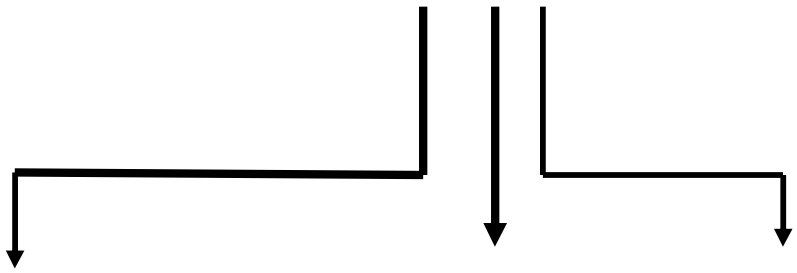
Foreverlight

Foreverlight Electronic.Co.Ltd

SPECIFICATION FOR IR SERIES

HPL- H44XX1BA



Lens & Assembly Type :	Wavelength:	1W
R : Lens 60° T : Star &Lens 60° L : Lens 120° F : Star &Lens 120°	J : IR 850nm K : IR 940nm	

Caution:

Depends on different chips structures, the thermal pad could has a polarity as Anode or Negative. To avoid the risk of circuit-fail, **It is strongly recommended to suppose the condition (Anode or Negative – thermal pad)** while designing a circuit.

Part Number Matrix

Without Star:

Wavelength:	Lens 120^0
IR 850nm	HPL-H44LJ1BA
IR 940nm	HPL-H44LK1BA
Wavelength:	**Lens 60^0**
IR 850nm	HPL-H44RJ1BA
IR 940nm	HPL-H44RK1BA

With Star:

Wavelength:	Star & Lens 120^0
IR 850nm	HPL-H44FJ1BA
IR 940nm	HPL-H44FK1BA
Wavelength:	**Star & Lens 60^0**
IR 850nm	HPL-H44TJ1BA
IR 940nm	HPL-H44TK1BA

1. Features

- 4Dimension :4.4mm(L)×4.4mm(W)
- High Radiant Flux type
- High Speed
- All Metal Design Cu PCB/Al reflector
- Low thermal resistance
- The AlGaAs/ AlGaAs , AlGaAs/ GaAs Chip inside

2. Applications

- IrDA
- Encoder
- Data Communication
- Infrared Lighting

3. Absolute Maximum Ratings (Tj=25℃)

Parameters		Symbol	Rating	Unit
Power Dissipation	IR 850nm	P	0.6	W
	IR 940nm		0.5	

Parameters	Symbol	Rating	Unit
Forward Current	I_F	350	mA
Forward Pulse Current (1/10 Duty Cycle, 400msec Pulse Width)	I_{FP}	500	mA
Thermal Resistance, Junction-Case	$R_{th, J-C}$ [1]	10	°C/W
Reverse Voltage	V_R	5	V
LED Junction Temperature	T_j	125	°C
Operating Temperature Range	T_{opr}	-40°C to + 80°C	
Storage Temperature Range	T_{stg}	-40°C to + 120°C	
Soldering Condition	T_{sol}	260°C For 5 Seconds	

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

4. Initial Electrical/Optical Characteristics

I Forward Voltage (Tj=25℃)

Wavelength	Forward Voltage					
	Symbol	MIN.	TYP.	MAX.	Test Condition	Unit
IR 850nm	V_F	1.55	1.65	1.75	I_F= 350mA	V
IR 940nm		-	1.40	1.60		

I Reverse Current (Tj=25℃)

Wavelength	Reverse Current					
	Symbol	MIN.	TYP.	MAX.	Test Condition	Unit
IR 850nm	I_R	-	-	100	V_R = 5V	μA
IR 940nm		-	-	100		

I Radiant Flux (Tj=25℃)

Wavelength	Radiant Flux					
	Symbol	MIN.	TYP.	MAX.	Test Condition	Unit
IR 850nm	Φ_e	-	144	-	I_F = 350mA	mW
IR 940nm		-	102	-		

I Peak wavelength (Tj=25℃)

Wavelength	Wavelength					
	Symbol	MIN.	TYP.	MAX.	Test Condition	Unit
IR 850nm	λ_p	-	860	-	I_F = 350mA	nm
IR 940nm		-	960	-		

l View Angle (Tj=25℃)

Wavelength	Viewing Angle				
	Symbol	Lens 60°	Lens 120°	Test Condition	Unit
All	$2\theta_{1/2}$	60°	120°	I_F = 350mA	degree

l Spectra half-width (Tj=25℃)

Wavelength	Spectra half-width					
	Symbol	MIN.	TYP.	MAX.	Test Condition	Unit
IR 850nm	Δλ	-	40	-	I_F = 350mA	nm
IR 940nm		-	50	-		

l Bin Code List for Reference (Tj=25℃)

Forward Voltage (V):

BIN CODE	MIN	MAX	Unit
A	1.35	1.59	V
B	1.59	1.83	
C	1.83	2.07	
D	2.07	2.31	
E	2.31	2.55	
F	2.55	2.79	

Radiometric Flux (Φ_e) :

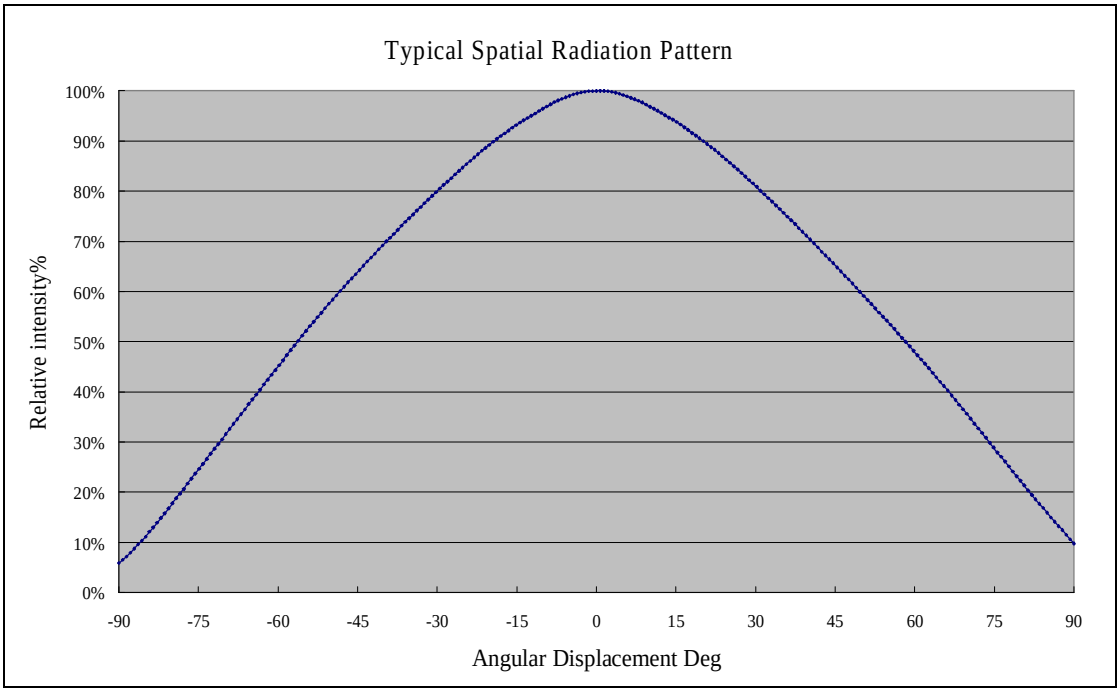
Bin Code	Min.	Max.	Unit
0	0	10	mW
1	10	20	
2	20	30	
3	30	40	
4	40	50	
5	50	75	
6	75	100	
7	100	125	
8	125	150	
9	150	175	

Bin Code	Min.	Max.	Unit
A	175	225	mW
B	225	275	
C	275	350	
D	350	425	
E	425	500	
F	500	600	
G	600	700	
H	700	800	
J	800	900	
K	900	1000	

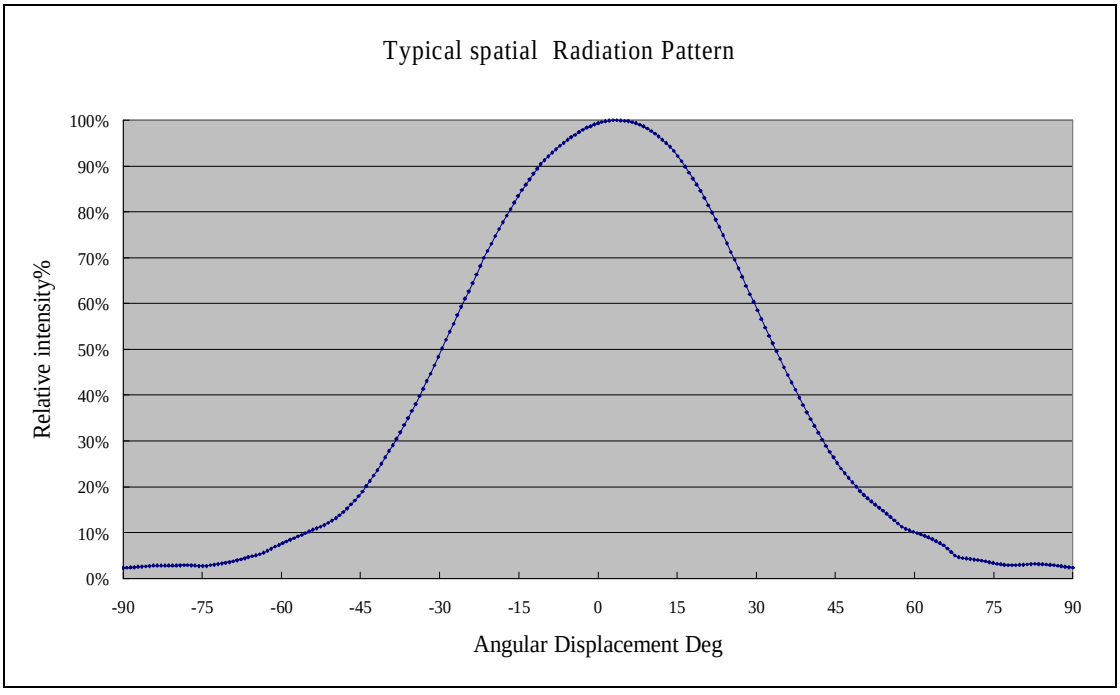
Note

1. Forward voltage measurement allowance is ± 0.1V.
2. Radiant intensity measurement allowance is ± 10%.

I Typical Radiation Pattern

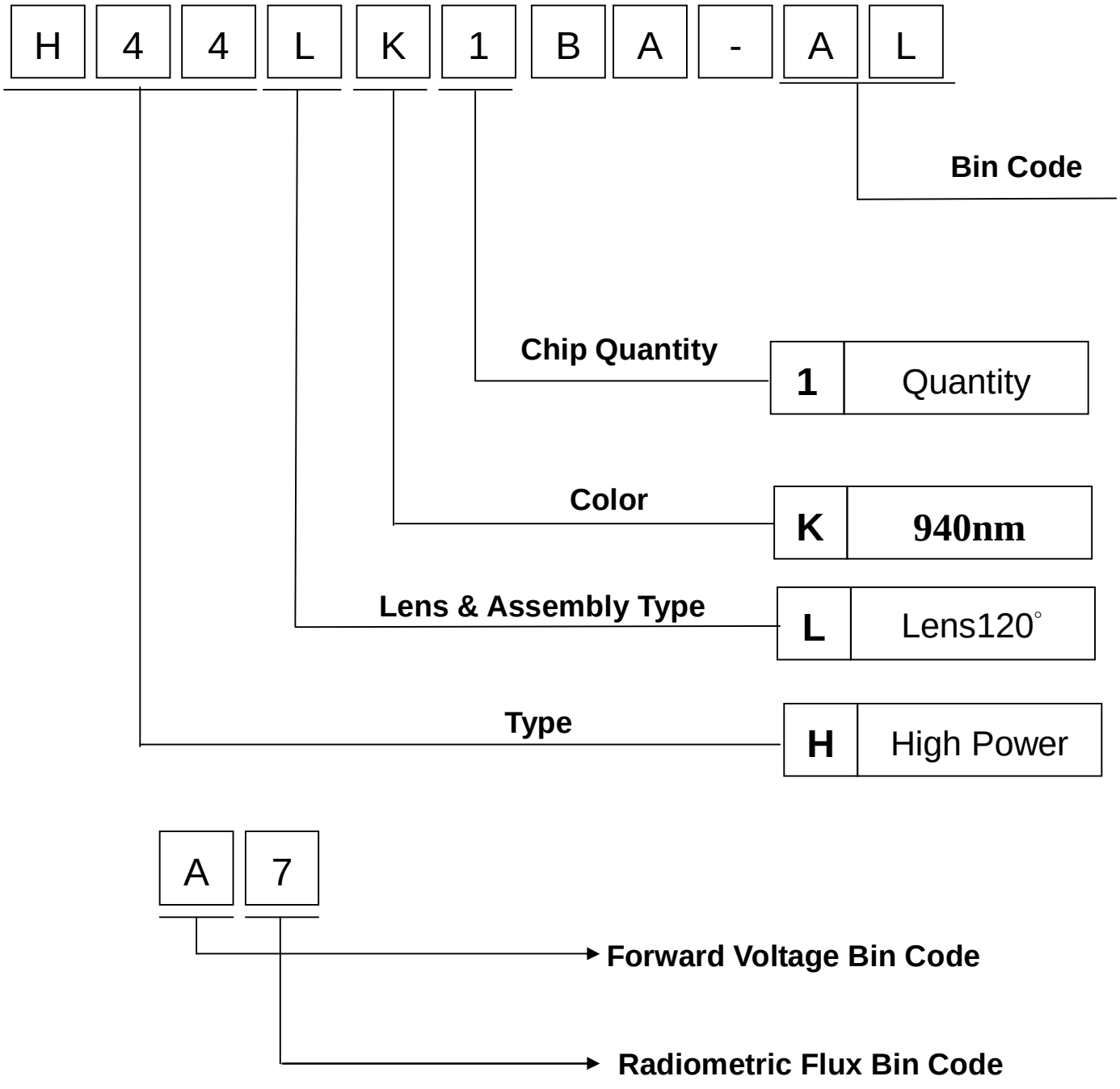


120˚ Lens



60˚ Lens

5. Part Number Formation



6. Characteristic Diagrams

Fig. 6.1 Forward Voltage VS. Forward Current

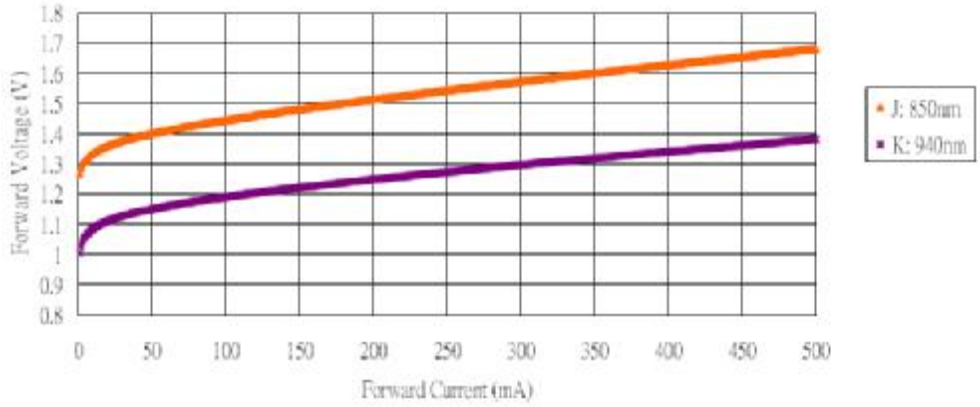


Fig. 6.2 Forward Current VS. Relative Intensity

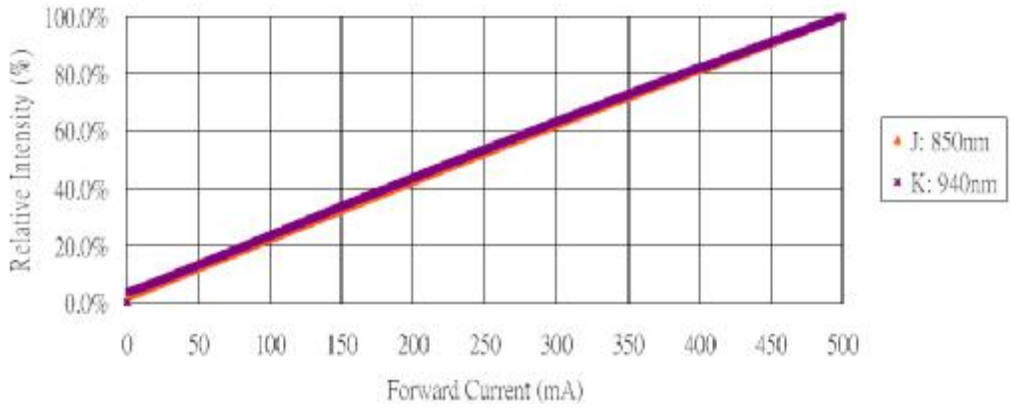
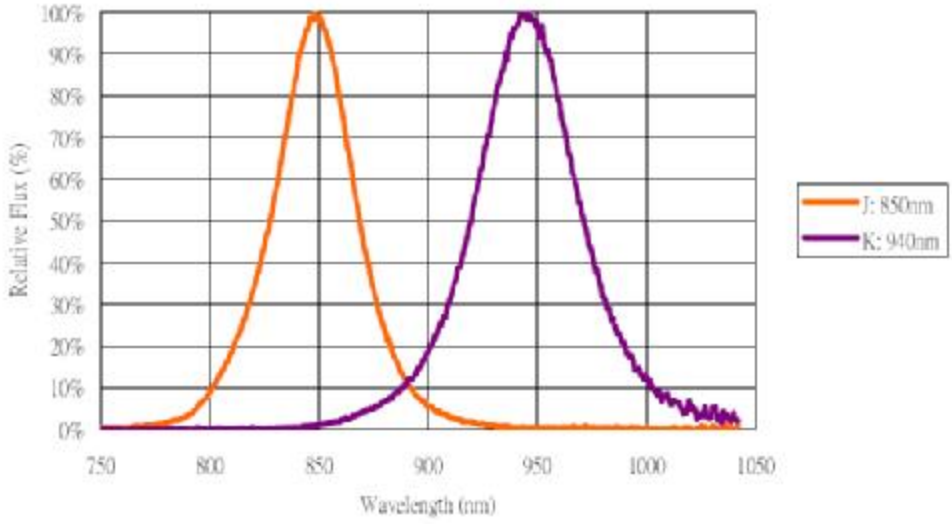


Fig. 6.3 Wavelength VS. Relative Radiometric Flux



7. Outline Dimension

Unit : mm

HPL-H44RX1BA **HPL-H44LX1BA**

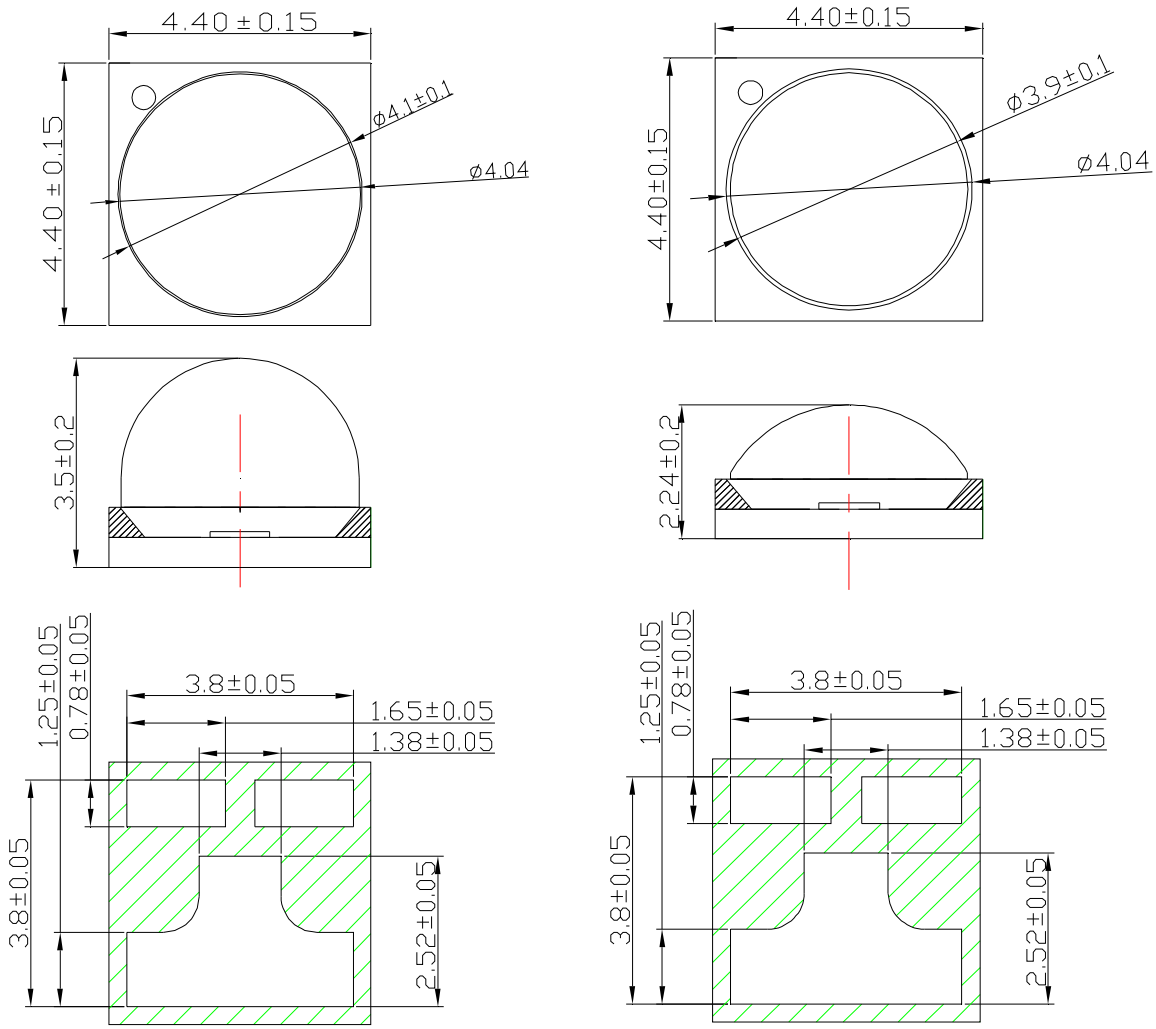
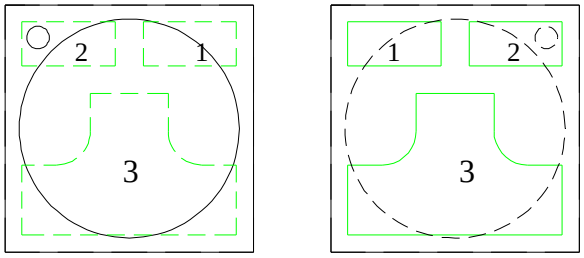


Fig. 7.1 Lens Type Outline Drawing

I Pad configuration



TOP BOTTOM

PAD	Function
1	Cathode
2	Anode
3	Thermal

HPL-H44Tx1BA **HPL-H44Fx1BA**

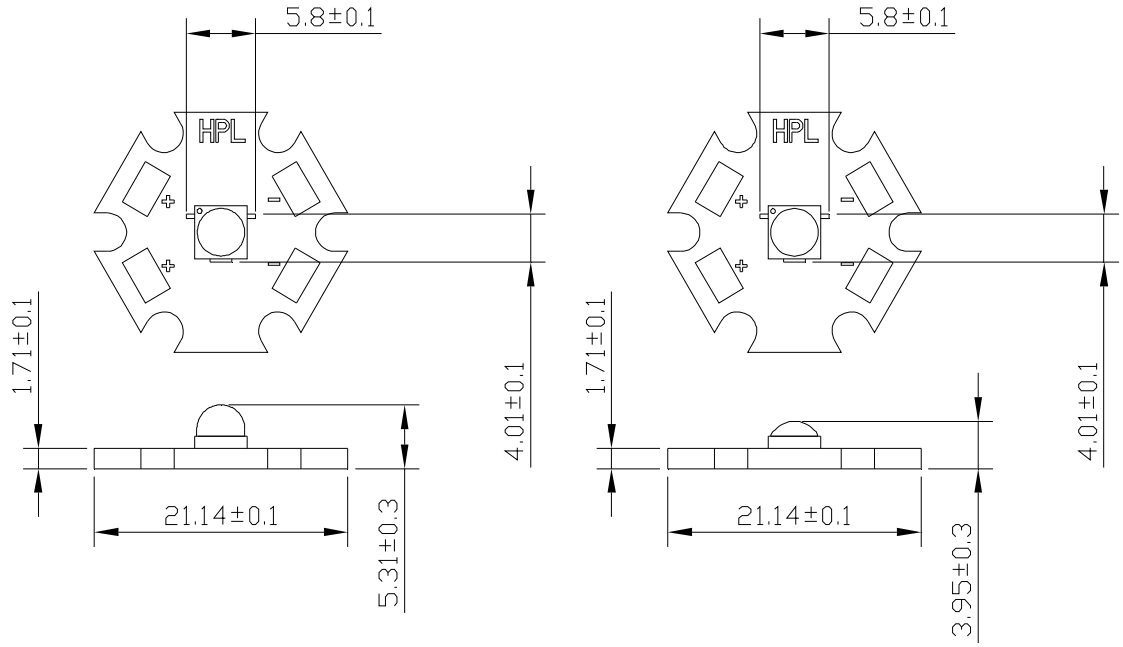
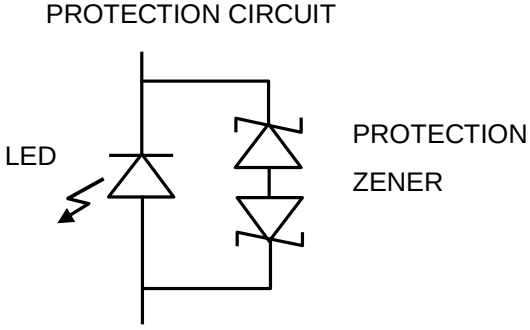
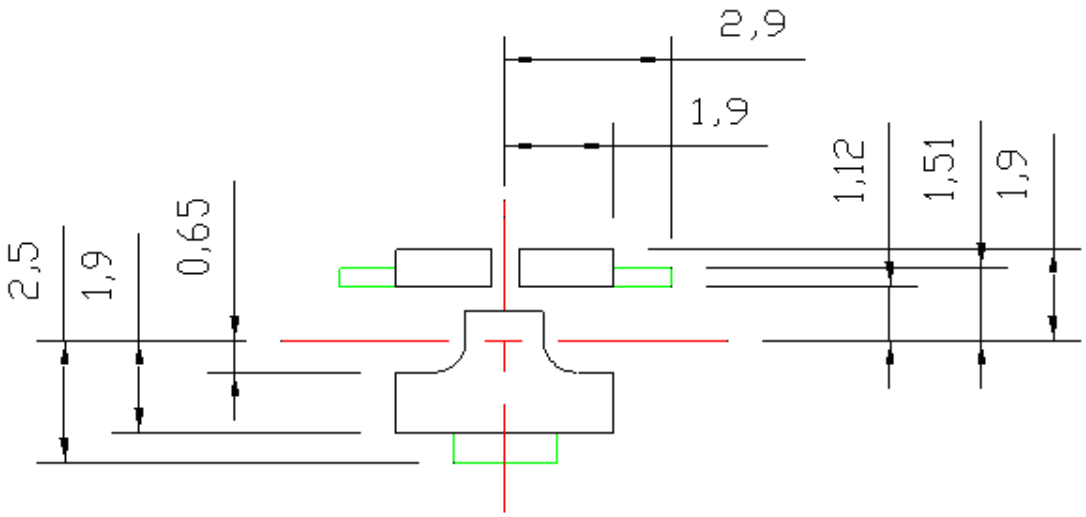
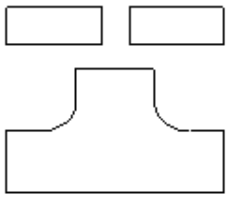


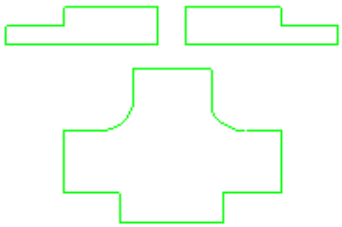
Fig. 7.2 Assembly Outline Drawing.



8. Recommended Solder Pattern







SOLDER MASK

COPPER LAYER

9. Shipping Package Style

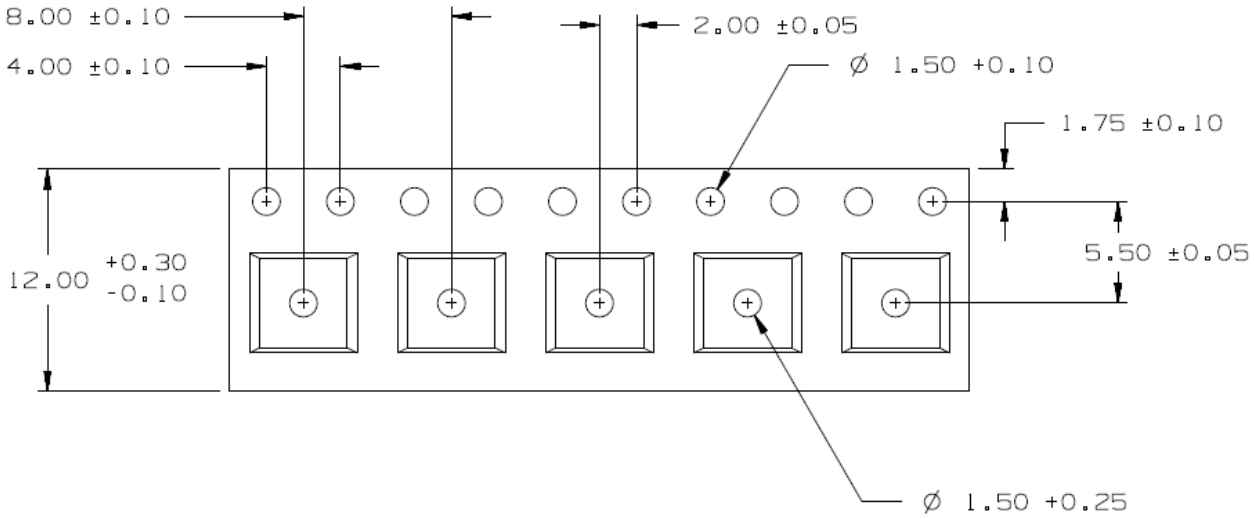
A. Lens Type

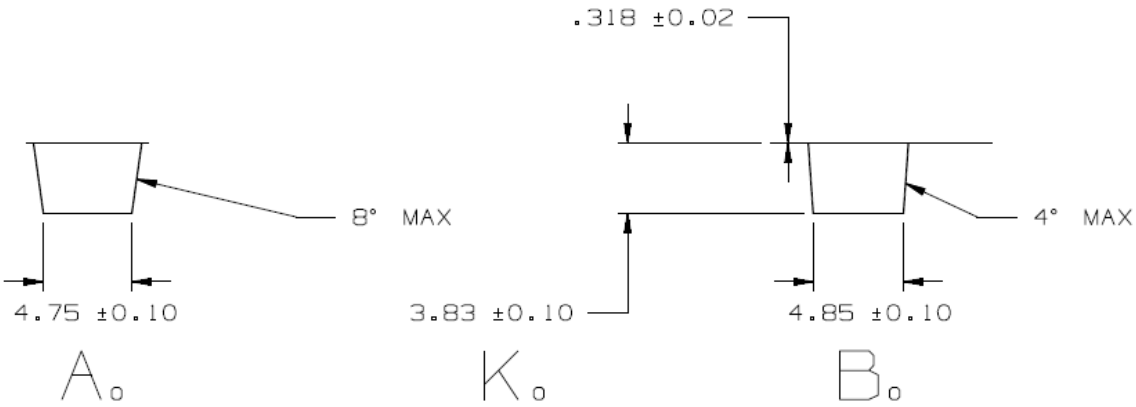
(1)Tapping Dimension Packaging Specification

I 60 degree Lens Type :

- Moisture proof bag.
- 1 Reel/bag.
- Q'ty:650 (MAX)/Reel.

Unit : mm

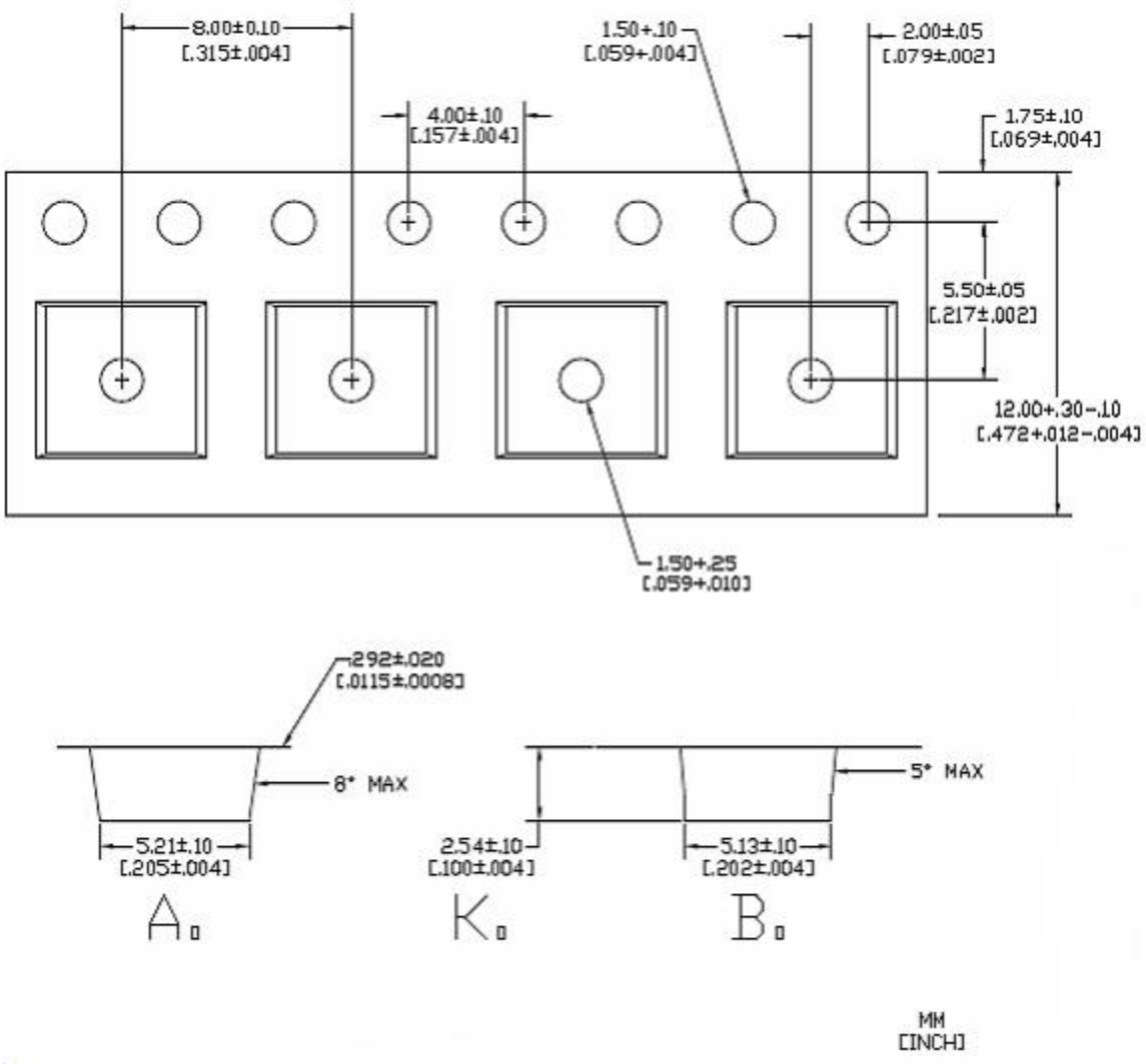




l 120 degree Lens Type :

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

Unit : mm



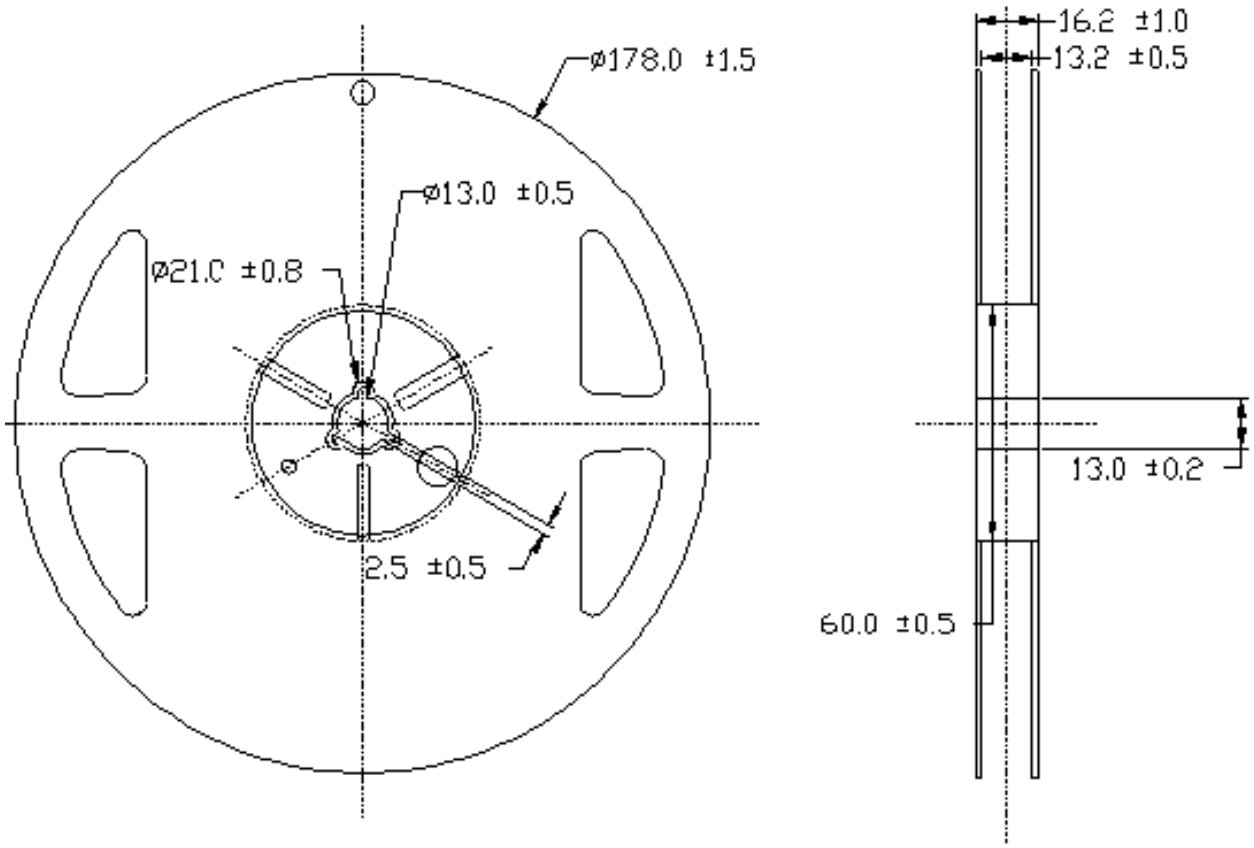
(2) Package

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 :

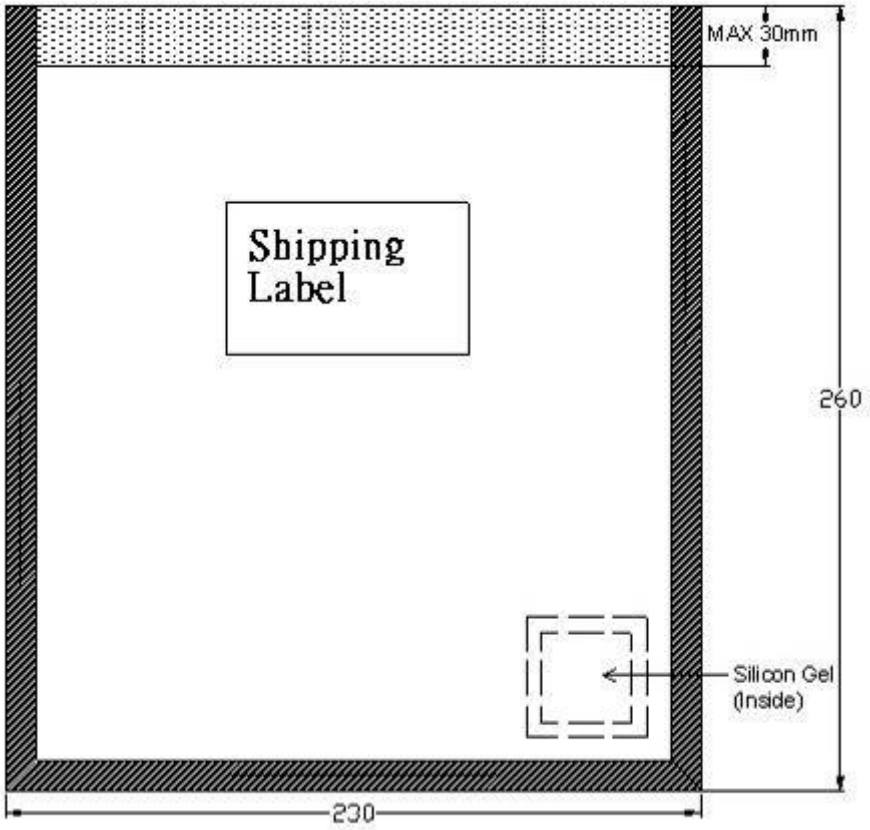
Reel Part :

Unit : mm



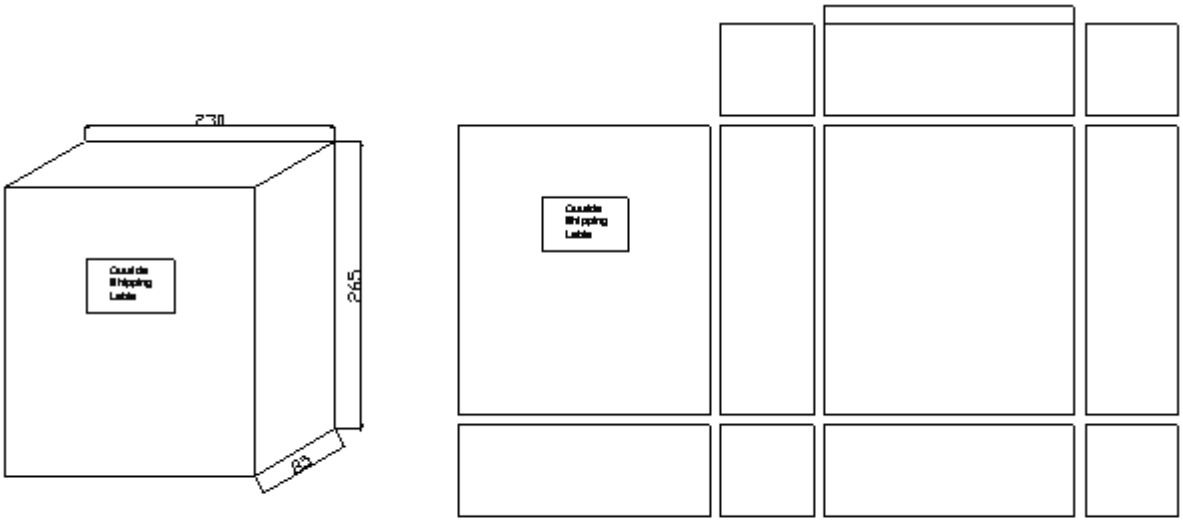
Anti Statistic Bag :

Unit : mm



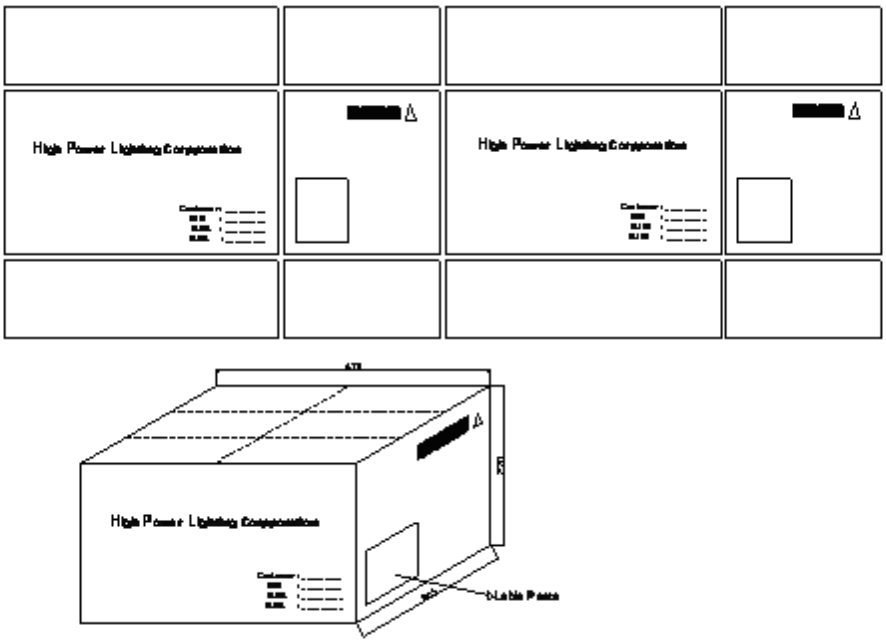
Small Box

Unit : mm



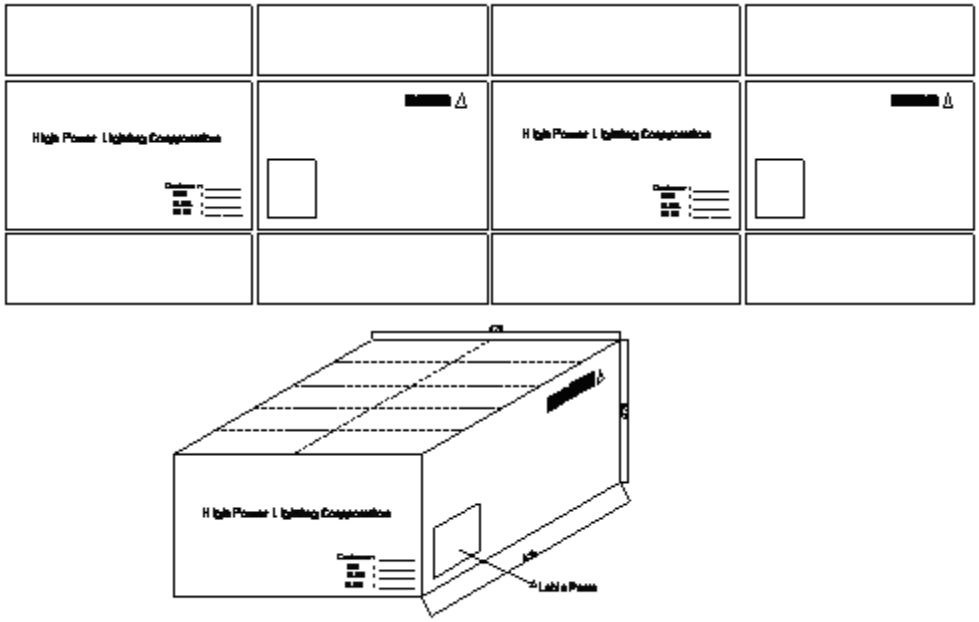
Middle Box

Unit : mm



Large Box

Unit : mm

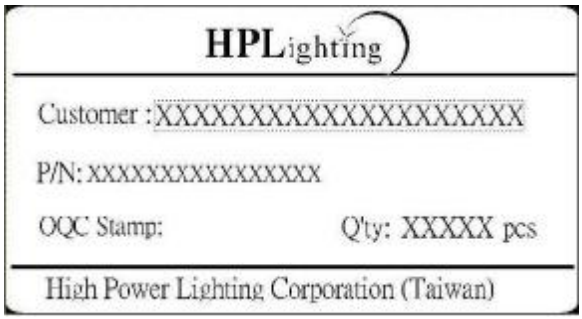


(3) Label Formation

70mm

Unit : mm

40mm,



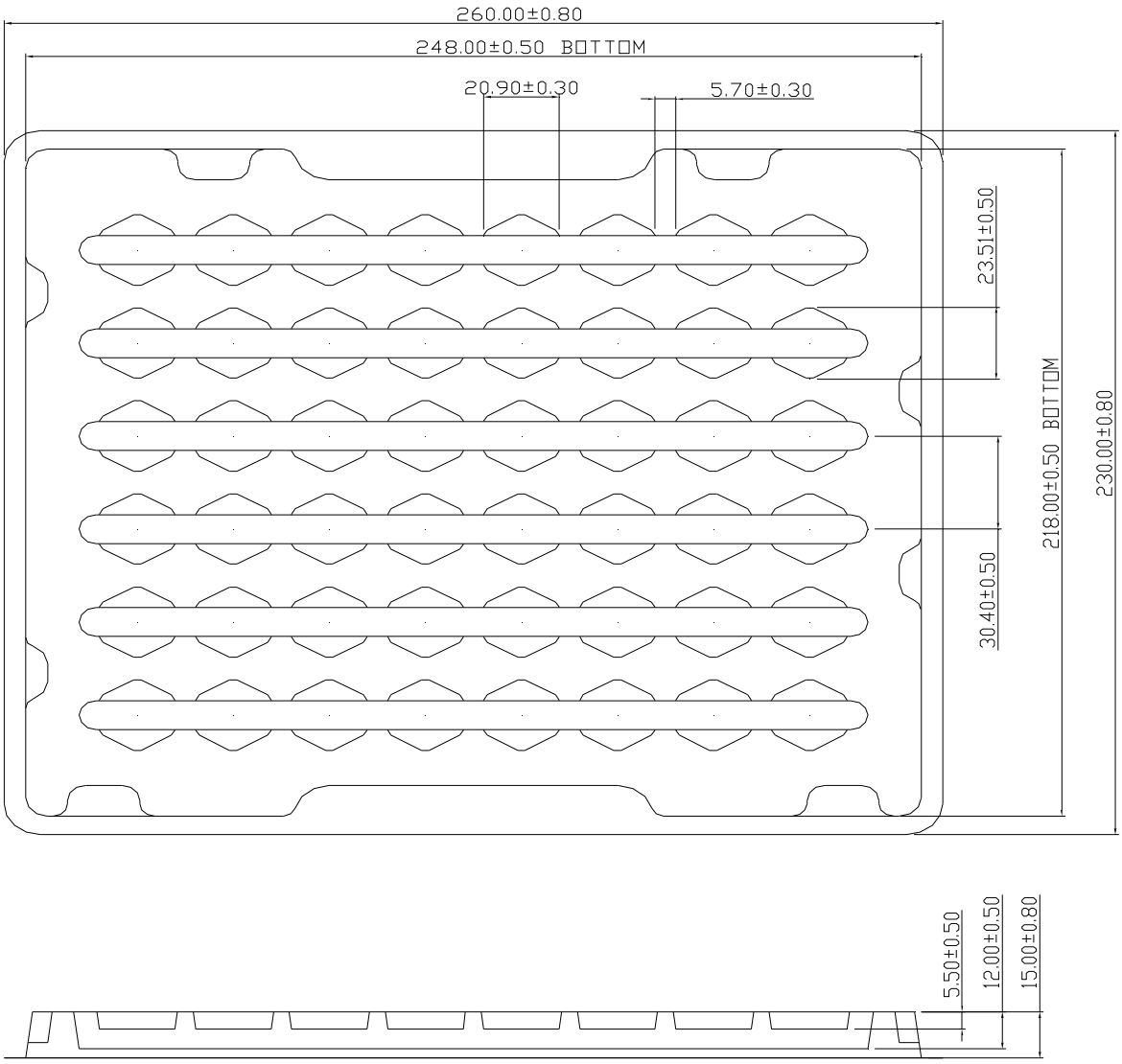
B. Assembly Type

(1)Tapping Dimension Packaging Specification

l 60 degree Assembly Type :

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

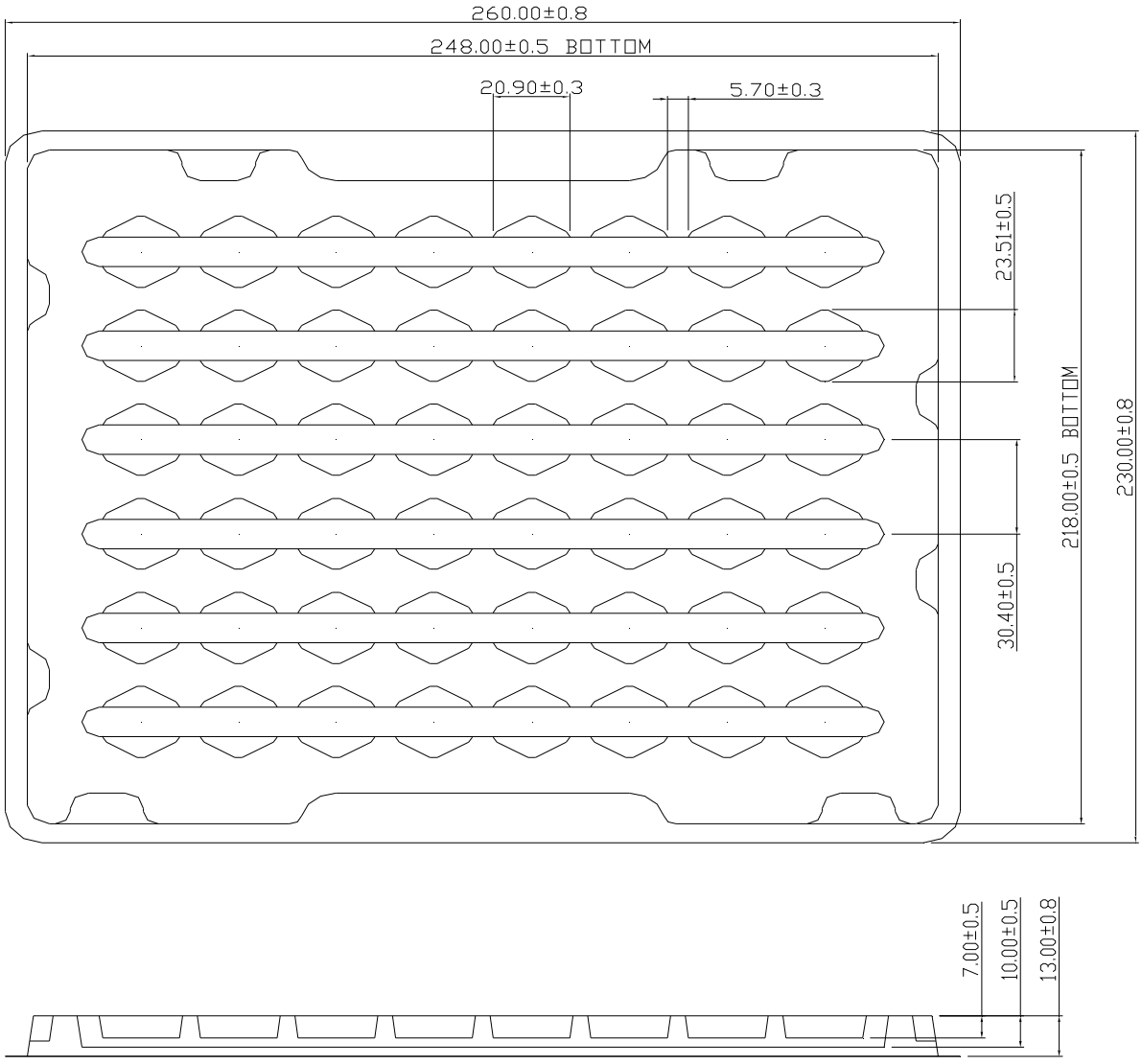
Unit : mm



l 120 degree Assembly Type :

- **n** Moisture proof bag.
- **n** 24 Tray (MAX) /bag.
- **n** Q'ty:48pcs (MAX)/Tray

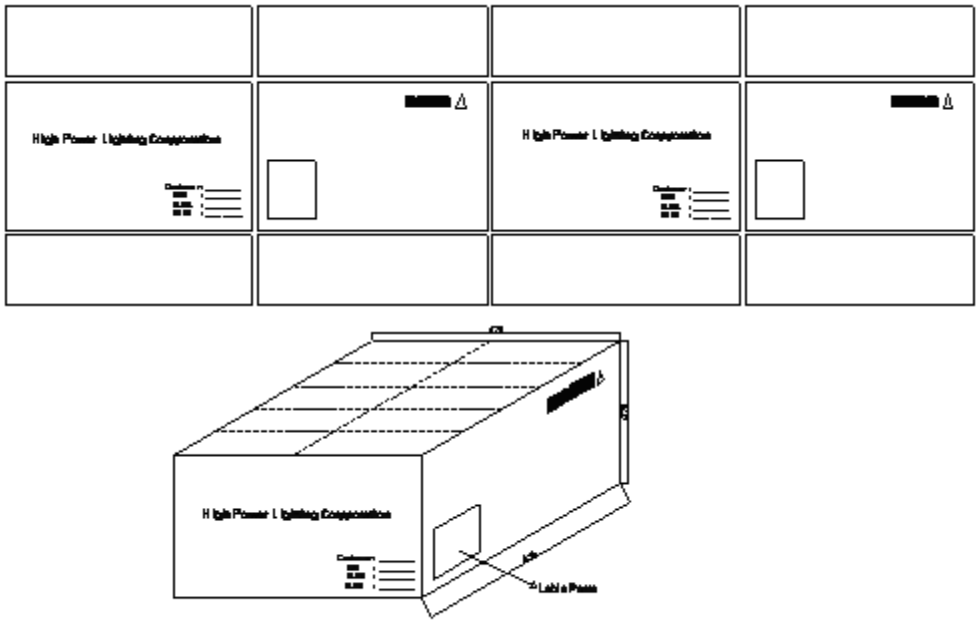
Unit : mm



(2) Package

Large Box

Unit : mm

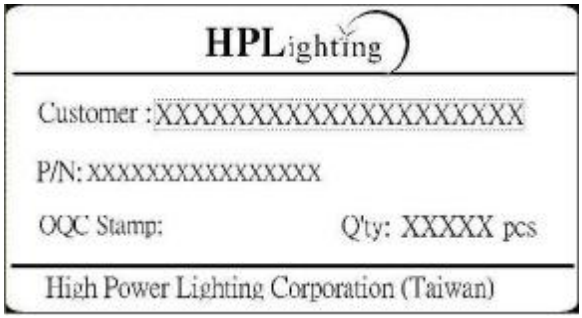


(3) Label Formation

70mm

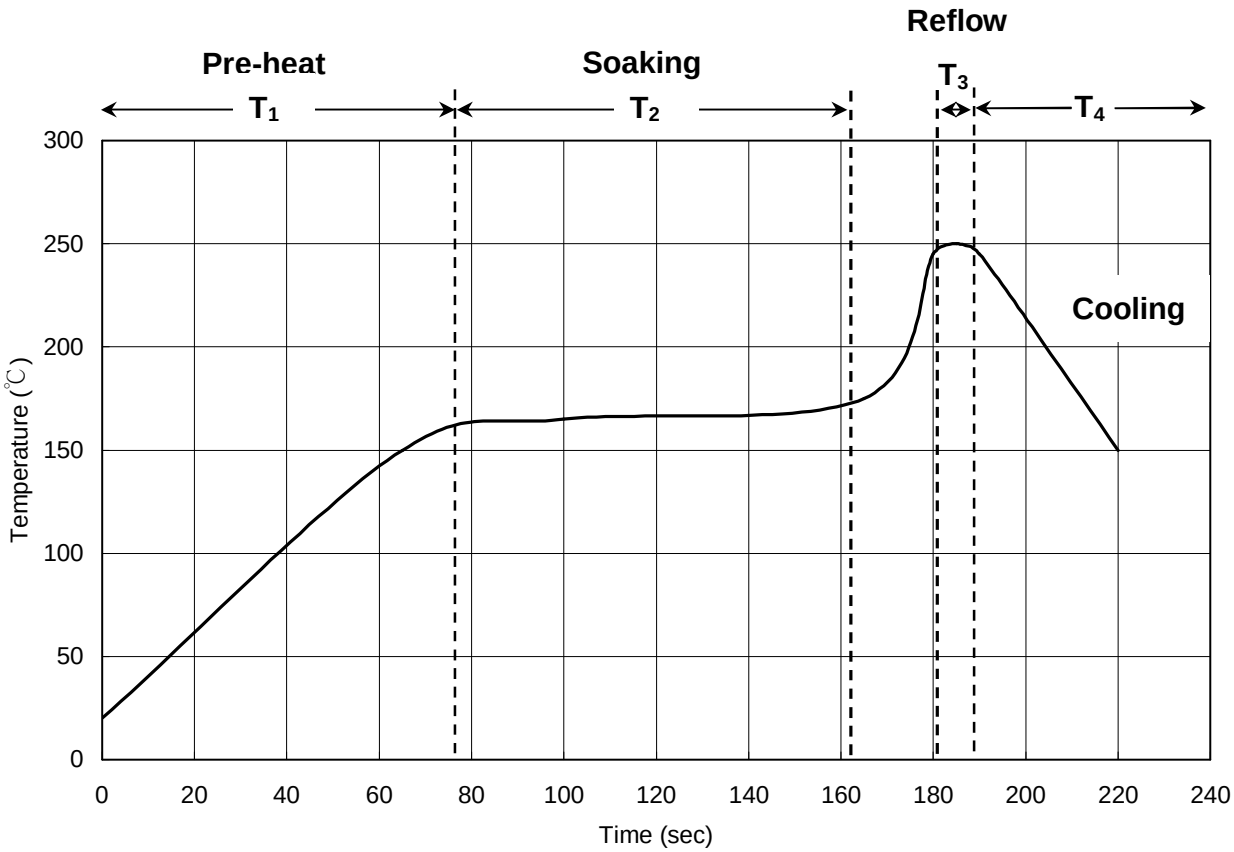
Unit : mm

40mm,



10. Recommended Solder profile

Soldering Recommended soldering conditions:



T_1	Ramp up rate	1.0 ~ 3.0 ℃/sec
	Pre-heat time	50 ~ 80 sec
T_2	Soaking temperature	155 ~ 185 ℃
	Dwell time during soaking	60 ~ 120 sec
T_3	Reflow temperature	240 ~ 250 ℃
	Reflow time	Max 10 sec
	Ramp up rate during reflow	1.2 ~ 2.3 ℃/sec
T_4	Cooling	1.0 ~ 6.0 ℃/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.