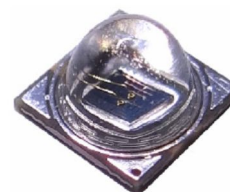


Specification For IR Series

HPL-H40DI1B3



Features

- Dimension : 4.0mm(L)×4.0mm(W)
- High Radiant Flux type
- All Metal Design Cu Substrate with Silicone Lens
- Exceed narrow beam angle 25°
- Low thermal resistance
- The AlGaAs/ AlGaAs , AlGaAs/ GaAs Chip inside

Applications

- IrDA
- Encoder
- Data Communication
- CCTV

5F, No 173-8, Yung-Fon Road, Tu-Cheng District, New Taipei City, Taiwan, R.O.C.
TEL: +886-2-8262-8886 FAX : +886-2-8262-8885

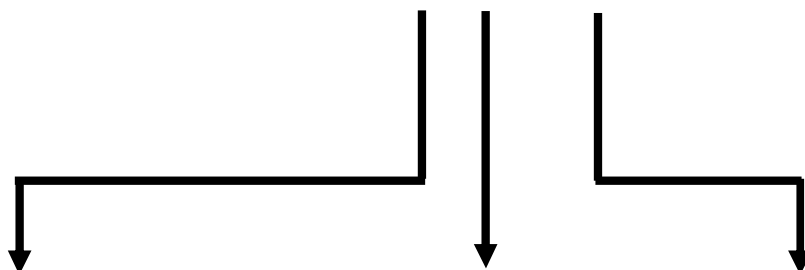


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General Information

HPL - H40DI1B3



Beam Angle-
Exceed narrow beam angle

Wavelength-
I : IR 730nm

Power-
B : 1W

Part Number Matrix

Type Wavelength	25° Lens	25° Lens & Star
IR 730	HPL-H40DI1B3	HPL-H40XI1B3

Absolute Maximum Ratings

(T_j=25°C)

Parameter	Symbol	Rating	Unit
Power Dissipation	P	1	W
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-C1}	5	°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 10 Seconds	

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

Initial Electrical/Optical Characteristics

- Forward Voltage** (T_j=25°C)

Wavelength	Forward Voltage					
	Symbol	MIN.	TYP.	MAX.	Test Condition	Unit
IR 730nm	V _F	-	2.1	-	I _F = 350mA	V

- Reverse Current** (T_j=25°C)

Wavelength	Reverse Current					
	Symbol	MIN.	TYP.	MAX.	Test Condition	Unit
IR 730nm	I _R	-	-	100	V _R = 5V	μA

- Radiant Flux** (T_j=25°C)

Wavelength	Radiant Flux					
	Symbol	MIN.	TYP.	MAX.	Test Condition	Unit
IR 730nm	Φ _e	100	290	-	I _F = 350mA	mW

- Radiant Intensity** (T_j=25°C)

Wavelength	Radiant Intensity					
	Symbol	MIN.	TYP.	MAX.	Test Condition	Unit
IR 730nm	I _e	-	520	-	I _F = 350mA	mW/sr

- Peak wavelength** (T_j=25°C)

Wavelength	Wavelength					
	Symbol	MIN.	TYP.	MAX.	Test Condition	Unit
IR 730nm	λ _p	730	-	750	I _F = 350mA	nm

- Spectra half-width** (T_j=25°C)

Wavelength	Wavelength					
	Symbol	MIN.	TYP.	MAX.	Test Condition	Unit
IR 730nm	Δλ	-	25	-	I _F = 350mA	nm

● Typical Radiation Pattern

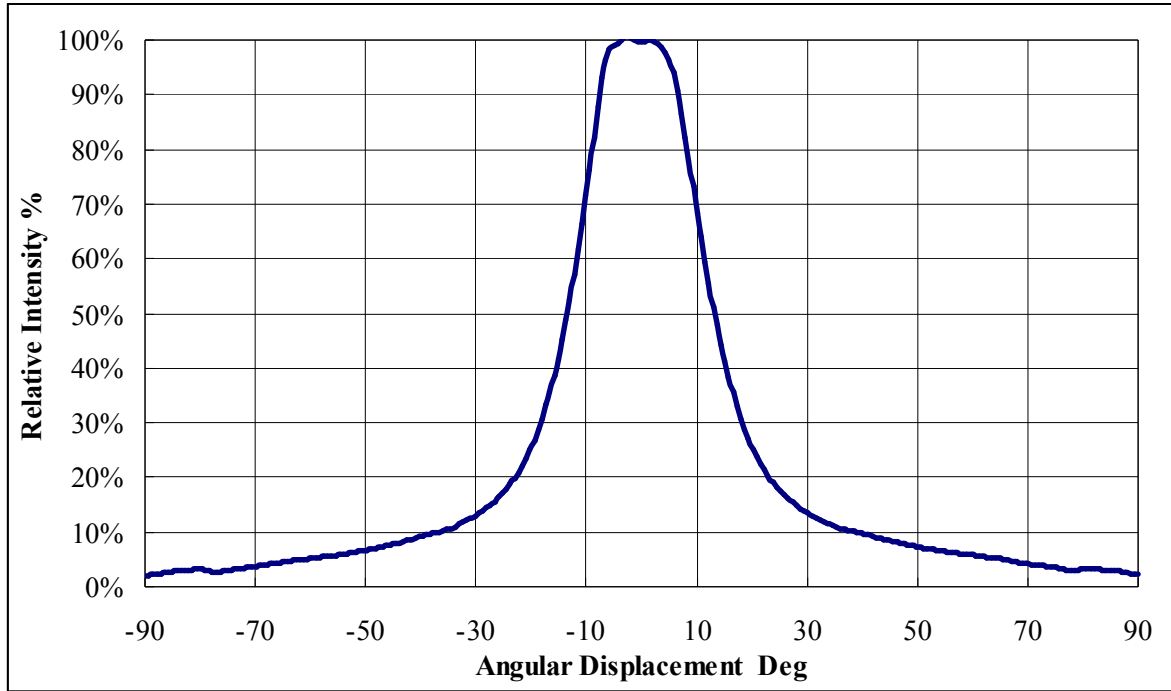


Fig. Typical Representative Spatial Radiation Pattern : 25 degree

● Bin Code List for Reference

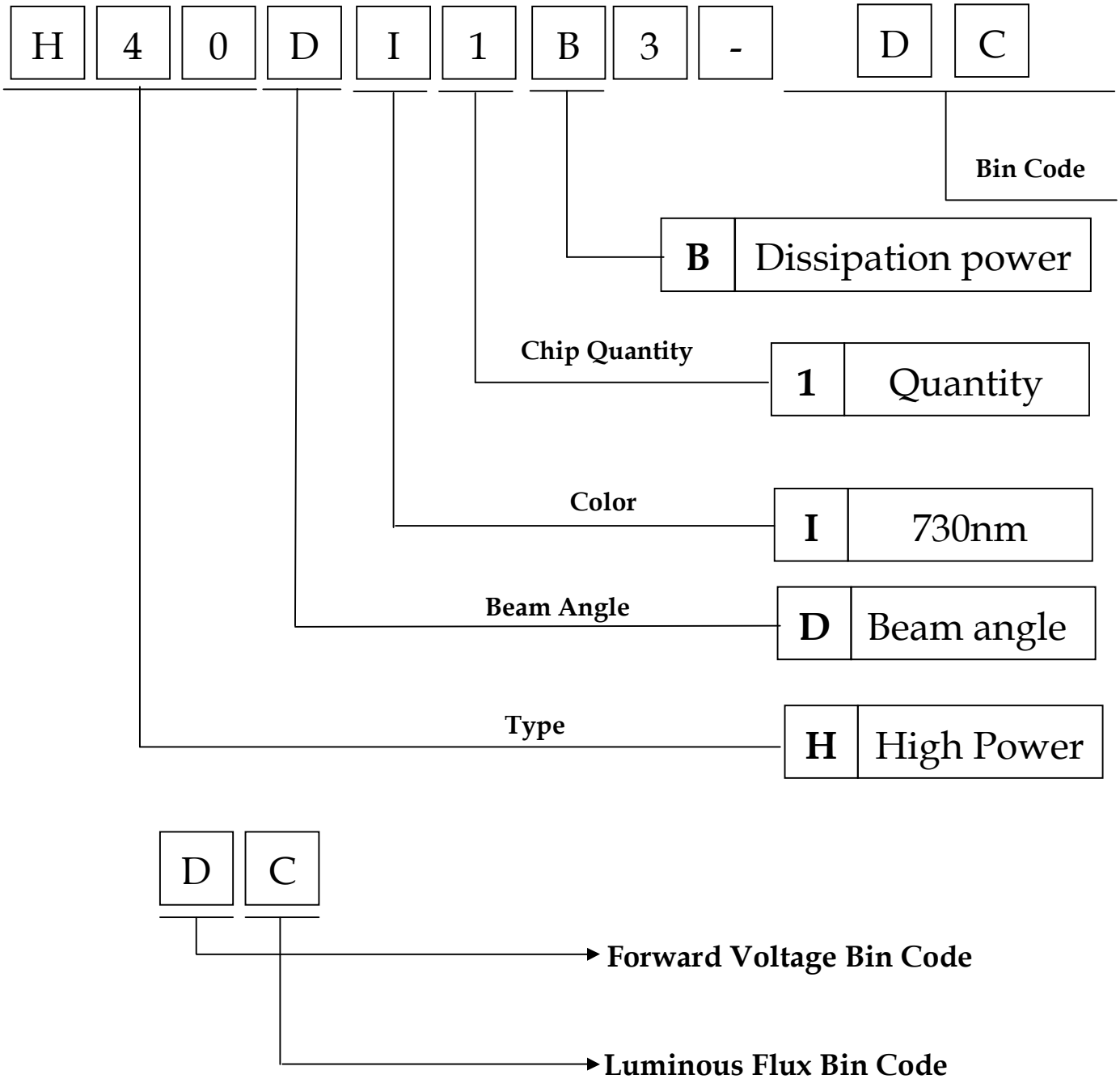
(Tj=25°C)

Item	Bin Code	Symbol	Condition	Min.	Max.	Unit
Forward Voltage ¹	C	V _F	I _F = 350 [mA]	1.83	2.07	V
	D			2.07	2.31	
	E			2.31	2.55	
	F			2.55	2.79	
Luminous Flux ²	A	Φ _e	I _F = 350 [mA]	175	225	mW
	B			225	275	
	C			275	350	
	D			350	425	

Note

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

Part Number Formation



Characteristic Diagram

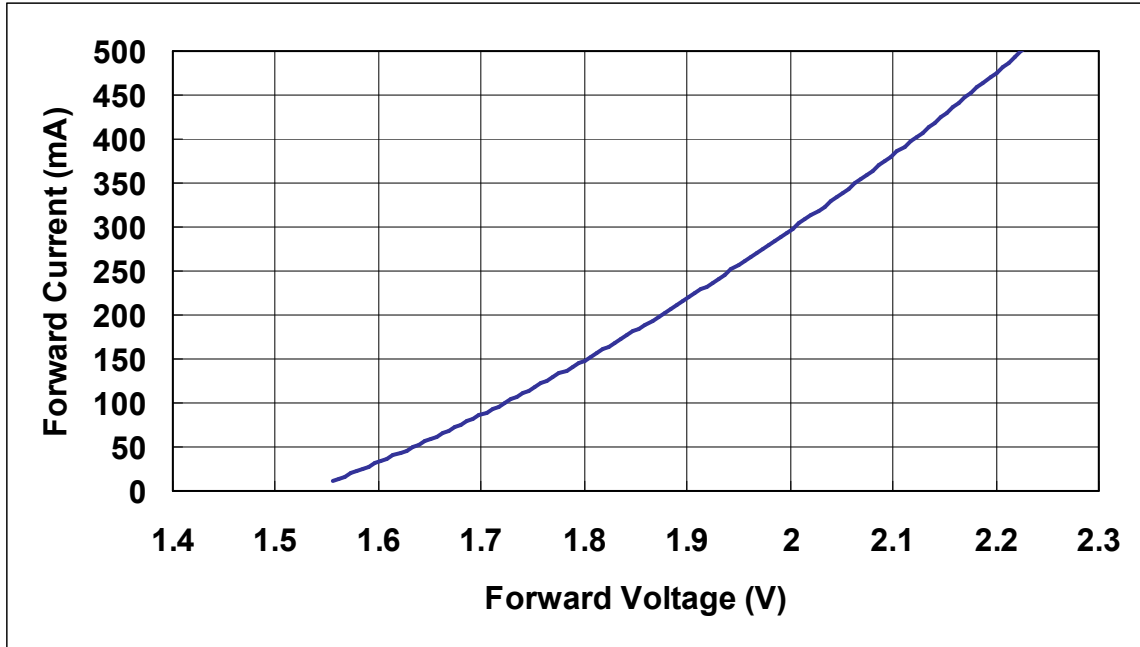


Fig. Forward Current vs. Forward Voltage

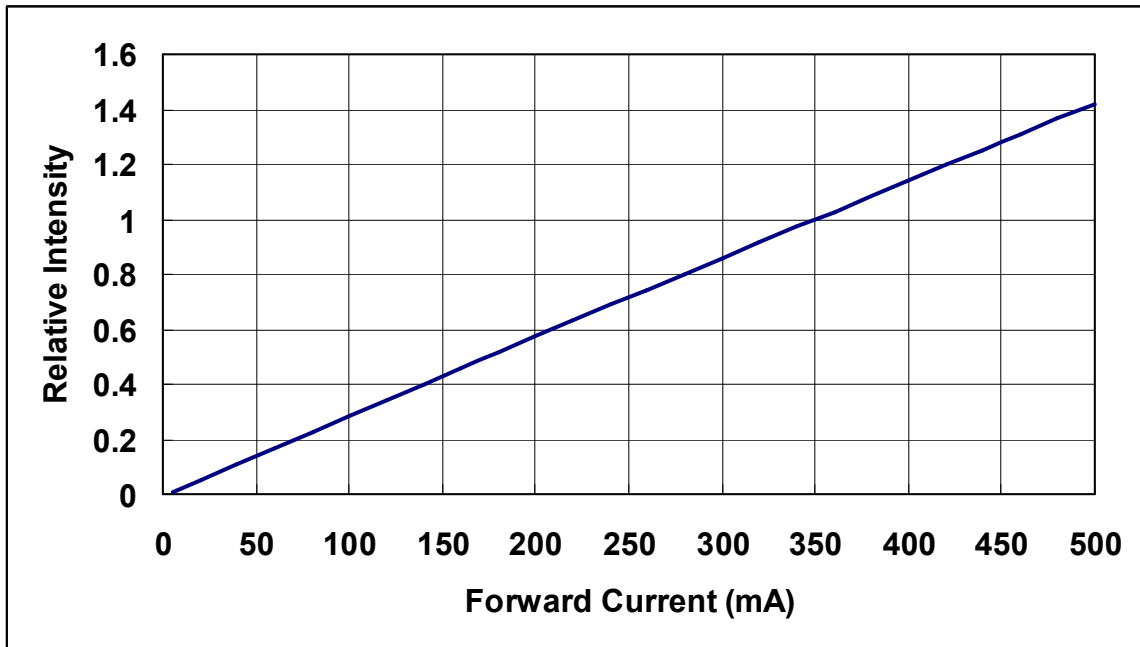


Fig. Relative Intensity vs. Forward Current.

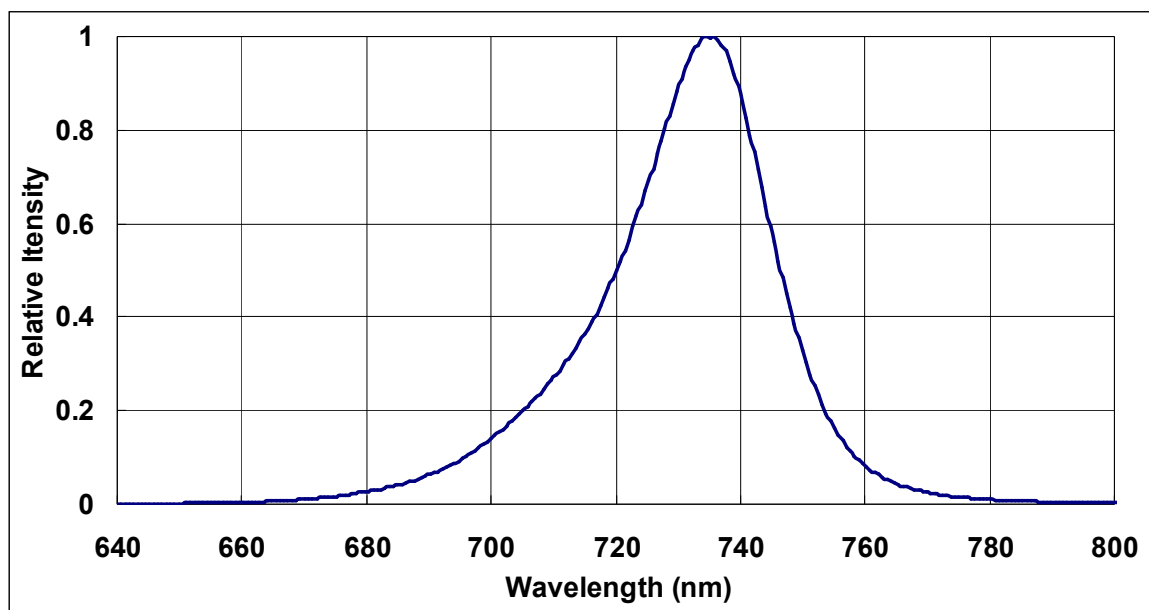


Fig. Typical Relative Intensity vs. wavelength

Outline Dimension

Unit : mm

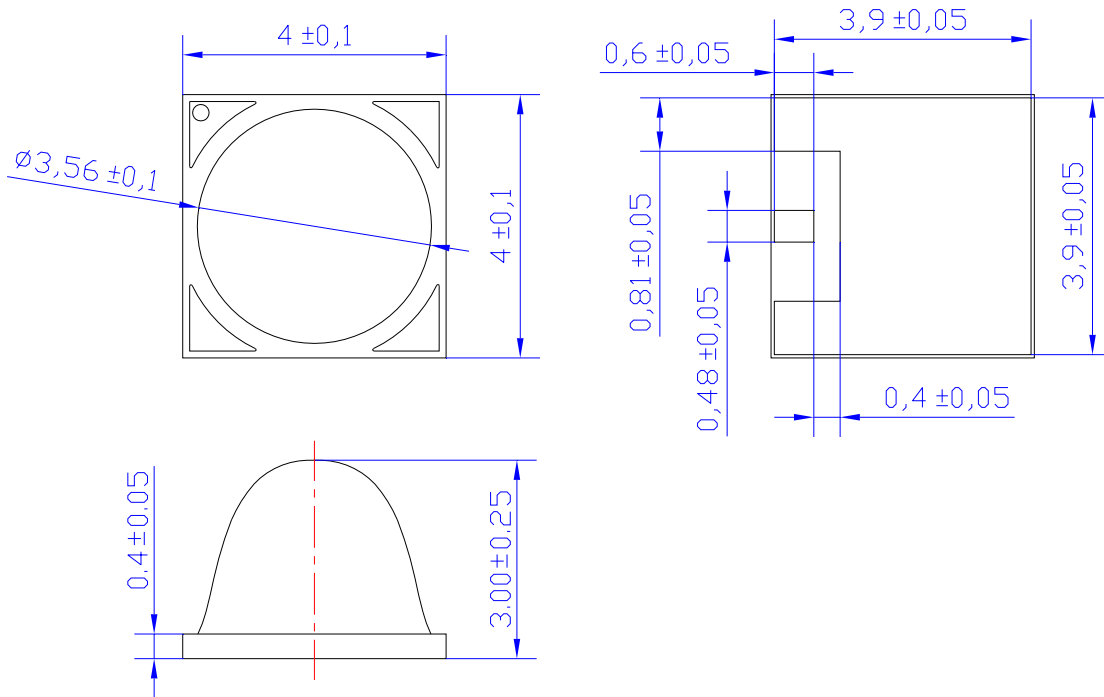
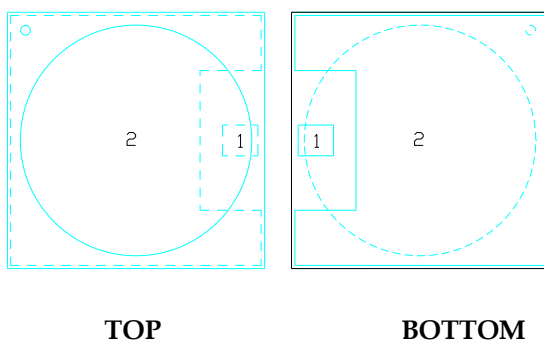


Fig. Package Outline Drawing.

● Pad Configuration



PAD	Function
1	Cathode
2	Anode、Thermal

Fig. Pad configuration.

Note: Please don't put conductive material on the top surface of LEDs.

HPL-H40XI1B3

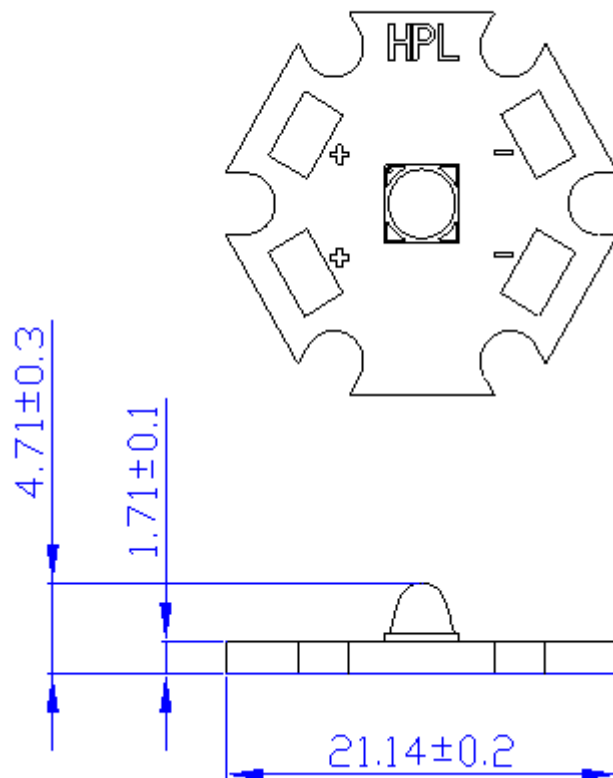
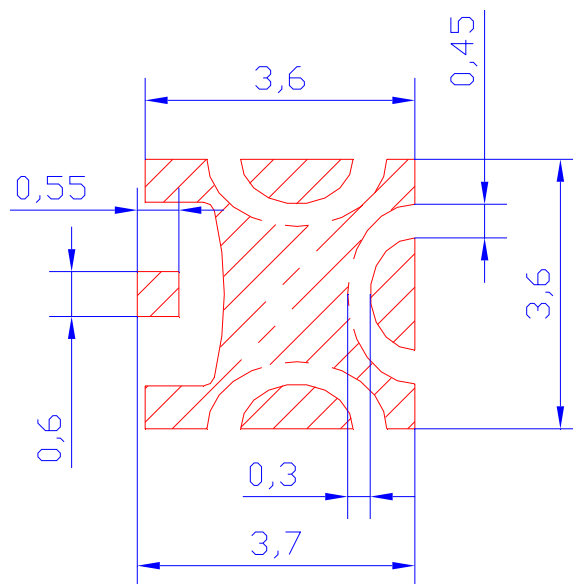
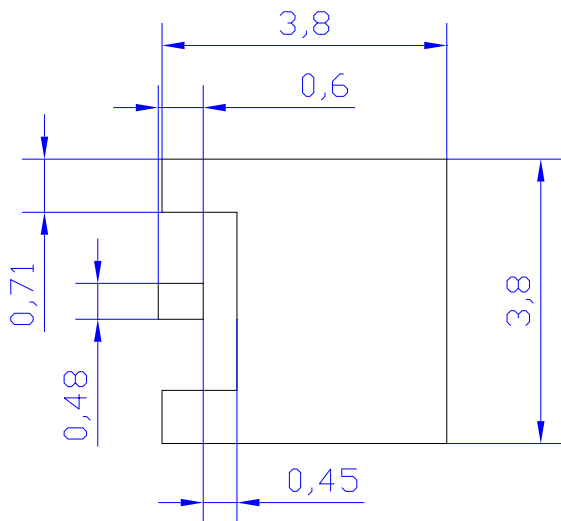


Fig. Assembly Outline Drawing.

Recommended Solder Pattern

Unit : mm

Tolerance±0.05



MCPCB LAYOUT

SOLDER MASK

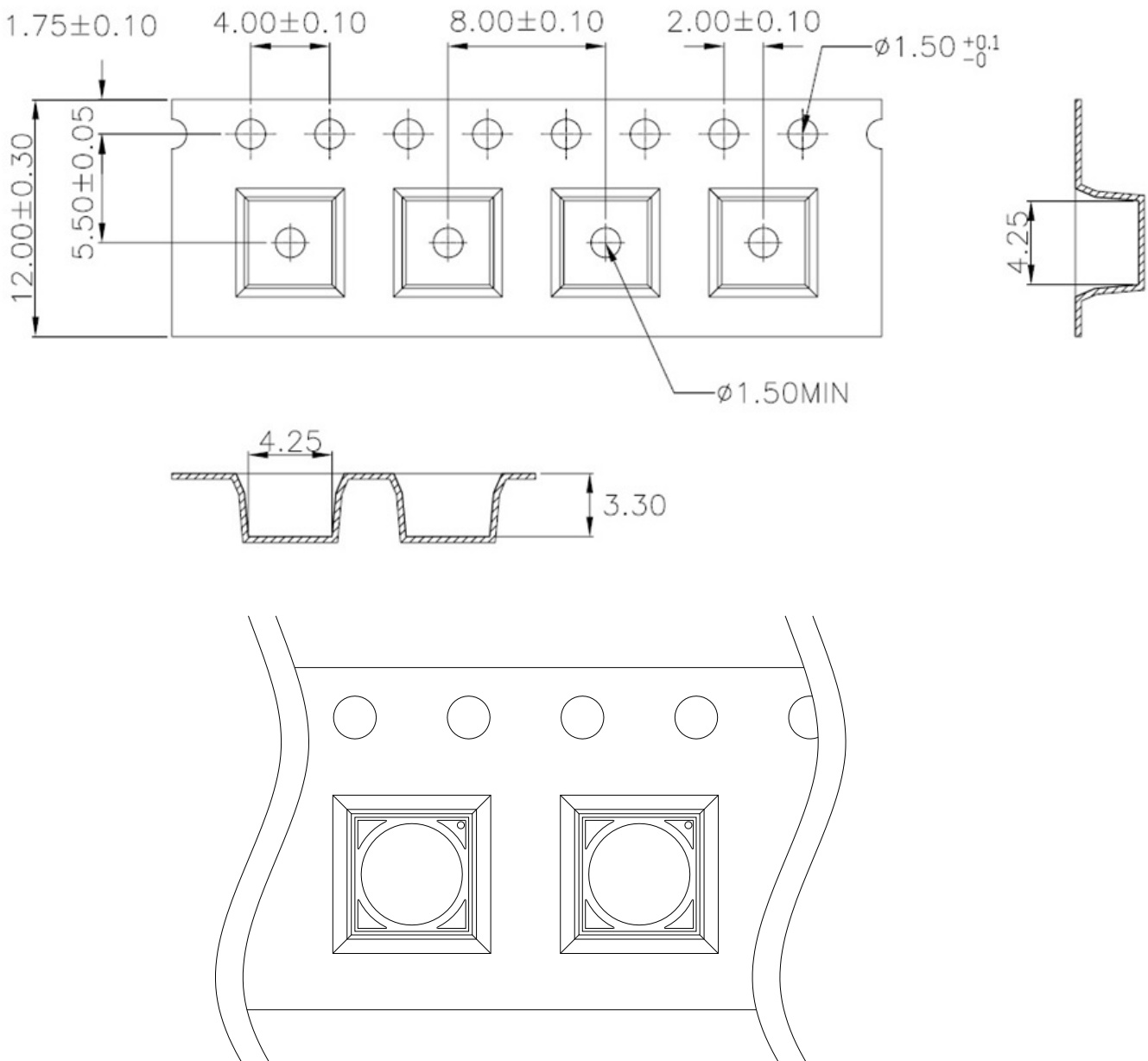
Fig. Solder Pad Layout.

Shipping Package Style

Tapping Dimension Packaging Specification

- Moisture proof bag.
- 1 Reel/bag.
- Q'ty : 700(MAX) / 7 inch Reel
- Q'ty : 2500(MAX) / 13 inch Reel

Unit : mm



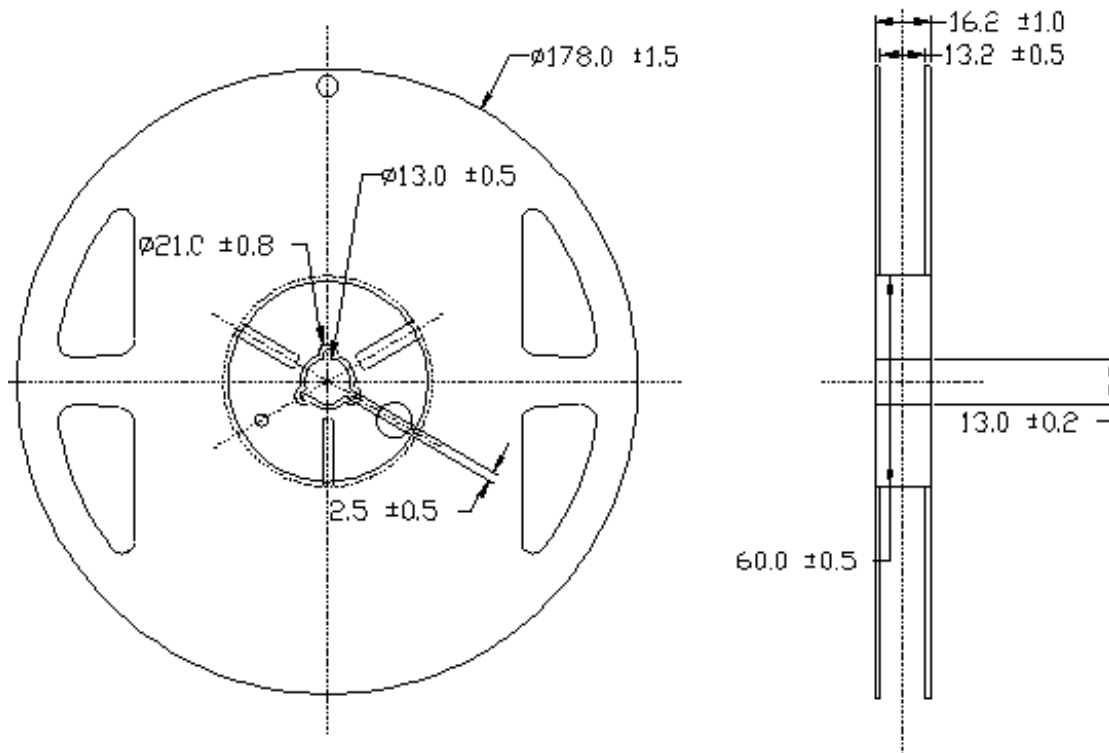
7 inch Reel Package

Box Type	Dimension (mm)	Reel/Box	25° Lens Type (Pcs)
Small Box(S)	230x85x265	5 Reel/Box	3500
Middle Box(M)	470x265x270	30 Reel/Box	21000
Large Box(L)	470x435x270	50 Reel/Box	35000

Reel Packaging :

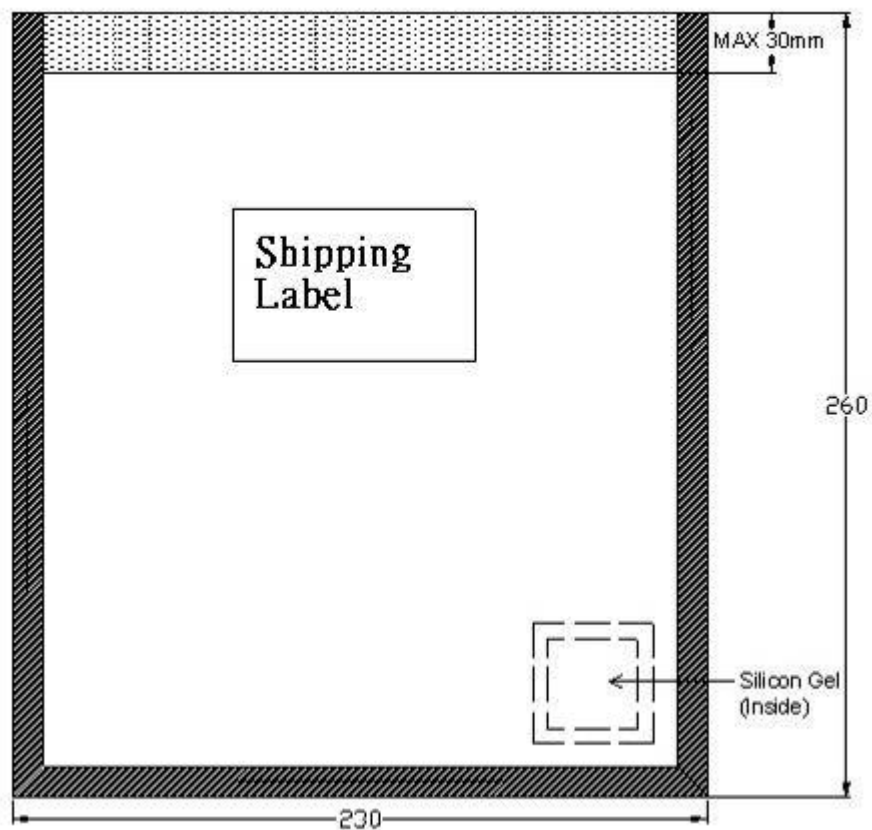
Reel Part :

Unit : mm



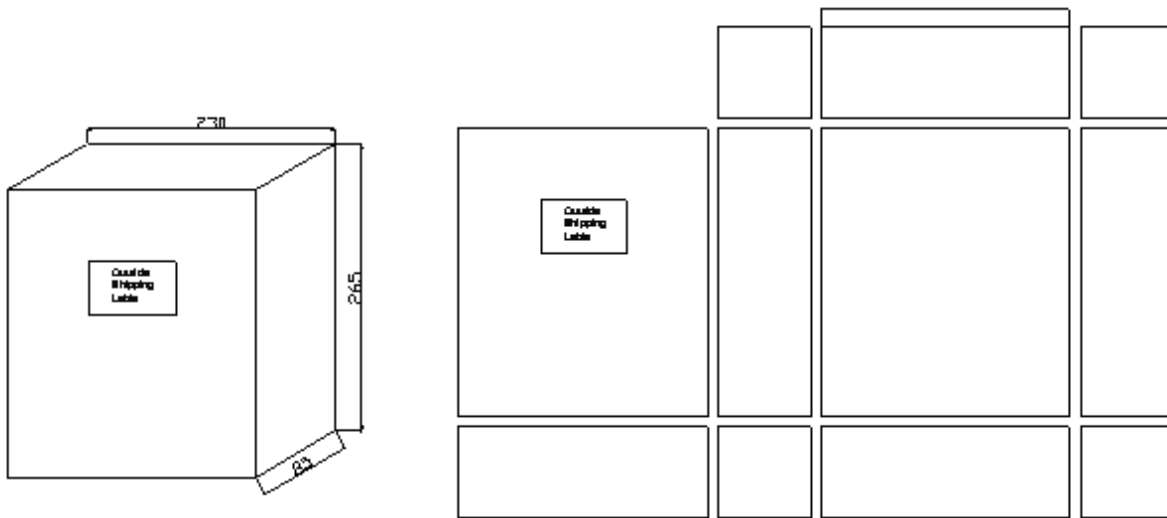
Anti Statistic Bag :

Unit : mm



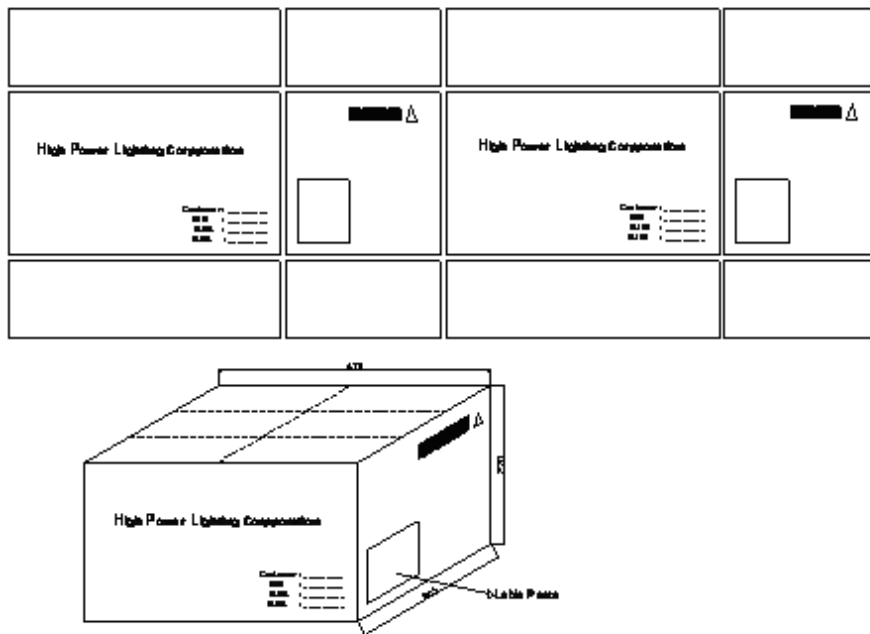
Small Box

Unit : mm



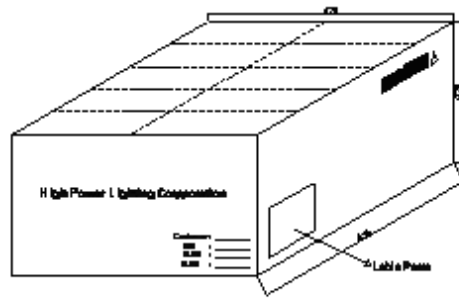
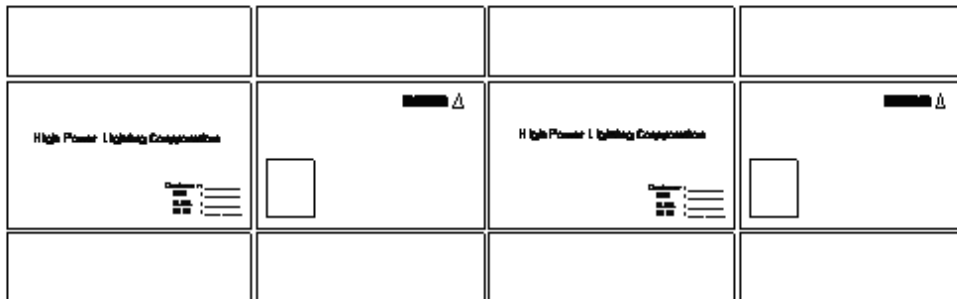
Middle Box

Unit : mm



Large Box

Unit : mm

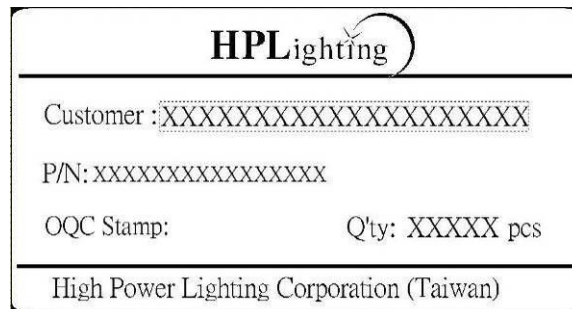
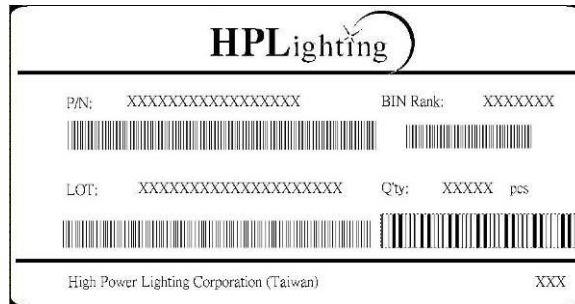


Label Formation

Unit : mm

70mm

40mm



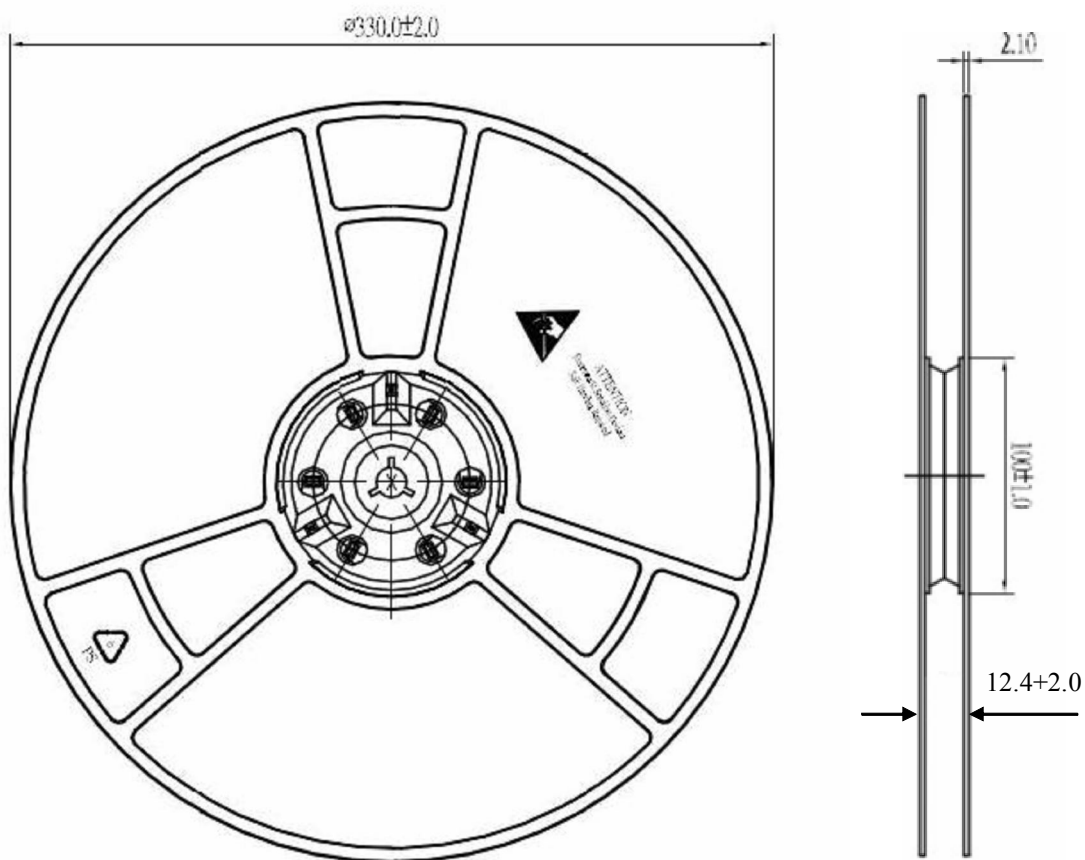
13 inch Reel Package

Box Type	Dimension (mm)	Reel/Box	25°Lens Type (Pcs)
Small Box(S)	415 x 380 x 95	5 Reel/Box	12500
Middle Box(M)	415 x 380 x 290	15 Reel/Box	37500
Large Box(L)	780 x 432 x 310	30 Reel/Box	75000

Reel Packaging :

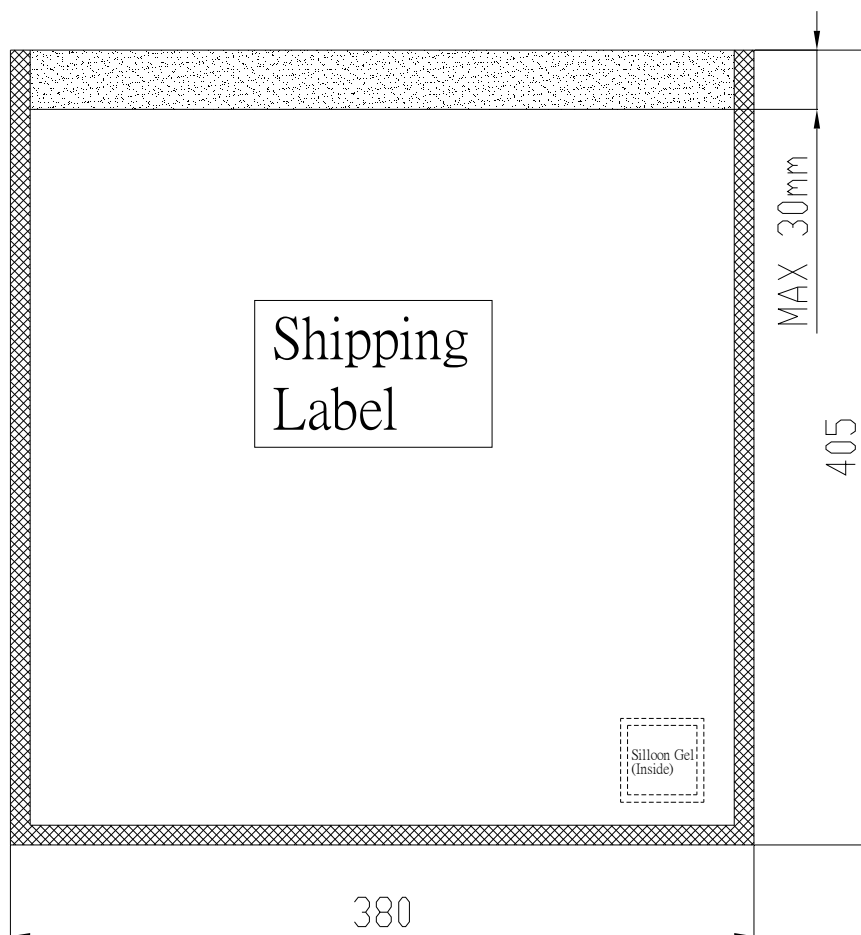
Reel Part :

Unit : mm



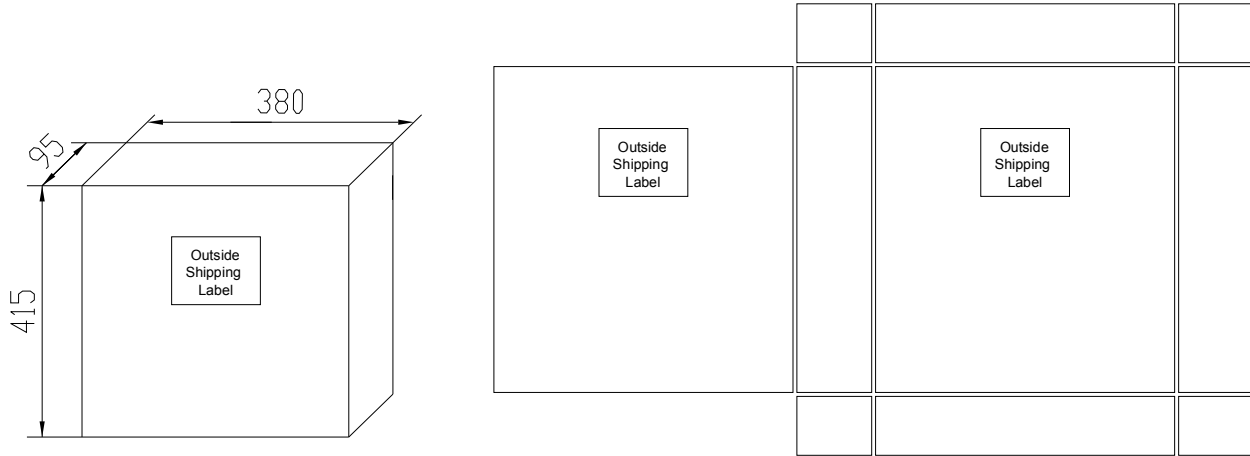
Anti Statistic Bag :

Unit : mm



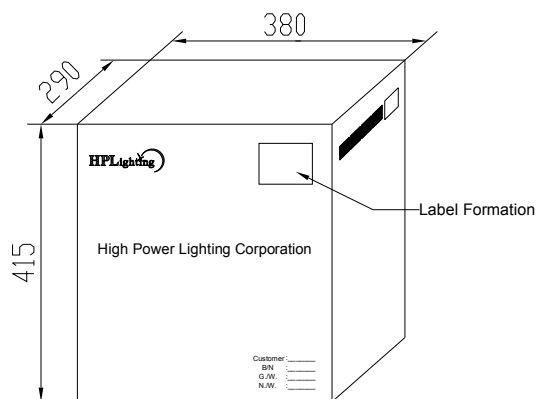
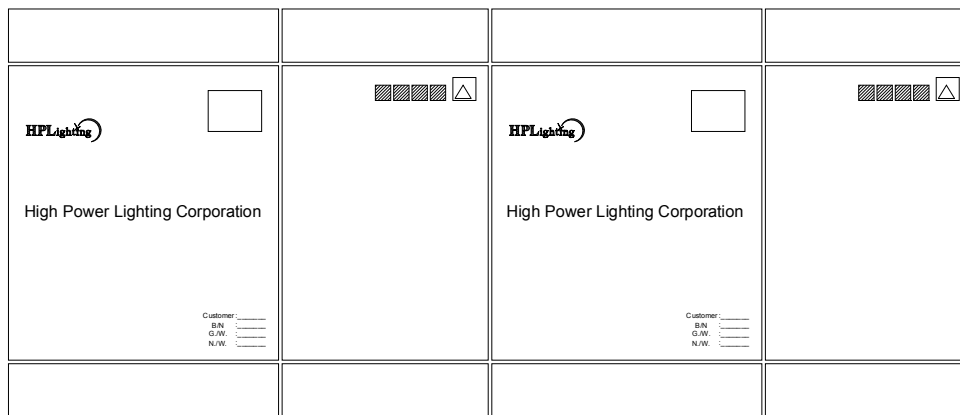
Small Box

Unit : mm



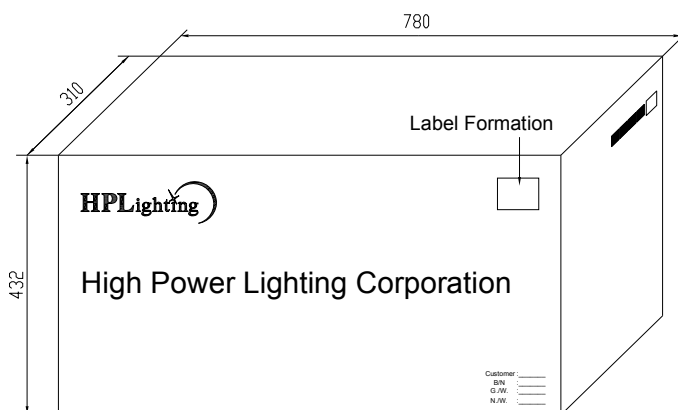
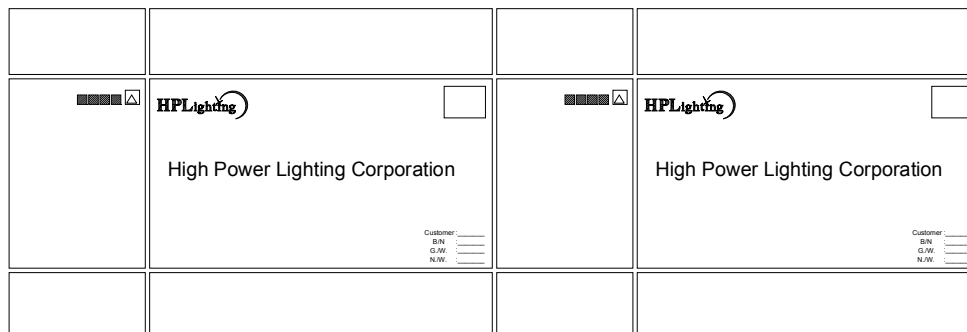
Middle Box

Unit : mm



Large Box

Unit : mm

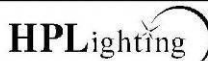


Label Formation

70mm

	
P/N: XXXXXXXXXXXXXXXXX	BIN Rank: XXXXXXX
	
LOT: XXXXXXXXXXXXXXXXXXXXX	Q'ty: XXXXX pcs
	
High Power Lighting Corporation (Taiwan)	XXX

40mm

	
Customer :XXXXXXXXXXXXXXXXXXXXXXXXXX	
P/N: XXXXXXXXXXXXXXXXX	
OQC Stamp:	Q'ty: XXXXX pcs
High Power Lighting Corporation (Taiwan)	

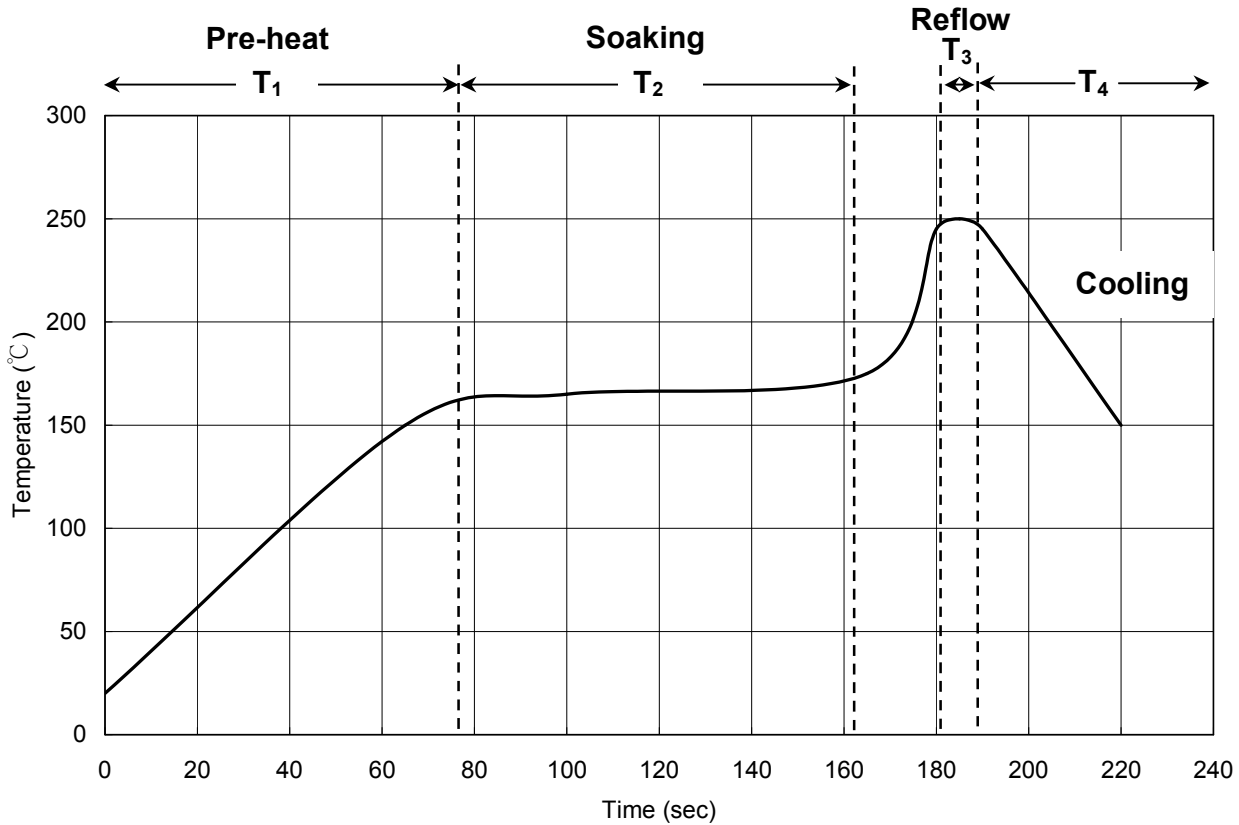
Qualification Reliability Testing

Classification	Test Item	Test conditions	Reference Standard
Endurance Test	Operation Life	$I_F = 350\text{mA}$ $T_a = 25^\circ\text{C}$ 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	JISC 7021: B-12
Environmental Test	Temperature Cycling	$-30^\circ\text{C} \sim 25^\circ\text{C} \sim 105^\circ\text{C} \sim 25^\circ\text{C}$ 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	$-30\pm 5^\circ\text{C} \sim 105\pm 5^\circ\text{C}$ 30min 30min Test Duration = 10 cycle	MIL-STD-202: 107D MIL-STD-750: 1051 MIL-STD-883: 1011
	Solder Resistance	$T_{sol} = 260\pm 5^\circ\text{C}$ 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	$I_F = 350\text{mA}$	V_F shift > 10%
Luminous	$I_v\%$	$I_F = 350\text{mA}$	$I_v\%$ shift > 10%

Recommended Solder Profile

Soldering Recommended soldering conditions:



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