

SPECIFICATION

P/N: HPL-H32NW1ZA

HPL-H32NN1ZA

HPL-H32NS1ZA

HPL-H32SW1ZA (with star)

HPL-H32SN1ZA (with star)

HPL-H32SS1ZA (with star)

研 晶 光 電 股 份 有 限 公 司
High Power Lighting Corporation.

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TEL : 02-8262-8886 FAX : 02-8262-8885

1. Features

- Dimension : 3.0mm(L)×2.0mm(W)×0.83mm(H)
- Wide View Angle
- White LED by InGaN Die
- Good for SMT Process
- All Metal Design Cu PCB/Al Reflector



2. Applications

- LCD or Lighting Module
- Mobile Phone or Camera Flash LED

3. Absolute Maximum Ratings

(Ta=25°C)

Parameter	Symbol	Rating	Unit
Power Dissipation	P _o	0.56	W
Forward Current	I _F	150	mA
Peak Pulsed Forward Current *	I _{FP}	350	mA
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	
Wave Soldering Condition	T _{sol}	260 °C For 5 Seconds	

* IFP condition : 1/10 Duty Cycle : 400msec pulse width

4. Initial Electrical/Optical Characteristics (W/N/S)

(Ta=25°C)

Item	Symbol	MIN.	TYP.	MAX.	Test Condition	Unit
Forward Voltage	V _F	3.03	3.7	4.23	I _F = 150mA	V
Reverse Current	I _R	-	-	100	V _R = 5V	μA
Viewing Angle	2θ _{1/2}	-	120	-	I _F = 150mA	deg.

• Luminous Flux

(T_j=25°C)

Color	Luminous Flux (With Lens type / Flat type)					
	Symbol	MIN.	TYP.	MAX.	Test Condition	Unit
Cool White	Φ _V	-	19	23	I _F = 150mA	lm
Neutral White	Φ _V	-	16	20	I _F = 150mA	lm
Warm White	Φ _V	-	10	14	I _F = 150mA	lm

• Color Temperature

(T_j=25°C)

Color	Color Temperature					
	Symbol	MIN.	TYP.	MAX.	Test Condition	Unit
Cool White	CCT	4500	5650	10000	I _F = 150mA	K
Neutral White	CCT	3500	4000	4500	I _F = 150mA	K
Warm White	CCT	2670	2850	3500	I _F = 150mA	K

• Chromaticity Coordinates / Dominate Wavelength

(T_j=25°C)

Color	Chromaticity Coordinates / Spectra half-width					
	Symbol	MIN.	TYP.	MAX.	Test Condition	Unit
Cool White	x	-	0.33	-	I _F = 150mA	-
	y	-	0.34	-		
Neutral White	x	-	0.38	-	I _F = 150mA	-
	y	-	0.38	-		
Warm White	x	-	0.43	-	I _F = 150mA	-
	y	-	0.40	-		

• Bin Code List for Reference

(T_j=25°C)

Forward Voltage Bins (WNS)

Item	Bin Code	Symbol	Condition	Min.	Max.	Unit
Forward Voltage ¹	H	V _F	I _F = 150 [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	

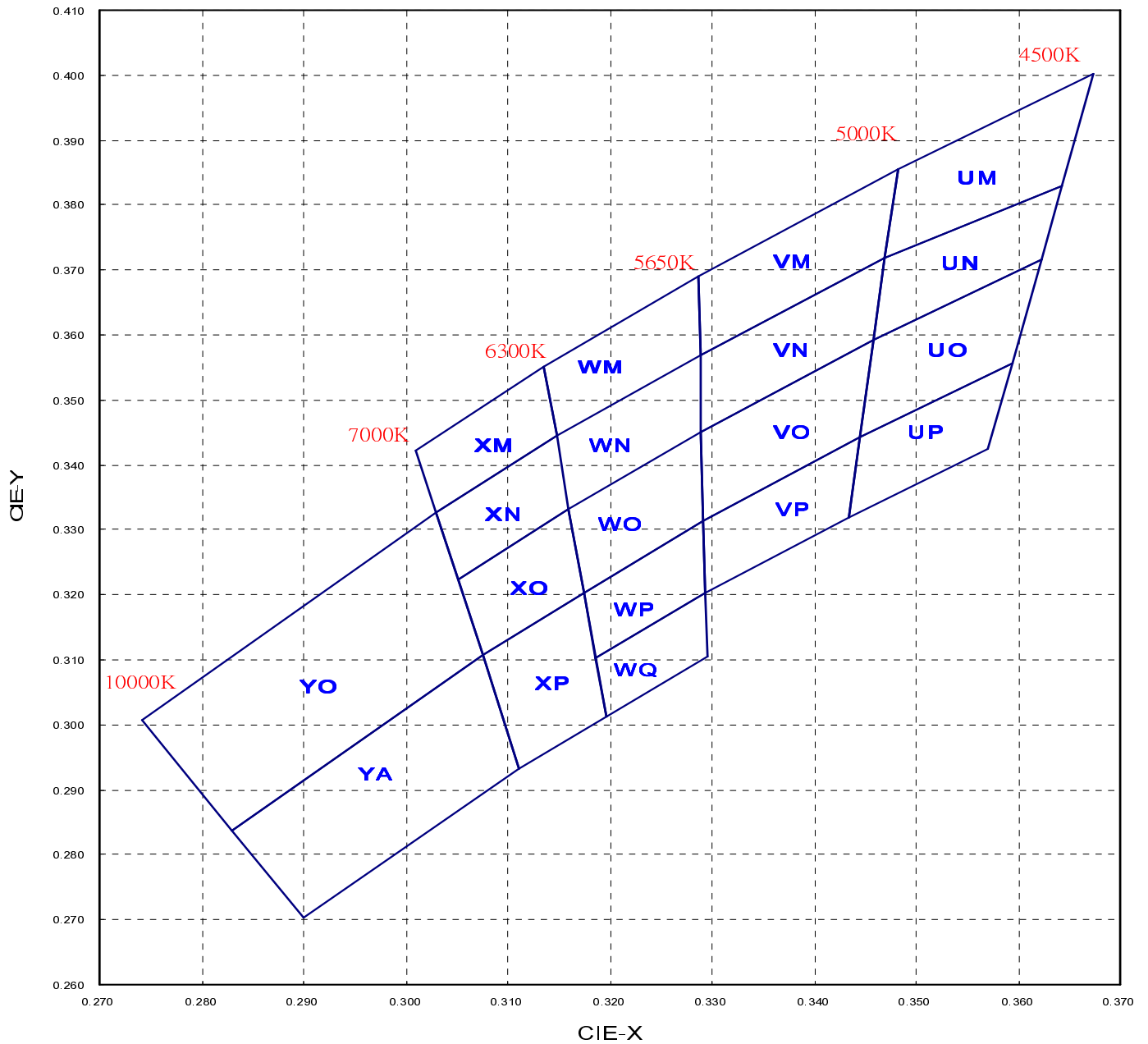
Luminous Flux Bins (WNS)

Item	Bin Code	Symbol	Condition	Min.	Max.	Unit
Luminous Flux ²	A	Φ _v	I _F = 350 [mA]	8.2	10.7	lm
	B			10.7	13.9	
	C			13.9	18.1	
	D			18.1	23.5	
	E			23.5	30	

Note: 1. Forward voltage measurement allowance is ± 0.1V.

2. Luminous flux measurement allowance is ± 10%.

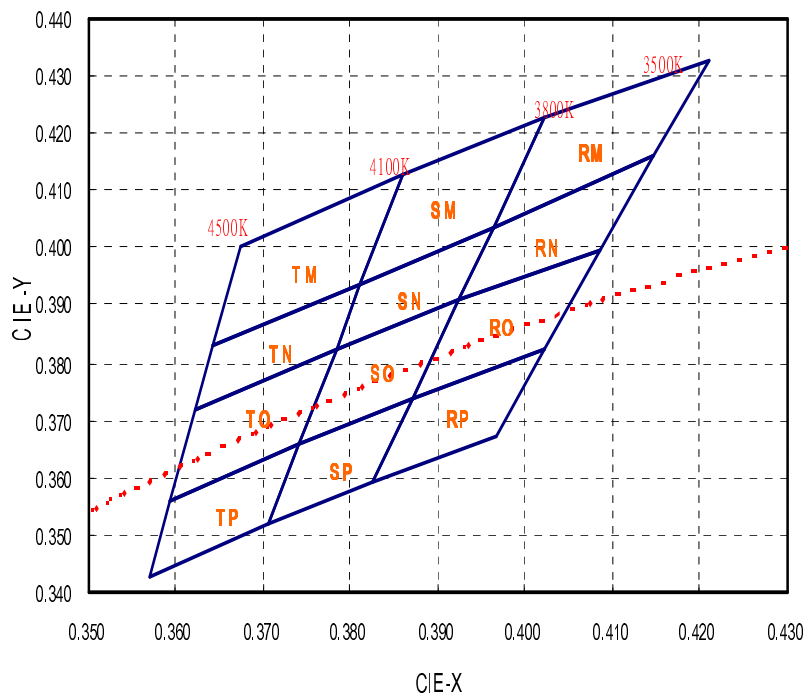
CIE Diagram Hue Bin Specification for Cool white →C Color



Bin Code	X	Y	CCT	Bin Code	X	Y	CCT	Bin Code	X	Y	CCT
YO	0.2742	0.3007	7000~10000	WN	0.3148	0.3444	5650~6300	VP	0.3292	0.3313	5000~5650
	0.3031	0.3327			0.3288	0.3569			0.3444	0.3442	
	0.3076	0.3108			0.3290	0.3451			0.3434	0.3320	
	0.2830	0.2838			0.3160	0.3332			0.3294	0.3202	
YA	0.2830	0.2838	7000~10000	WO	0.3160	0.3332	5650~6300	UM	0.3481	0.3856	4500~5000
	0.3076	0.3108			0.3290	0.3451			0.3673	0.4003	
	0.3112	0.2932			0.3292	0.3313			0.3642	0.3829	
	0.2899	0.2703			0.3175	0.3204			0.3469	0.3717	
XM	0.3011	0.3422	6300~7000	WP	0.3175	0.3204	5650~6300	UN	0.3469	0.3717	4500~5000
	0.3136	0.3550			0.3292	0.3313			0.3642	0.3829	
	0.3148	0.3444			0.3294	0.3202			0.3622	0.3716	
	0.3031	0.3327			0.3186	0.3102			0.3458	0.3592	
XN	0.3031	0.3327	6300~7000	WQ	0.3186	0.3102	5650~6300	UO	0.3458	0.3592	4500~5000
	0.3148	0.3444			0.3294	0.3202			0.3622	0.3716	
	0.3160	0.3332			0.3295	0.3105			0.3594	0.3557	
	0.3052	0.3224			0.3196	0.3013			0.3444	0.3442	
XO	0.3052	0.3224	6300~7000	VM	0.3286	0.3690	5000~5650	UP	0.3444	0.3442	4500~5000
	0.3160	0.3332			0.3481	0.3856			0.3594	0.3557	
	0.3175	0.3204			0.3469	0.3717			0.3571	0.3426	
	0.3076	0.3108			0.3288	0.3569			0.3434	0.3320	
XP	0.3076	0.3108	6300~7000	VN	0.3288	0.3569	5000~5650	VO	0.3290	0.3451	5000~5650
	0.3175	0.3204			0.3469	0.3717			0.3458	0.3592	
	0.3196	0.3013			0.3458	0.3592			0.3444	0.3442	
	0.3112	0.2932			0.3290	0.3451			0.3292	0.3313	
WM	0.3136	0.3550	5650~6300	VO	0.3290	0.3451	5000~5650	VO	0.3290	0.3451	5000~5650
	0.3286	0.3690			0.3458	0.3592			0.3458	0.3592	
	0.3288	0.3569			0.3444	0.3442			0.3444	0.3442	
	0.3148	0.3444			0.3292	0.3313			0.3292	0.3313	

Note: . The CIE x, y color coordinates measurement allowance is ± 0.01 .

CIE Diagram Hue Bin Specification for Neutral white →N Color



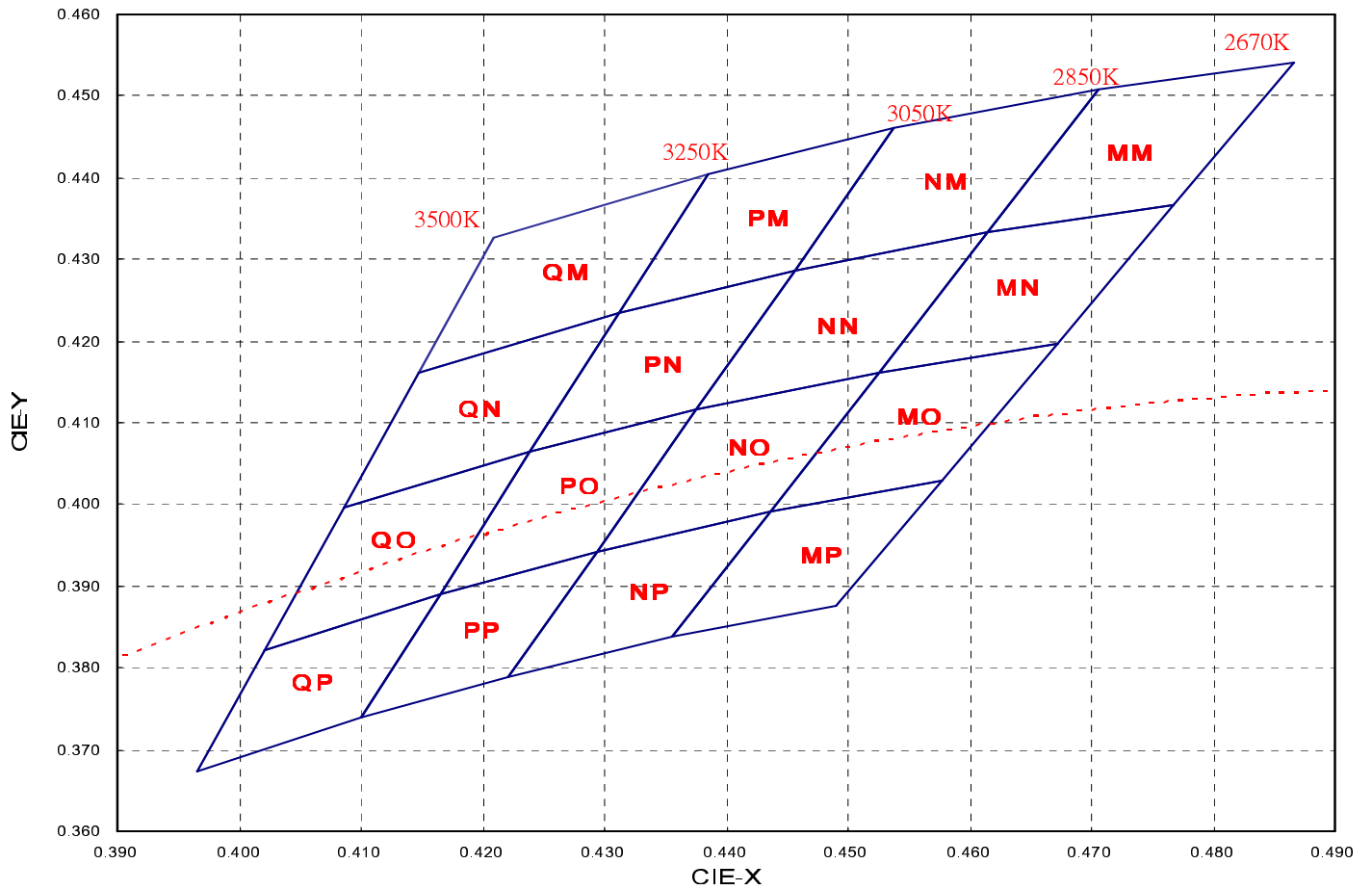
Bin Code	X	Y	CCT
TM	0.3673	0.4003	4100~4500
	0.3860	0.4130	
	0.3811	0.3937	
	0.3642	0.3829	
TN	0.3642	0.3829	4100~4500
	0.3811	0.3937	
	0.3783	0.3825	
	0.3622	0.3716	
TO	0.3622	0.3716	4100~4500
	0.3783	0.3825	
	0.3741	0.3658	
	0.3594	0.3557	
TP	0.3594	0.3557	4100~4500
	0.3741	0.3658	
	0.3706	0.3520	
	0.3571	0.3426	

Bin Code	X	Y	CCT
SM	0.3860	0.4130	3800~4100
	0.4023	0.4228	
	0.3963	0.4035	
	0.3811	0.3937	
SN	0.3811	0.3937	3800~4100
	0.3963	0.4035	
	0.3924	0.3909	
	0.3783	0.3825	
SO	0.3783	0.3825	3800~4100
	0.3924	0.3909	
	0.3871	0.3739	
	0.3741	0.3658	
SP	0.3741	0.3658	3800~4100
	0.3871	0.3739	
	0.3826	0.3595	
	0.3706	0.3520	

Bin Code	X	Y	CCT
RM	0.4023	0.4228	3500~3800
	0.4209	0.4326	
	0.4148	0.4161	
	0.3963	0.4035	
RN	0.3963	0.4035	3500~3800
	0.4148	0.4161	
	0.4086	0.3995	
	0.3924	0.3909	
RO	0.3924	0.3909	3500~3800
	0.4086	0.3995	
	0.4021	0.3822	
	0.3871	0.3739	
RP	0.3871	0.3739	3500~3800
	0.4021	0.3822	
	0.3966	0.3673	
	0.3826	0.3595	

Note: . The CIE x, y color coordinates measurement allowance is ± 0.01 .

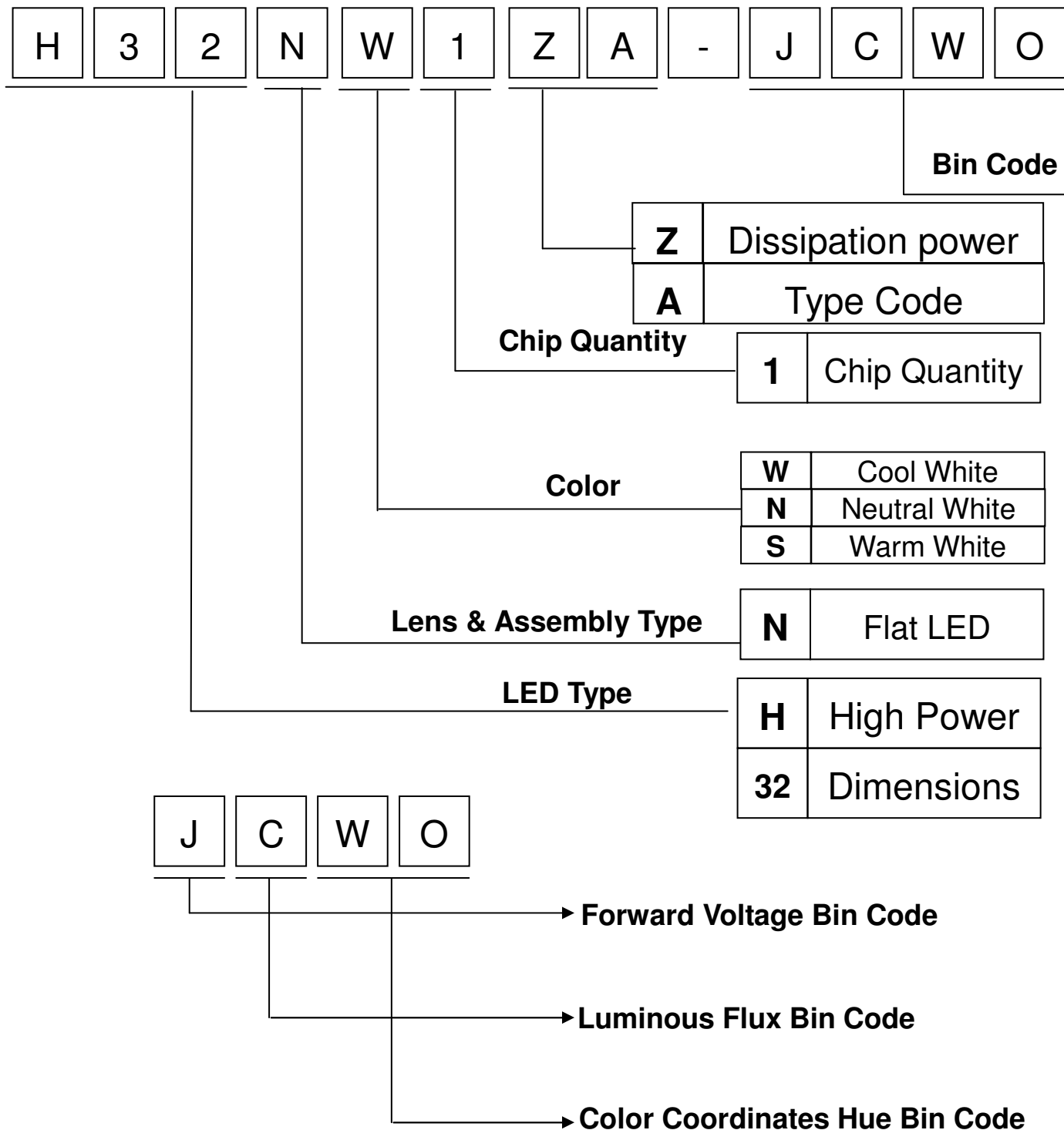
CIE Diagram Hue Bin Specification for Warm white →S Color



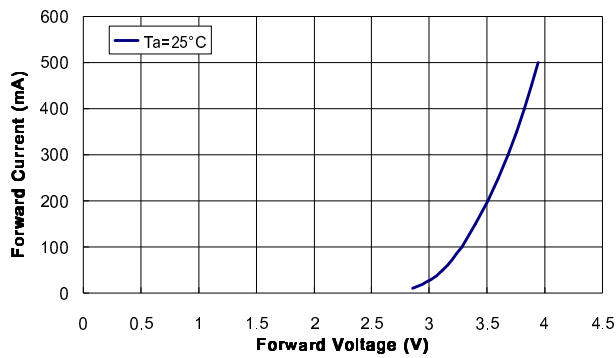
Bin Code	X	Y	CCT	Bin Code	X	Y	CCT	Bin Code	X	Y	CCT
QM	0.4209	0.4326	3250~3500	PO	0.4240	0.4065	3000~3250	MM	0.4705	0.4508	2670~2850
	0.4385	0.4404			0.4376	0.4116			0.4866	0.4542	
	0.4312	0.4234			0.4294	0.3943			0.4767	0.4366	
	0.4148	0.4161			0.4165	0.3890			0.4614	0.4333	
QN	0.4148	0.4161	3250~3500	PP	0.4165	0.3890	3000~3250	MN	0.4614	0.4333	2670~2850
	0.4312	0.4234			0.4294	0.3943			0.4767	0.4366	
	0.4240	0.4065			0.4221	0.3790			0.4671	0.4196	
	0.4086	0.3995			0.4100	0.3738			0.4525	0.4162	
QO	0.4086	0.3995	3250~3500	NM	0.4538	0.4460	2850~3000	MO	0.4525	0.4162	2670~2850
	0.4240	0.4065			0.4705	0.4508			0.4671	0.4196	
	0.4165	0.3890			0.4614	0.4333			0.4577	0.4029	
	0.4021	0.3822			0.4456	0.4287			0.4436	0.3991	
QP	0.4021	0.3822	3250~3500	NN	0.4456	0.4287	2850~3000	MP	0.4436	0.3991	2670~2850
	0.4165	0.3890			0.4614	0.4333			0.4577	0.4029	
	0.4100	0.3738			0.4525	0.4162			0.4490	0.3875	
	0.3966	0.3673			0.4376	0.4116			0.4356	0.3837	
PM	0.4385	0.4404	3000~3250	NO	0.4376	0.4116	2850~3000				
	0.4538	0.4460			0.4525	0.4162					
	0.4456	0.4287			0.4436	0.3991					
	0.4312	0.4234			0.4294	0.3943					
PN	0.4312	0.4234	3000~3250	NP	0.4294	0.3943	2850~3000				
	0.4456	0.4287			0.4436	0.3991					
	0.4376	0.4116			0.4356	0.3837					
	0.4240	0.4065			0.4221	0.3790					

Note: . The CIE x, y color coordinates measurement allowance is ± 0.01 .

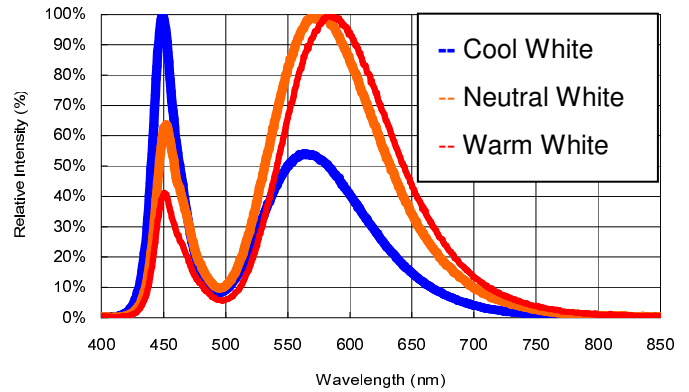
5. Part Number Formation:



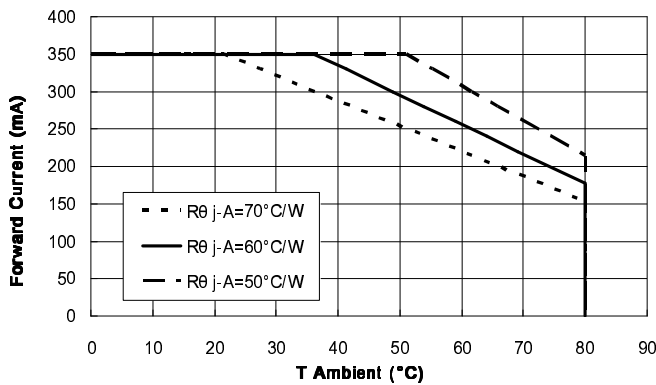
6. Characteristic Diagram:



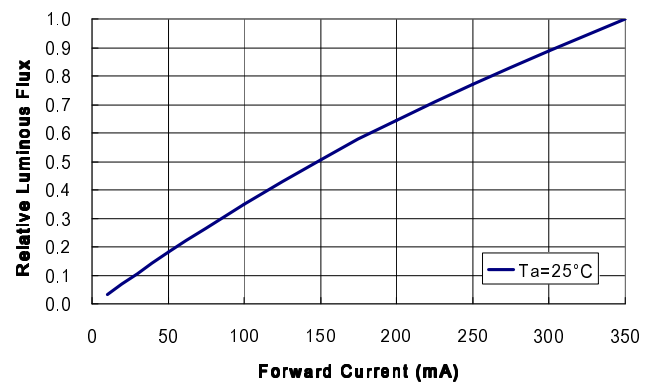
Forward Voltage vs. Forward Current



Relative Intensity vs. Wavelength

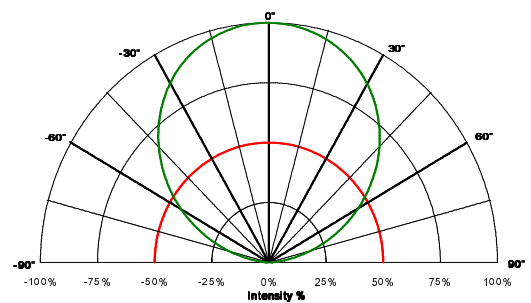
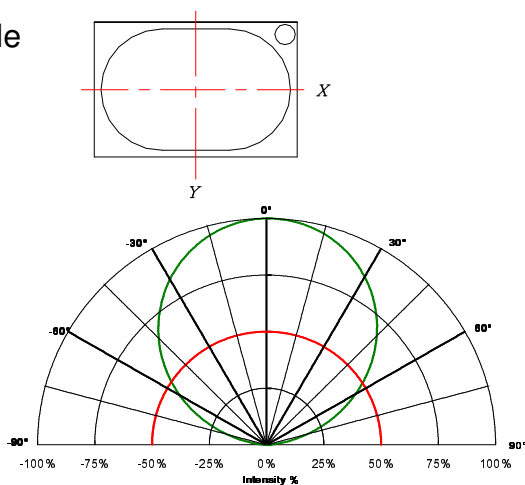


Forward Current Derating Curve



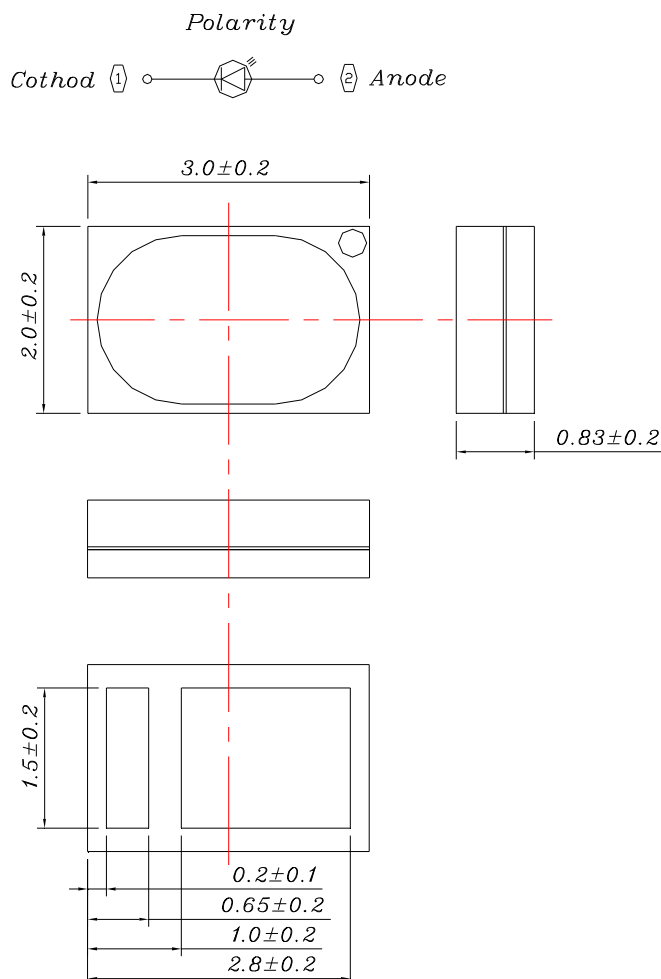
Forward Current vs. Relative Luminosity

View Angle

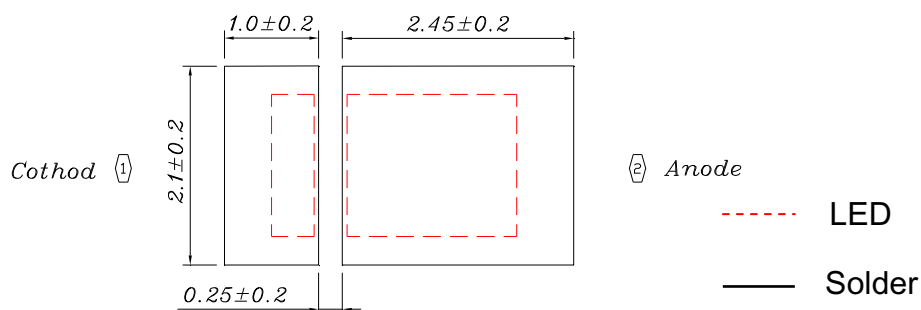


7. Outline Dimensions

Unit: mm



Recommended soldering pad design

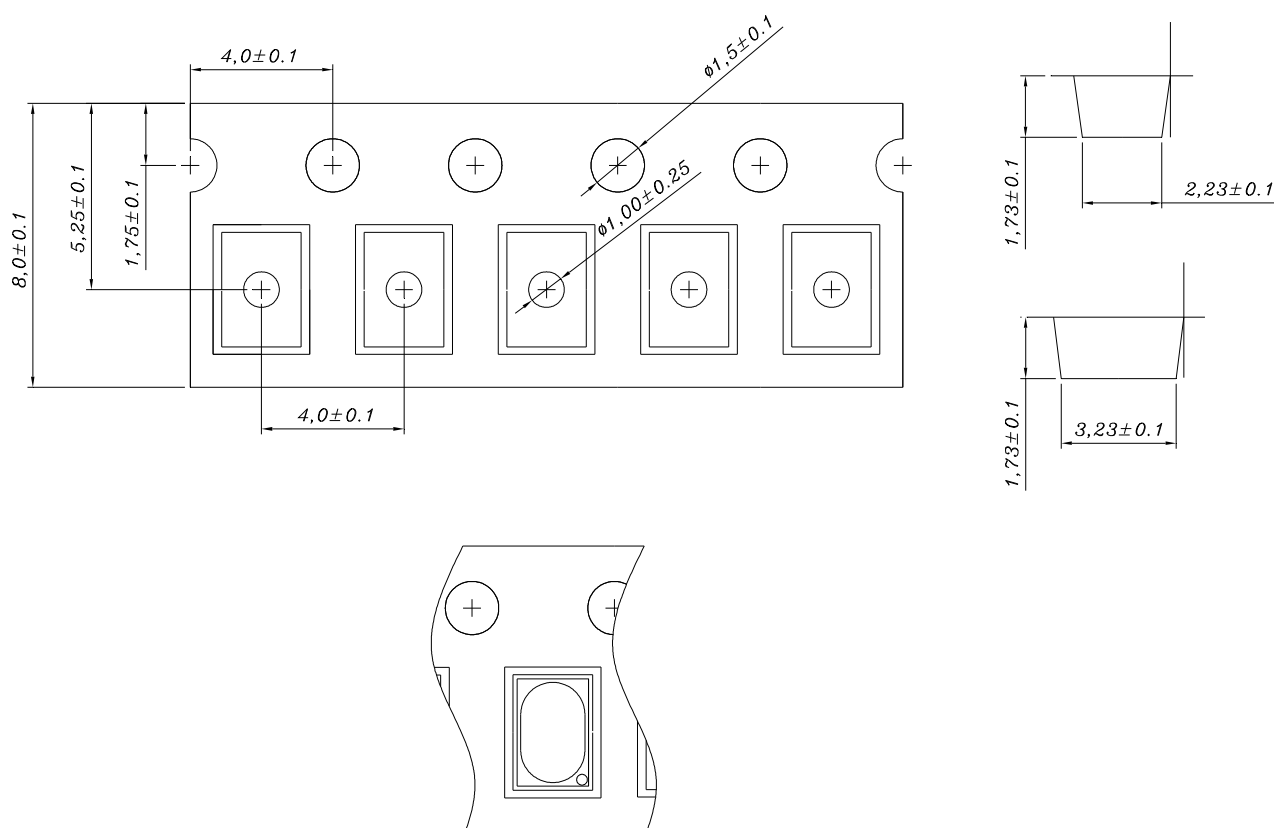


8. Shipping Package Style

- Moisture proof bag.
- 1 Reel/bag.
- Q'ty: 4000(MAX)/Reel.

Unit : mm

(1)Tapping Dimension Packaging Specification

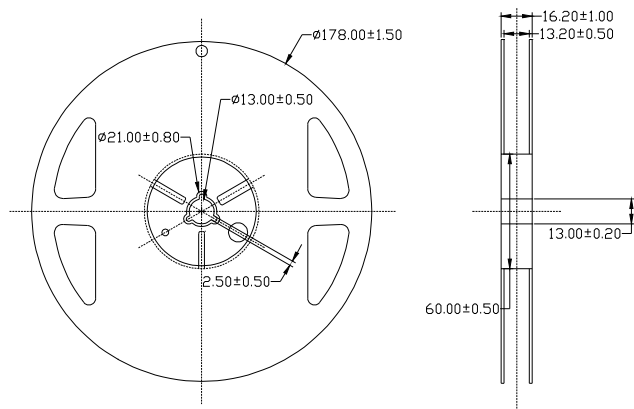


(2) Package

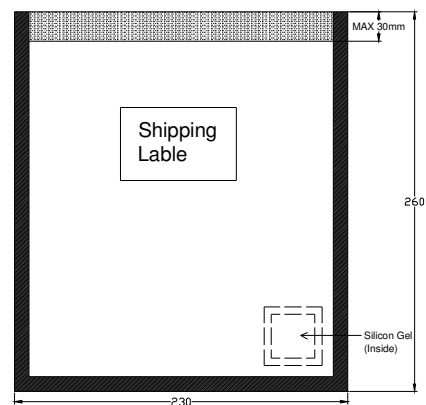
Box Type	Dimensions (mm)	Reel/Box
Small Box (S)	230 × 85 × 265	6 Reel/Box
Middle Box (M)	470 × 265 × 270	36 Reel/Box
Large Box (L)	470 × 435 × 270	60 Reel/Box

Reel Packaging Unit: mm

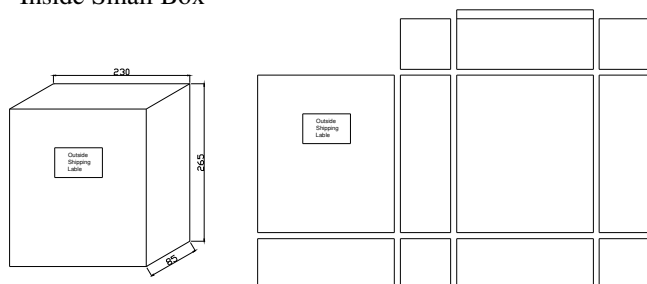
Reel



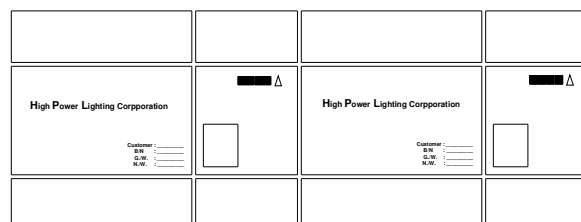
Anti Static Bag



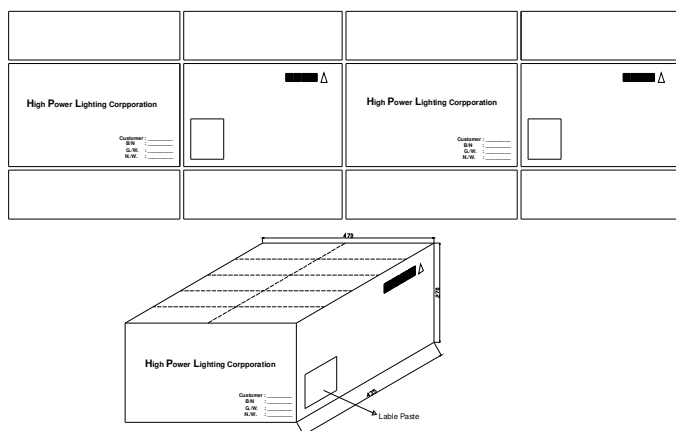
Inside Small Box



Middle Box (Carton)



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

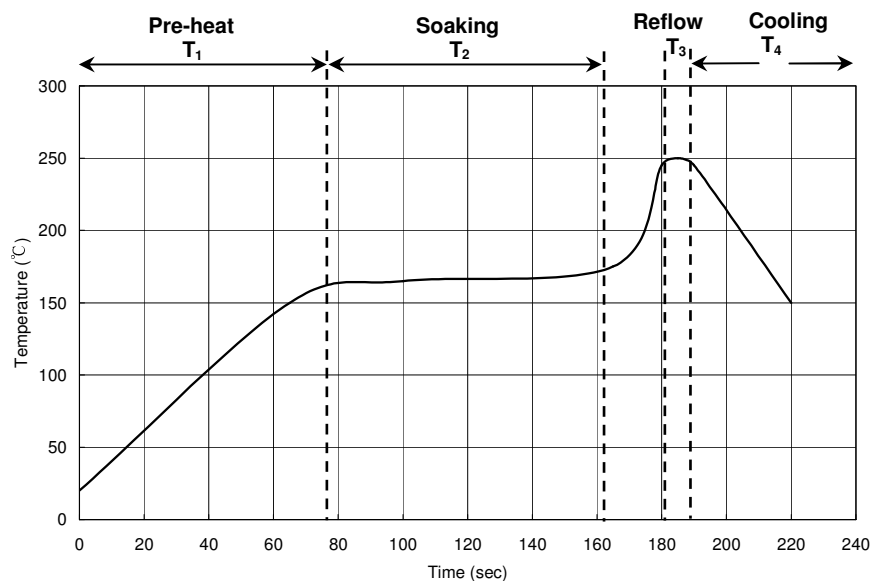
	
P/N : HPL-###-####-#	BIN Rank : A2B
Lot : T051129001	Q'ty : 5000pcs
High Power Lighting Corporation (Taiwan)	

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.