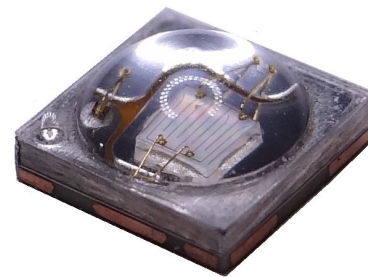


# Specification For UV Series

## HPL-H44LU1C0



### Features

- High Efficacy 3W UV LED
- Dimension : 4.4mm(L)×4.4mm(W)
- All Metal Design Cu Substrate/Al reflector with Quartz Glass Lens
- View Angle 120°
- Low thermal resistance
- The InGaN Chip inside
- Superior ESD protection

### Applications

- UV Printing/UV Curing
- Medical
- Electronics Assembly
- Opto Electronics
- Special Lighting
- Defect Detection

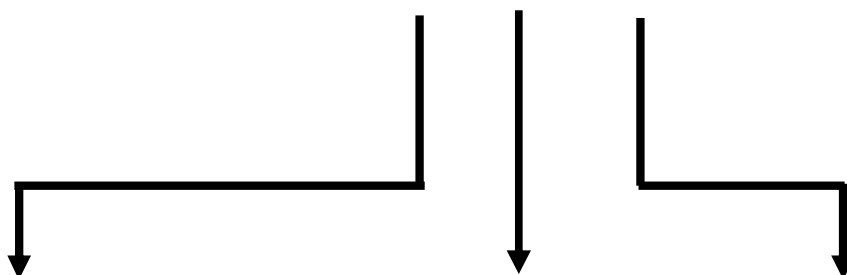
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TEL: +886-2-8262-8886 FAX : +886-2-8262-8885

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General Information

**HPL - H44X<sub>1</sub>X<sub>2</sub>1C0**



**X1: Lens & Assembly Type-**  
L : 120° Lens Emitter only  
F : 120° Lens Emitter on Standard Star

**X2: Color-**  
U: UV390~420nm

**Power-**  
C: 3W

## Part Number Matrix

Type Wavelength	120°Lens	120°Lens & Star
U	HPL-H44LU1C0	HPL-H44FU1C0

## Absolute Maximum Ratings

(T<sub>j</sub>=25°C)

Parameter	Symbol	Rating	Unit	
Power Dissipation	UV390-420nm	P	3	W
Forward Current	I <sub>F</sub>	700		mA
Forward Pulse Current (1/10 Duty Cycle, 400msec Pulse Width)	I <sub>FP</sub>	1000		mA
Thermal Resistance, Junction-Case	R <sub>th, J-C1</sub>	5		°C/W
LED Junction Temperature	T <sub>J</sub>	125		°C
Operating Temperature Range	T <sub>opr</sub>	- 40°C to + 80°C		
Storage Temperature Range	T <sub>stg</sub>	- 40°C to + 120°C		
Soldering Condition	T <sub>sol</sub>	260°C For 5 Seconds		

Note: 1. The thermal resistance value is measured with MCPCB (Star).

## Initial Electrical/Optical Characteristics

- **Forward Voltage** (T<sub>j</sub>=25°C)

Wavelength	Forward Voltage					
	Symbol	MIN.	TYP.	MAX.	Test Condition	Unit
390~420nm	V <sub>F</sub>	3.03	3.8	4.47	I <sub>F</sub> = 700mA	V

**Caution:** The real output is decided by chip capability

- **Radiant Flux**(T<sub>j</sub>=25°C)

Wavelength	Radiant Flux					
	Symbol	MIN.	TYP.	MAX.	Test Condition	Unit
410~420nm	Φ <sub>e</sub>	500	850	-	I <sub>F</sub> = 700mA	mW
400~410nm		500	850	-		
390~400nm		500	850	-		

**Caution:** The real output is decided by chip capability

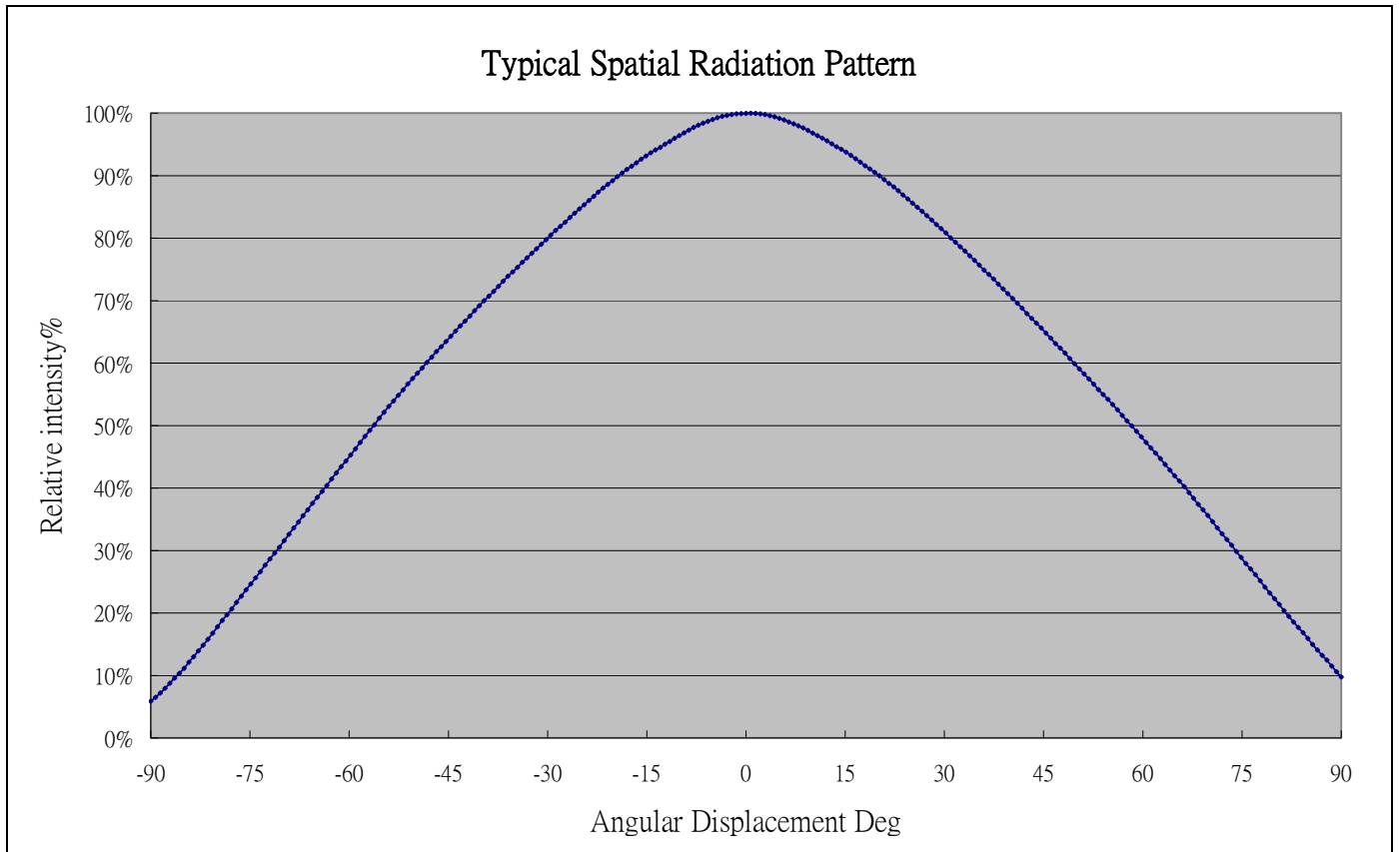
- **Peak wavelength** (T<sub>j</sub>=25°C)

Wavelength	Wavelength					
	Symbol	MIN.	TYP.	MAX.	Test Condition	Unit
390~420nm	λ <sub>p</sub>	390	-	420	I <sub>F</sub> = 700mA	nm

- **Spectra half-width** (T<sub>j</sub>=25°C)

Wavelength	Wavelength					
	Symbol	MIN.	TYP.	MAX.	Test Condition	Unit
390~420nm	Δλ	-	15	-	I <sub>F</sub> = 700mA	nm

● **Typical Radiation Pattern**



**Fig. (120° Lens) Typical Representative Spatial Radiation Pattern**

● Bin Code List for Reference

(T<sub>j</sub>=25°C)

Item	Bin Code	Symbol	Condition	Min.	Max.	Unit
Forward Voltage <sup>1</sup>	H	V <sub>F</sub>	I <sub>F</sub> = 700 [mA]	3.03	3.27	V
	J			3.27	3.51	
	K			3.51	3.75	
	L			3.75	3.99	
	M			3.99	4.23	
	N			4.23	4.47	
Radiant Flux <sup>2</sup>	D	Φ <sub>e</sub>	I <sub>F</sub> = 700 [mA]	350	425	mW
	E			425	500	
	F			500	600	
	G			600	700	
	H			700	800	
	J			800	900	

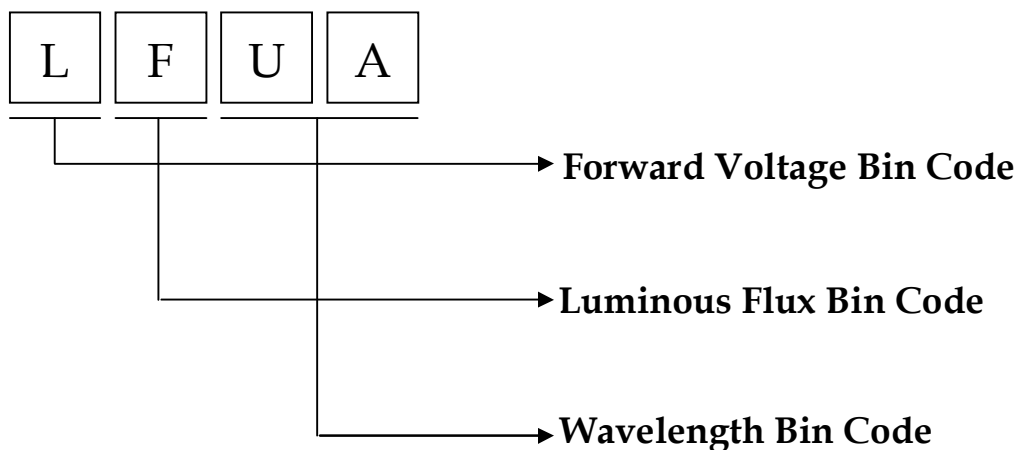
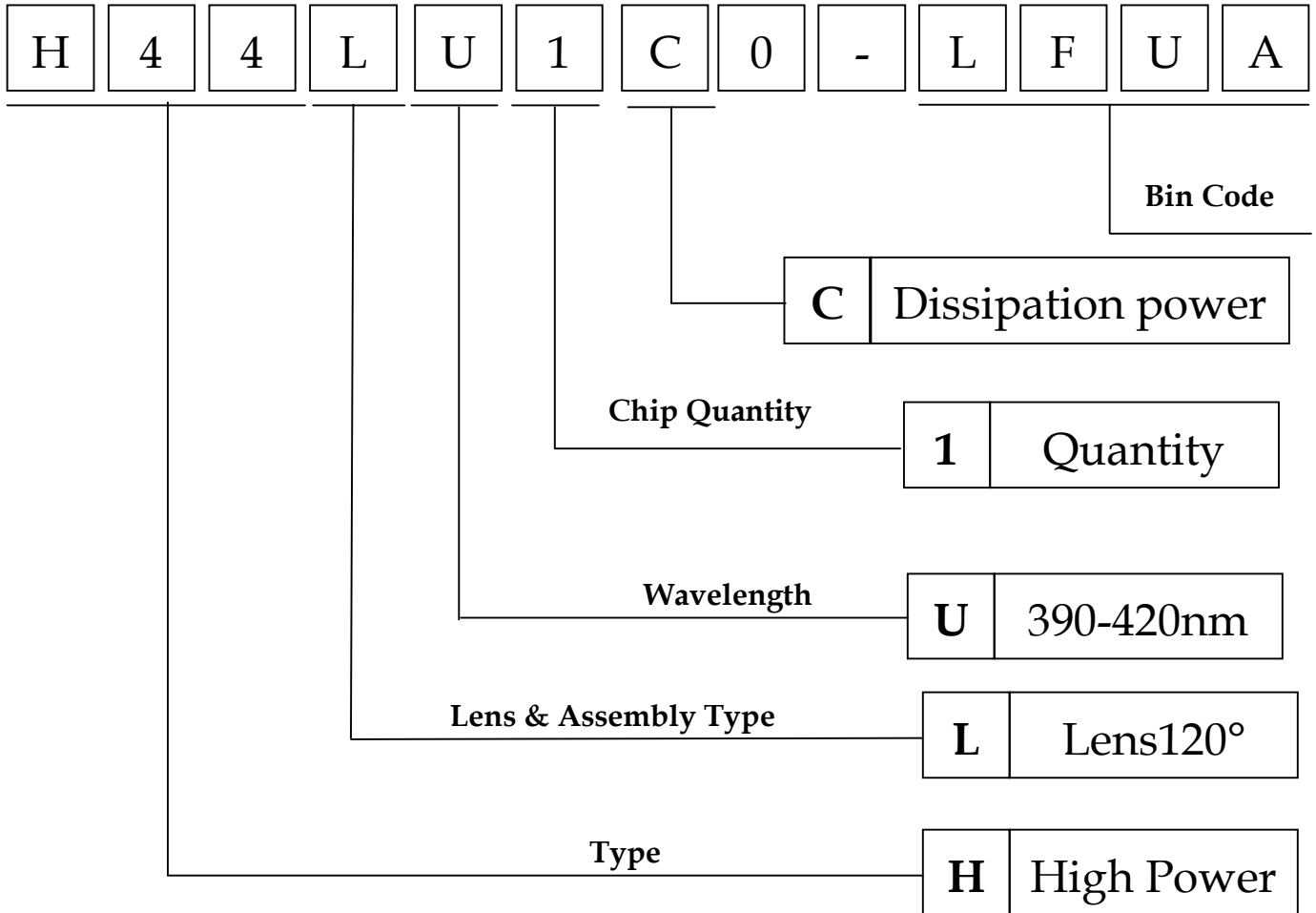
● Wavelength Bins

Wavelength <sup>3</sup>	Bin Code	Symbol	Condition	Min.	Max.	Unit
U 390~420nm	UF	λ <sub>p</sub>	I <sub>F</sub> = 700 [mA]	415	420	nm
	UE			410	415	
	UD			405	410	
	UC			400	405	
	UB			395	400	
	UA			390	395	

Note

1. Forward voltage measurement allowance is ± 0.1V.
2. Radiant flux measurement allowance is ± 10%.
3. Wavelength measurement allowance is ± 2nm.

### Part Number Formation





## Characteristic Diagram

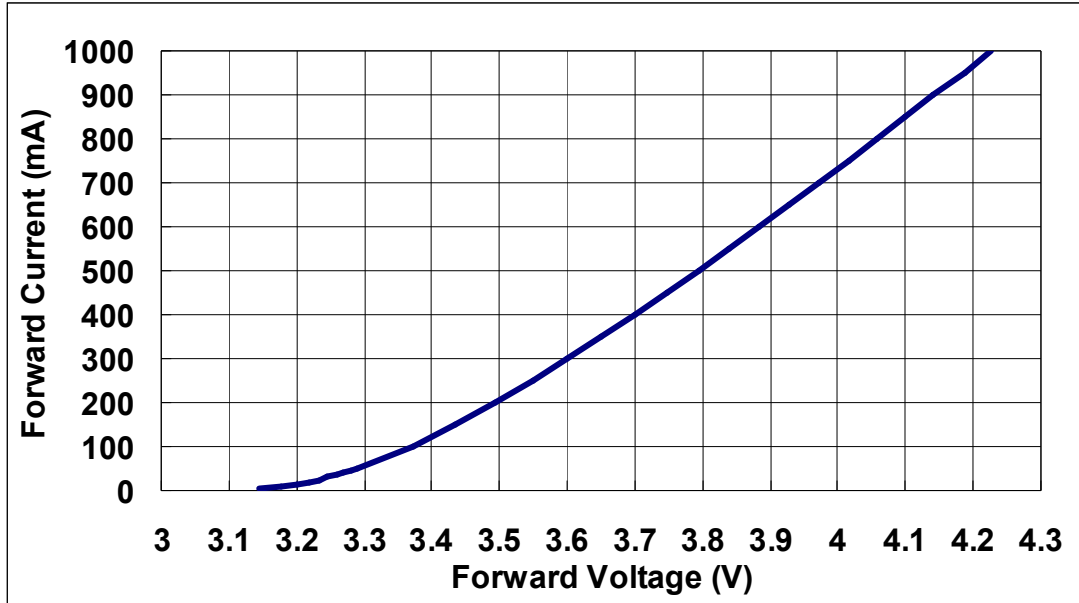


Fig. Forward Current vs. Forward Voltage

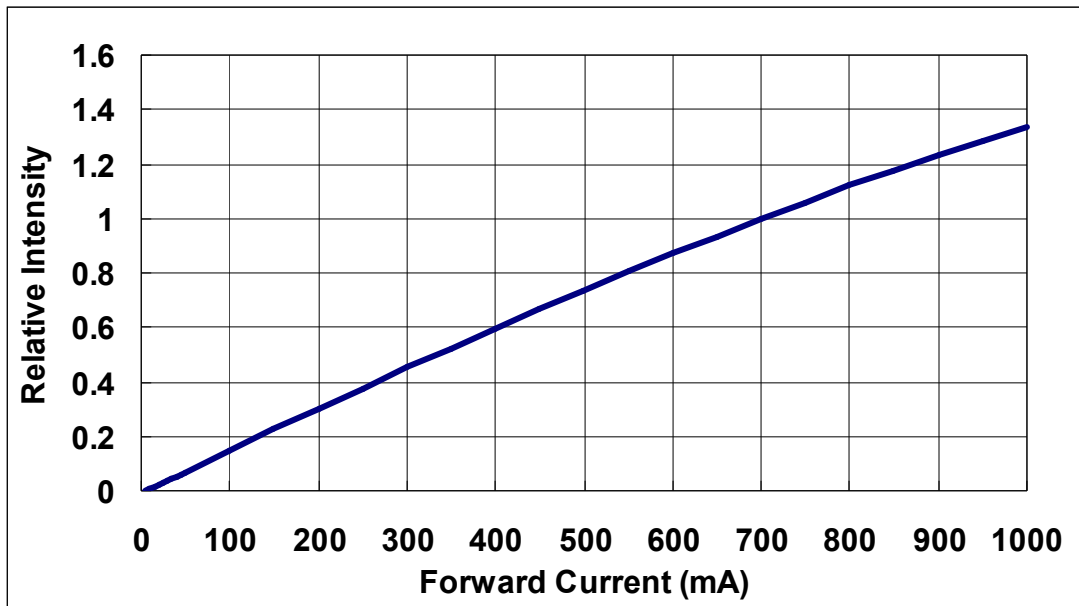


Fig. Relative Intensity vs. Forward Current.

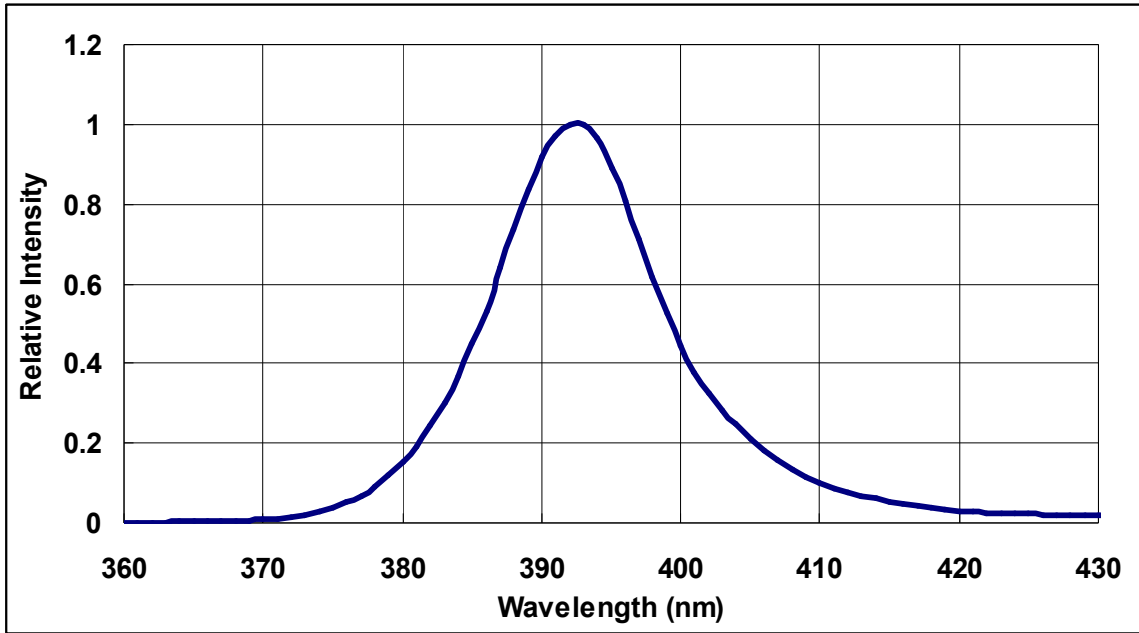


Fig. Typical Relative Intensity vs. wavelength

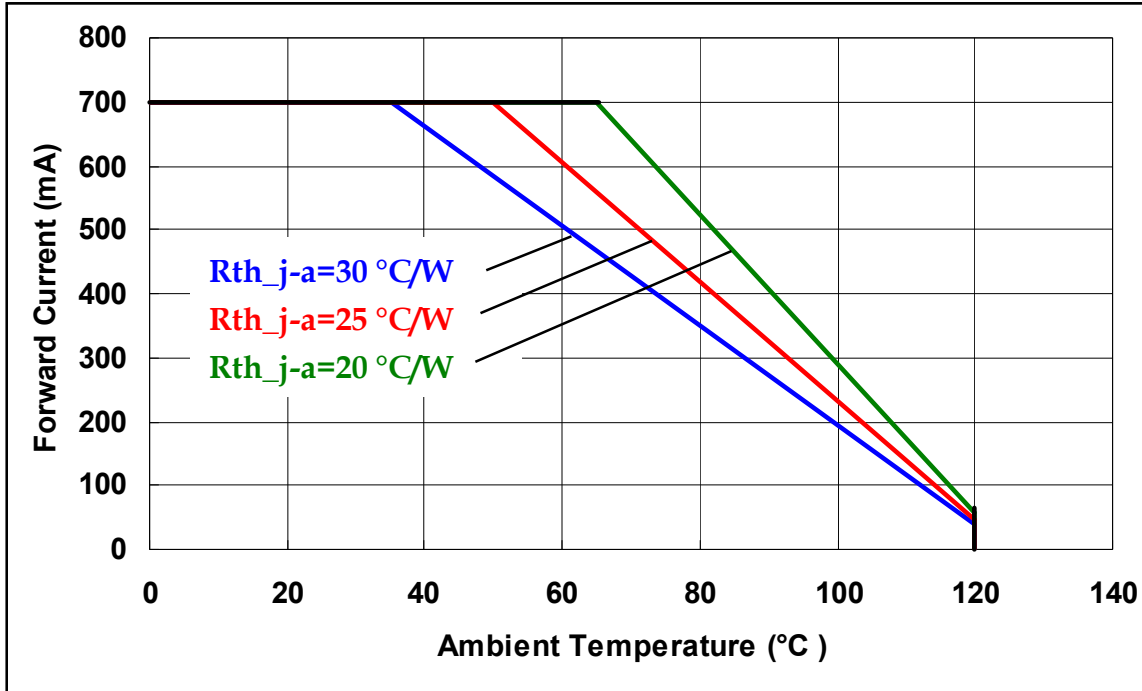


Fig. Forward Current Degrading Curve

Note:

$R_{th\_j-a}$  : junction to Ambient Thermal Resistance

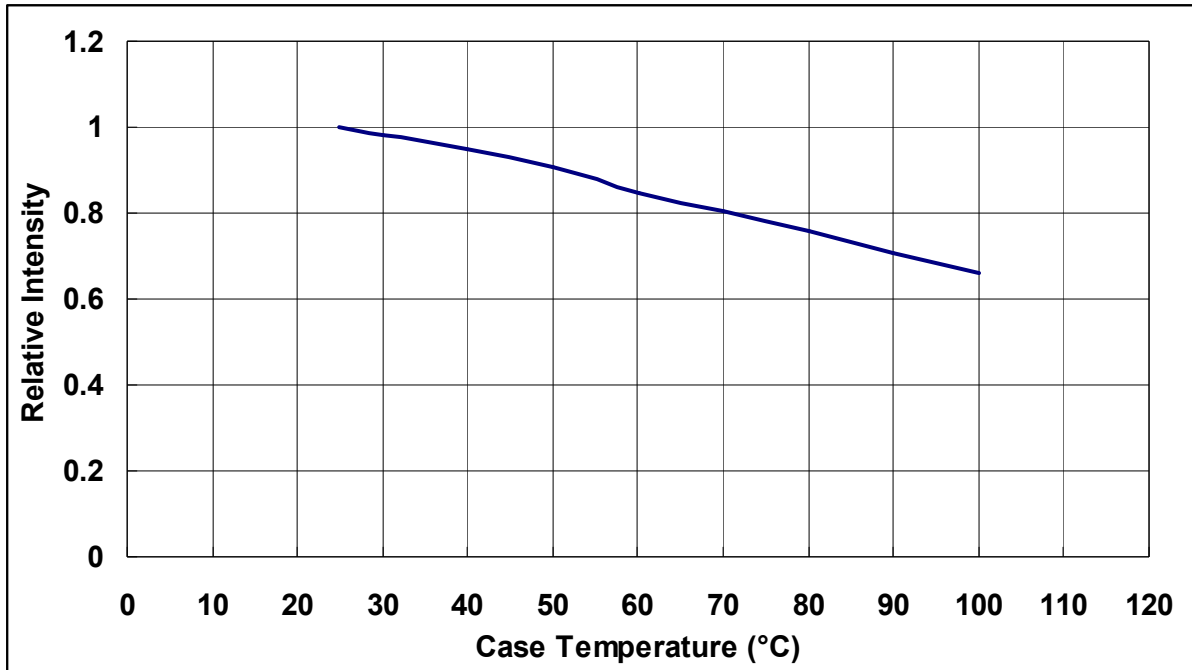


Fig. Relative Intensity vs. Case Temperature

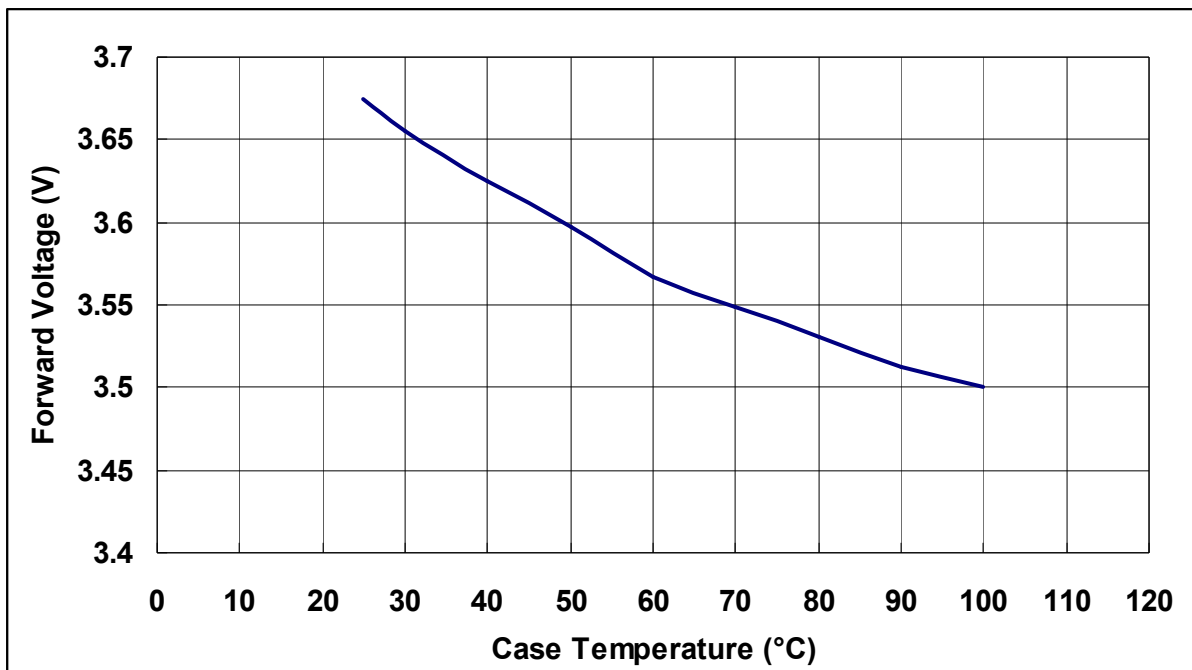


Fig. Forward Voltage vs. Case Temperature

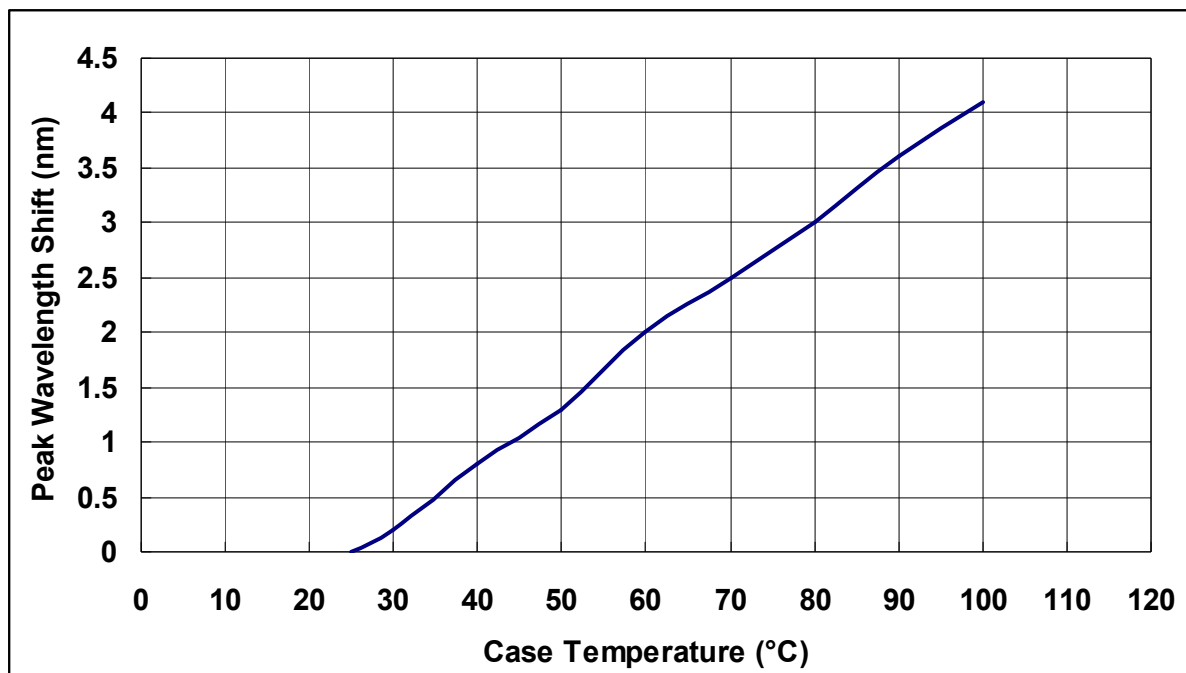


Fig. Peak Wavelength shift vs. Case Temperature

## Outline Dimension

### HPL-H44LU1C0

Unit : mm

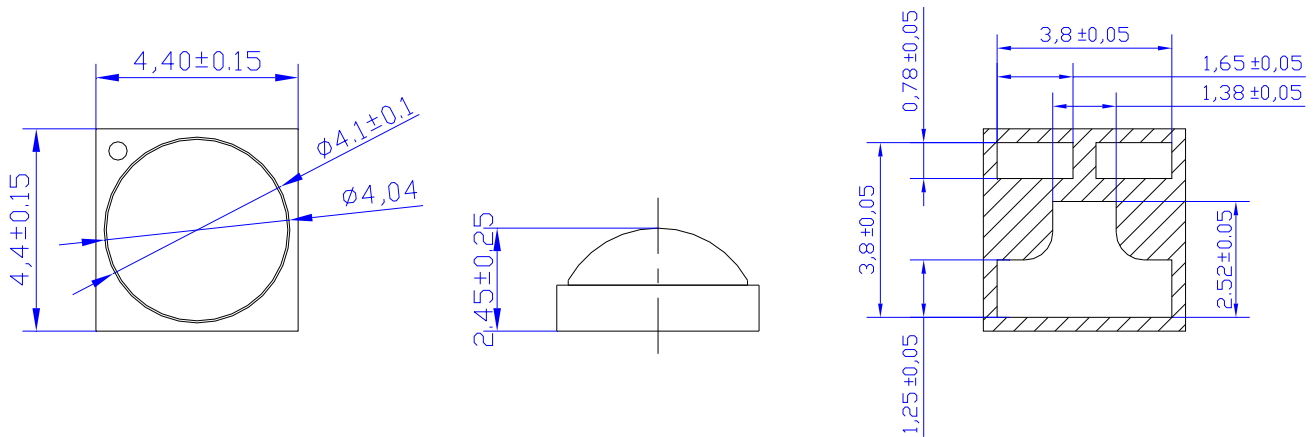
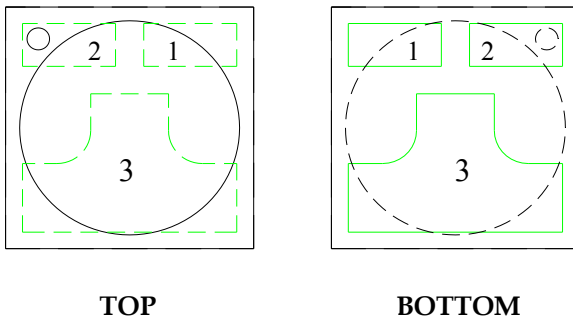


Fig. Package Outline Drawing.

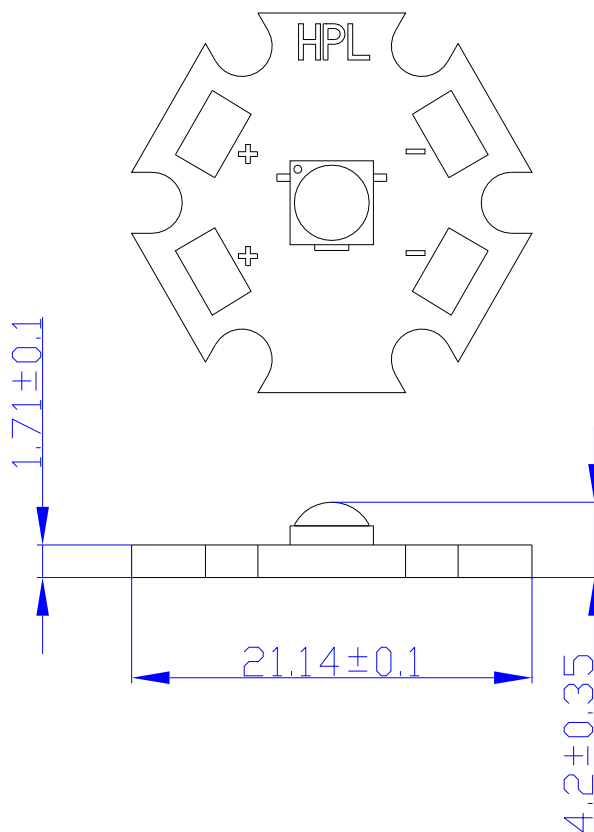
## Pad Configuration



PAD	Function
1	Cathode
2	Anode
3	Thermal

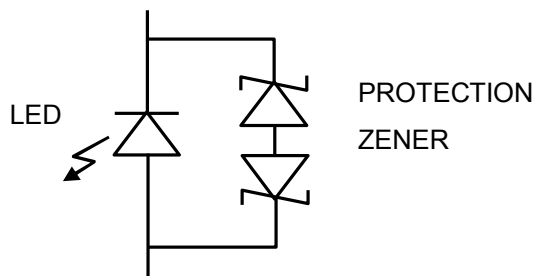
Fig. Pad configuration.

**HPL-H44FU1C0**

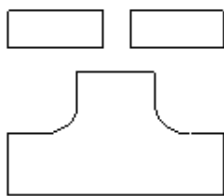
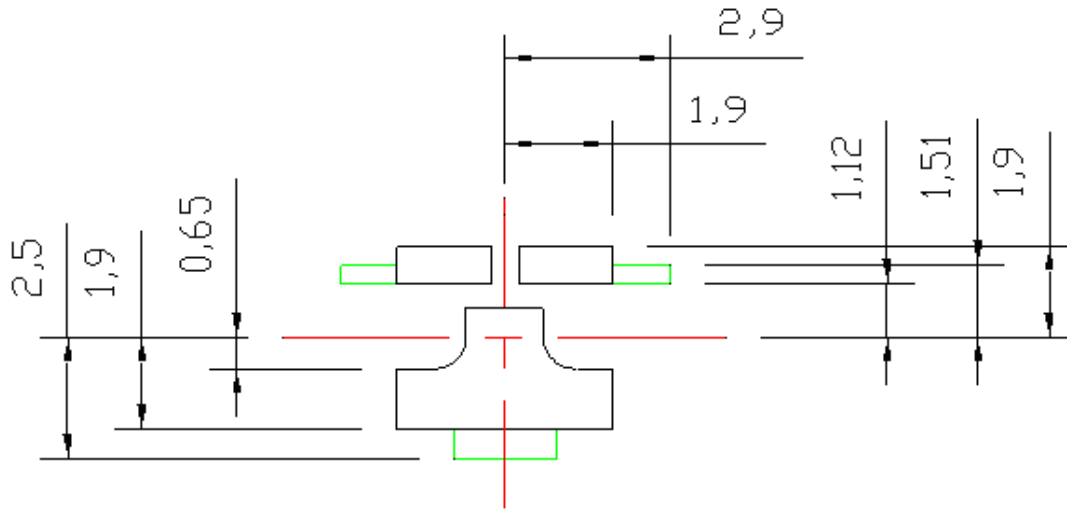


**Fig. Assembly r Outline Drawing.**

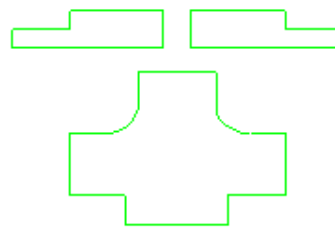
**PROTECTION CIRCUIT**



## Recommended Solder Pattern



**SOLDER  
MASK**



**COPPER  
LAYER**

Fig. Solder Pad Layout.

## Shipping Package Style

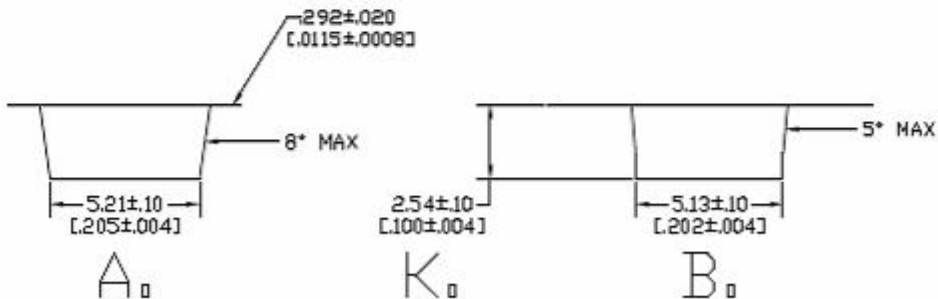
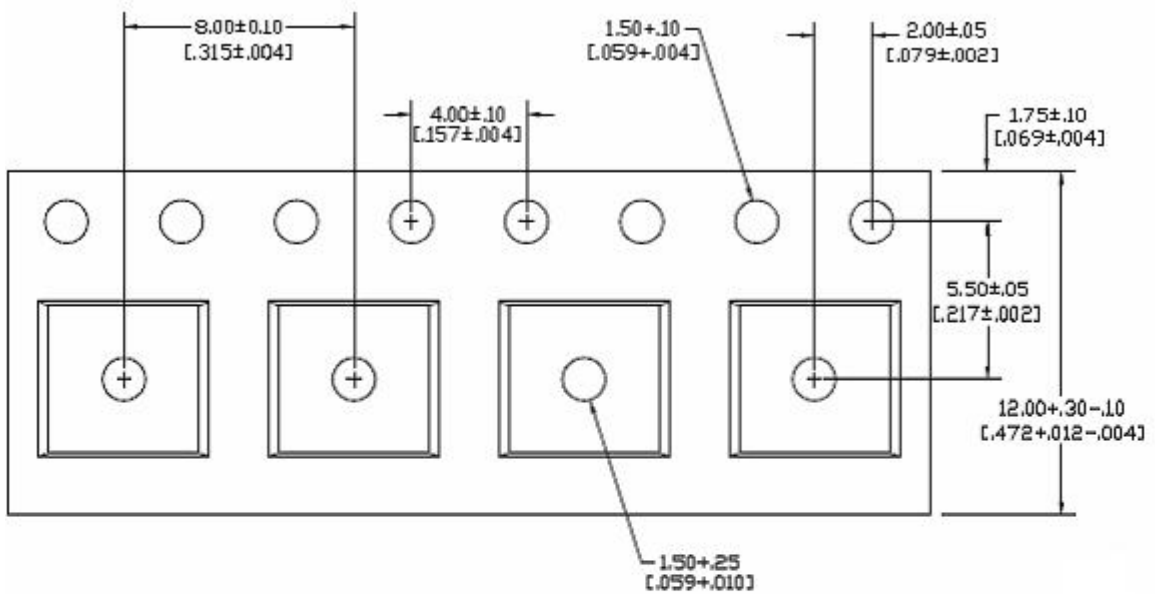
### Lens Type

#### Tapping Dimension Packaging Specification

##### 120 Degree Lens Type :

- Moisture proof bag.
- 1 Reel/bag.
- Q'ty: 800(MAX)/Reel.

Unit : mm



MM  
[INCH]



### Label Formation

P/N: XXXXXXXXXXXXX	BIN Rank : XXXXXXXXX
LOT: XXXXXXXXXXXXX	Q'ty : XXXX PCS XXX

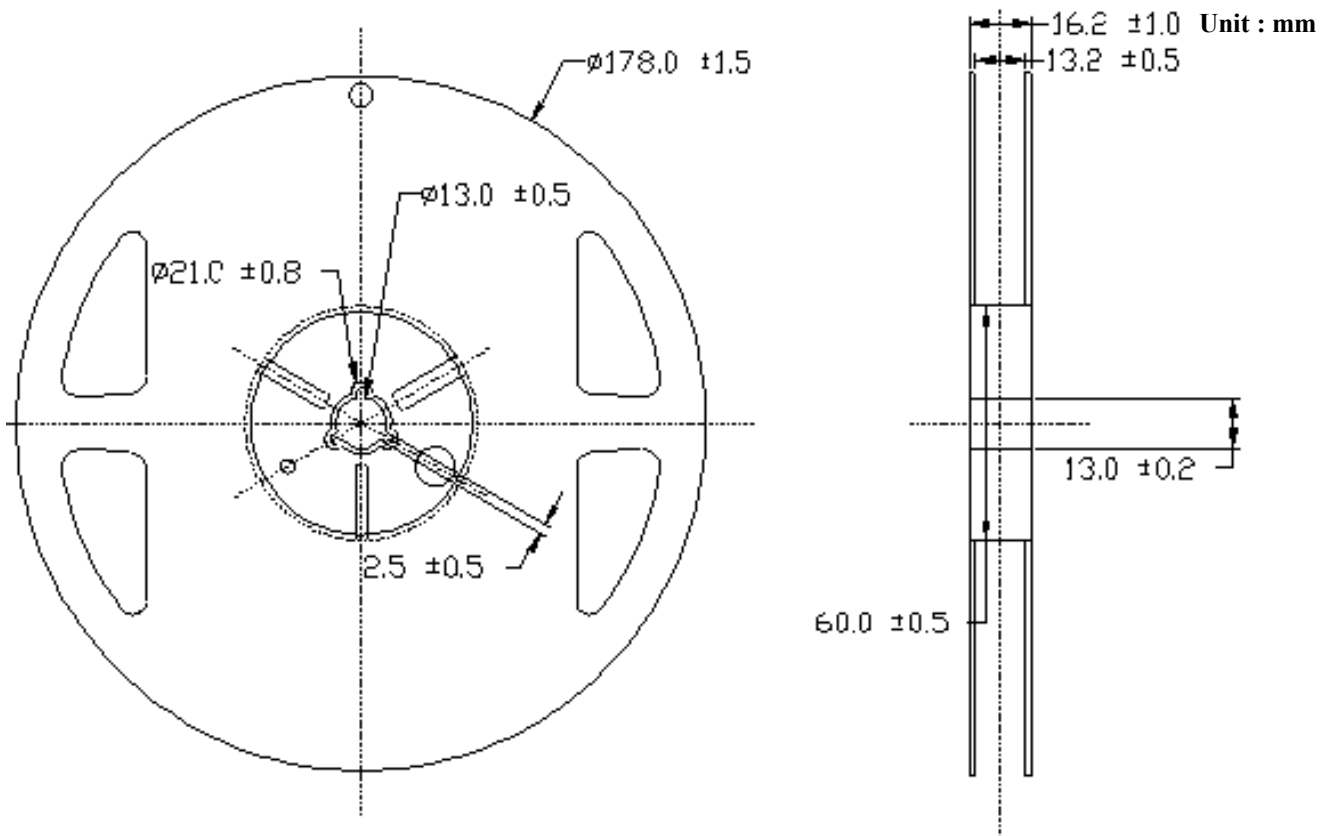
75mm\*8mm

### Package

Box Type	Dimension (mm)	Reel/Box	60°Lens Type (Pcs)	120°Lens Type(Pcs)
Small Box(S)	230x85x265	5 Reel/Box	3250	4000
Middle Box(M)	470x265x270	30 Reel/Box	19500	24000
Large Box(L)	470x435x270	50 Reel/Box	32500	40000

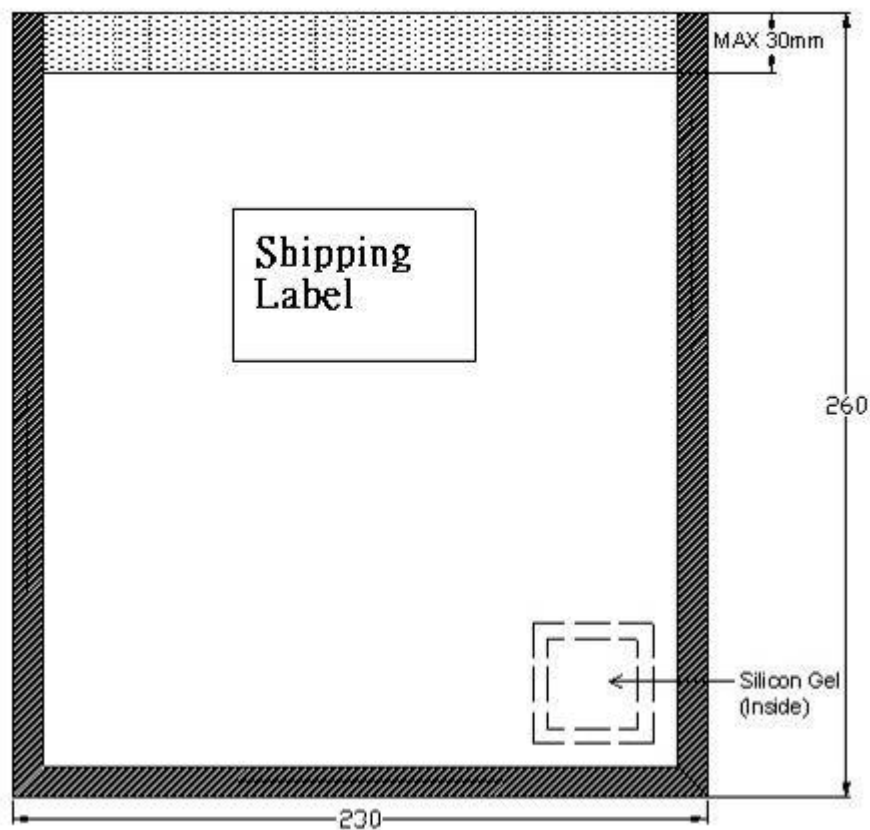
### Reel Packaging :

Reel Part :



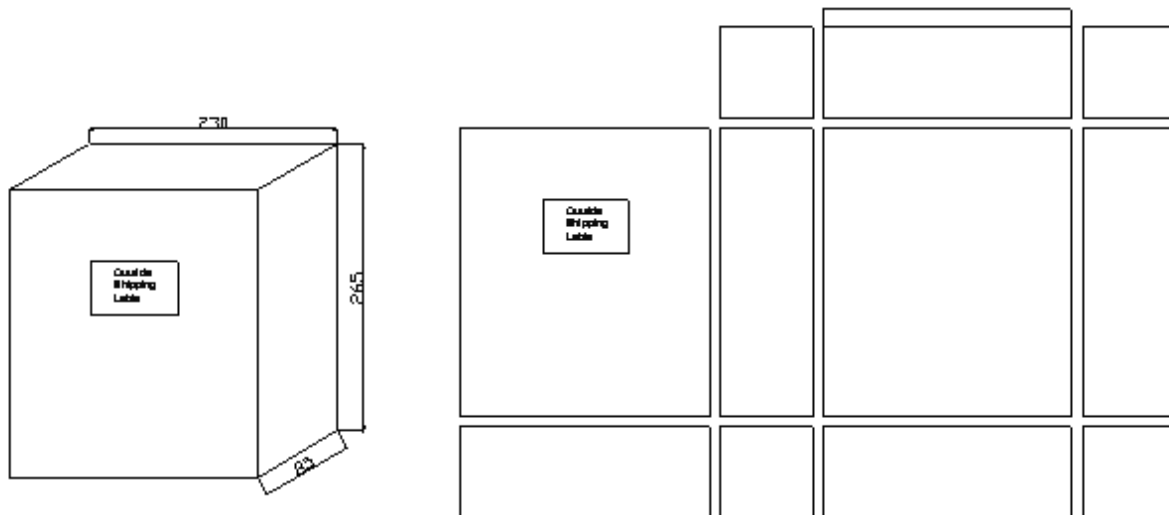
**Anti Statistic Bag :**

**Unit : mm**



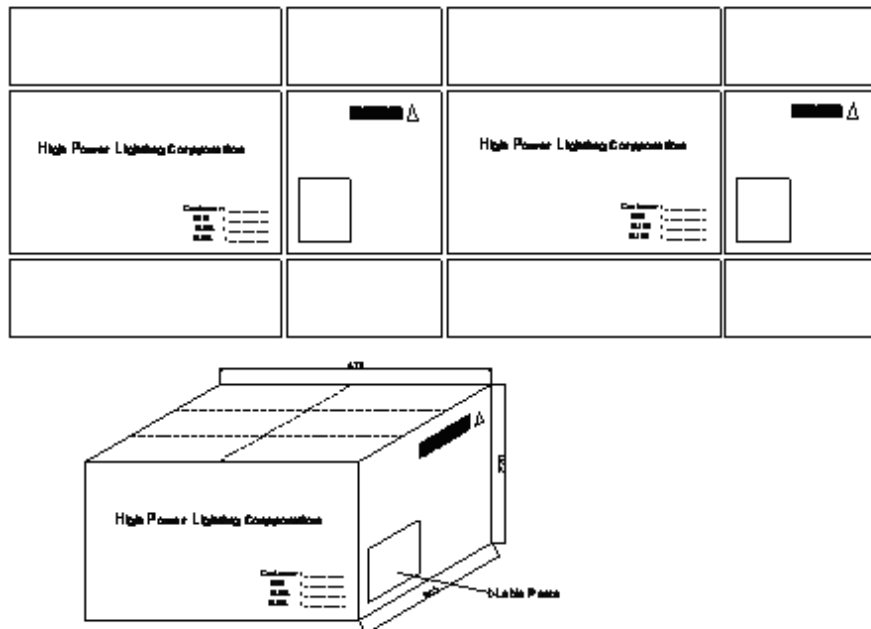
**Small Box**

Unit : mm



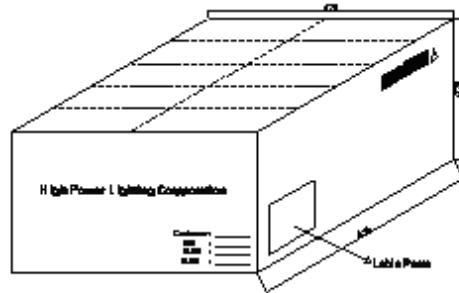
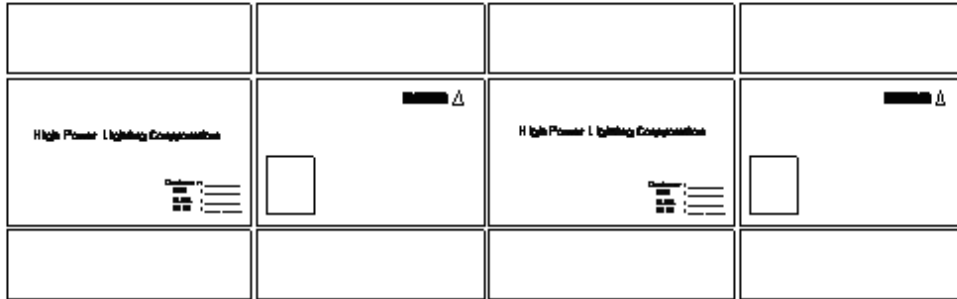
**Middle Box**

Unit : mm



Large Box

Unit : mm



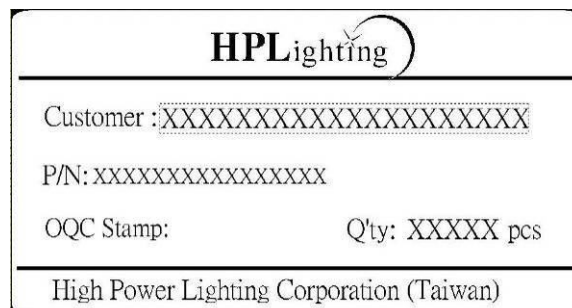
Label Formation

70mm

Unit : mm



40mm



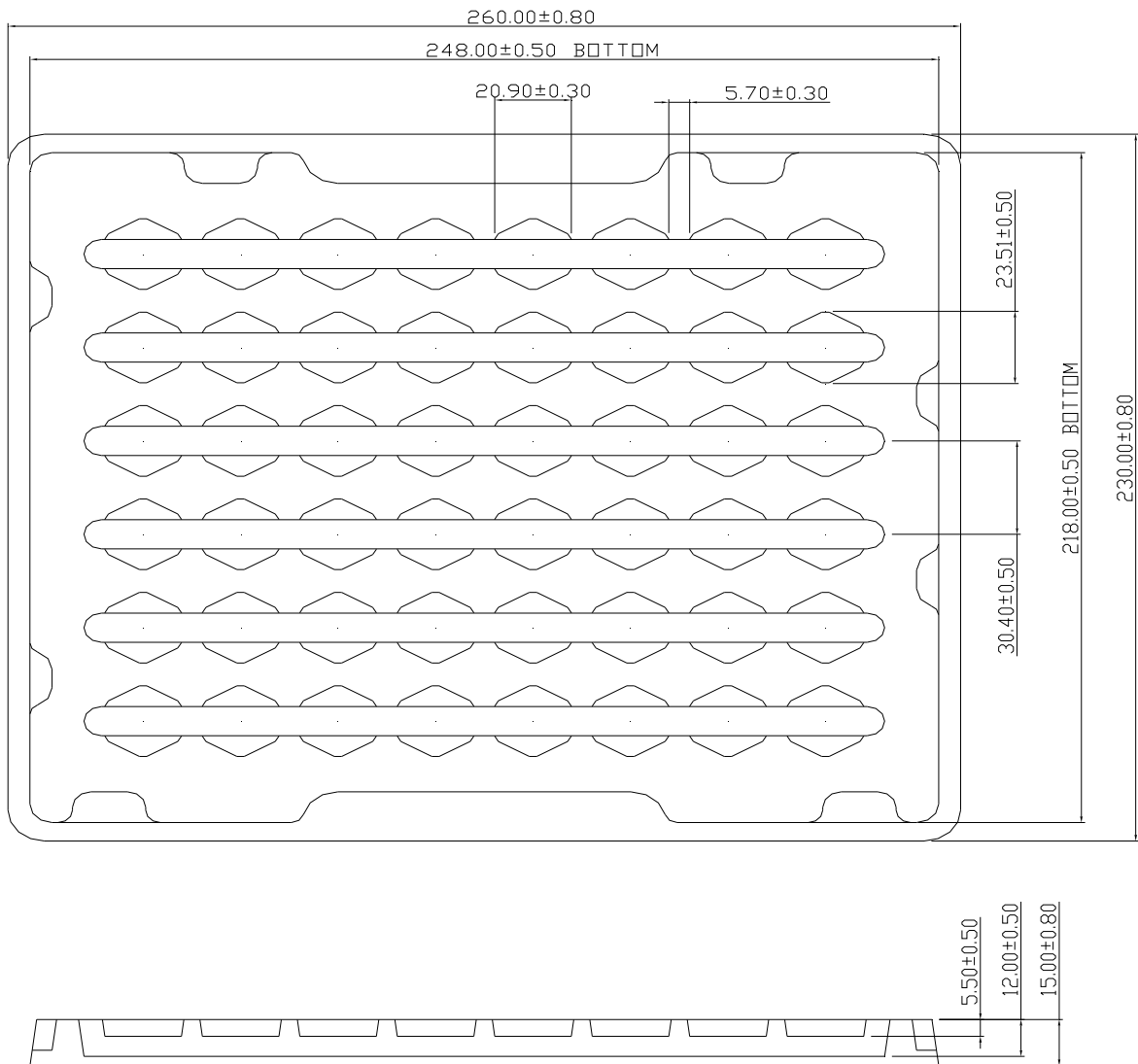
## Assembly Type

### Tapping Dimension Packaging Specification

#### 120 Degree Assembly Type :

- Moisture proof bag.
- 21 Tray (MAX) /bag.
- Q'ty: 48pcs(MAX)/Tray

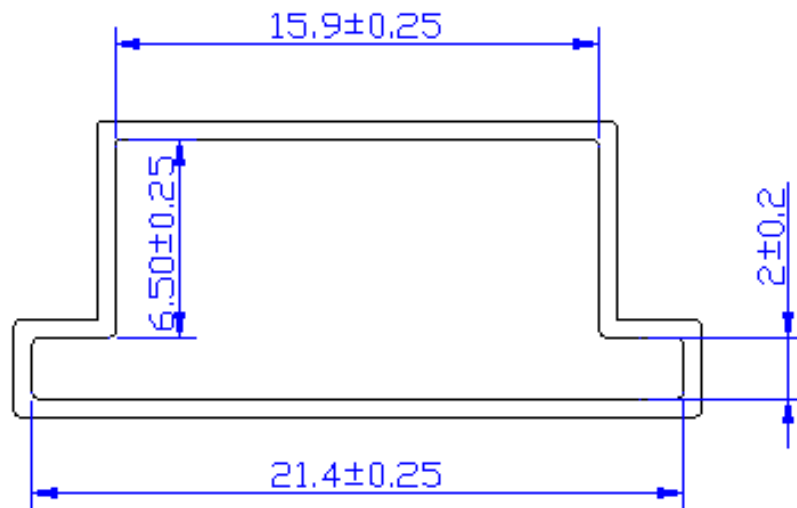
Unit : mm



### 120 Degree Assembly Type :

- 1 Tube
- Q'ty:20pcs(MAX)/Tube
- Q'ty: 300 Tube (MAX)/Box

Unit : mm



### NOTES:

General tolerance=± 0.25mm

Material :PVC,Clear

THICKNESS : 0.60±0.1

LENGTH : 424±2mm

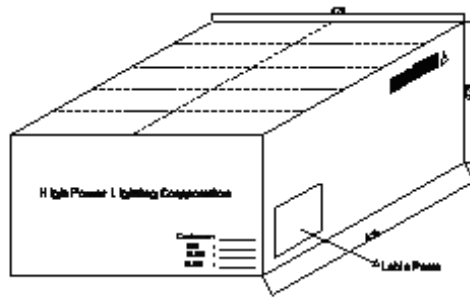
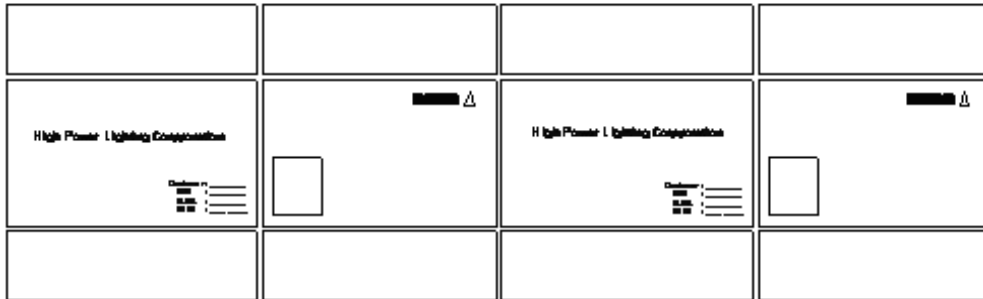
### Label Formation

P/N: XXXXXXXXXXXXX	BIN Rank : XXXXXXXXXXX
LOT: XXXXXXXXXXXXX	Q'ty : XXX PCS XXX

75mm\*8mm

**Package  
Large Box**

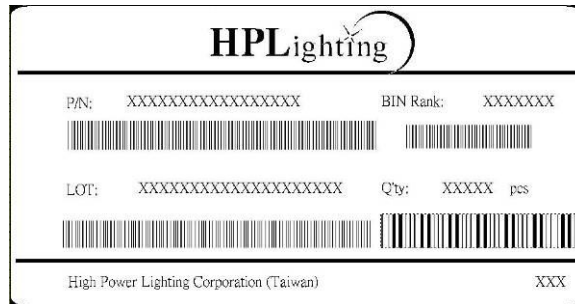
Unit : mm



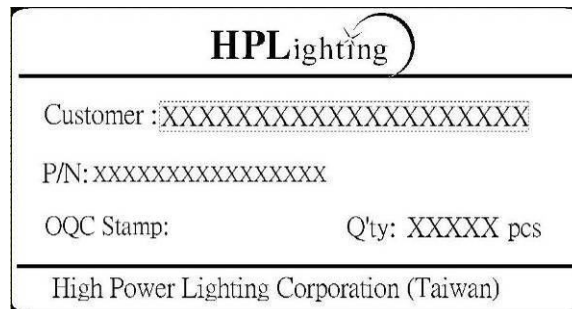
**Label Formation**

70mm

Unit : mm



40mm



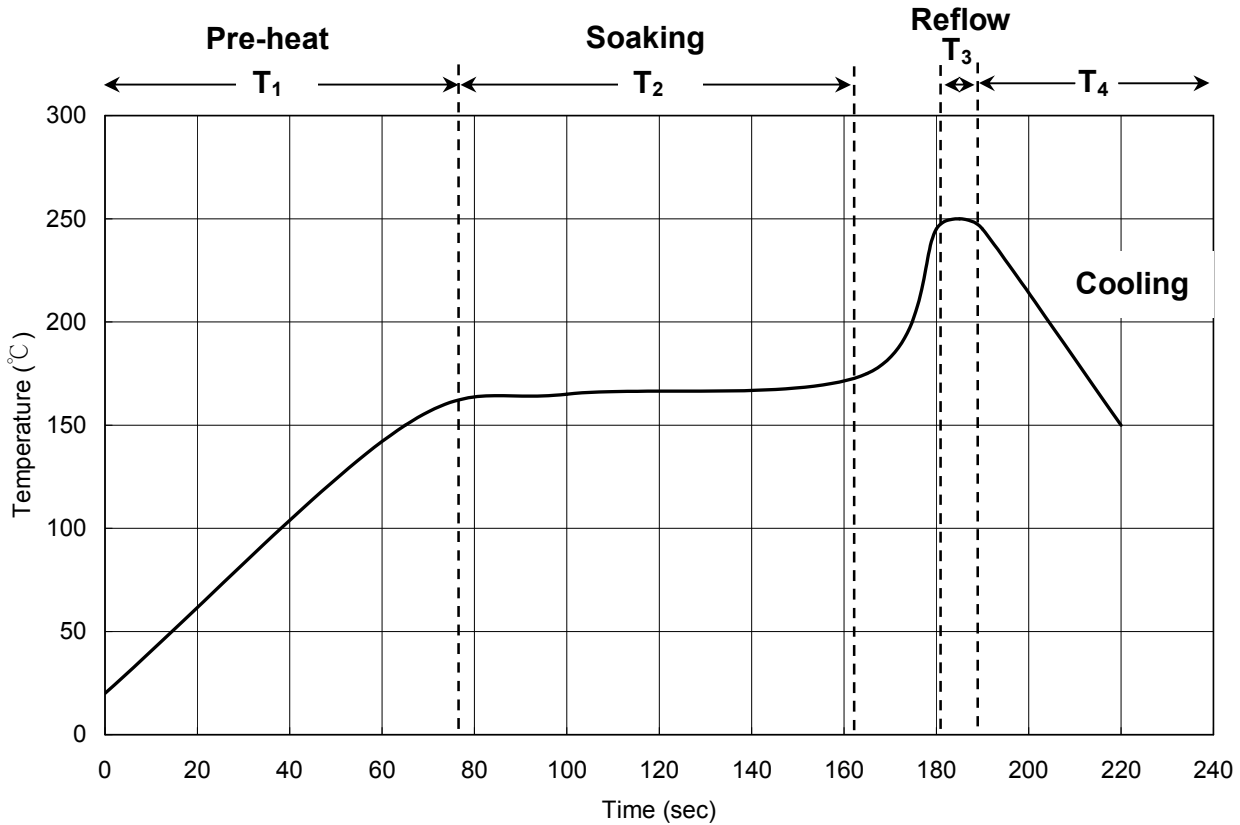
## Qualification Reliability Testing

Classification	Test Item	Test conditions	Reference Standard
Endurance Test	Operation Life	$I_f = 60\text{mA}/120\text{mA}(\text{H28}), 350\text{mA}/700\text{mA}(\text{H40}/\text{H44}/\text{H99})$ $T_a = 25^\circ\text{C}$ Test Duration = 1000hrs	MIL-STD-750: 1026 MIL-STD-883: 1005 JIS C 7021: B-1
	High Temperature High Humidity Storage	$T_a = 85\pm 5^\circ\text{C}$ RH = 85±5% Test Duration = 1000hrs	MIL-STD-202: 103B JIS C 7021: B-11
	High Temperature Storage	$T_a = 105\pm 5^\circ\text{C}$ Test Duration = 1000hrs	MIL-STD-202: 1008 JIS C 7021: B10
	Low Temperature Storage	$T_a = -40\pm 5^\circ\text{C}$ Test Duration = 1000hrs	JIS C 7021: B-12
Environmental Test	Temperature Cycling	$-40^\circ\text{C} \sim 25^\circ\text{C} \sim 105^\circ\text{C} \sim 25^\circ\text{C}$ 30min 5min 30min 5min Test Duration = 10 cycle	MIL-STD-202: 107D MIL-STD-750: 1051 MIL-STD-883: 1010 JIS C 7021: A-4
	Thermal Shock	$-55\pm 5^\circ\text{C} \sim 105\pm 5^\circ\text{C}$ 30min 30min Test Duration = 10 cycle	MIL-STD-202: 107D MIL-STD-750: 1051 MIL-STD-883: 1011
	Solder Resistance	$T_{\text{sol}} = 260\pm 5^\circ\text{C}$ Dwell Time = 10sec	MIL-STD-202: 210A MIL-STD-750: 2031 JIS C 7021: A-1
Measuring Items	Symbol	Measuring Conditions	Failure Criteria
Forward voltage	$V_f$	$I_f = 60\text{mA}/120\text{mA}(\text{H28}), 350\text{mA}/700\text{mA}(\text{H40}/\text{H44}/\text{H99})$	$V_f$ shift > 10%
Luminous	$I_v\%$	$I_f = 60\text{mA}/120\text{mA}(\text{H28}), 350\text{mA}/700\text{mA}(\text{H40}/\text{H44}/\text{H99})$	$I_v\%$ shift > 10%



## Recommended Solder Profile

**Soldering** Recommended soldering conditions:



T <sub>1</sub>	Ramp up rate	1.0 ~ 3.0 °C/sec
	Pre-heat time	50 ~ 80 sec
T <sub>2</sub>	Soaking temperature	155 ~ 185 °C
	Dwell time during soaking	60 ~ 120 sec
T <sub>3</sub>	Reflow temperature	240 ~ 250 °C
	Reflow time	Max 10 sec
	Ramp up rate during reflow	1.2 ~ 2.3 °C/sec
T <sub>4</sub>	Cooling	1.0 ~ 6.0 °C/sec

Note: Suggest using Sn96Ag3Cu0.5 lead free solder.

### Cleaning

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



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