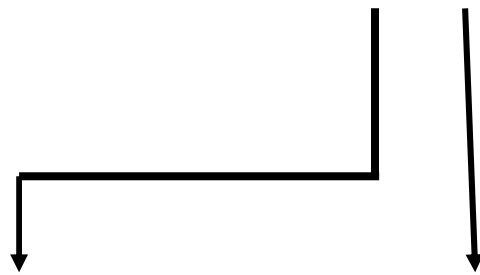


SPECIFICATION FOR IR SERIES

HPL- H77X X 1 B A



Lens & Assembly Type :

- N : No special Work
- S : with Star
- A : Lens 25°
- B : Lens 45°
- L : Lens 120°
- G : Star & Lens 25°
- H : Star & Lens 45°
- F : Star & Lens 120°

Wavelength:

- H : IR 660nm
- I : IR 730nm
- J : IR 850nm
- K : IR 940nm

Caution:

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

Part Number Matrix

Without Star:

Colors	Flat	Lens 25°	Lens 45°	Lens 120°
IR 660nm	HPL-H77NH1BA	HPL-H77AH1BA	HPL-H77BH1BA	HPL-H77LH1BA
IR 730nm	HPL-H77NI1BA	HPL-H77AI1BA	HPL-H77BI1BA	HPL-H77LI1BA
IR 850nm	HPL-H77NJ1BA	HPL-H77AJ1BA	HPL-H77BJ1BA	HPL-H77LJ1BA
IR 940nm	HPL-H77NK1BA	HPL-H77AK1BA	HPL-H77BK1BA	HPL-H77LK1BA

With Star:

Colors	Star & Flat	Star & Lens 25°	Star & Lens 45°	Star & Lens 120°
IR 660nm	HPL-H77SH1BA	HPL-H77GH1BA	HPL-H77HH1BA	HPL-H77FH1BA
IR 730nm	HPL-H77SI1BA	HPL-H77GI1BA	HPL-H77HI1BA	HPL-H77FI1BA
IR 850nm	HPL-H77SJ1BA	HPL-H77GJ1BA	HPL-H77HJ1BA	HPL-H77FJ1BA
IR 940nm	HPL-H77SK1BA	HPL-H77GK1BA	HPL-H77HK1BA	HPL-H77FK1BA

1. Features

- Dimension : 7.0mm(L)×7.0mm(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

. Absolute Maximum Ratings

(T_j=25°C)

Parameters		Symbol	Rating	Unit
Power Dissipation	IR 660nm	P	0.8	W
	IR 730nm		0.6	
	IR 850nm		0.6	
	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

● **Forward Voltage**

(T_j=25°C)

Wavelength	Forward Voltage					
	Symbol	MIN.	TYP.	MAX.	Test Condition	Unit
IR 660nm	V _F	-	2.20	-	I _F = 350mA	V
IR 730nm		-	1.70	-		
IR 850nm		1.55	1.65	1.75		
IR 940nm		-	1.40	1.60		

● **Reverse Current**

(T_j=25°C)

Wavelength	Reverse Current					
	Symbol	MIN.	TYP.	MAX.	Test Condition	Unit
IR 660nm	I _R	-	-	10	V _R = 5V	μA
IR 730nm		-	-	10		
IR 850nm		-	-	10		
IR 940nm		-	-	10		

● **Radiant Flux**

(T_j=25°C)

Wavelength	Radiant Flux (With Lens / Without Lens)					
	Symbol	MIN.	TYP.	MAX.	Test Condition	Unit
IR 660nm	Φ _e	-	72/60	-	I _F = 350mA	mW
IR 730nm		-	57.6/48	-		
IR 850nm		-	144/120	-		
IR 940nm		-	102/85	-		

● Peak wavelength

(T_j=25°C)

Wavelength	Wavelength					
	Symbol	MIN.	TYP.	MAX.	Test Condition	Unit
IR 660nm	λ_p	-	660	-	I _F = 350mA	nm
IR 730nm		-	730	-		
IR 850nm		-	860	-		
IR 940nm		-	960	-		

● View Angle

(T_j=25°C)

Wavelength	Viewing Angle						
	Symbol	Without Lens	Lens 120°	Lens 25°	Lens 45°	Test Condition	Unit
All	2 $\theta_{1/2}$	110°	120°	25°	45°	I _F = 350mA	degree

● Spectra half-width

(T_j=25°C)

Wavelength	Spectra half-width					
	Symbol	MIN.	TYP.	MAX.	Test Condition	Unit
IR 660nm	$\Delta\lambda$	-	25	-	I _F = 350mA	nm
IR 730nm		-	40	-		
IR 850nm		-	40	-		
IR 940nm		-	50	-		

Bin Code List for Reference

(Tj=25°C)

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) :

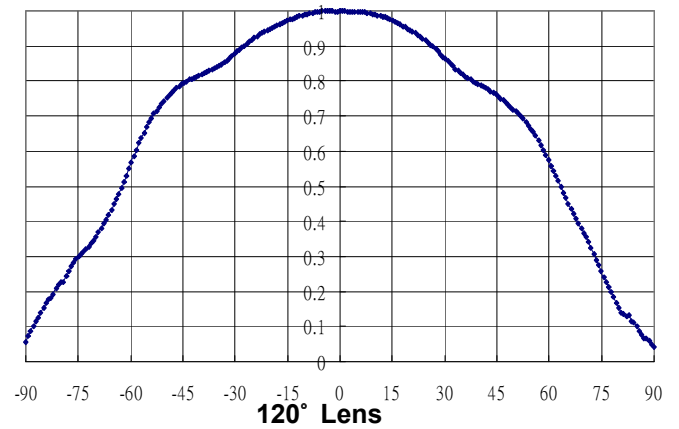
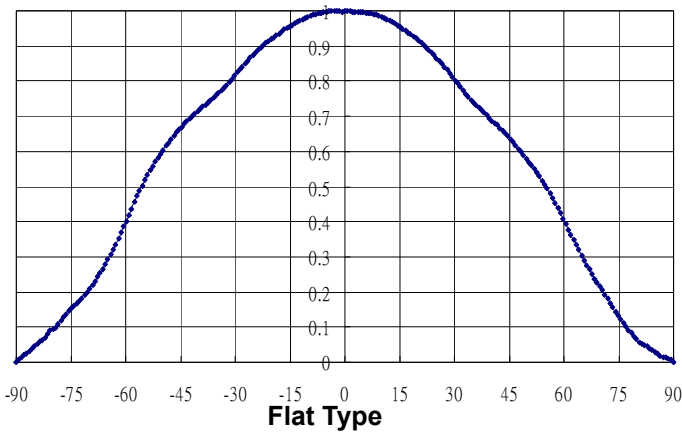
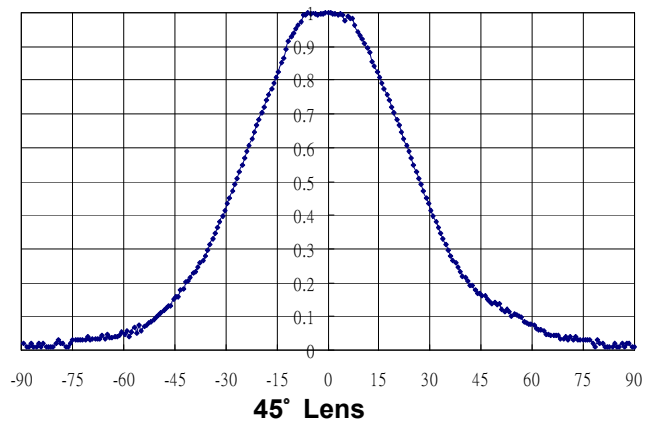
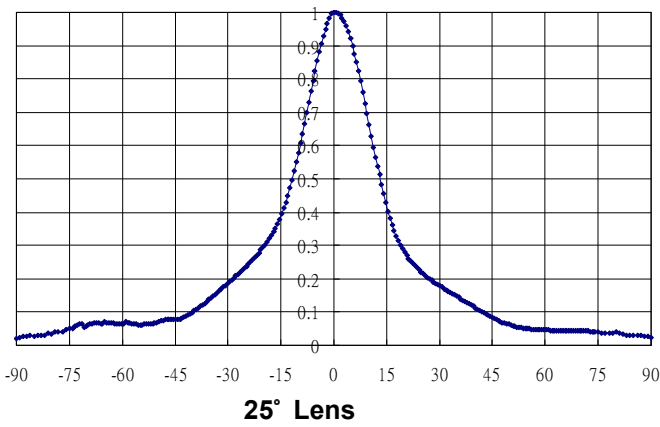
Bin Code	Min.	Max.	Unit
0	0	10	mW
1	10	20	
2	20	30	
3	30	40	
4	40	50	
5	50	75	
6	75	100	
7	100	125	
8	125	150	
9	150	175	

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	

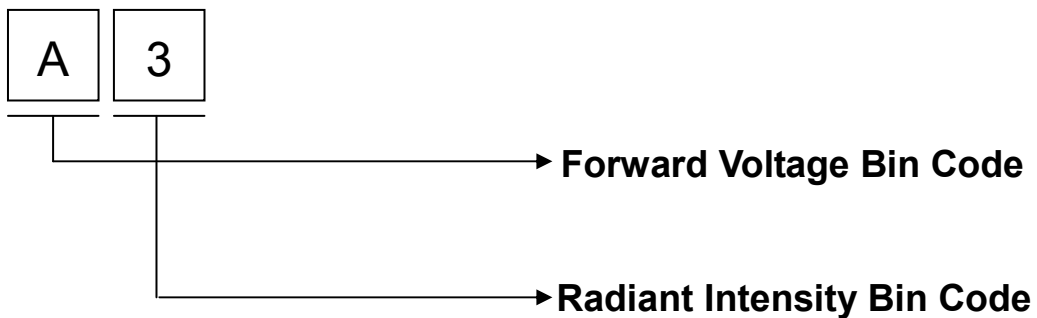
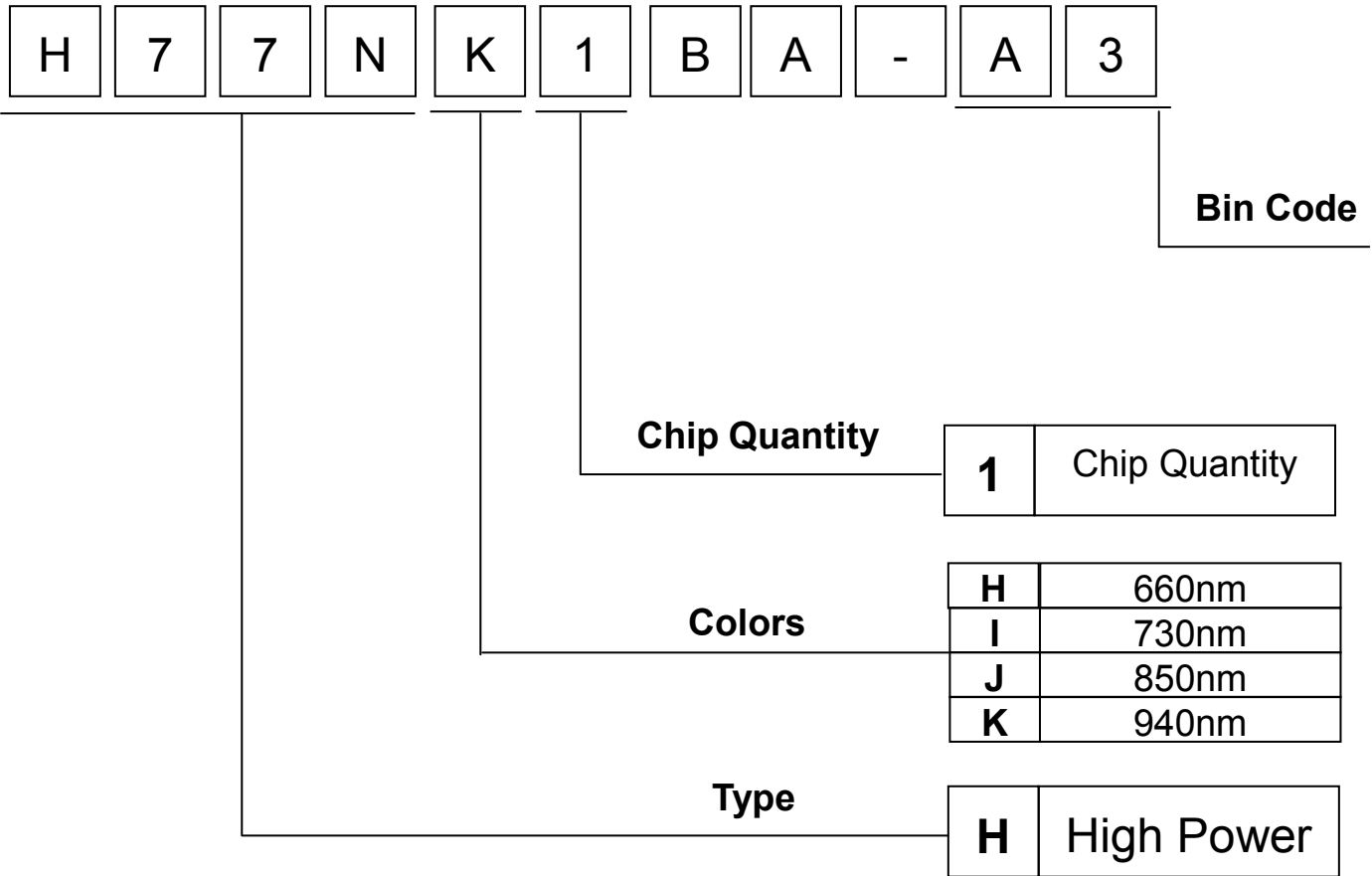
Note

1. Forward voltage measurement allowance is $\pm 0.1V$.
2. Radiant intensity measurement allowance is $\pm 10\%$.

● **Typical Radiation Pattern**

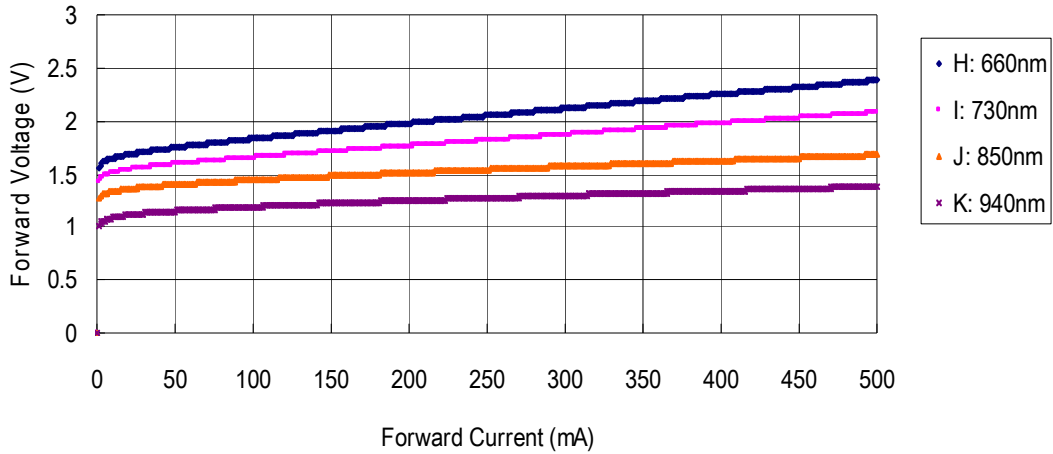


5. Part Number Formation

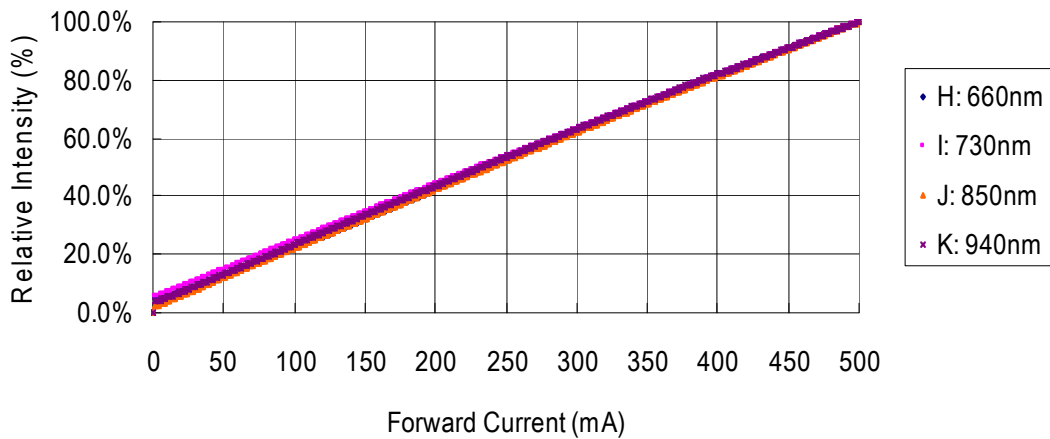


6. Characteristic Diagrams

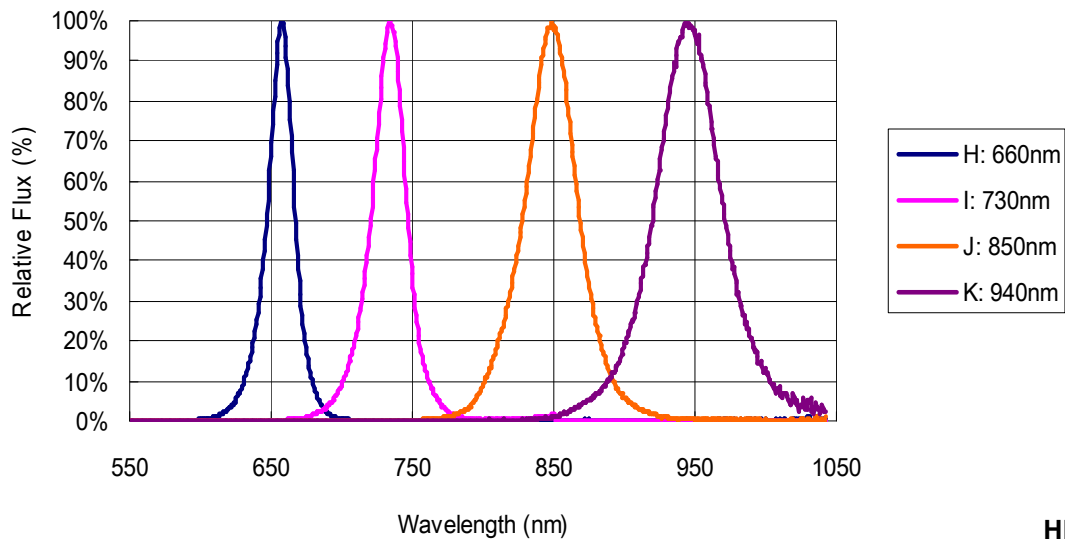
Forward Voltage VS. Forward Current



Forward Current VS. Relative Intensity

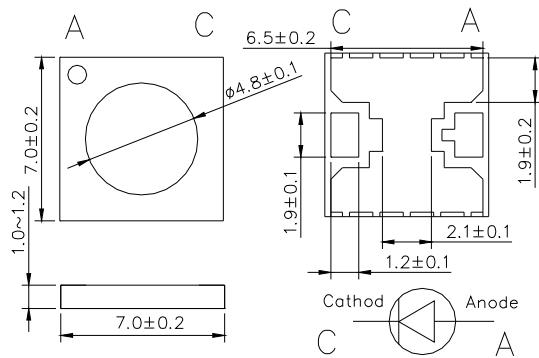


Wavelength VS. Relative Radiometric Flux

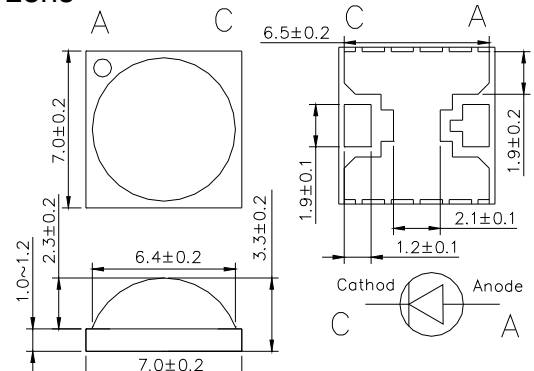


7. Dimensions (Unit: mm)

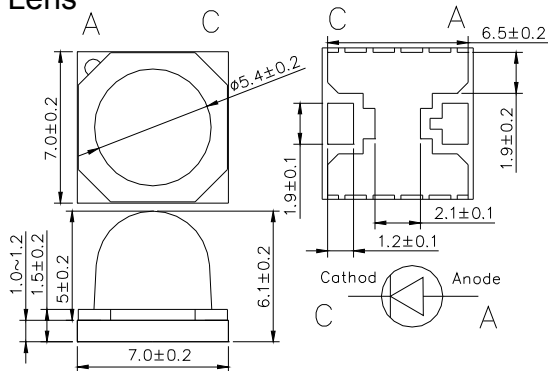
Flat Type



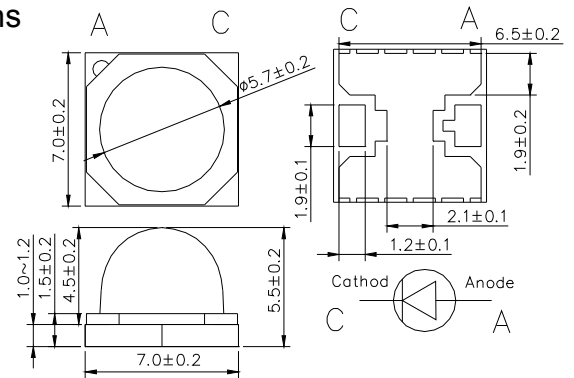
120° Lens



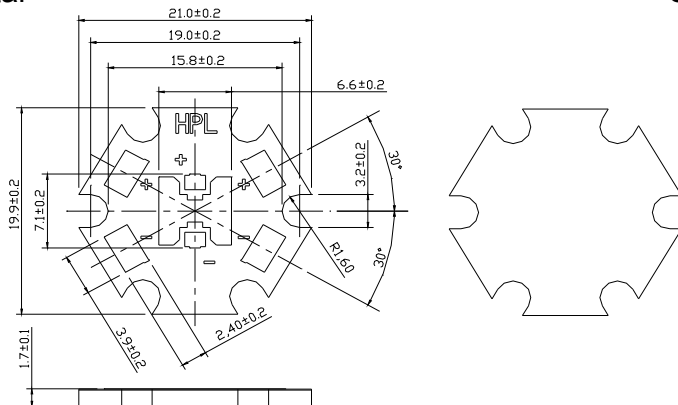
25° Lens



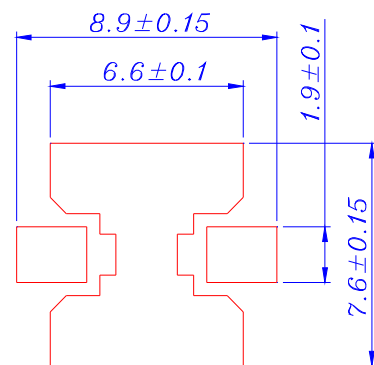
45° Lens



Star



Solder Pad Note: See the caution area

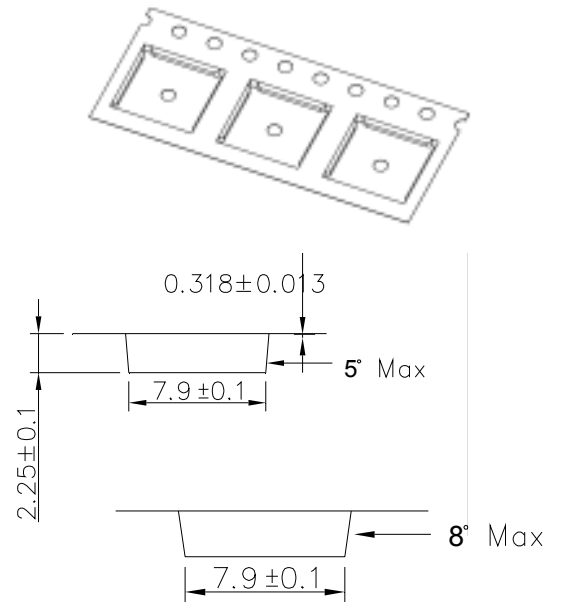
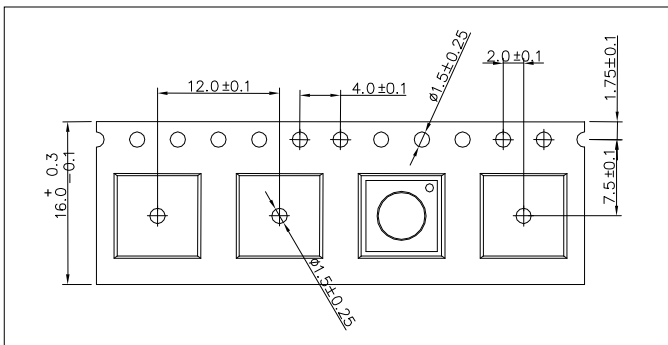


8. Shipping Package Unit : mm

(1) Tapping Dimension Packaging Specification

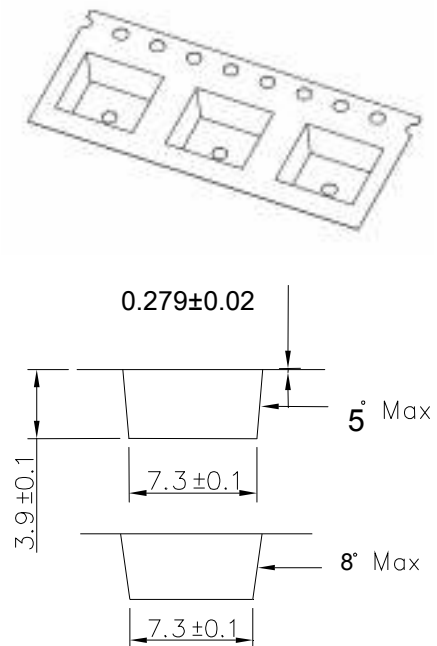
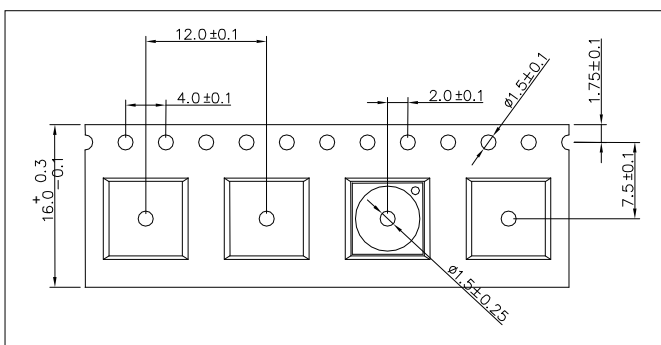
● Flat Type :

- Moisture proof bag.
- 1 Reel/bag.
- Q'ty: 500(MAX)/Reel.



● With 120 degree Lens:

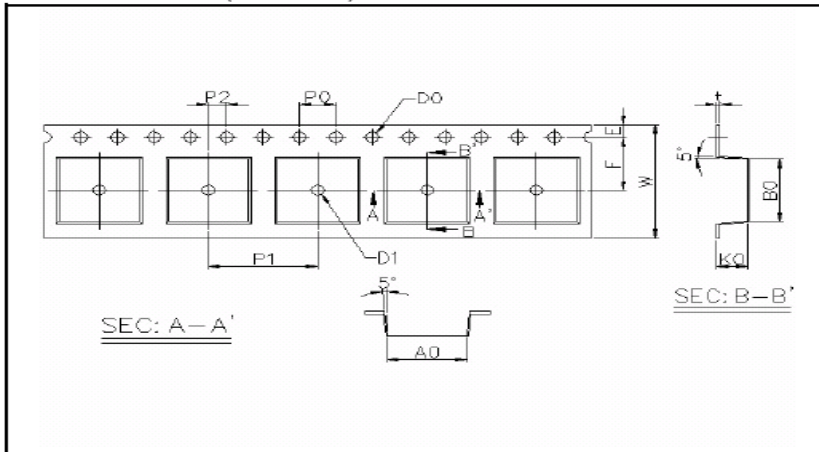
- Moisture proof bag.
- 1 Reel/bag.
- Q'ty: 300(MAX)/Reel.



● **With 45, 100/50 degree Lens:**

- Moisture proof bag.
- 1 Reel/bag.
- Q'ty: 250(MAX)/Reel.

Dimensions. (Unit: mm)



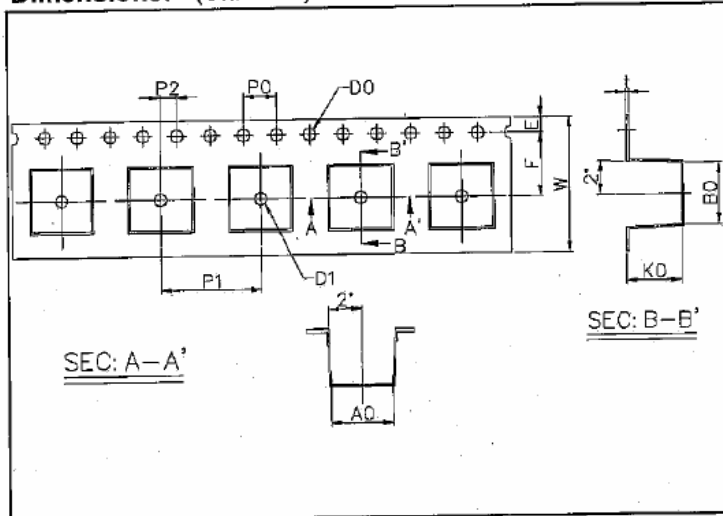
Item	Specification	Tol. (+/-)
W	16.00	± 0.30
E	1.75	± 0.10
F	7.50	± 0.10
D0	1.50	+0.10, -0
D1	1.50	+0.10, -0
P0	4.00	± 0.10
P1	12.00	± 0.10
P2	2.00	± 0.10
P0 x 10	40.00	± 0.20

t	0.35	± 0.05
A0	7.60	± 0.10
B0	7.60	± 0.10
K0	5.30	± 0.10

● **With 25 degree Lens & Special Shipping:**

- Moisture proof bag.
- 1 Reel/bag.
- Q'ty: 200(MAX)/Reel.

Dimensions. (Unit: mm)



Item	Specification	Tol. (+/-)
W	16.00	± 0.30
E	1.75	± 0.10
F	7.50	± 0.10
D0	1.50	+0.10, -0
D1	1.50	+0.25, -0
P0	4.00	± 0.10
P1	12.00	± 0.10
P2	2.00	± 0.05
P0 x 10	40.00	± 0.20

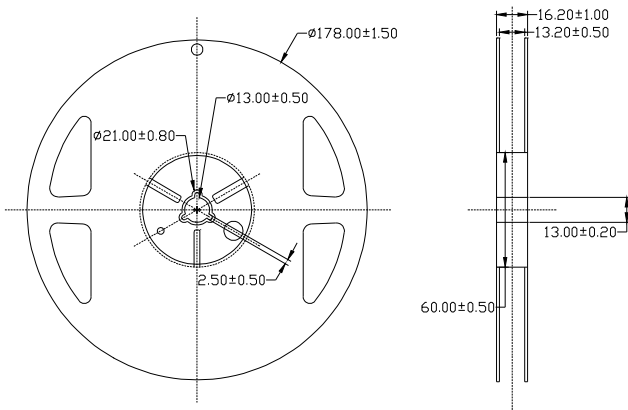
t	0.40	± 0.05
A0	7.45	± 0.10
B0	7.45	± 0.10
K0	6.85	± 0.10

(2) Package

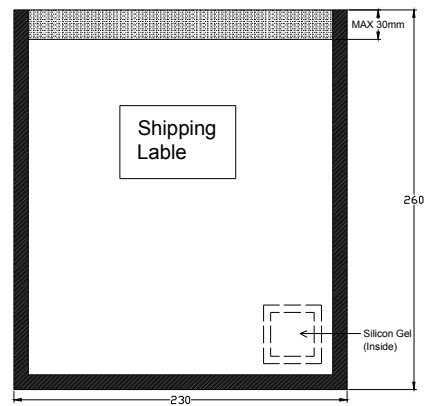
Box Type	Dimensions (mm)	Reel/Box
Small Box (S)	230 × 85 × 265	4 Reel/Box
Middle Box (M)	470 × 265 × 270	24 Reel/Box
Large Box (L)	470 × 435 × 270	40 Reel/Box

Reel Packaging Unit: mm

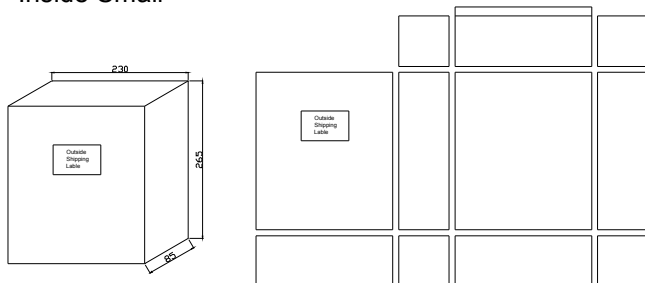
Reel



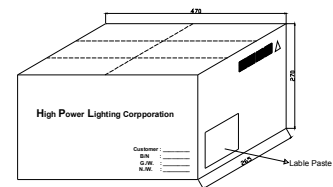
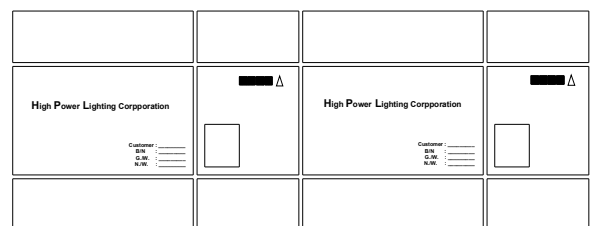
Anti Static Bag



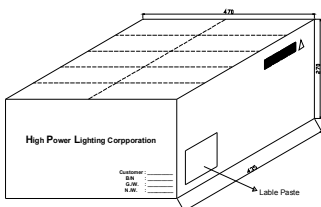
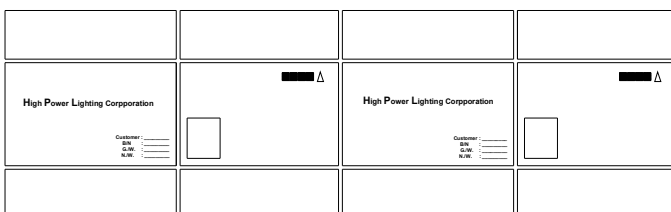
Inside Small



Middle Box




Large Box (Carton)




(3) Label Formation

Carton Label

P/N : HPL-###-####-#		
Date : 29-11-2005		
Q'ty : 150000pcs	Reel's Q'ty : 30 reels	
Customer :	OQC Stamp :	
High Power Lighting Corporation (Taiwan)		

100mm

Reel Label

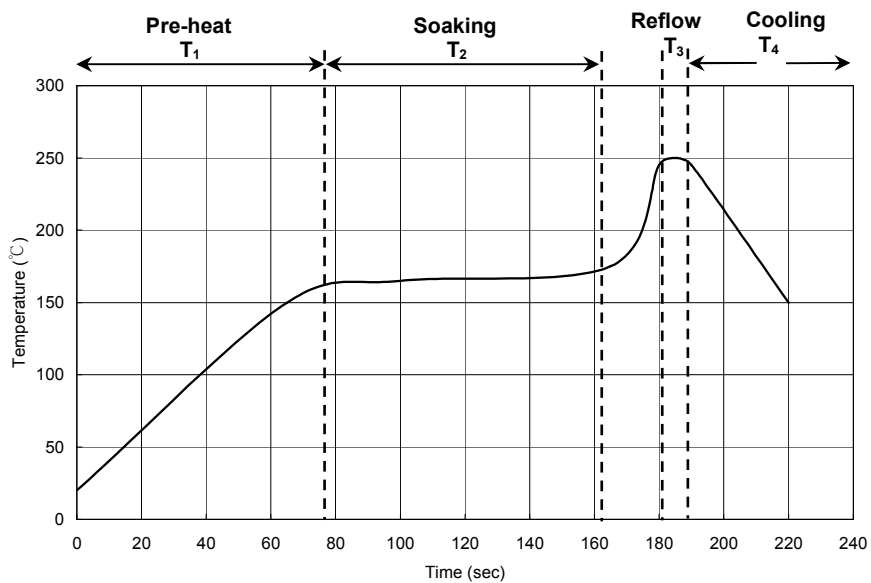
	
P/N : HPL-###-####-#	BIN Rank : A2B
Lot : T051129001	Q'ty : 5000pcs
XXX	
High Power Lighting Corporation (Taiwan)	

40mm

70mm

9. 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.