

Specification For UV Series

HPL-H44DV1C0



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 30°
- Low thermal resistance
- The InGaN Chip inside
- Superior ESD protection

Applications

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

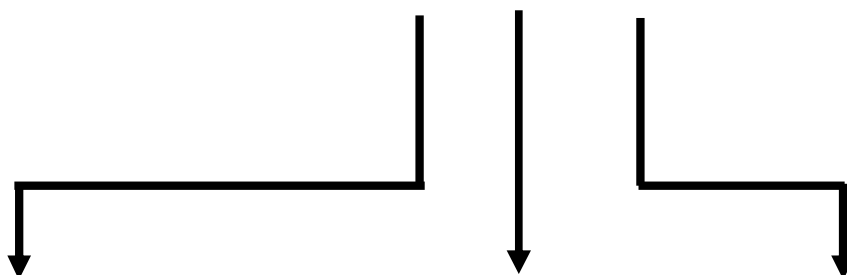
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General Information

HPL - H44X₁X₂1C0



X1: Lens & Assembly Type-

D : 30° Lens Emitter only

X : 30° Lens Emitter on Standard Star

X2: Color-

V: UV365~390nm

Power-

C: 3W

Part Number Matrix

Type Wavelength	30° Lens	30° Lens & Star
V	HPL-H44DV1C0	HPL-H44XV1C0

Absolute Maximum Ratings

(T_j=25°C)

Parameter	Symbol	Rating	Unit
Power Dissipation UV365-390nm	P	3	W
Forward Current	I _F	700	mA
Forward Pulse Current (1/10 Duty Cycle, 400msec Pulse Width)	I _{FP}	1000	mA
Thermal Resistance, Junction-Case	R _{th, J-C1}	5	°C/W
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).

Initial Electrical/Optical Characteristics

- Forward Voltage** (T_j=25°C)

Wavelength	Forward Voltage					
	Symbol	MIN.	TYP.	MAX.	Test Condition	Unit
365~390nm	V _F	3.03	3.9	4.47	I _F = 700mA	V

Caution: The real output is decided by chip capability

- Radiant Flux**(T_j=25°C)

Wavelength	Radiant Flux					
	Symbol	MIN.	TYP.	MAX.	Test Condition	Unit
380~390nm	Φ _e	500	850	-	I _F = 700mA	mW
365~370nm		350	550	-		

Caution: The real output is decided by chip capability

- Peak wavelength** (T_j=25°C)

Wavelength	Wavelength					
	Symbol	MIN.	TYP.	MAX.	Test Condition	Unit
365~390nm	λ _p	365	-	390	I _F = 700mA	nm

- Spectra half-width** (T_j=25°C)

Wavelength	Wavelength					
	Symbol	MIN.	TYP.	MAX.	Test Condition	Unit
365~390nm	Δλ	-	15	-	I _F = 700mA	nm

- **Typical Radiation Pattern**

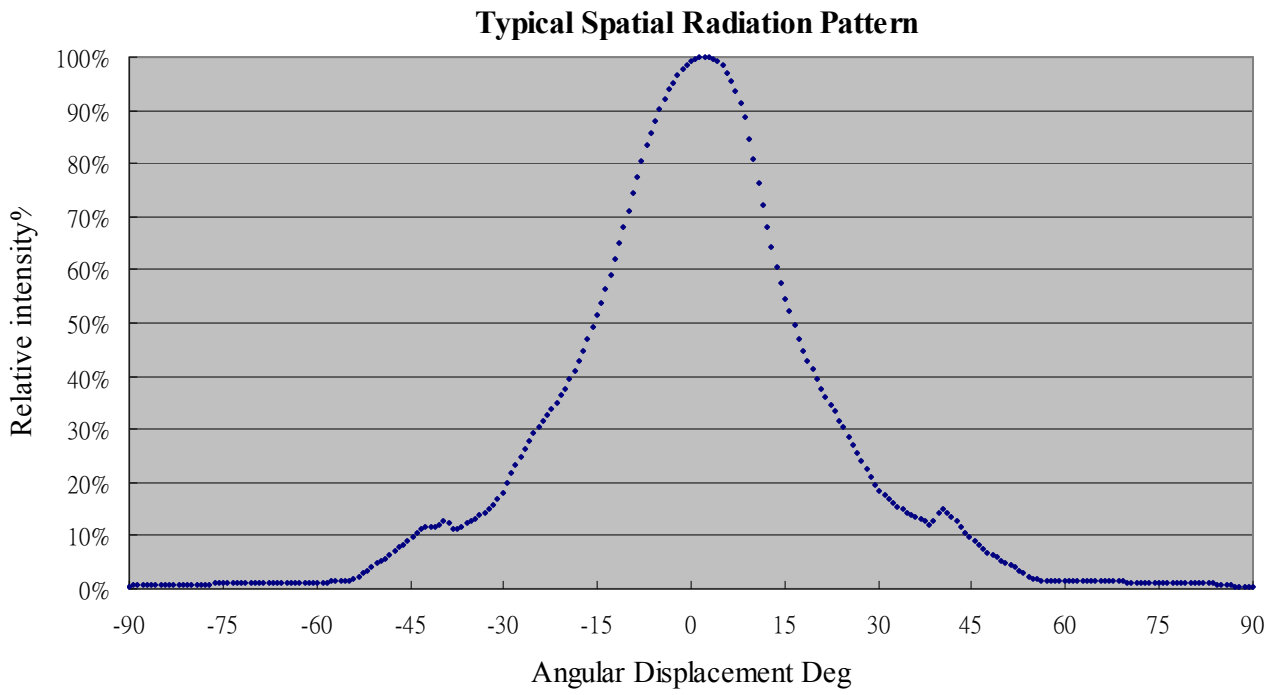


Fig. (30° Lens) Typical Representative Spatial Radiation Pattern

● Bin Code List for Reference

(T_j=25°C)

Item	Bin Code	Symbol	Condition	Min.	Max.	Unit
Forward Voltage ¹	H	V _F	I _F = 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 ²	6	Φ _e	I _F = 700 [mA]	75	100	mW
	7			100	125	
	8			125	150	
	9			150	175	
	A			175	225	
	B			225	275	
	C			275	350	
	D			350	425	
	E			425	500	

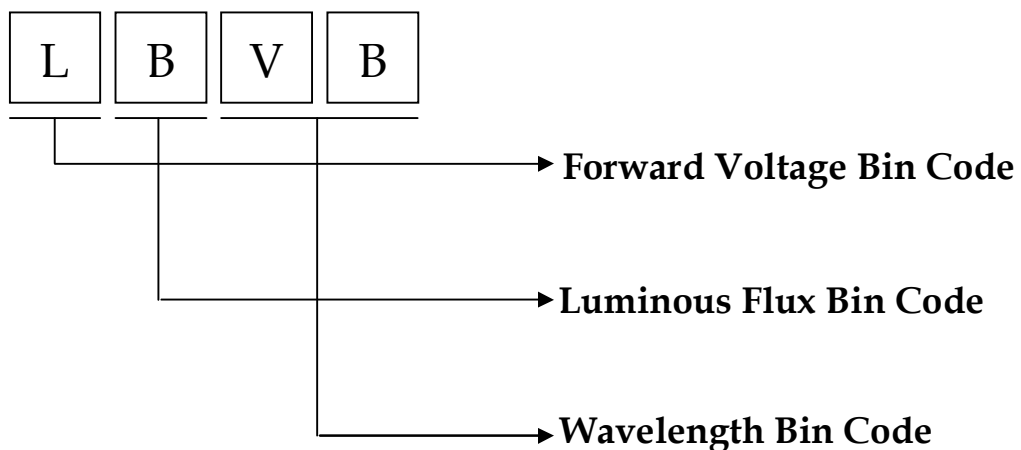
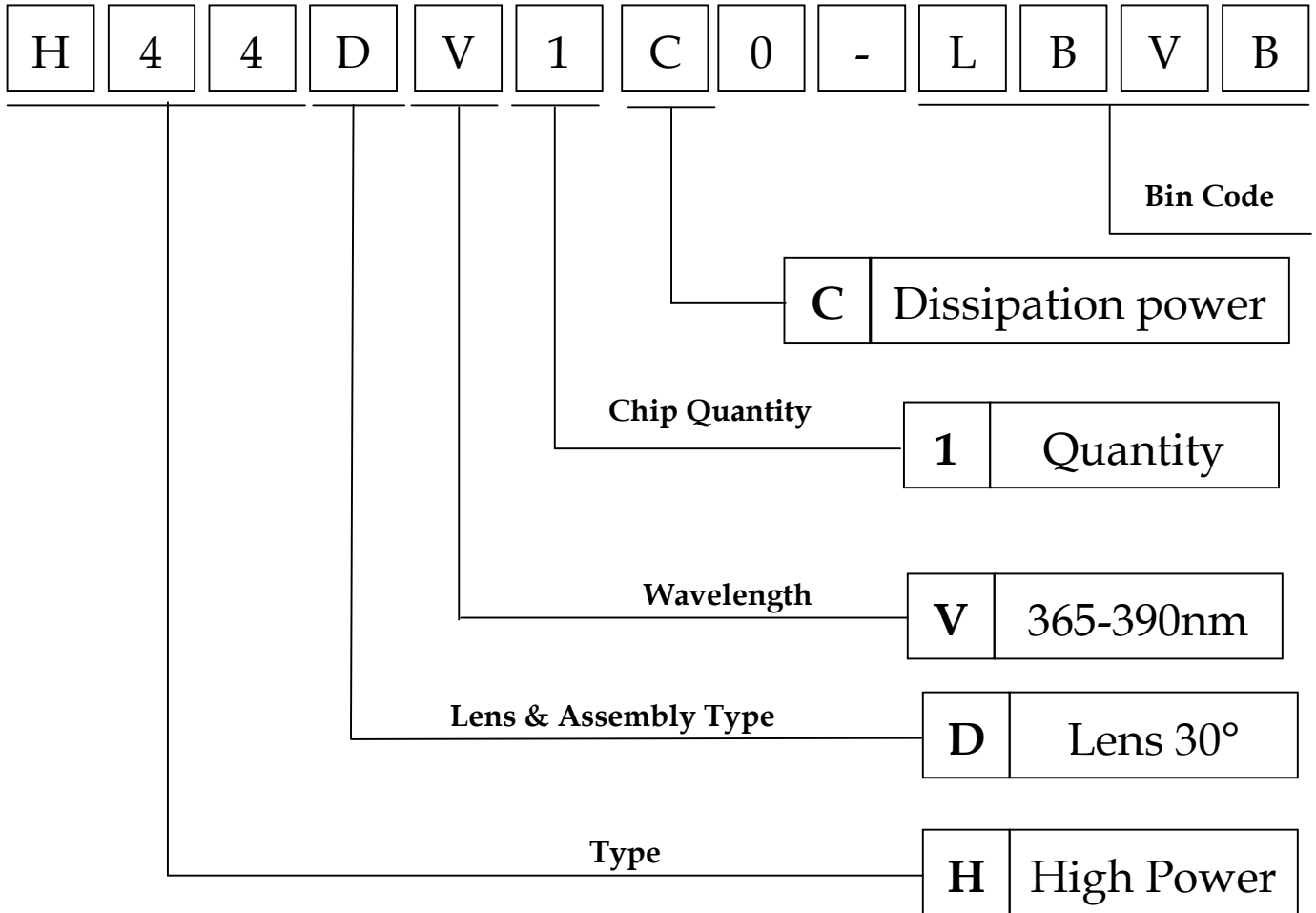
● Wavelength Bins

Wavelength ³	Bin Code	Symbol	Condition	Min.	Max.	Unit
V 365~390nm	VC	λ _p	I _F = 700 [mA]	385	390	nm
	VB			380	385	
	VA			375	380	
	VZ			370	375	
	VY			365	370	

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

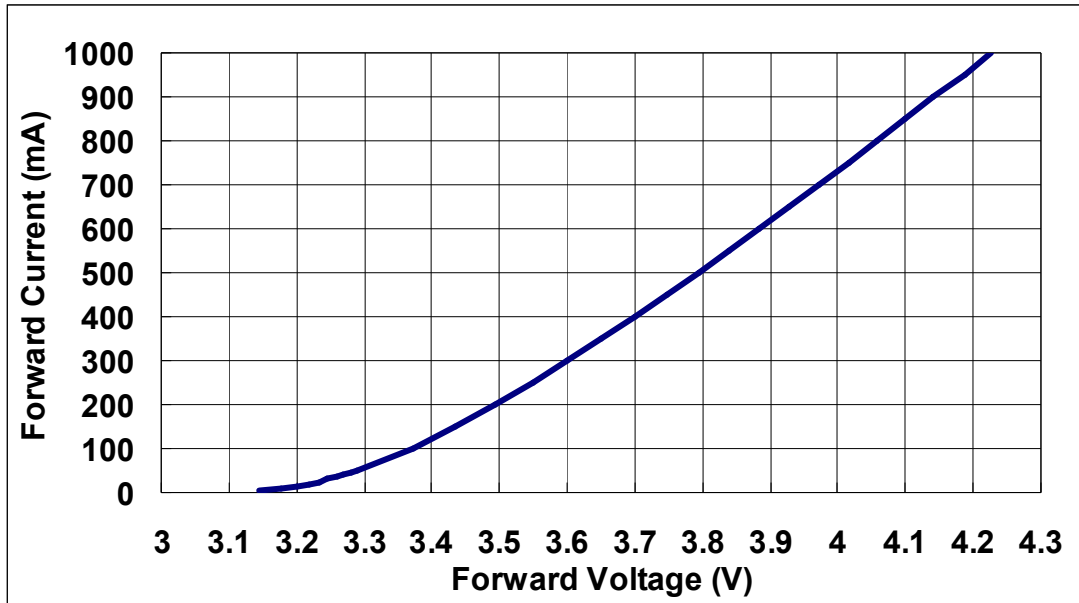


Fig. Forward Current vs. Forward Voltage

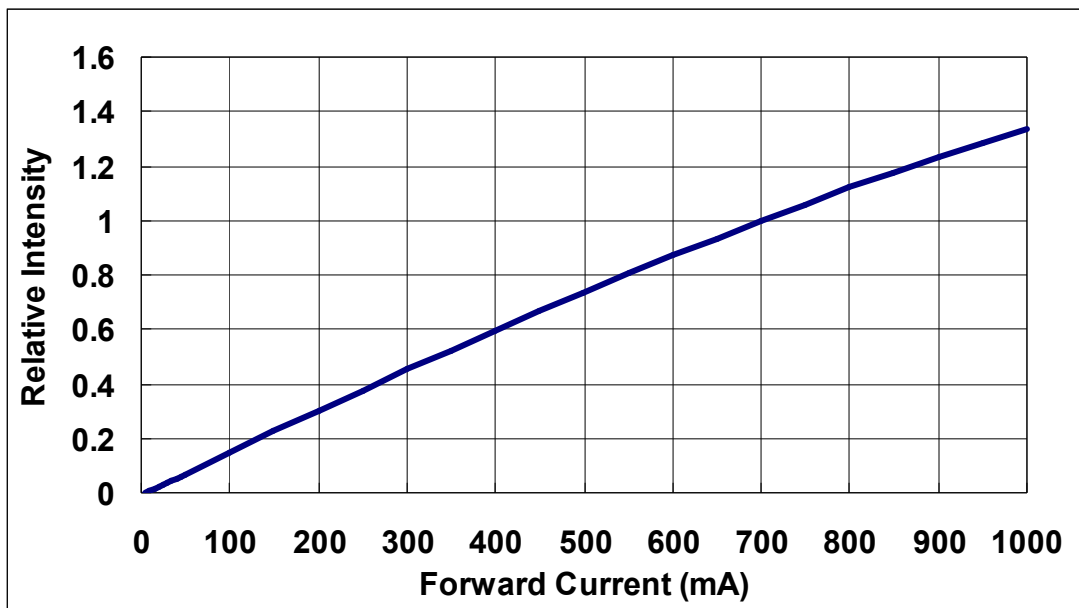


Fig. Relative Intensity vs. Forward Current

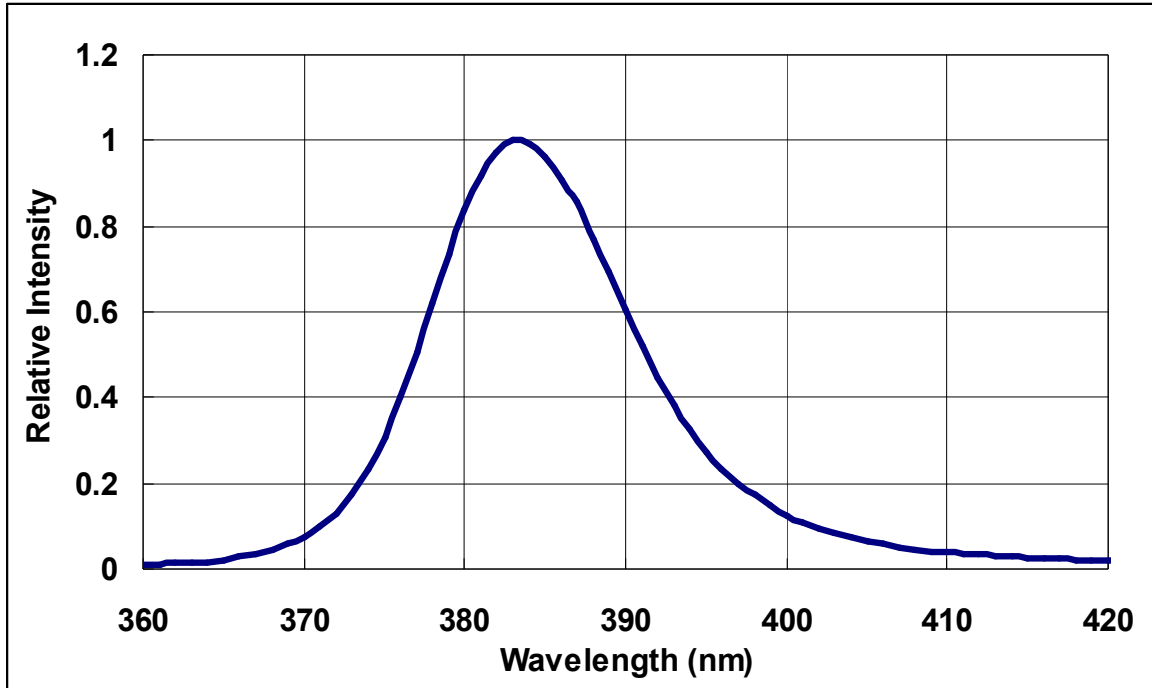


Fig. Typical Relative Intensity vs. wavelength

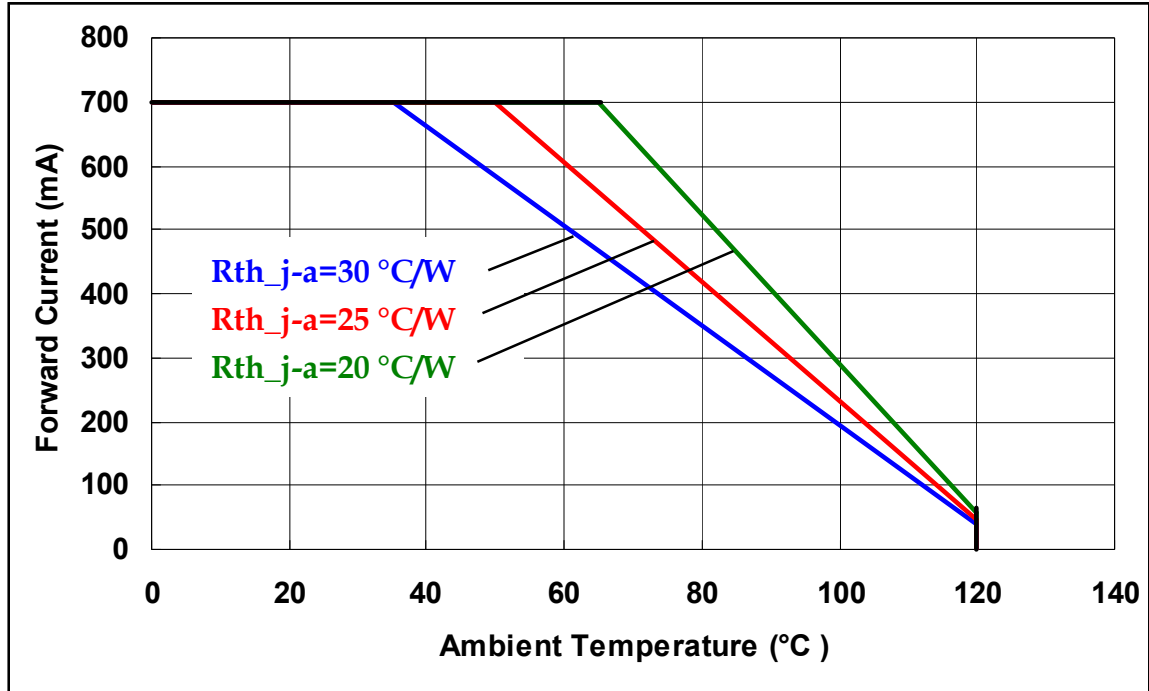


Fig. Forward Current Degrading Curve

Note:

R_{th_j-a} : junction to Ambient Thermal Resistance

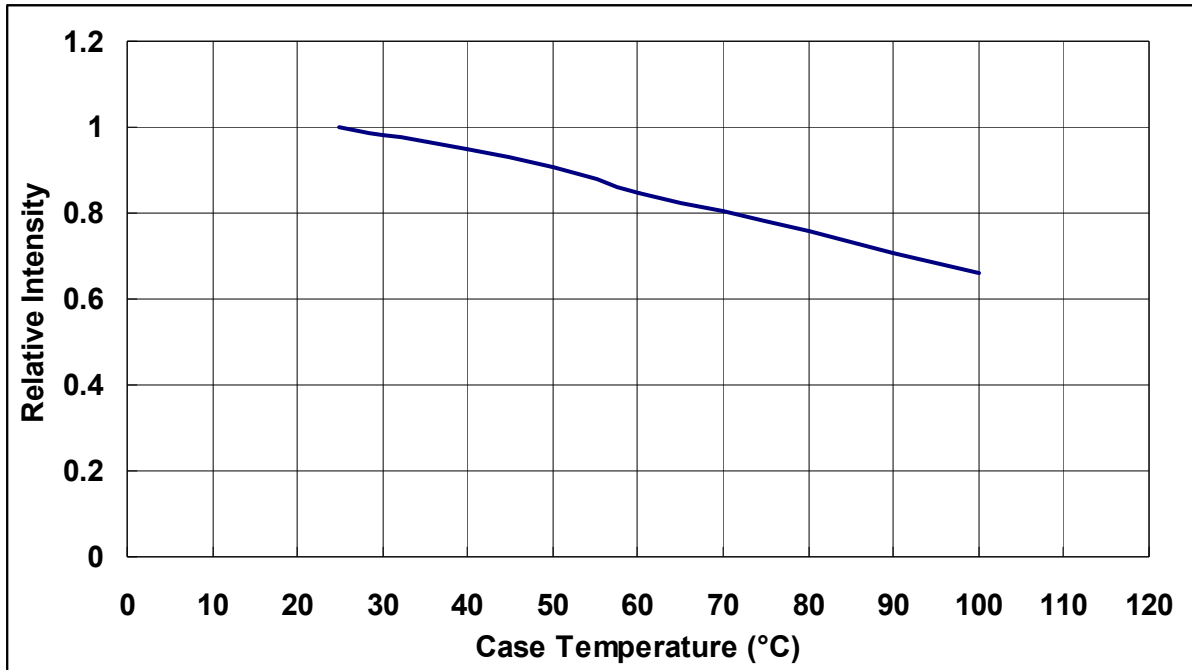


Fig. Relative Intensity vs. Case Temperature

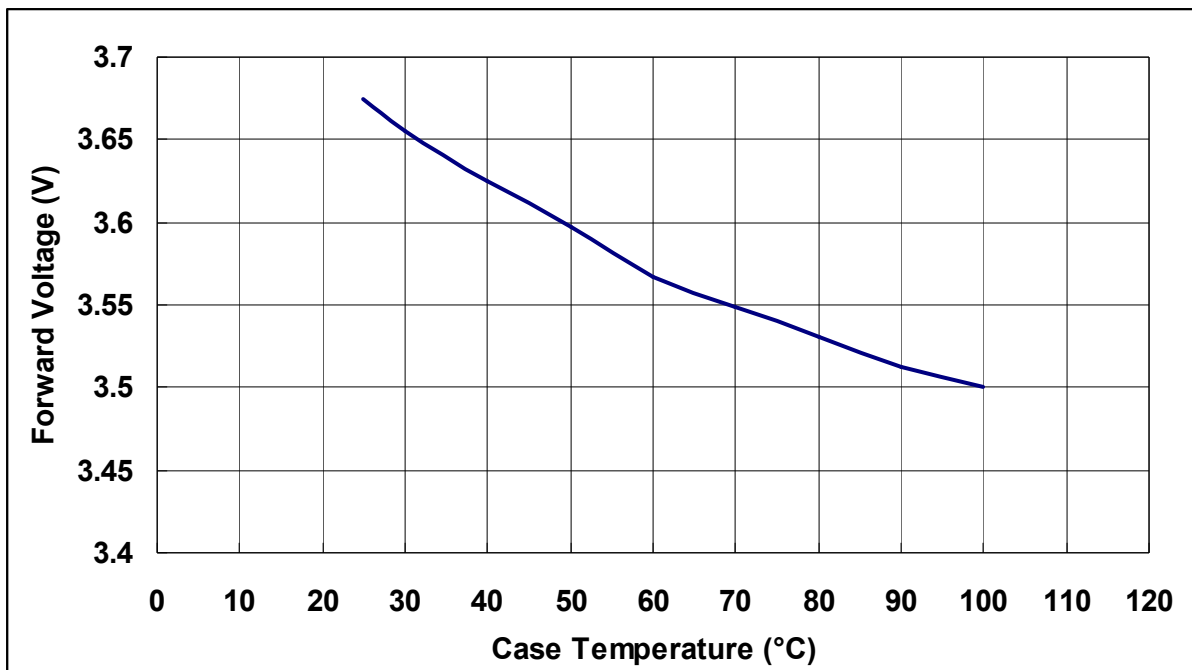


Fig. Forward Voltage vs. Case Temperature

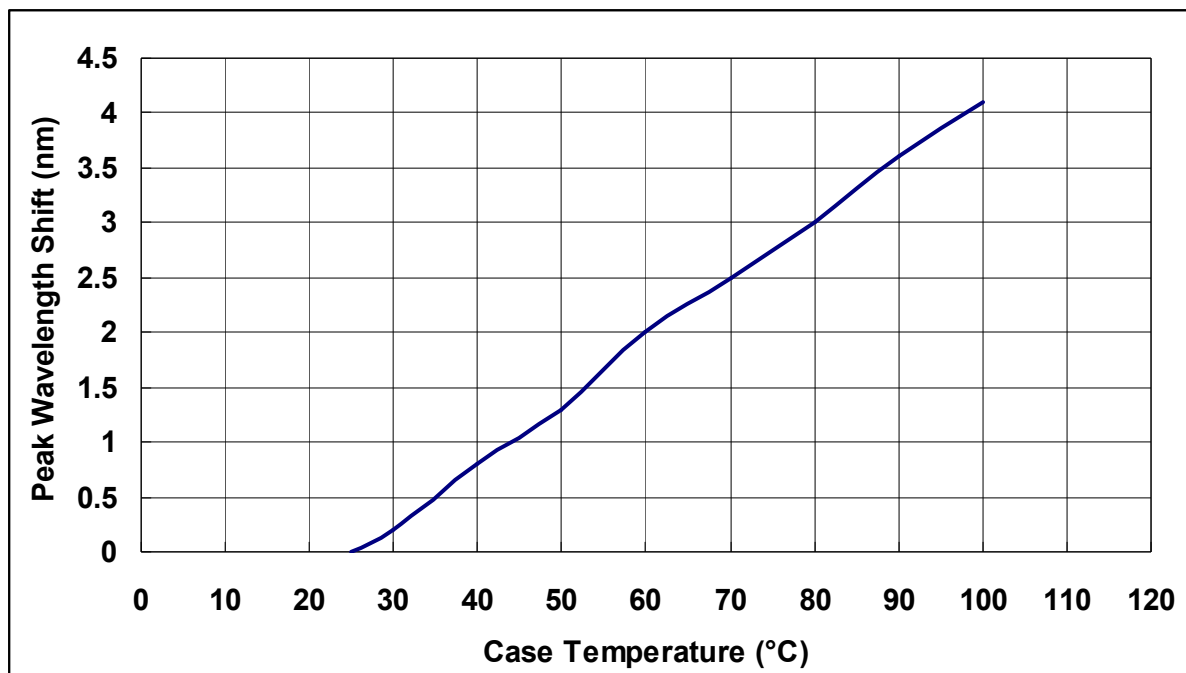


Fig. Peak Wavelength shift vs. Case Temperature

Outline Dimension

HPL-H44DV1C0

Unit : mm

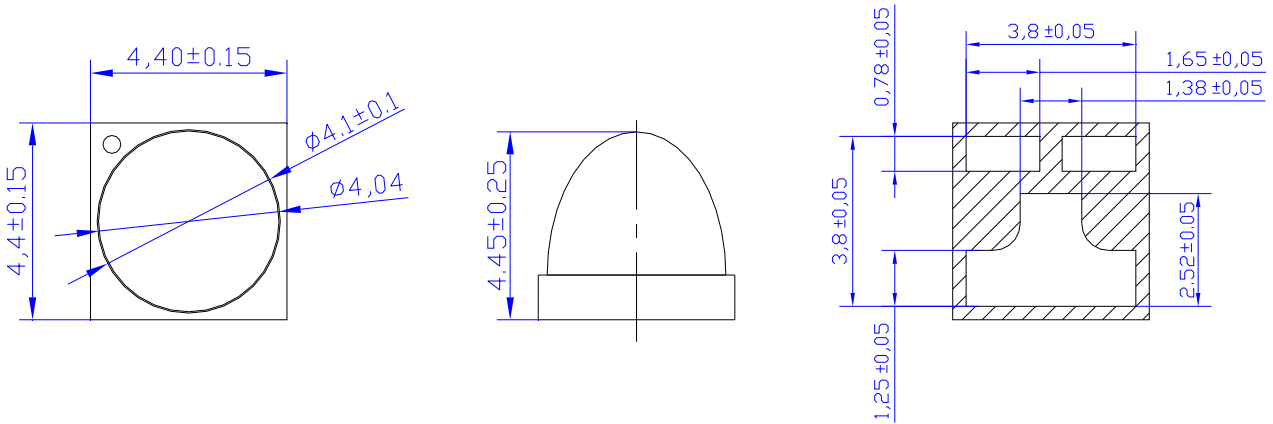
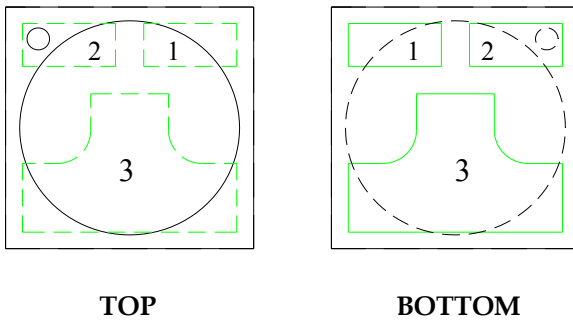


Fig. Package Outline Drawing.

Pad Configuration



PAD	Function
1	Cathode
2	Anode
3	Thermal

Fig. Pad configuration.

HPL-H44XV1C0

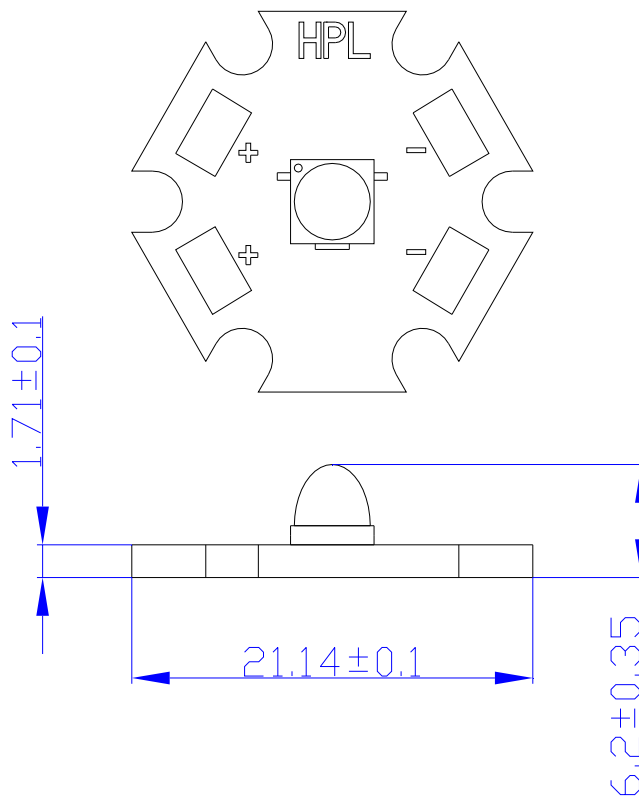
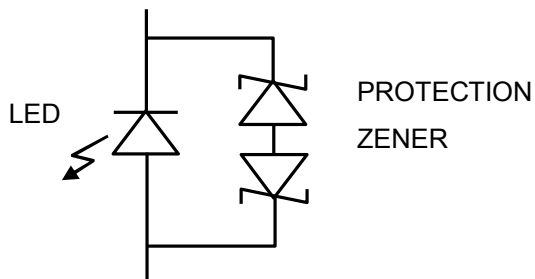
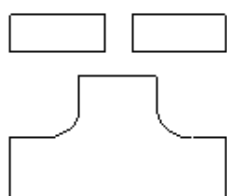
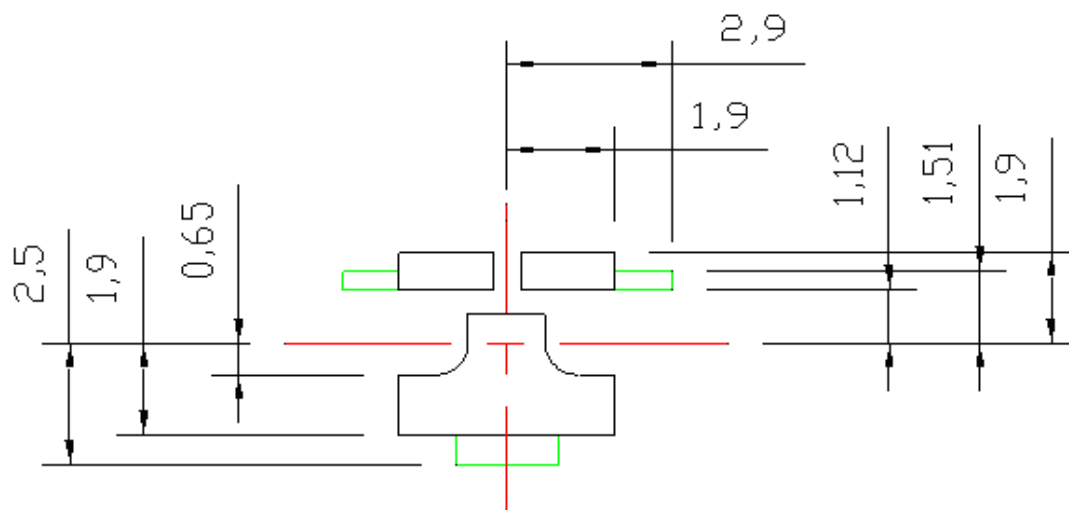


Fig. Assembly Outline Drawing.

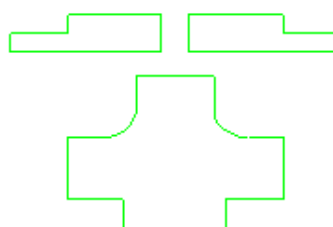
PROTECTION CIRCUIT



Recommended Solder Pattern



**SOLDER
MASK**



**COPPER
LAYER**

Fig. Solder Pad Layout.

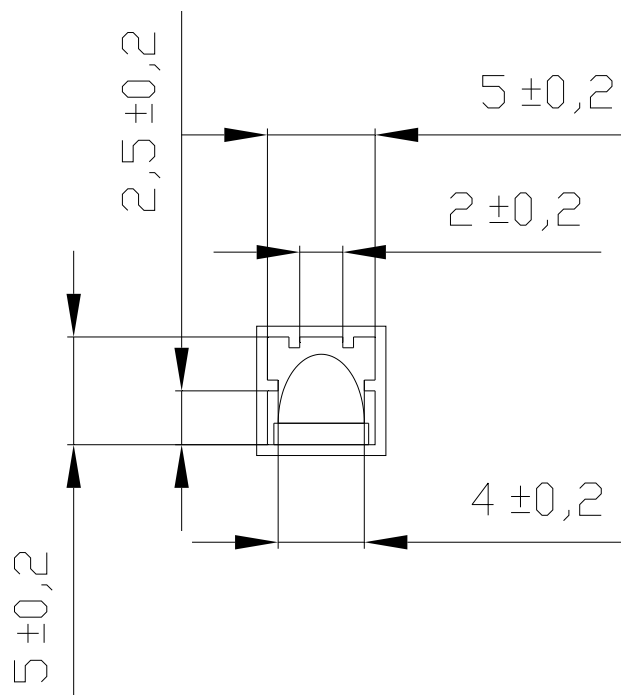
Shipping Package Style

Lens Type

30 Degree Lens Type :

- 1 Tube
- Q'ty: 100(MAX)/Tube.
- Q'ty: 950 Tube (MAX)/Box.

Unit : mm



Notes:

General tolerance = $\pm 0.2\text{mm}$

Material : PVC , Clear

Thickness : 0.5mm

Length : 460mm $\pm 2\text{mm}$

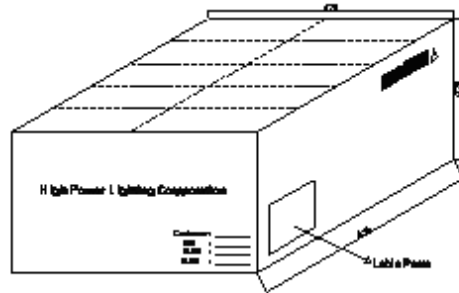
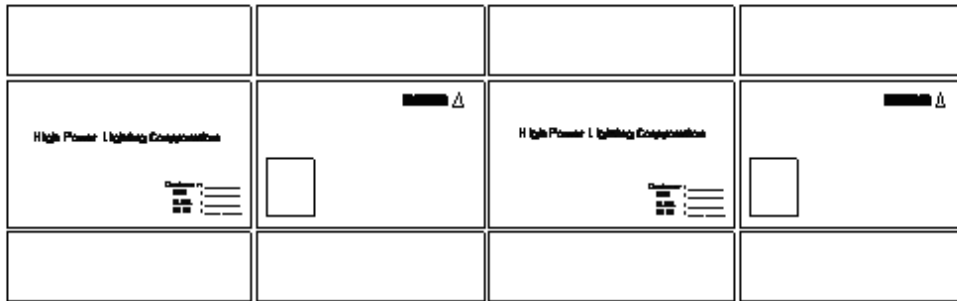
Label Formation

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

75mm*8mm

Large Box

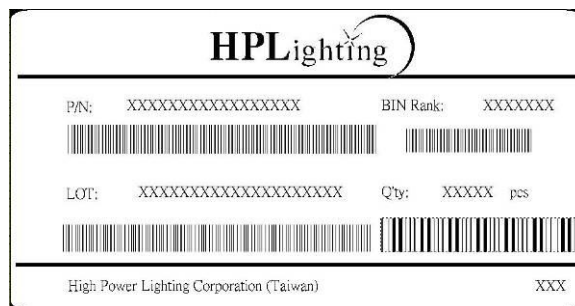
Unit : mm



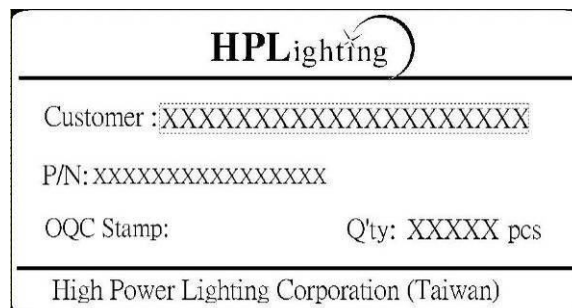
Label Formation

70mm

Unit : mm



40mm



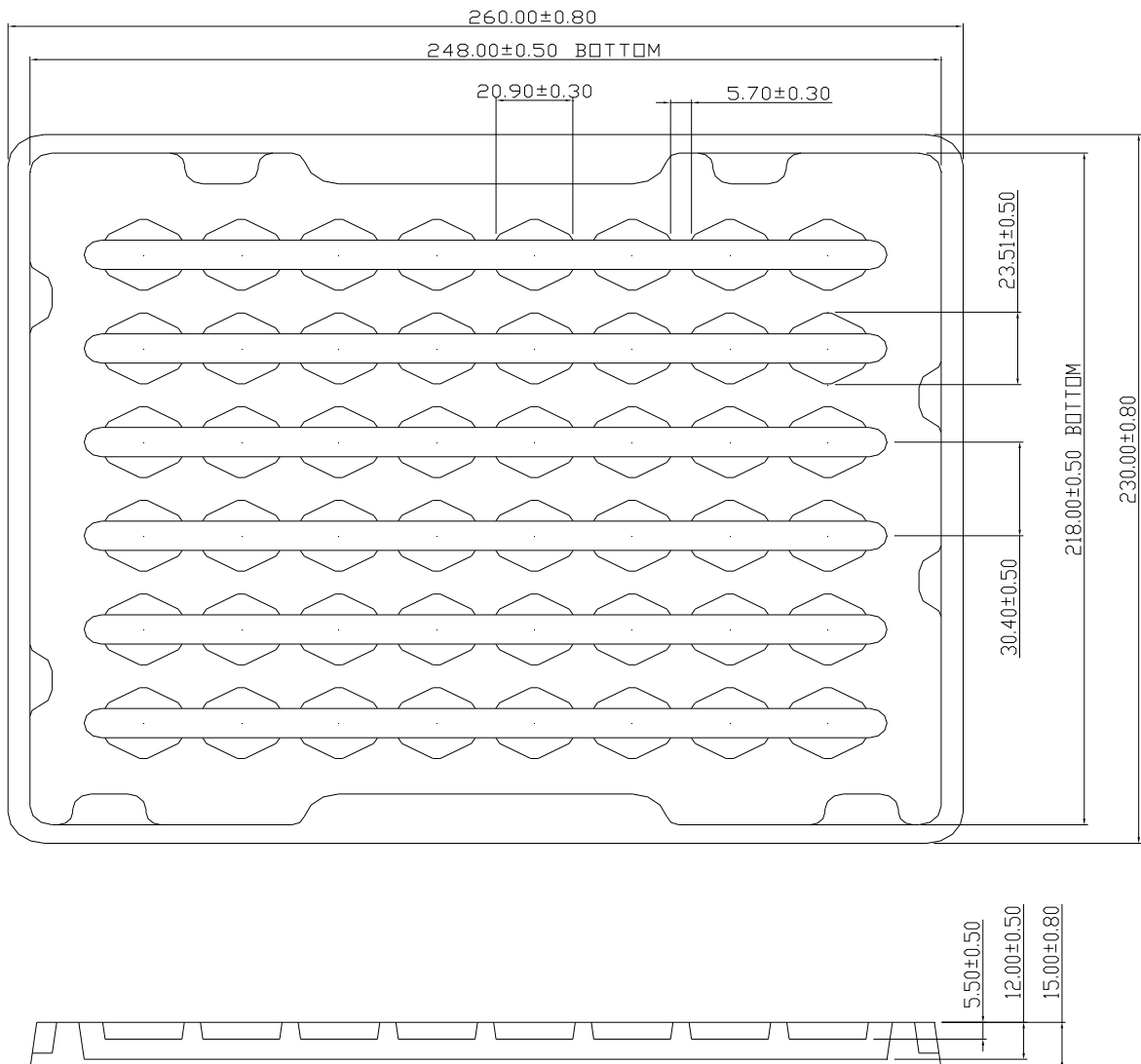
Assembly Type

Tapping Dimension Packaging Specification

30 Degree Assembly Type :

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

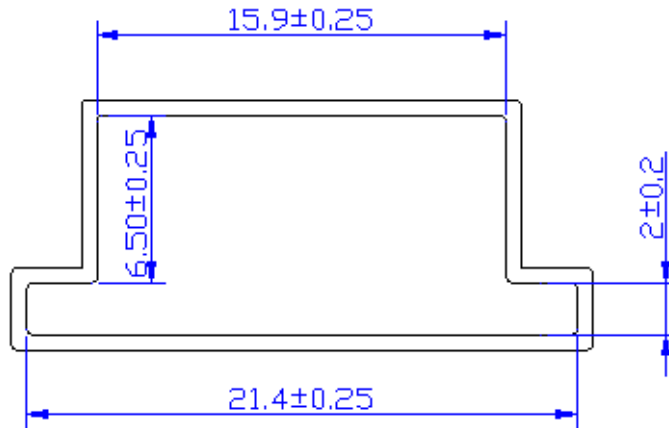
Unit : mm



30 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

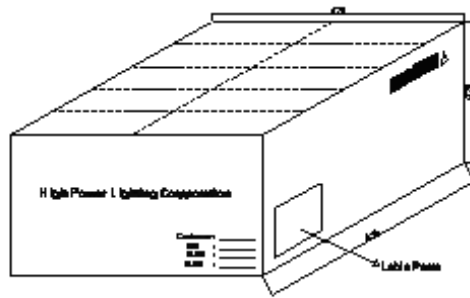
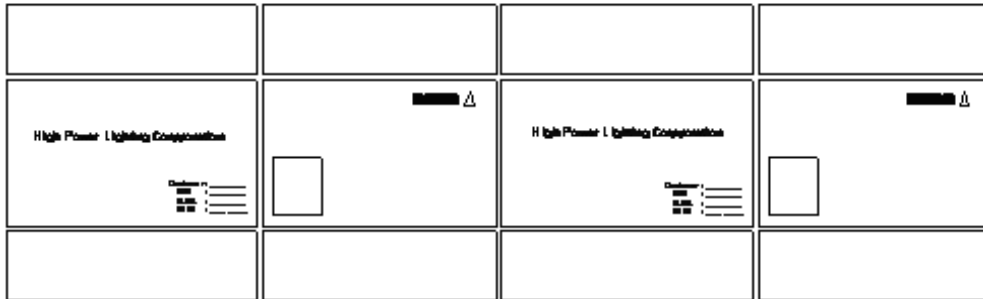
Label Formation

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

75mm*8mm

**Package
Large Box**

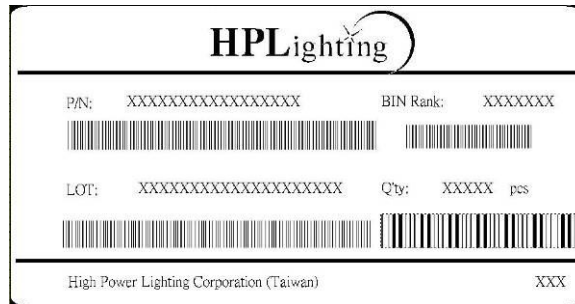
Unit : mm



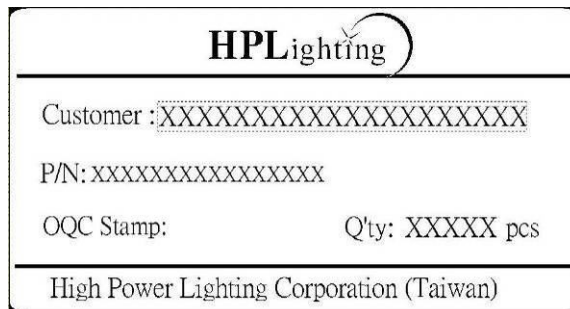
Label Formation

70mm

Unit : mm



40mm

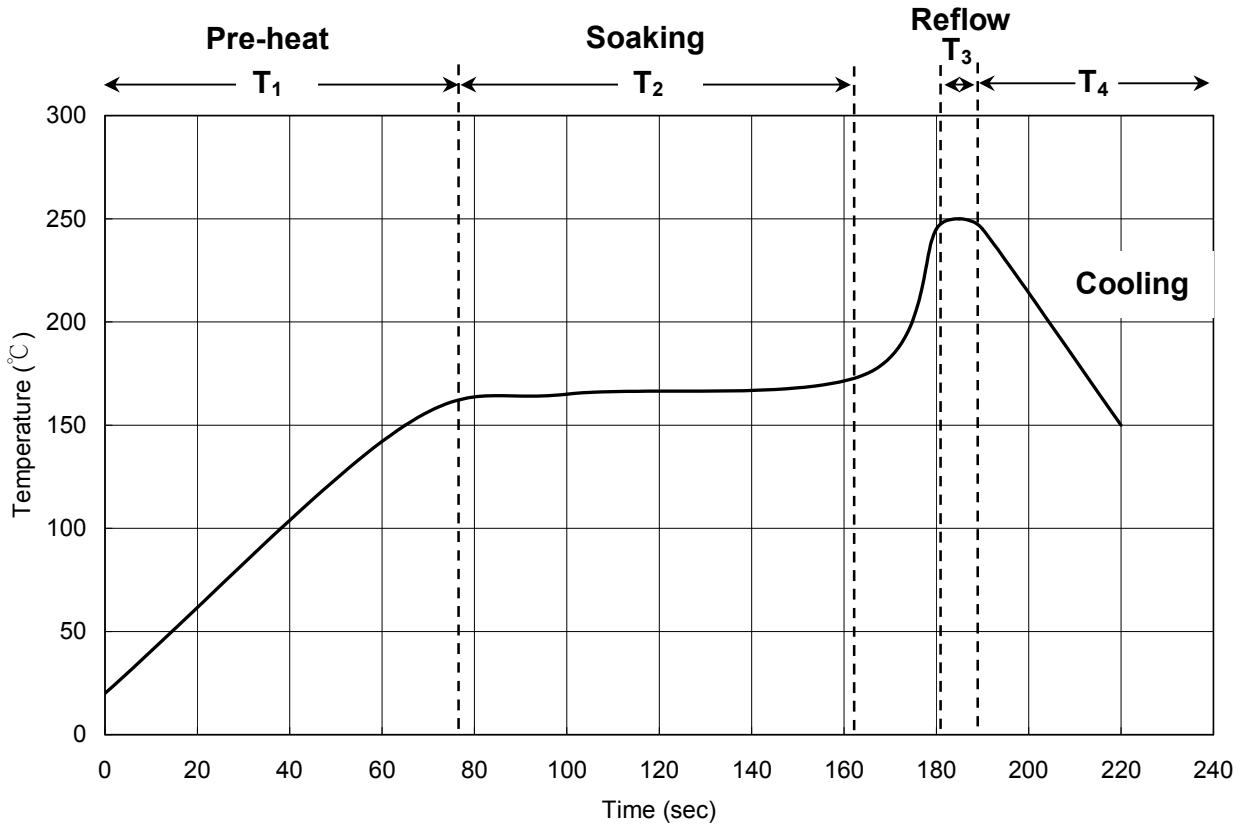


Qualification Reliability Testing

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 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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