

MULTI-COLOR SPECIFICATION FOR BLUE LED

MC-LB346HIBK

- Size(mm): 3.2×3.9×6.1
- RoHS Compliant
- High reliability
- High anti-oxidation
- Good UV resistance performance
- Pb-free Reflow soldering Application

1. SPECIFICATIONS

1.1 Absolute Maximum Ratings (Ta=25°C)

Item	Symbol	Absolute Maximum Rating	Unit
Forward Current	I _F	30	mA
Pulse Forward Current	I _{FP}	100	mA
Reverse Voltage	V _R	5	V
Power dissipation	P _D	99.6	mW
Operating Temperature	T _{opr}	-30 to +85	°C
Storage Temperature	T _{stg}	-40 to +100	°C

* I_{FP} conditions with pulse width ≤10ms and duty cycle ≤10%.

1.2 Optical and Electrical Characteristics (Ta=25°C)

Item	Symbol	Condition	Typ.	Min.	Max.	Unit
Forward Voltage	V _F	I _F =20mA	3.2	-	3.45	V
Reverse Current	I _R	V _R =5V		-	1	μA
Wavelength	λ _D	I _F =20mA	469	460	475	nm
				3nm per bin		
Luminous Intensity	I _v	I _F =20mA	600	450	800	mcd

* Each Bin: I_v(Max):I_v(Min) ≤1.2.

* Tolerance of measurements of the Forward Voltage is ±0.05V.

* Tolerance of measurements of the Luminous Intensity is ±5%.

* Tolerance of measurements of the Wavelength is ±0.5nm.

2. RELIABILITY

2.1 Test Items and Results

Test Item	Standard Test Method	Test Conditions	Test Duration	Units Failed/Tested
Resistance to Soldering Heat	JEITA ED-4701 300 302	Tsld=260±5°C,10sec,1dip 3mm from the base of the lens		0/100
Temperature Cycle		-40°C~130°C 30min. 30min. 60min./cycle	100cycles	0/100
Temperature Cycle	JEITA ED-4701 100 105	-40°C~25°C~100°C~25°C 30min. 5min. 30min. 5min	100cycles	0/100
Moisture Resistance (Cyclic)	JEITA ED-4701 200 203	25°C~65°C~-10°C 90%RH, 24hr per cycle	10cycles	0/100
Terminal Bending Strength	JEITA ED-4701 400 401	5N,0°~90°~0°bend, 2bending cycles	No noticeable damage	0/50
Terminal Pull Strength	JEITA ED-4701 400 401	10N,10±1sec	No noticeable damage	0/50
High Temperature Storage	JEITA ED-4701 200 201	Ta=100°C	1000hrs	0/100
Temperature Humidity Storage		Ta=85°C,RH=85%	1000hrs	0/100
Low Temperature Storage	JEITA ED-4701 200 202	Ta=-40°C	1000hrs	0/100
Room Temperature Operating Life		Ta=25°C, I _F =30mA	1000hrs	0/10
Temperature Humidity Operating Life		85°C,RH=85%, I _F =30mA	500hrs	0/10
Low Temperature Operating Life		Ta=-30°C, I _F =30mA	1000hrs	0/10

NOTES:

Measurements are performed after allowing the LEDs to return to room temperature.

2.2 Criteria for Judging Damage

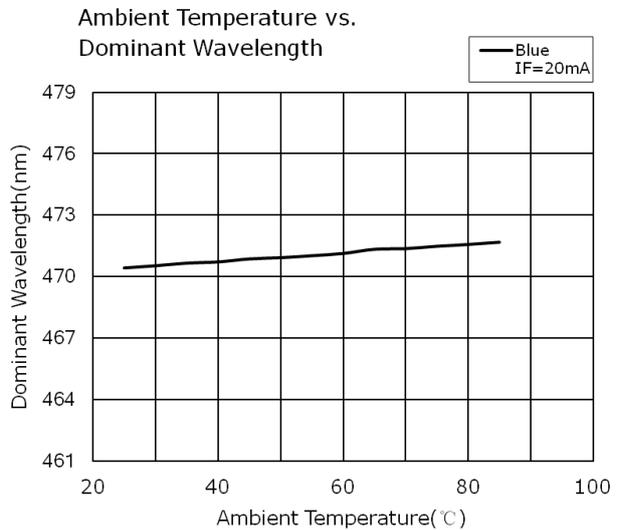
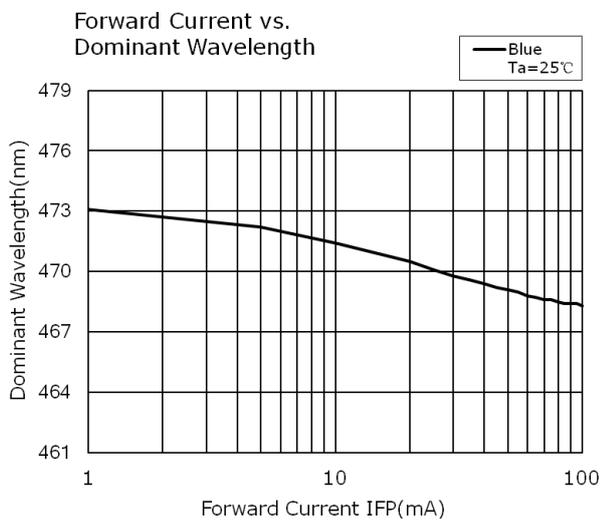
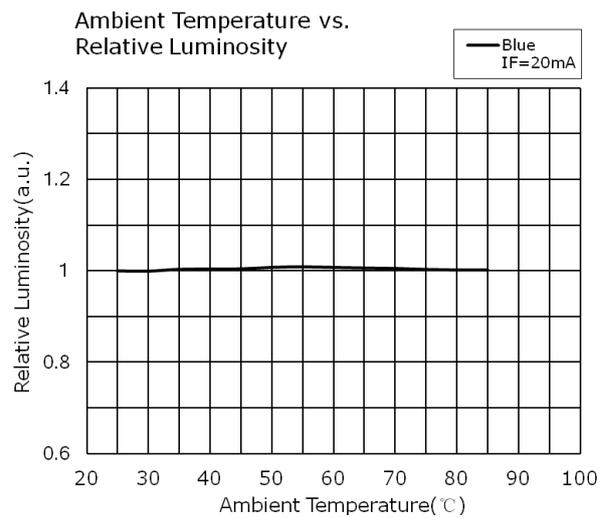
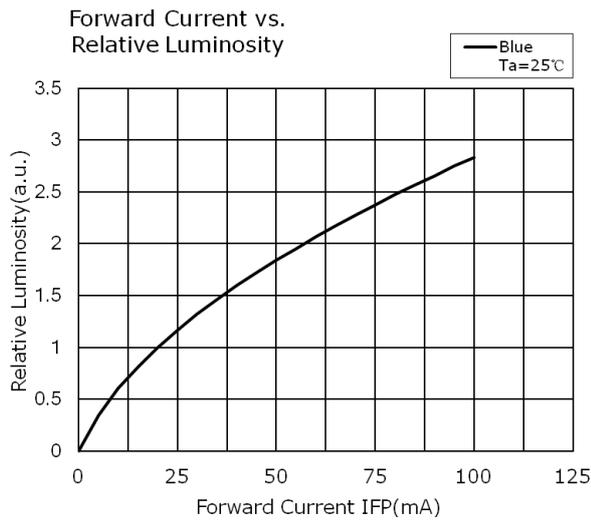
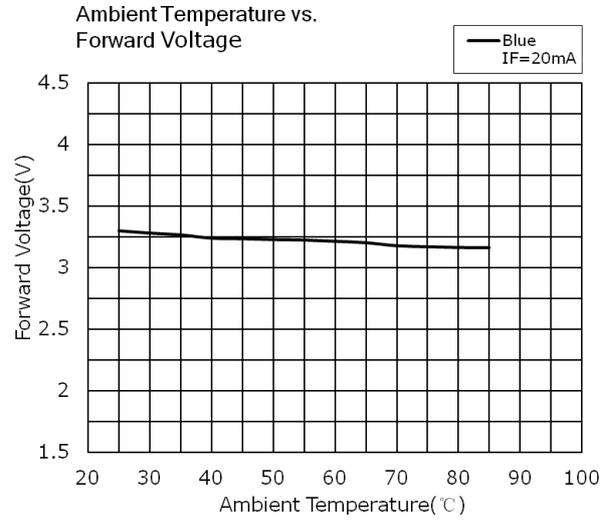
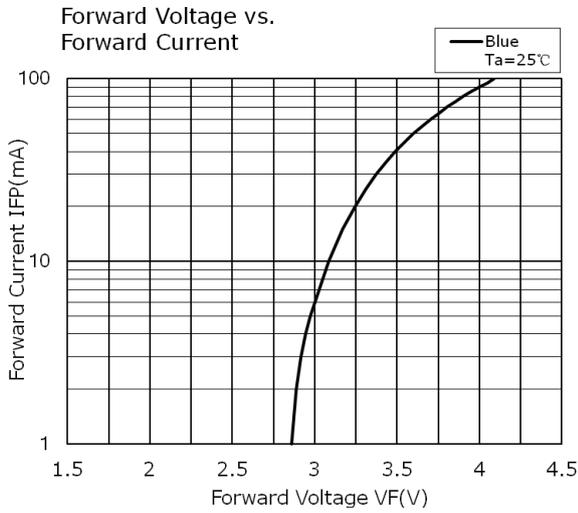
Item	Symbol	Test Conditions	Criteria for Judgement	
			Min.	Max.
Forward Voltage	V _F	I _F =20mA	--	U.S.L.×1.1
Reverse Current	I _R	V _R =5V	--	U.S.L.×2.0
Luminous Intensity	I _V	I _F =20mA	L.S.L.×0.9	--

U.S.L.: Upper Standard Level

L.S.L.: Lower Standard Level

3. TYPICAL ELECTRICAL CHARACTERISTICS CURVES

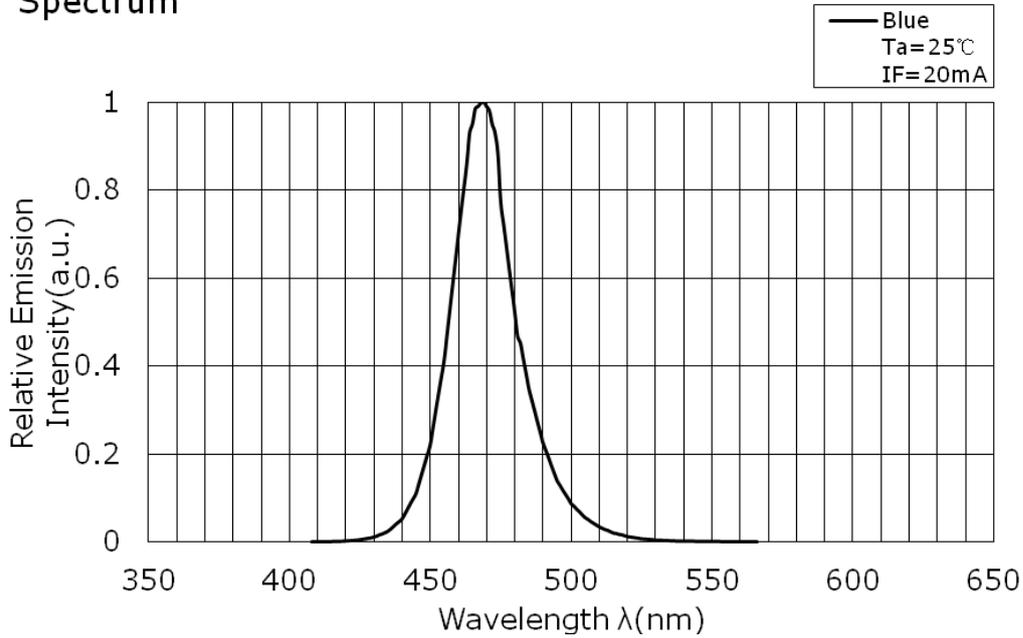
All characteristics shown are for reference only and are not guaranteed.



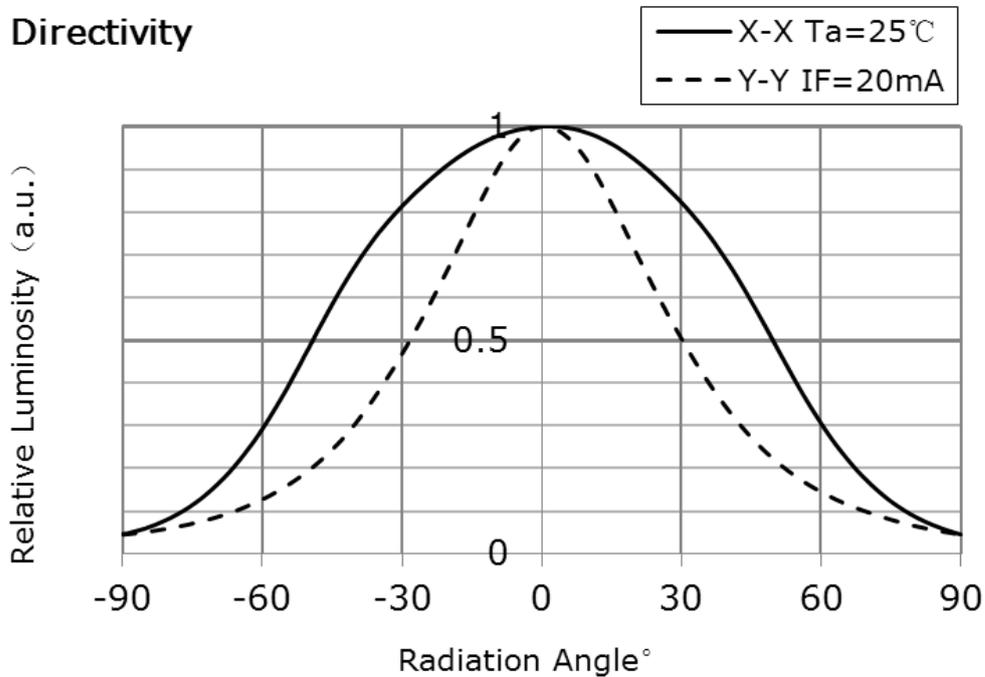
4. TYPICAL OPTICAL CHARACTERISTICS CURVES

All characteristics shown are for reference only and are not guaranteed.

Spectrum



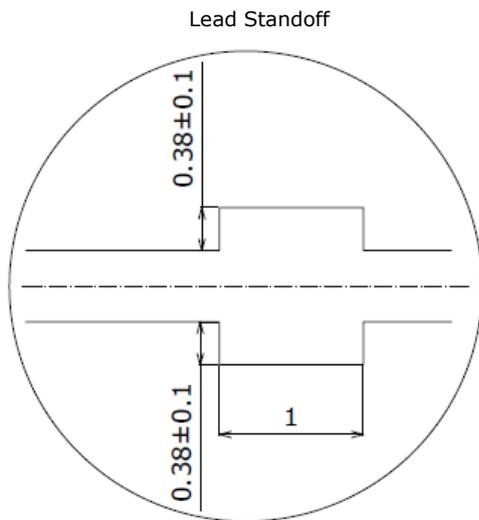
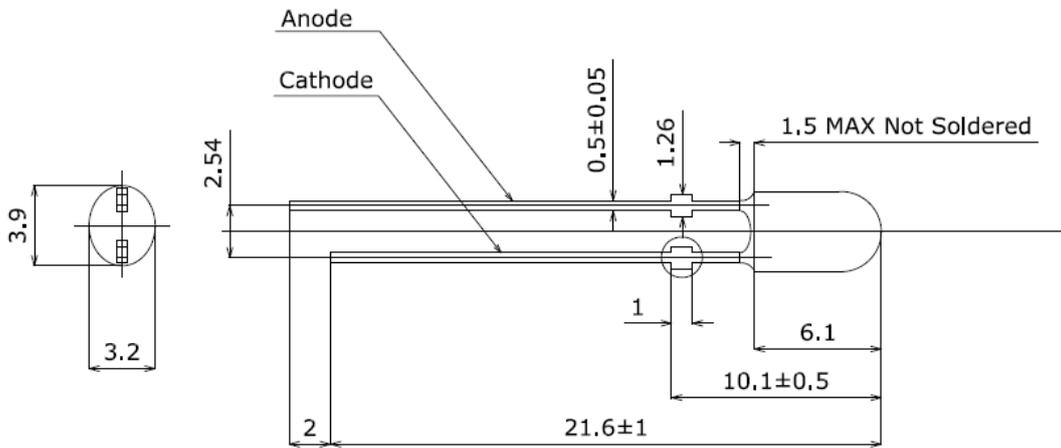
Directivity



5. OUTLINE DIMENSIONS AND MATERIALS

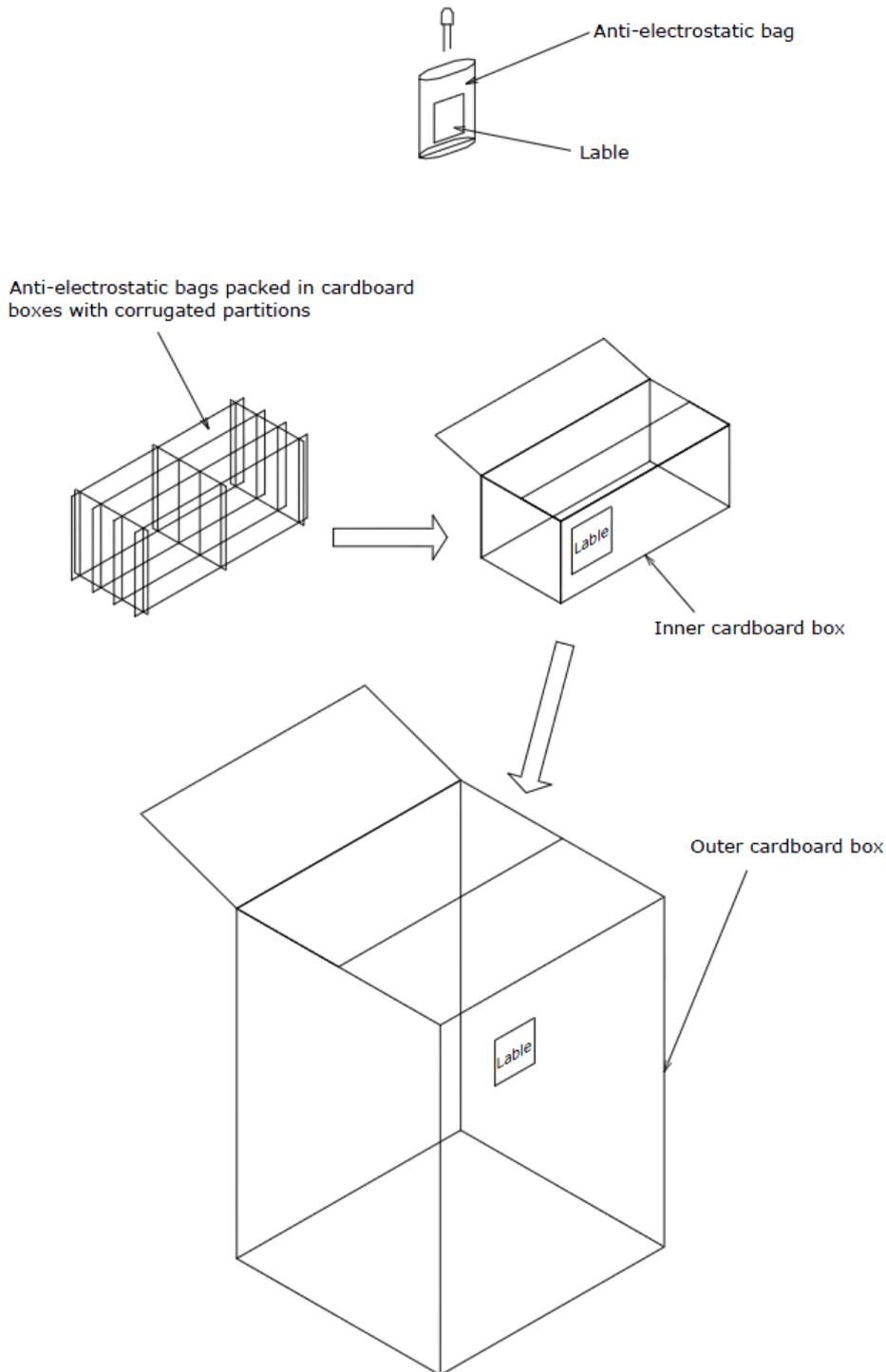
This product complies with RoHS Directive.

(Unit: mm, Tolerance: ± 0.3)



Item	Description
Resin Materials	Epoxy Resin
Lens Color	Blue(with diffuser)
Lead Frame Materials	Ag-plated and lead-free Solder-plated Iron

6. PACKING-BULK



* The Label shows: TYPE, QTY, IV, VF, WLD.

* The Products are places loose in anti-static bags.

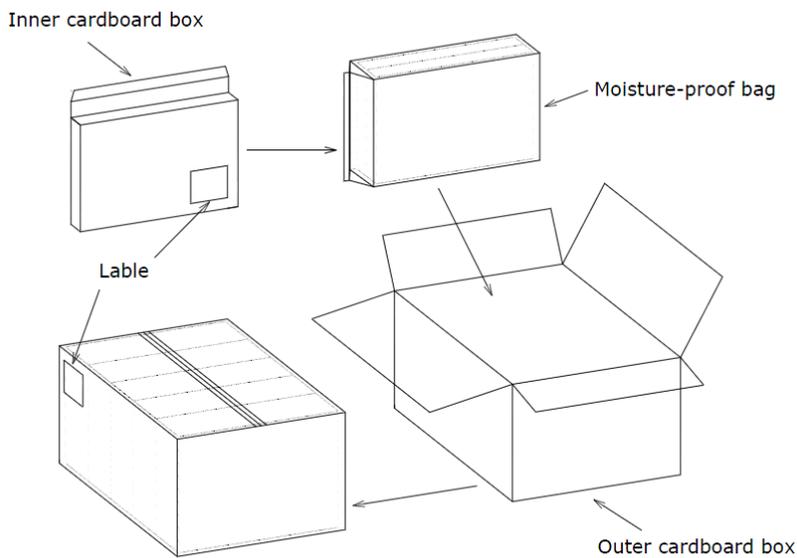
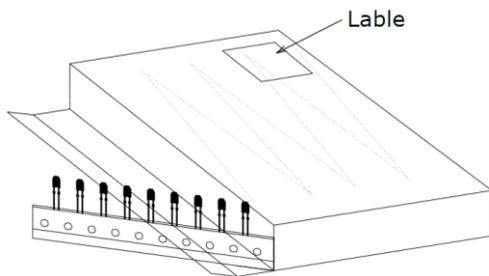
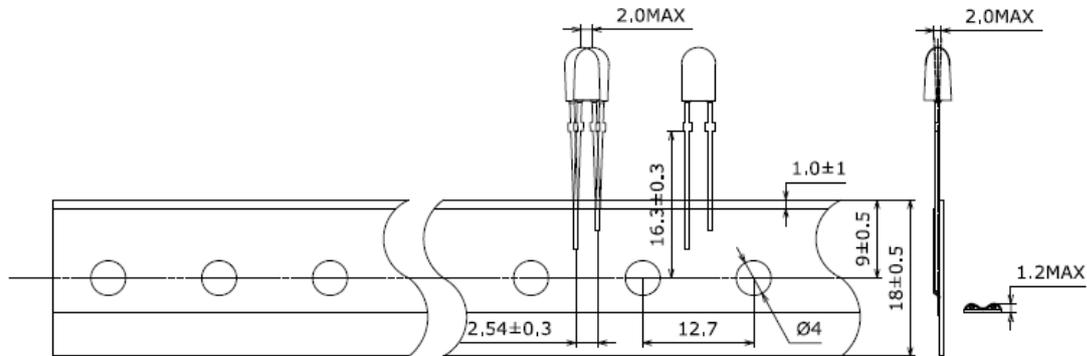
The anti-static bags are packed in cardboard boxes to prevent damage during shipment.

* Do not drop the cardboard box or expose it to shock. If the box falls, the products could be damaged.

* The cardboard box is not water-resistant. Do not expose to water.

7. PACKING-(TAPING OUTLINE)

(Unit: mm)



* The Label shows: TYPE, QTY, IV, VF, WLD.

* The Products are ammo packing in Inner cardboard box to prevent damage during shipment.

The Inner cardboard boxes are packing in Moisture-proof bag.

* Do not drop the cardboard box or expose it to shock. If the box falls, the products could be damaged.

* The cardboard box is not water-resistant. Do not expose to water.

8. SOLDERING

●Recommended Hand Soldering Condition

Temperature	350°C Max
Soldering Time	3sec Max
Position	No closer than 2mm from the base of the lens

●Recommended Dip Soldering Condition

Pre-Heat	120°C Max
Pre-Heat Time	60sec Max
Solder Bath Temperature	260°C Max
Dipping Time	10sec Max
Dipping Position	No closer than 2mm from the base of the lens

- Solder the LED no closer than 2mm from the base of the lens.
Soldering beyond the base of the tie bar is recommended.
- Dip soldering/hand soldering must not be performed more than once.
- Care should be taken to avoid cooling at a rapid rate and ensure the peak temperature ramps down slowly.
- When soldering, do not apply stress to the lead frame while the LED is hot.
- When using a pick and place machine, choose an appropriate nozzle for this product.
- After soldering, the LED position must not be corrected.
- After soldering, NO mechanical shock or vibration should be applied to LED lens until the LEDs cool down to room temperature.
- In order to avoid damage on the lens during cutting and clinching the leads, it is not recommended to solder the LEDs directly on customer PCB without any gap between the lens and the board.
If it is unavoidable, customer is advised to check whether such soldering will not cause wire breakage or lens damage.
Direct soldering to double-sided PCBs must be avoided due to an increased effect of heat on the lens.
- When it is necessary to clamp the LEDs to prevent soldering failure, it is important to minimize the mechanical stress on the LEDs.
- Cut the LED lead frames at room temperature. Cutting the lead frames at high temperature may cause failure of the LEDs.
- Consider factors such as the dip soldering temperature, hand soldering temperature, etc. when choosing the solder.
- When flux is used, it should be a halogen free flux. Ensure that the manufacturing process is not designed in a manner where the flux will come in contact with the LEDs.

9. LEAD FORMING

- When forming leads, the leads should be bent at a point at least 3mm from the base of the epoxy bulb.
Do not use the base of the lead frame as a fulcrum during lead forming.
- Lead forming should be done before soldering.
- Do not apply any bending stress to the base of the lead. The stress to the base may damage the LED's characteristics or it may break the LEDs.
- When mounting the LEDs onto a printed circuit board. The holes on the circuit board should be exactly aligned with the leads of the LEDs. If the LEDs are mounted with stress at the leads, it causes deterioration of the epoxy resin and this will degrade the LEDs.

10. STORAGE

- The LEDs should be stored at 30°C or less and 60%RH or less after being shipped from Multi-Color and the storage life limits are 3 months. If the LEDs are stored for 3 months or more, they can be stored for a year in a sealed container with a nitrogen atmosphere and moisture absorbent material (silica gel desiccants).
- The lead part may be affected by environments which contain corrosive substances . Please avoid conditions which may cause the LED to corrode, tarnish or discolor. This corrosion or discoloration may cause difficulty during soldering operations. It is recommended that the LEDs be used as soon as possible.
- Please avoid rapid transitions in ambient temperature, especially in high humidity environments where condensation can occur.

11.STATIC ELECTRICITY

- Static electricity or surge voltage damages the LEDs.
It is recommended that a wrist band or an anti-electrostatic glove be used when handling the LEDs.
- All devices equipment and machinery must be properly grounded. It is recommended that precautions be taken against surge voltage to the equipment that mounts the LEDs.