles |
| HTSL | High Temperature Storage Life | 120°C | 1000 hours |
| LTSL | Low Temperature Storage Life | -40°C | 1000 hours |
| SHR | Solder Heat Resistance | 260±5°C, 5secs | |
| MS | Mechanical Shock | 1500G,0.5msec pulse, 5 shocks each 6 axis | |
| ND | Natural Drop | On concrete from 1.2m, 3xtimes | |
| RV | Random Vibration | 6G RMS from 10 to 2KHz, 10mins/axis | |
| VVF | Variable Vibration Frequency | 10-2000-10Hz, 20G 1 min, 1.5mm, 3timesx/axis | |

Note :

Failure criteria:

Electrical failures

V_F shife $\geq 10\%$

$I_R < 50\mu A @ V_r = 5v$

Ligitek output Degradation

$\%I_v$ shift $\geq 30\% @ 1000hrs$ or 200cycle

Visual failures

Broken or damaged package or lead

Dimension out of tolerance