



LIGITEK ELECTRONICS CO.,LTD.
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LED SMD



Lead-Free Parts

LG-192HRFS/DGL-SR-CT-A01

DATA SHEET

DOC. NO : QW0905-LG-192HRFS/DGL-SR-CT-A01

REV. : A

DATE : 02 - Jan. - 2013



Features:

1. Package in 8.0mm carrier tape on 7" diameter reel.
2. Compatible with automatic placement equipment.
3. Compatible with reflow solder process.

Descriptions:

1. The LG-192 SMD Taping is much smaller than lead frame type components, thus enable smaller board size, higher packing density, reduced storage space and finally smaller equipment to be obtained.
2. Besides, lightweight makes them ideal for miniature applications. etc.

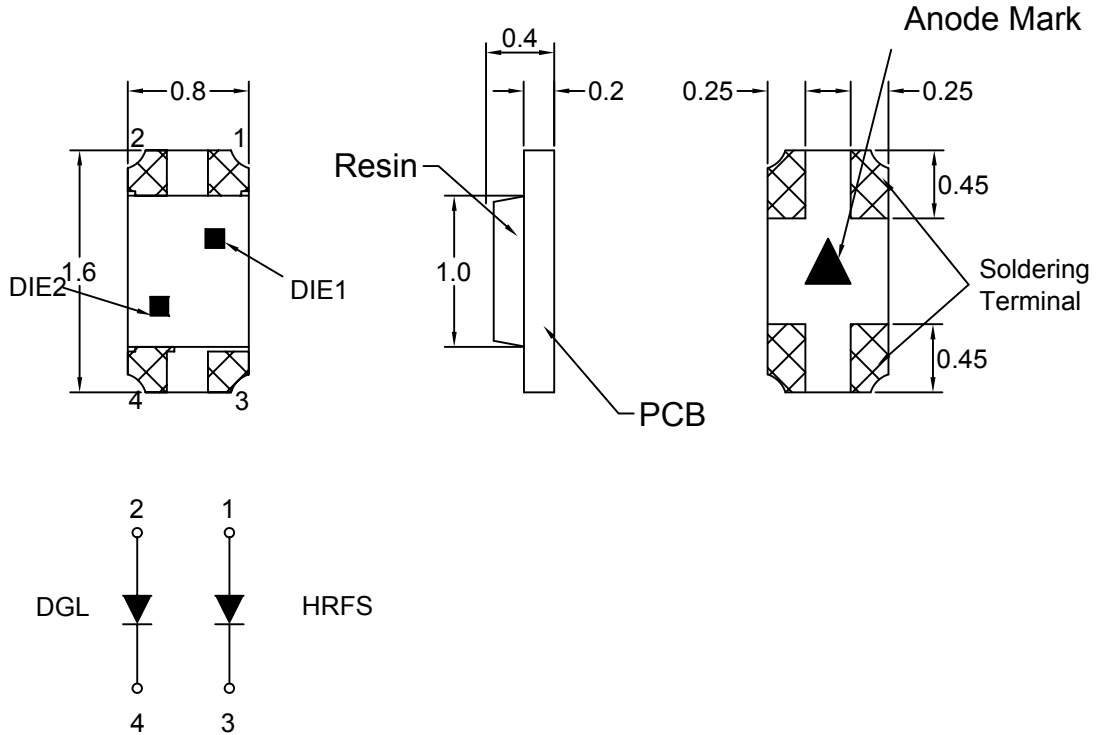
Applications:

1. Automotive : backlighting in dashboard and switch.
2. Telecommunication : indicator and backlighting in telephone and fax.
3. Flat backlight for LCD, switch and symbol
4. General use.

Device Selection Guide:

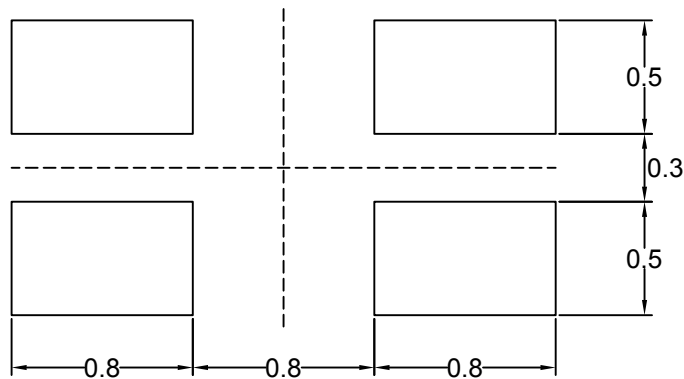
| PART NO | Chip Code | MATERIAL | COLOR | |
|--------------------------|-----------|----------|---------|-------------|
| | | | Emitted | Lens |
| LG-192HRFS/DGL-SR-CT-A01 | HRFS | AlGaInP | Red | Water Clear |
| | DGL | InGaN | Green | |

Package Dimensions



Note : 1.All dimension are in millimeter tolerance is ± 0.1 mm unless otherwise noted.
2.Specifications are subject to change without notice.

Recommended Soldering Pad Dimensions



Note : The tolerances unless mentioned is ± 0.1 mm, Angle ± 0.5 . Unit=mm.

Absolute Maximum Ratings at Ta=25°C

| Parameter | Symbol | Ratings | | UNIT |
|-----------------------------------------|--------|------------|-----|------|
| | | HRFS | DGL | |
| Power Dissipation | PD | 78 | 80 | mW |
| Peak Forward Current Duty 1/10@10KHz | IFP | 60 | 100 | mA |
| Forward Current | IF | 30 | 20 | mA |
| Reverse Current @5V | Ir | 10 | 50 | μA |
| Electrostatic Discharge | ESD | 2000 | 500 | V |
| Operating Temperature | Topr | -20 ~ +80 | | °C |
| Storage Temperature | Tstg | -30 ~ +100 | | °C |

Typical Electrical & Optical Characteristics (Ta=25°C)

| Items | Symbol | Min. | Typ. | Max. | UNIT | CONDITION | |
|--------------------------|--------|------|------|------|------|-----------|---------|
| Luminous Intensity | Iv | HRFS | 200 | ---- | 500 | mcd | IF=20mA |
| | | DGL | 125 | ---- | 320 | | |
| Dominant Wavelength | λD | HRFS | 621 | ---- | 630 | nm | IF=20mA |
| | | DGL | 501 | ---- | 510 | | |
| Spectral Line Half-Width | Δλ | HRFS | ---- | 20 | ---- | nm | IF=20mA |
| | | DGL | ---- | 32 | ---- | | |
| Forward Voltage | VF | HRFS | 1.7 | ---- | 2.6 | V | IF=20mA |
| | | DGL | 2.8 | ---- | 3.6 | | |
| Viewing Angle | 2θ 1/2 | HRFS | ---- | 120 | ---- | deg | IF=20mA |
| | | DGL | ---- | 120 | ---- | | |

Note : 1.The forward voltage data did not including ±0.1V testing tolerance.
2. The luminous intensity data did not including ±15% testing tolerance.

Luminous Intensity Classification

| BIN CODE | | Iv(mcd) at 20mA | |
|----------|---|-----------------|------|
| | | Min. | Max. |
| HRFS | S | 200 | 320 |
| | T | 320 | 500 |

| BIN CODE | | Iv(mcd) at 20mA | |
|----------|---|-----------------|------|
| | | Min. | Max. |
| DGL | R | 125 | 200 |
| | S | 200 | 320 |

Dominant Wavelength Classification

| BIN CODE | | λ_D (nm) at 20mA | |
|----------|----|--------------------------|------|
| | | Min. | Max. |
| HRFS | 28 | 621 | 624 |
| | 29 | 624 | 627 |
| | 30 | 627 | 630 |

| BIN CODE | | λ_D (nm) at 20mA | |
|----------|----|--------------------------|------|
| | | Min. | Max. |
| DGL | 1I | 501 | 504 |
| | 1J | 504 | 507 |
| | 1K | 507 | 510 |

Typical Electro-Optical Characteristics Curve

HRFS CHIP

Fig.1 Forward current vs. Forward Voltage

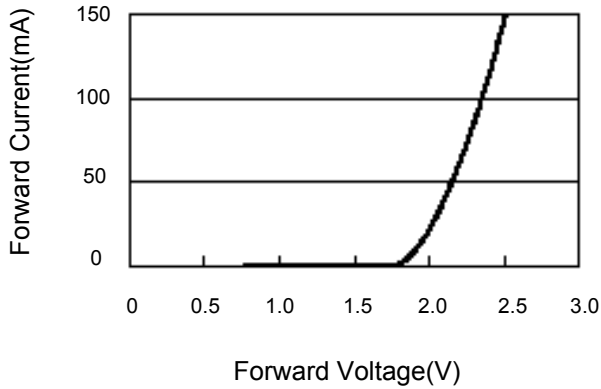


Fig.2 Luminous Intensity vs. Forward Current

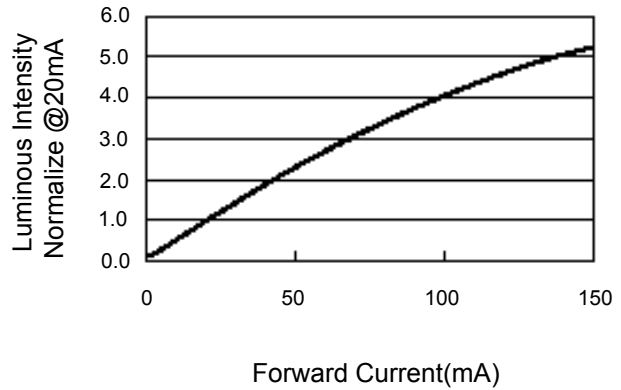


Fig.3 Forward Voltage vs. Temperature

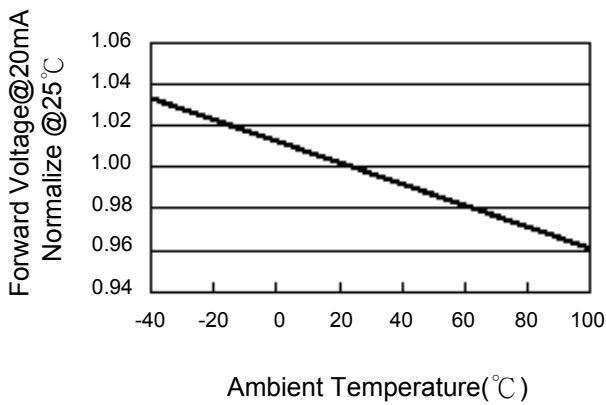


Fig.4 Luminous Intensity vs. Temperature

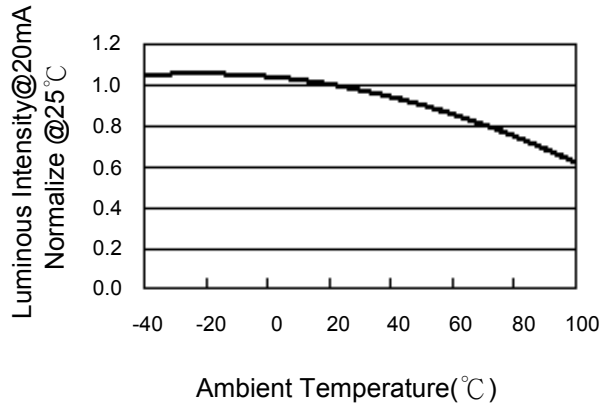


Fig.5 Relative Intensity vs. Wavelength

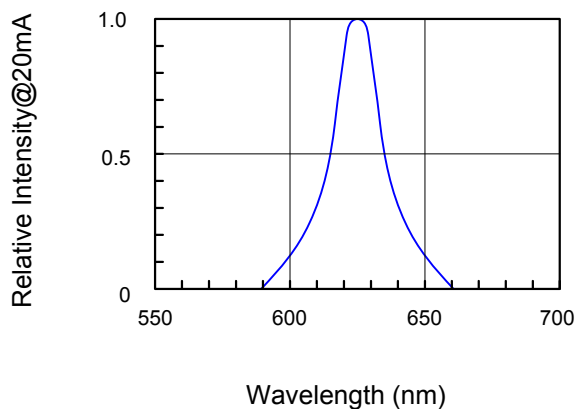
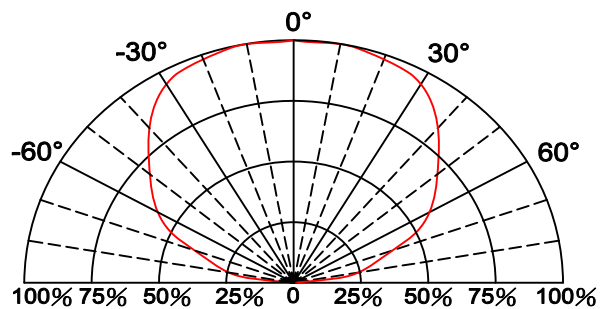


Fig.6 Directive Radiation



Typical Electro-Optical Characteristics Curve

DGL CHIP

Fig.1 Forward current vs. Forward Voltage

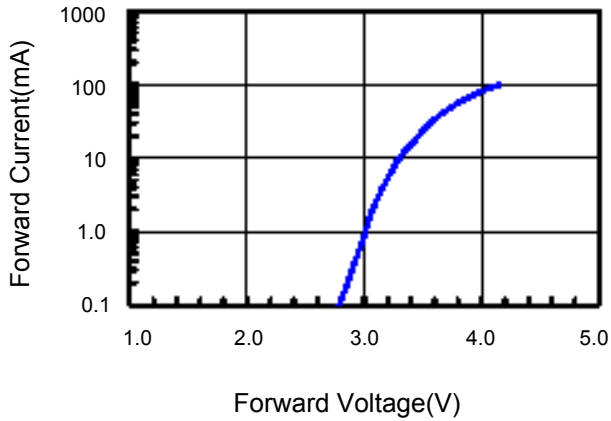


Fig.2 Relative Intensity vs. Forward Current

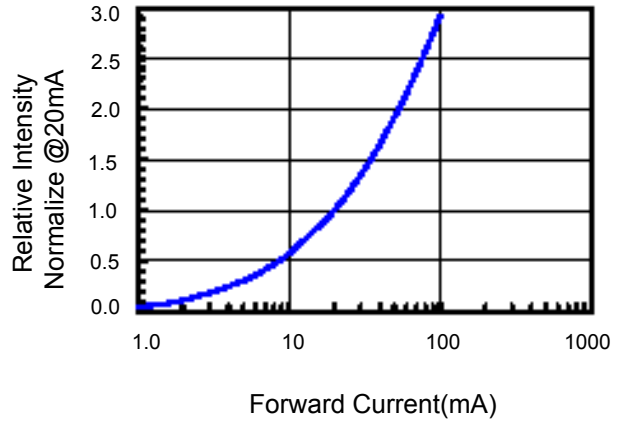


Fig.3 Forward Voltage vs. Temperature

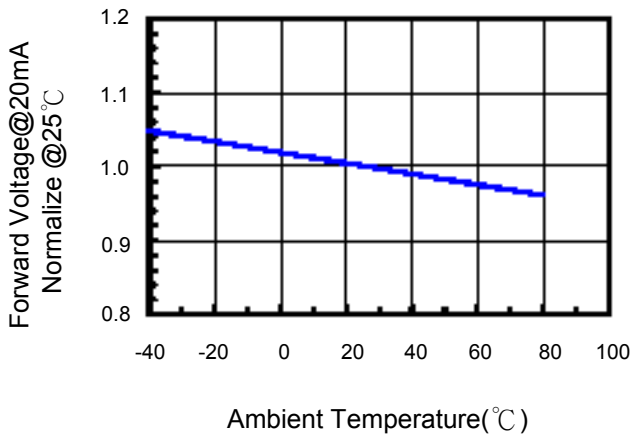


Fig.4 Relative Intensity vs. Temperature

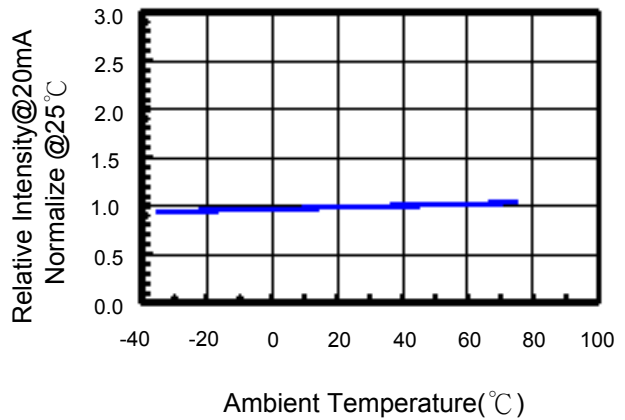


Fig.5 Relative Intensity vs. Wavelength

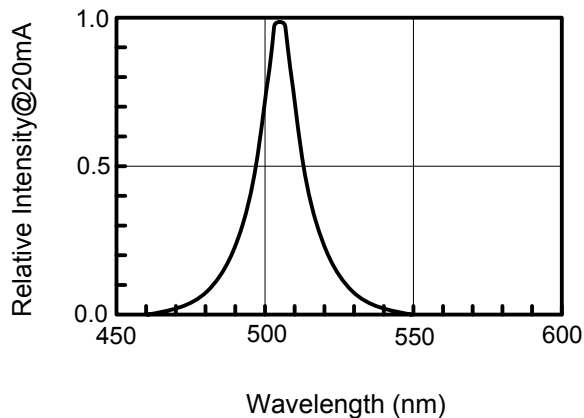
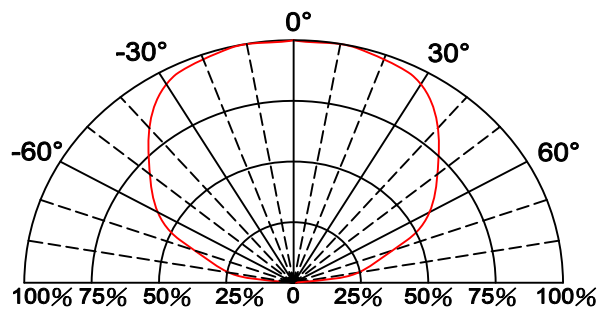
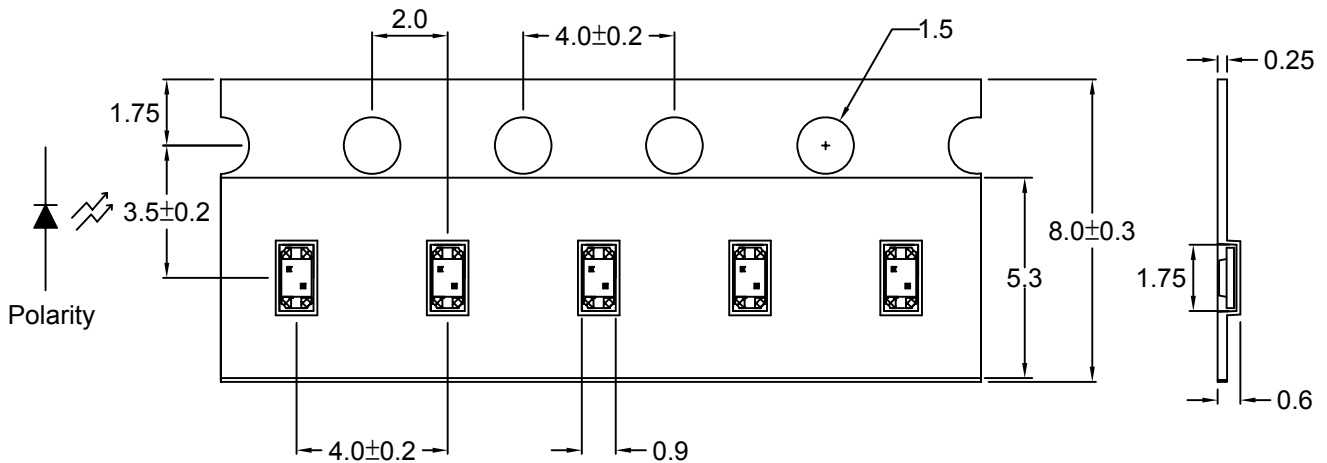


Fig.6 Directive Radiation

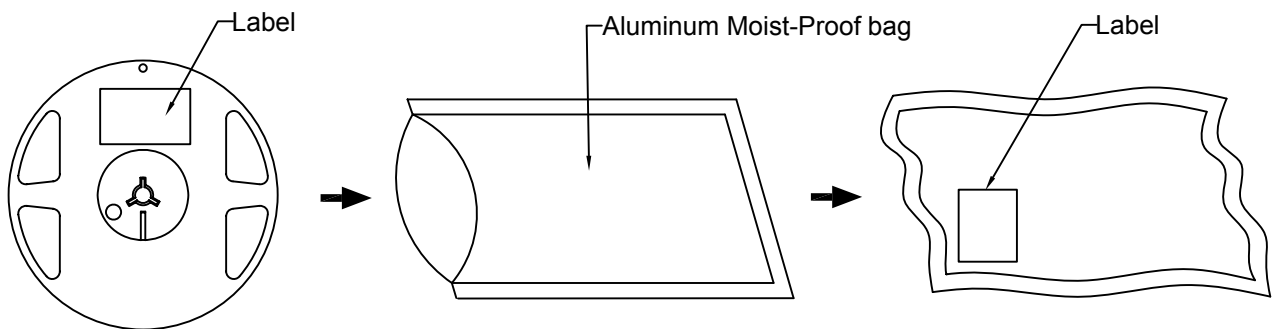


Carrier Type Dimensions










Note : The tolerances unless mentioned is ± 0.1 mm, Angle ± 0.5 . Unit=mm.

• Packing Specifications



| Part No. | Description | Quantity/Reel |
|--------------------------|---------------------|---------------|
| LG-192HRFS/DGL-SR-CT-A01 | 8.0mm tape, 7" reel | 4000 devices |

Label Explanation

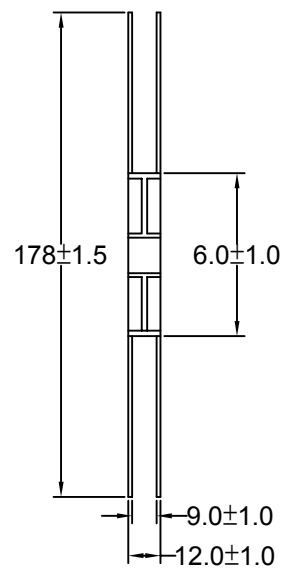
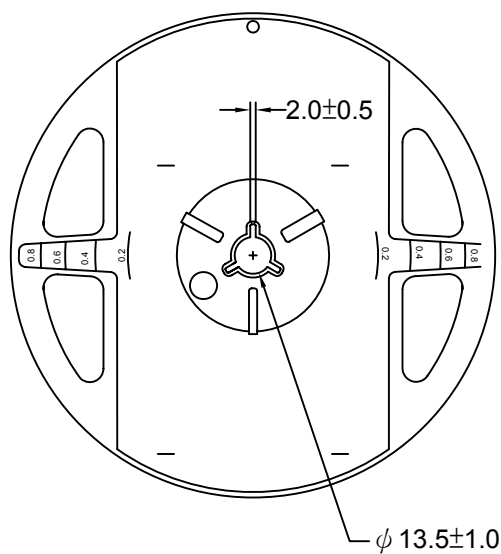
| | | |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
|  | LIGITEK ELECTRONICS CO., LTD. | |
| |  | |
| | PART : | LG-192HRFS/DGL-SR-CT-A01 |
| |  | |
| | LOT : | GS1-080168 |
|  | |  |
| QTY(PCS): | 4000 | VF:1.7-2.6 |
|  | |  |
| BIN/HUE : | S/28-Q/1J | VF:2.8-3.6 |

BIN : Luminous Intensity

HUE : Dominant Wavelength

VF: Forward Voltage

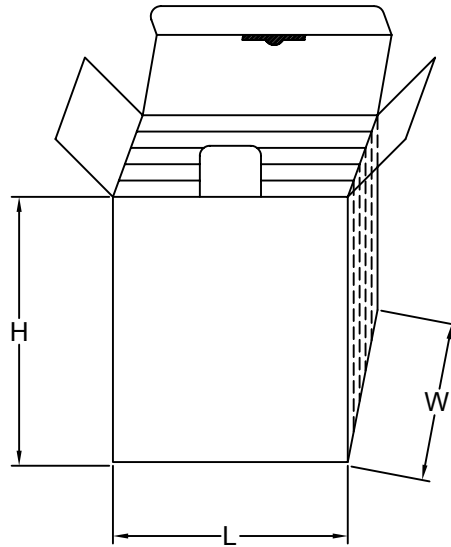
Reel Dimensions



Box Explanation

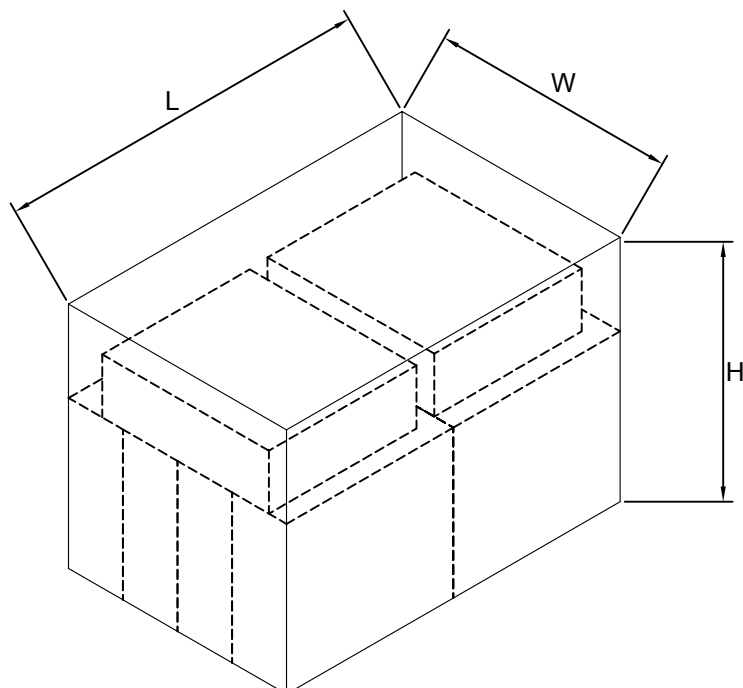
1. 5 BAG / INNER BOX

2. INNER BOX SIZE : L X W X H 23cm X 8.5cm x 26cm



3. 10 INNER BOXES / CARTON

4. CARTON SIZE : L X W X H 58cm X 34cm x 35cm

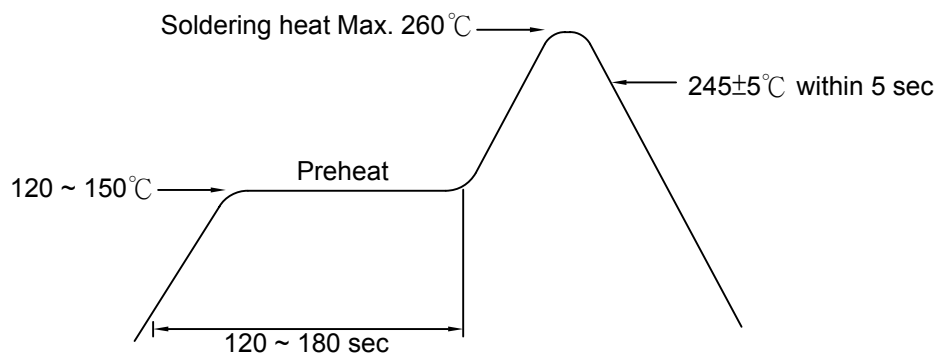


Recommended Soldering Conditions

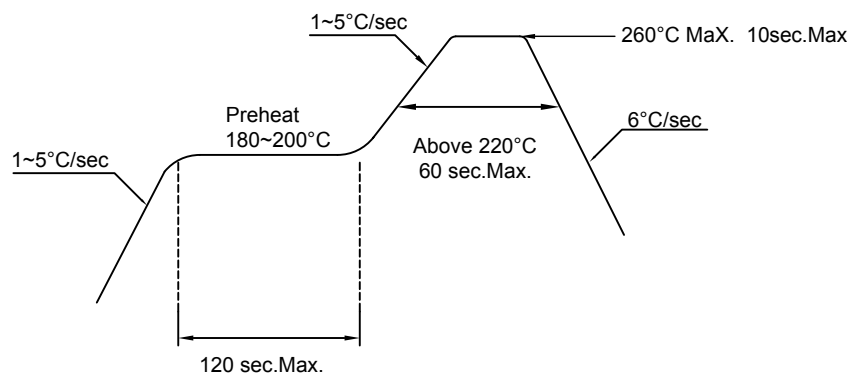
1. Hand Solder

Basic spec is $\leq 280^{\circ}\text{C}$ 3 sec one time only.

2. Wave Solder



3. PB-Free Reflow Solder



Note:

- 1.Reflow soldering should not be done more than two times.
- 2.When soldering,do not put stress on the LEDs during heating.
- 3.After soldering,do not warp the circuit board.

Precautions For Use:**Storage time:**

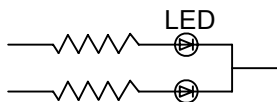
- 1.The operation of Temperatures and RH are : $5^{\circ}\text{C}\sim 35^{\circ}\text{C}$,RH60%.
- 2.Once the package is opened, the products should be used within a week.
Otherwise, they should be kept in a damp proof box with descanting agent.
Considering the tape life, we suggest our customers to use our products within a year(from production date).
- 3.If opened more than one week in an atmosphere $5^{\circ}\text{C} \sim 35^{\circ}\text{C}$,RH60%, they should be treated at $60^{\circ}\text{C}\pm 5^{\circ}\text{C}$ for 15hrs.

Drive Method:

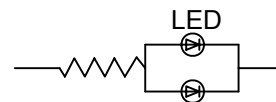
LED is a current operated device, and therefore, requirer some kind of current limiting incorporated into the driver circuit. This current limiting typically takes the form of a current limiting resistor placed in series with the LED.

Consider worst case voltage variations than could occur across the current limiting resistor. The forwr d current should not be allowed to change by more than 40% of its desired value.

Circuit model A



Circuit model B



(A) Recommended circuit.

(B) The difference of brightness between LED could be found due to the VF-IF characteristics of LED.

Cleaning:

Use alcohol-based cleaning solvents such as isopropyl alcohol to clean the LED.

ESD(Electrostatic Discharge):

Static Electricity or power surge will damage the LED. Use of a conductive wrist band or anti-electrosatic glove is recommended when handing these LED. All devices, equipment and machinery must be properly grounded.

Reliability Test:

| Classification | Test Item | Test Condition | Reference Standard |
|--------------------|---------------------------------------------|----------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|
| Endurance Test | Operating Life Test | 1.Ta=Under Room Temperature As Per Data Sheet Maximum Rating. 2.If=20mA 3.t=1000 hrs (-24hrs, +72hrs) | MIL-STD-750D: 1026 MIL-STD-883D: 1005 JIS C 7021: B-1 |
| | High Temperature Storage Test | 1.Ta=105°C±5°C 2.t=1000 hrs (-24hrs, +72hrs) | MIL-STD-883D:1008 JIS C 7021: B-10 |
| | Low Temperature Storage Test | 1.Ta=-40°C±5°C 2.t=1000 hrs (-24hrs, +72hrs) | JIS C 7021: B-12 |
| | High Temperature High Humidity Storage Test | 1.Ta=65°C±5°C 2.RH=90%~95% 3.t=1000hrs; 02hrs | MIL-STD-202F:103B JIS C 7021: B-11 |
| Environmental Test | Thermal Shock Test | 1.Ta=105°C±5°C & -40°C±5°C (10min) (10min) 2.total 10 cycles | MIL-STD-202F: 107D MIL-STD-750D: 1051 MIL-STD-883D: 1011 |
| | Solderability Test | 1.T.Sol=235°C±5°C 2.Immersion time 2±0.5sec 3.Coverage ≥ 95% of the dipped surface | MIL-STD-202F: 208D MIL-STD-750D: 2026 MIL-STD-883D: 2003 IEC 68 Part 2-20 JIS C 7021: A-2 |
| | Temperature Cycling | 1.105°C ~ 25°C ~ -55°C ~ 25°C 30mins 5mins 30mins 5mins 2.10 Cyeles | MIL-STD-202F: 107D MIL-STD-750D: 1051 MIL-STD-883D: 1010 JIS C 7021: A-4 |
| | IR Reflow | 1.T=260°C Max. 10sec.Max. 2. 6 Min | MIL-STD-750D:2031.2 J-STD-020 |