Draft Specification For IR Series

HPL-H39DL1F2-5N0

Features

- Dimension : 3.9mm(L)×3.9mm(W)
- High Radiant Flux type
- All Metal Design Cu Substrate with Silicone Lens
- Exceed narrow beam angle 20°
- Ultra low thermal resistance
- MSL Level : 3

Applications

- Sensing System
- Medical appliances
- Surveillance
- Machine vision

RoHS Compliant

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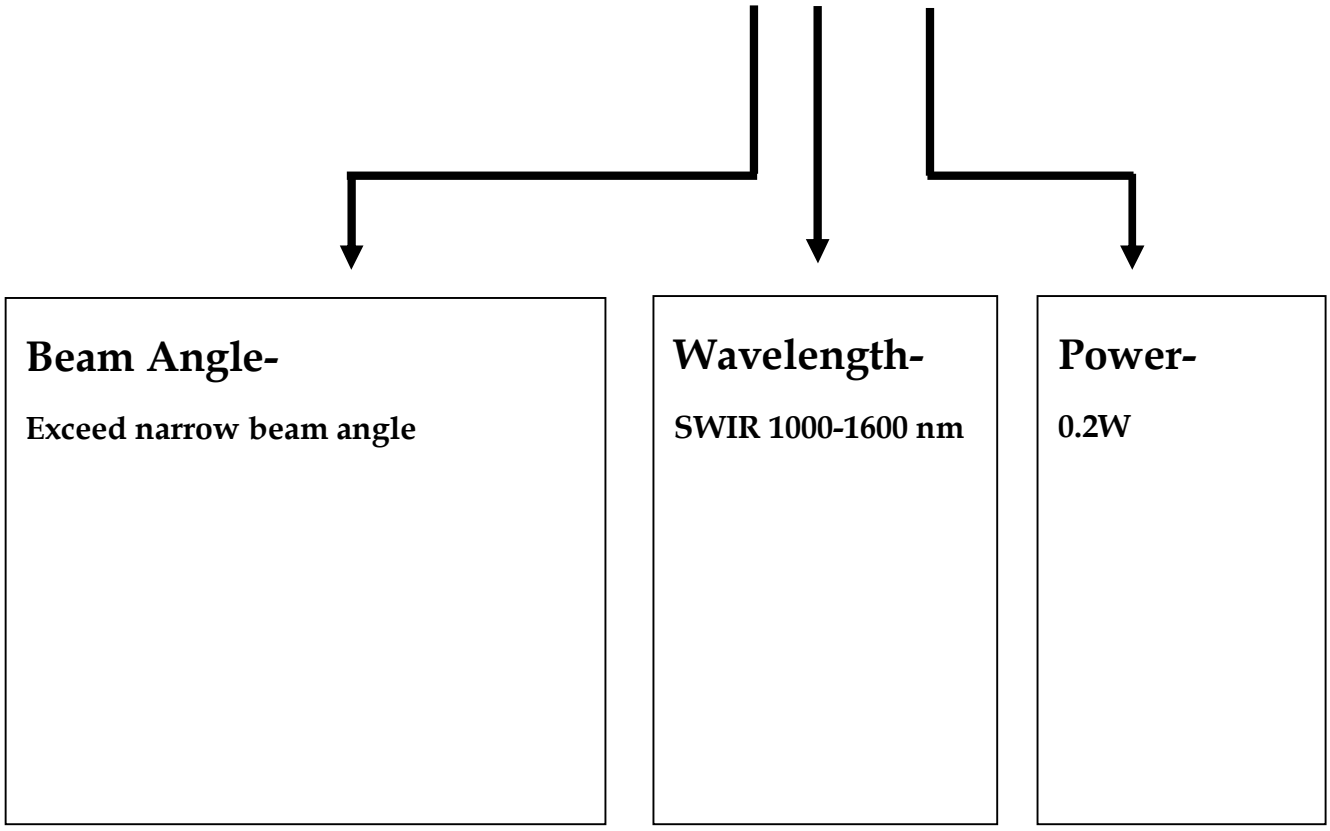
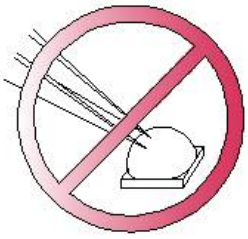
General Information

HPL – H39DL1F2



Part Number Matrix

Type / Wavelength	20°Lens	20°Lens & Star
SWIR 1000~1600	HPL-H39DL1F2	HPL-H39XL1F2

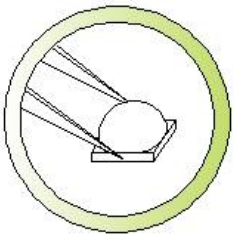


Do not poke the Led Lens with sharp object

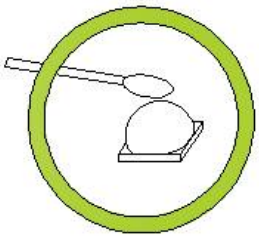
Do not stack assembled PCB

Do not hold the Led with hand

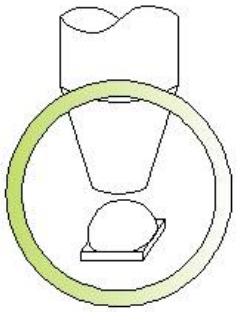
Do not press or push the Led Lens



Hold the Led only by the substrate



Clean the LED surface with cotton bud



Use pick and place nozzle per recommendation in data sheet

Absolute Maximum Ratings

(Tj=25℃)

Parameter	Symbol	Rating	Unit
Power Dissipation	P	0.2	W
Forward Current	I_F	150	mA
Reverse Voltage	V_R	1	V
LED Junction Temperature	T_J	115	°C
Operating Temperature Range	T_{opr}	- 40°C to + 85°C	
Storage Temperature Range	T_{stg}	- 40°C to + 120°C	
Soldering Condition	T_{sol}	260°C For 10 Seconds	

Initial Electrical/Optical Characteristics

(Tj=25℃)

Parameter	Symbol	Min	Typ	Max	Test Condition	Unit
Peak wavelength	λ_p	1300	-	1400	I_F = 150mA	nm
Radiant Flux	Φ_e	-	11	-		mW
Radiant Intensity	I_e	-	76.2	-		mW/Sr
Forward Voltage	V_F	-	1.6	-		V
Spectra half-width	$\Delta\lambda$	-	95	-		nm
Beam Angle	$2\Theta_{1/2}$	-	20	-		deg
Thermal Resistance, Junction-Case	R_{th}, J-C1	-	5	-	-	°C/W

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

Bin Code List for Reference

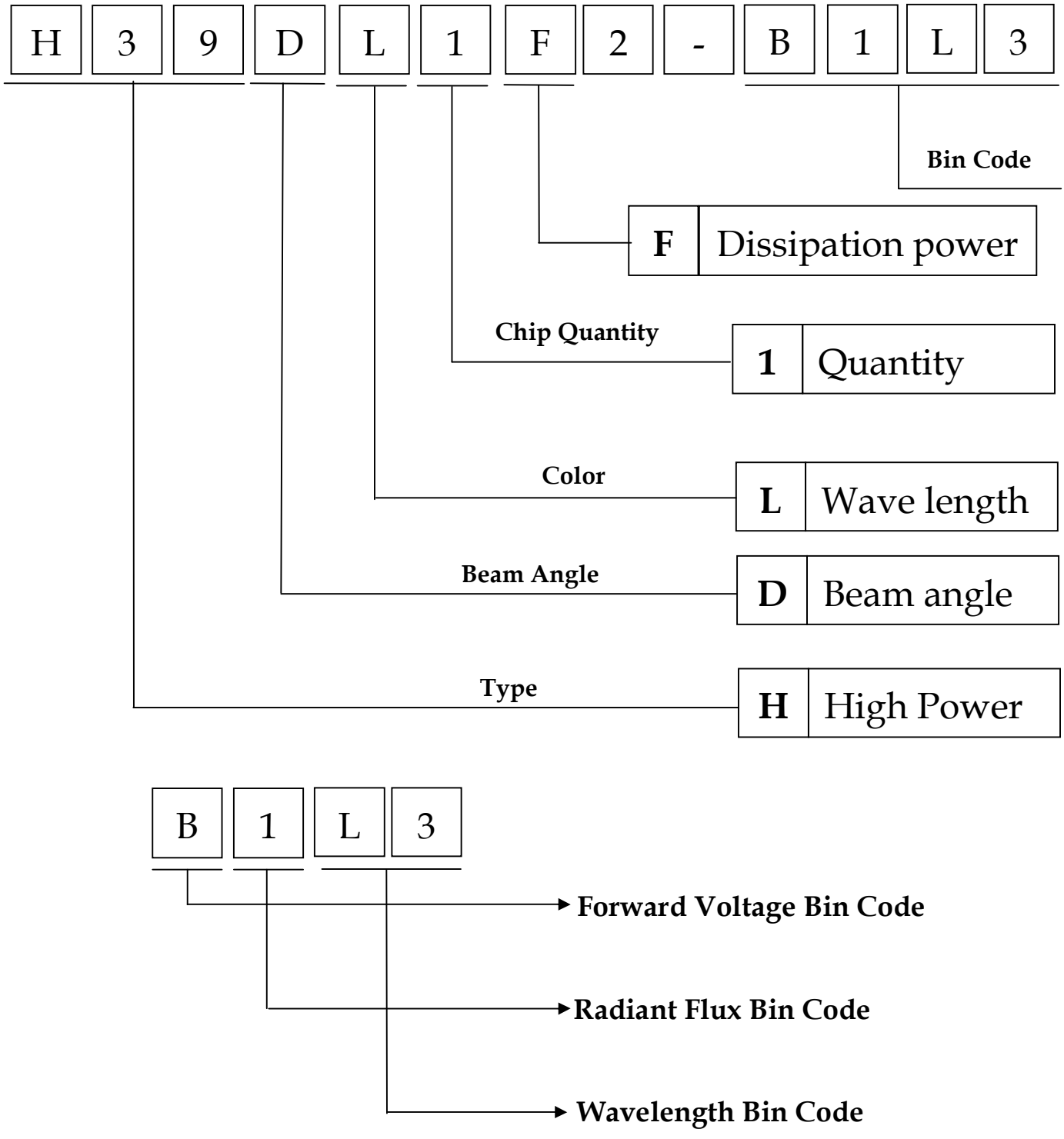
(Tj=25℃)

Item	Bin Code	Symbol	Condition	Min.	Max.	Unit
Forward Voltage[1]	A	V_F	I_F = 150 [mA]	1.35	1.59	**V**
	B			1.59	1.83	
	C			1.83	2.07	
Radiant Flux[2]	0	Φe	I_F = 150 [mA]	0	10	**mW**
	1			10	20	
	2			20	30	
	3			30	40	
Wavelength[3]	L3	λ_p	I_F = 150 [mA]	1300	1400	**nm**

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

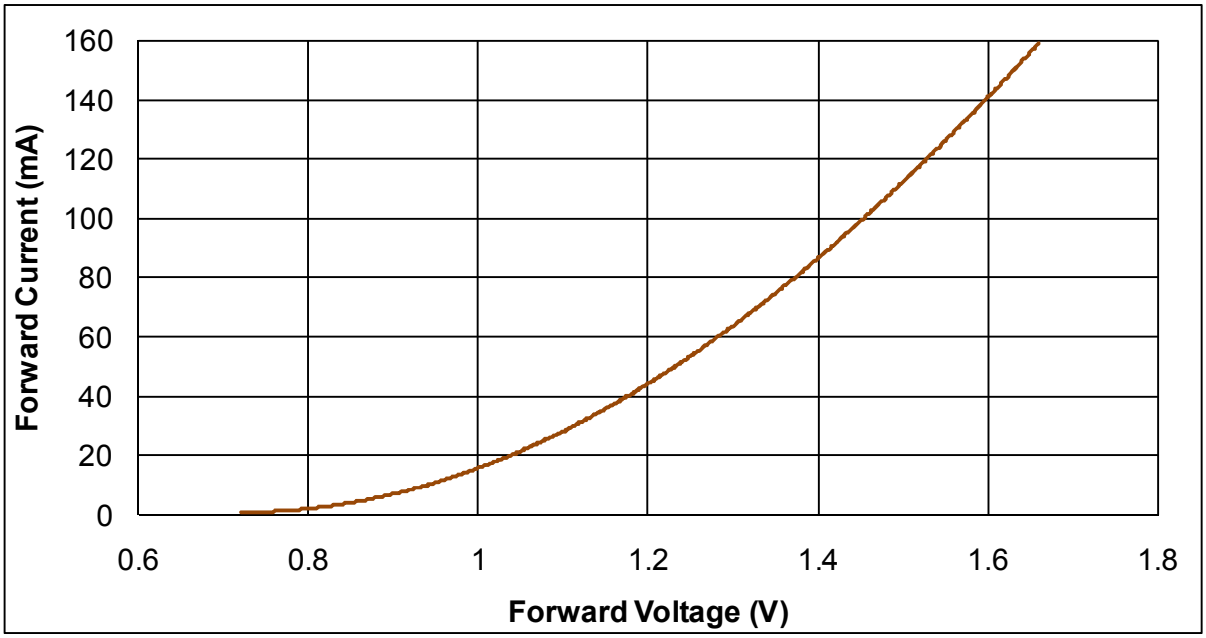


Fig. Forward Current vs. Forward Voltage

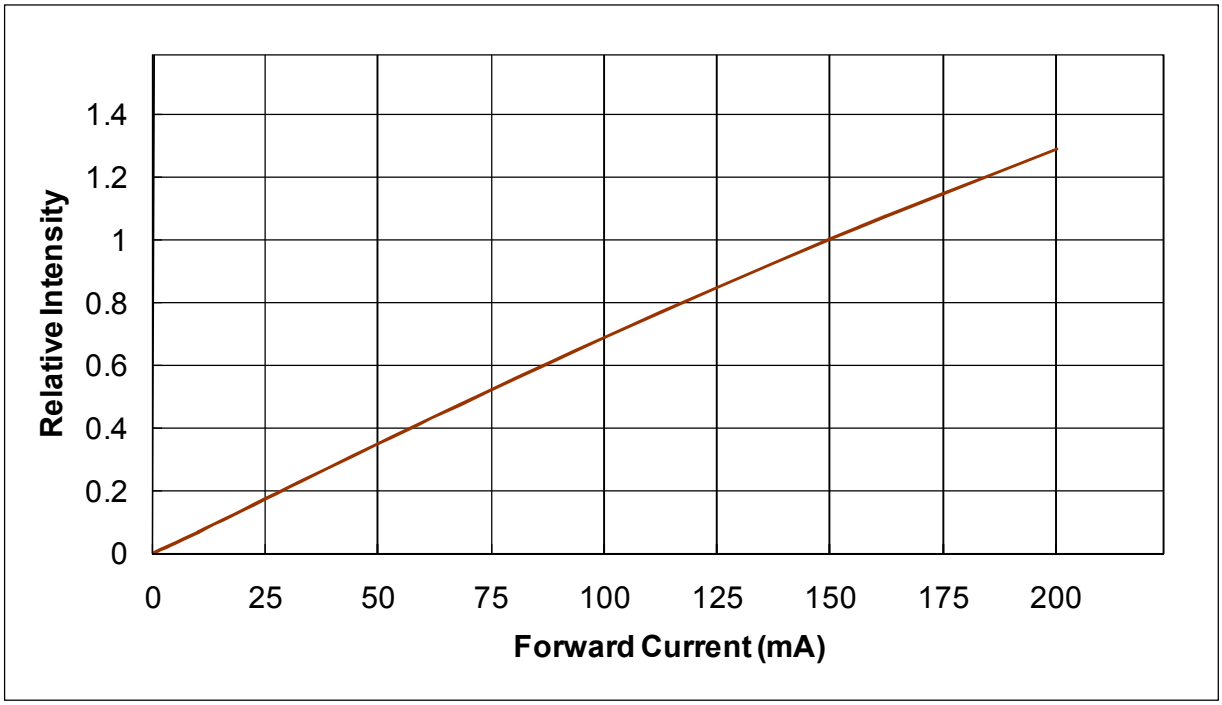


Fig. Relative Intensity vs. Forward Current

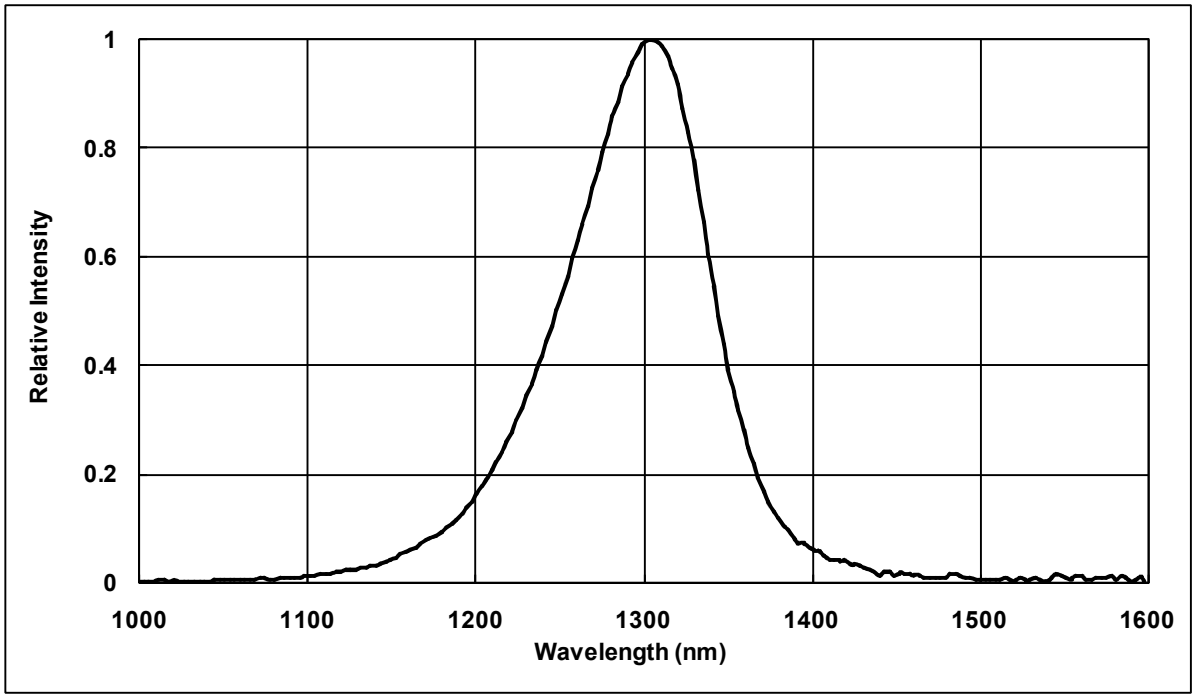


Fig. Typical Relative Intensity vs. wavelength

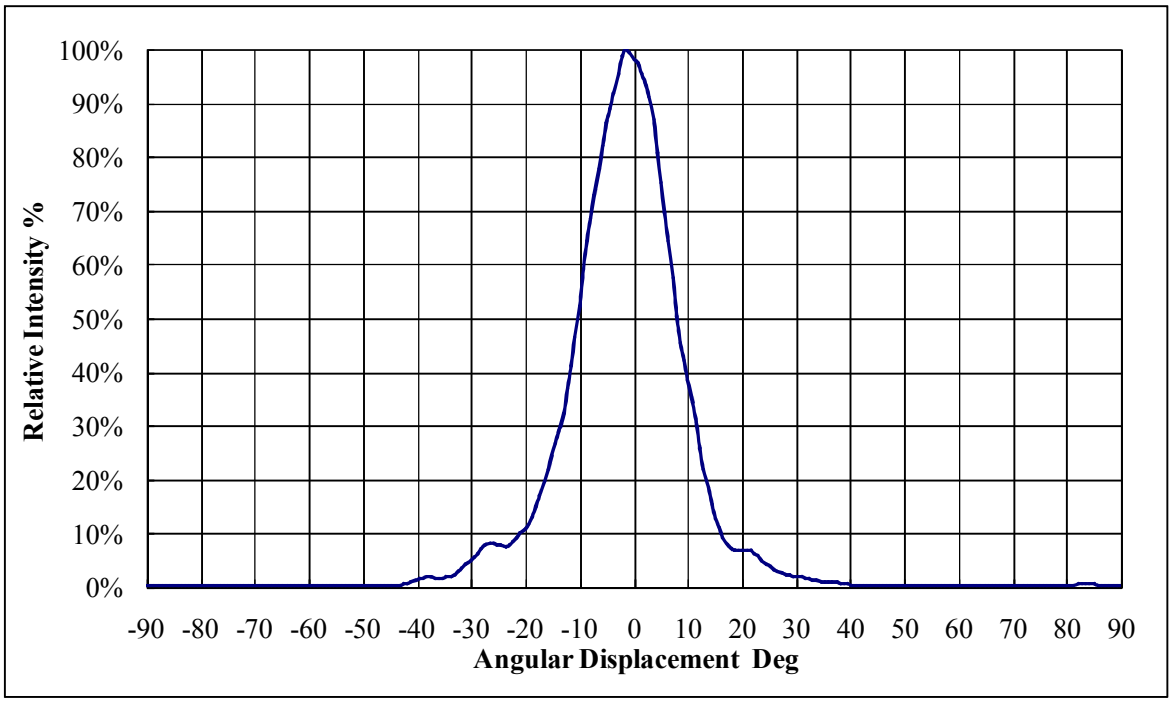


Fig. Typical Representative Spatial Radiation Pattern

Outline Dimension

Unit : mm

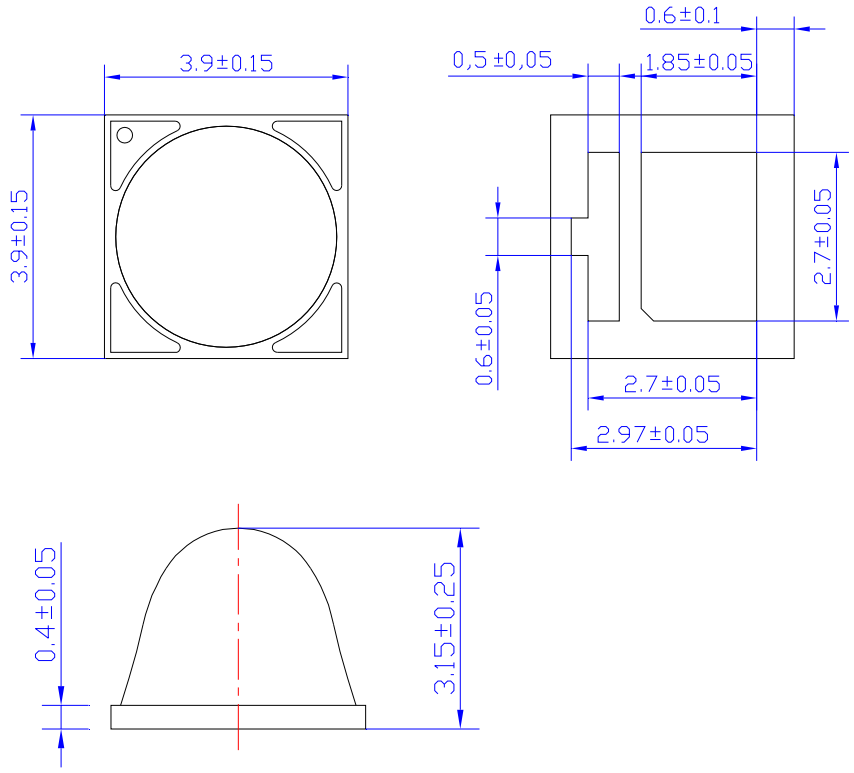
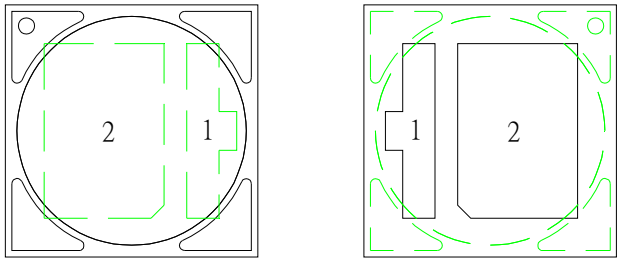


Fig. Package Outline Drawing.

● Pad Configuration



TOP **BOTTOM**

PAD	Function
1	Anode
2	Cathode、Thermal

Fig. Pad configuration.

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

Recommended Solder Pattern

Unit : mm

Tolerance±0.05

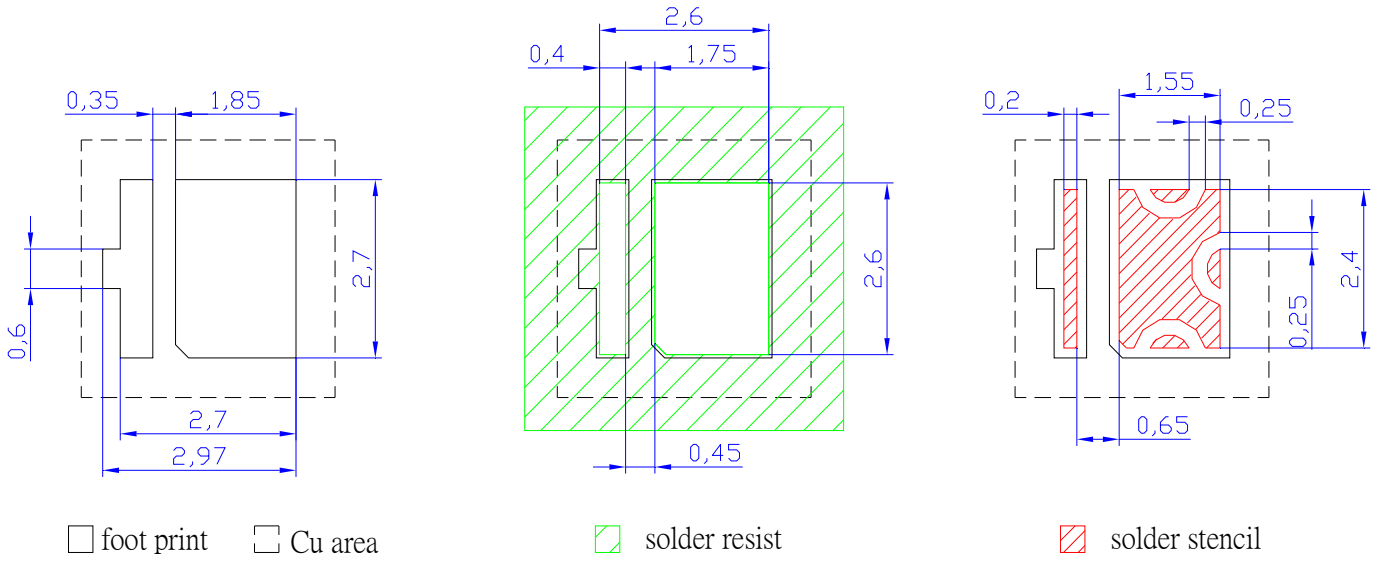


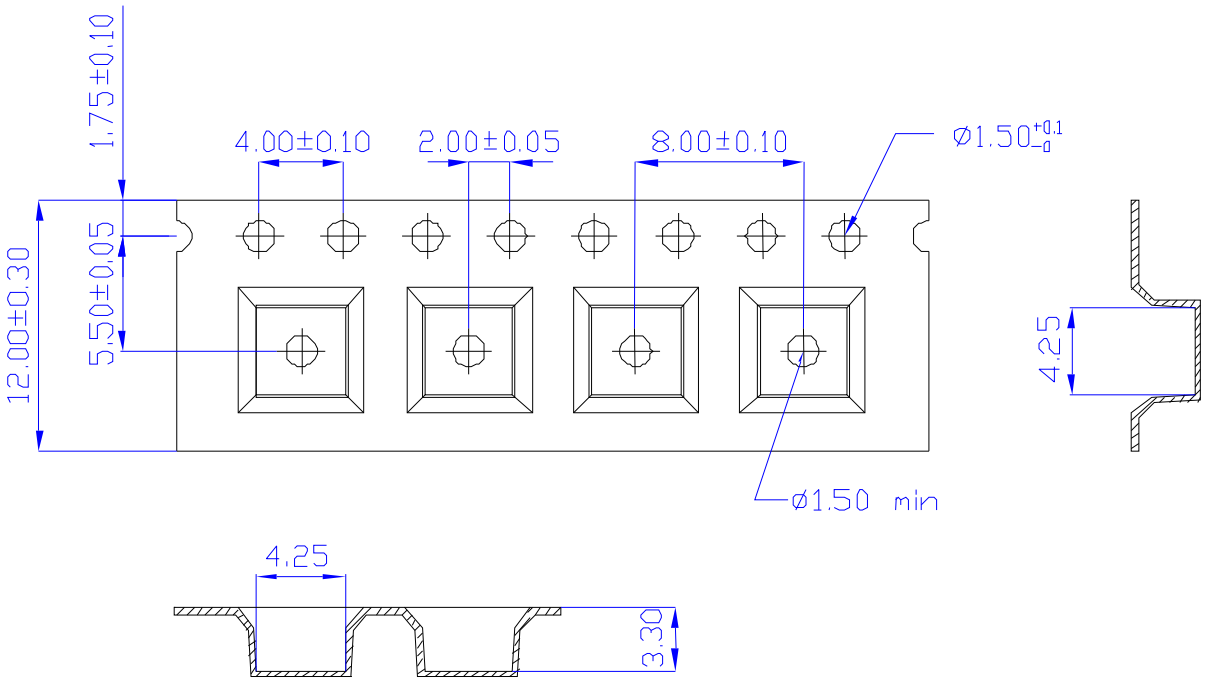
Fig. Solder Pad Layout.

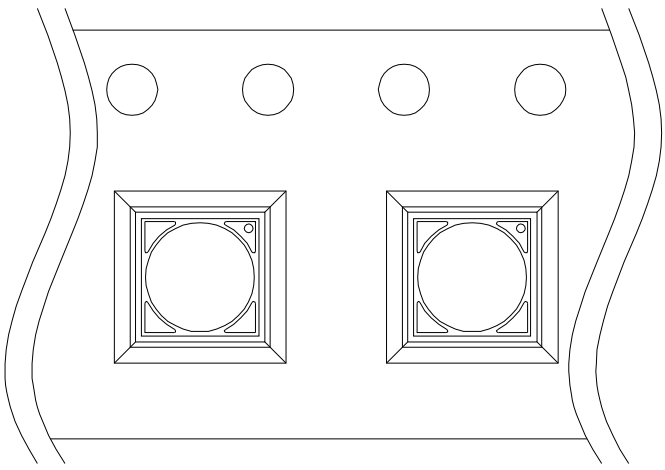
Shipping Package Style

Tapping Dimension Packaging Specification

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

Unit : mm





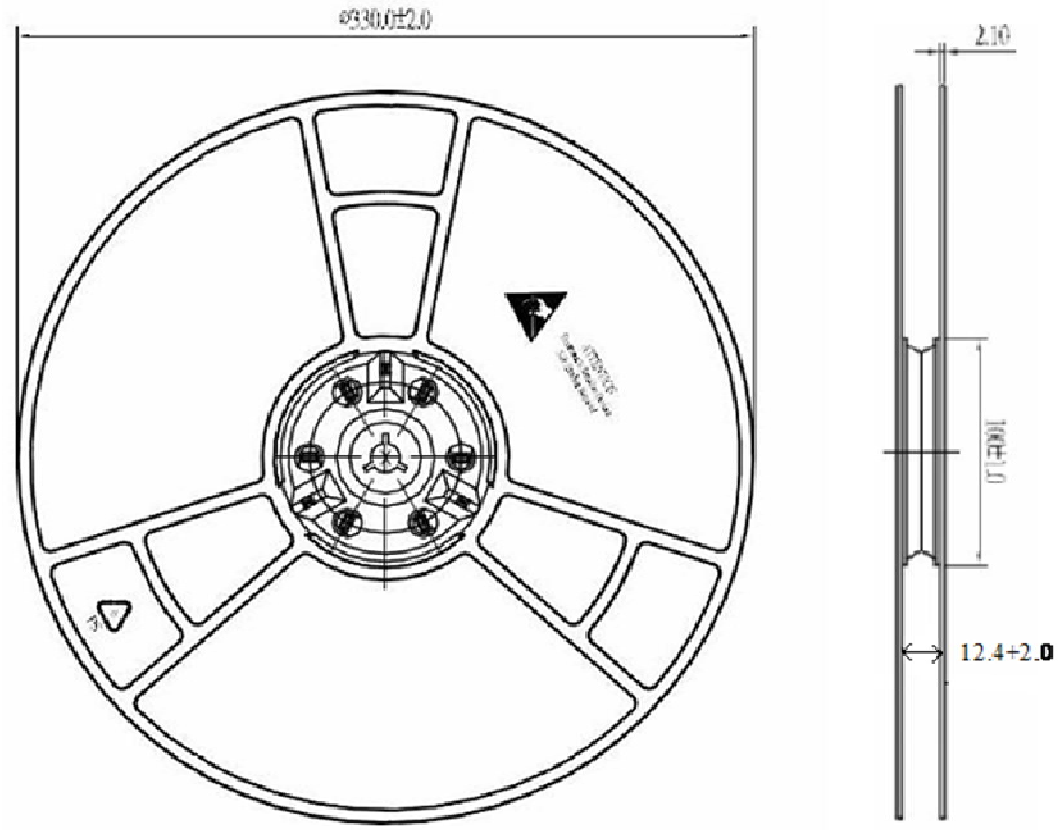
13 inch Reel Package

Box Type	Dimension (mm)	Reel/Box	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 :

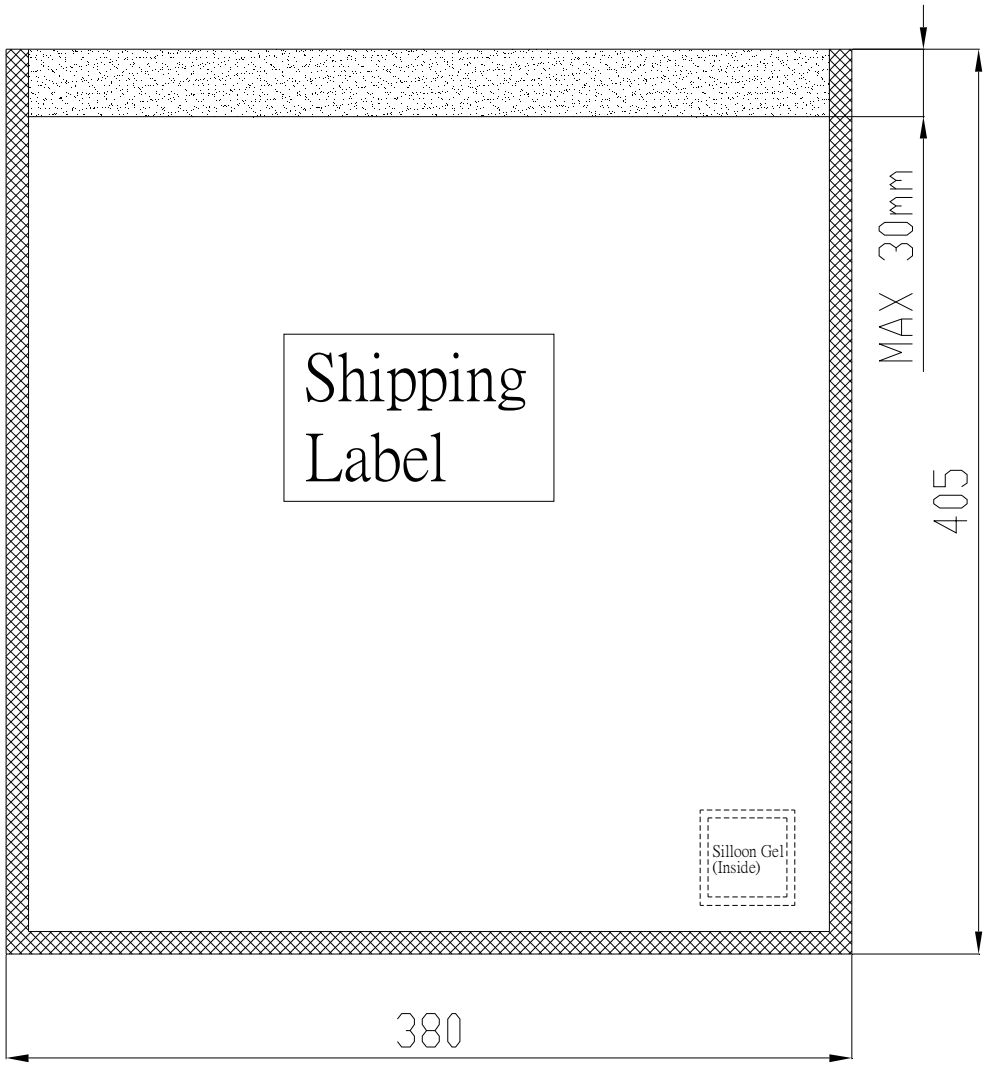
Reel Part :

Unit : mm



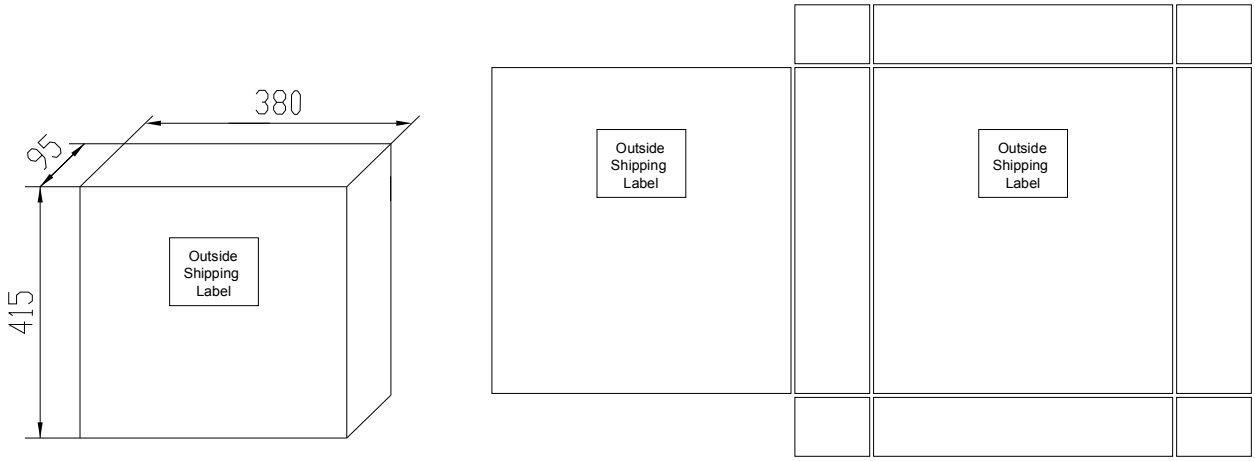
Anti Statistic Bag :

Unit : mm



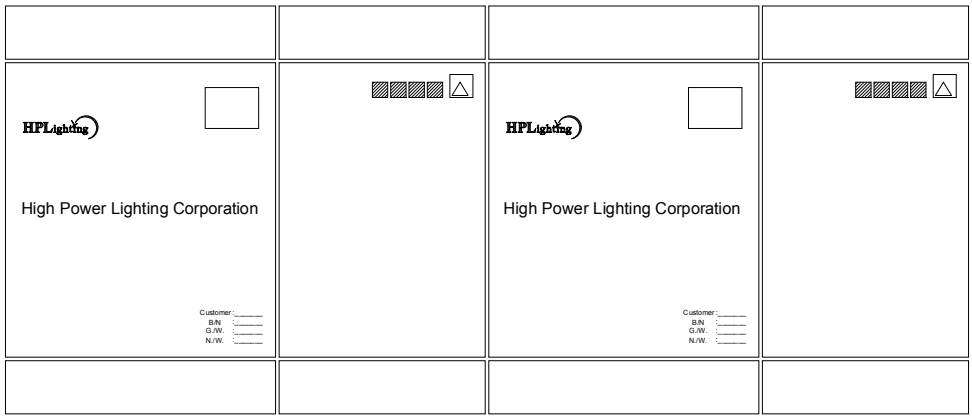
Small Box

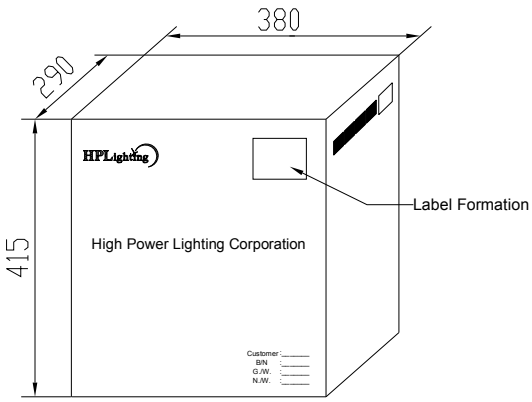
Unit : mm



Middle Box

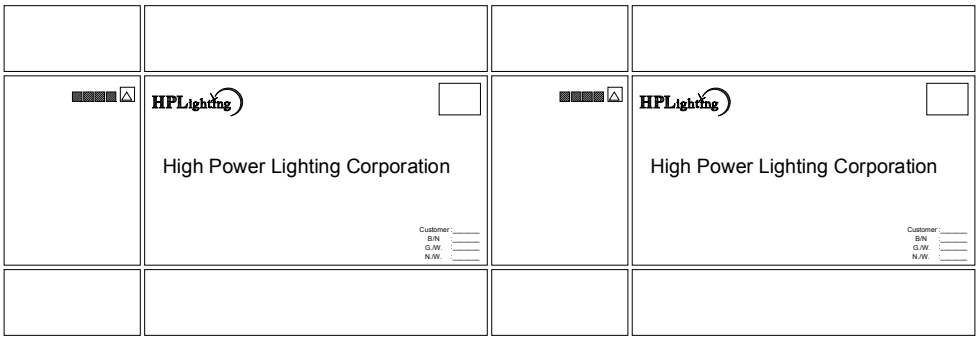
Unit : mm

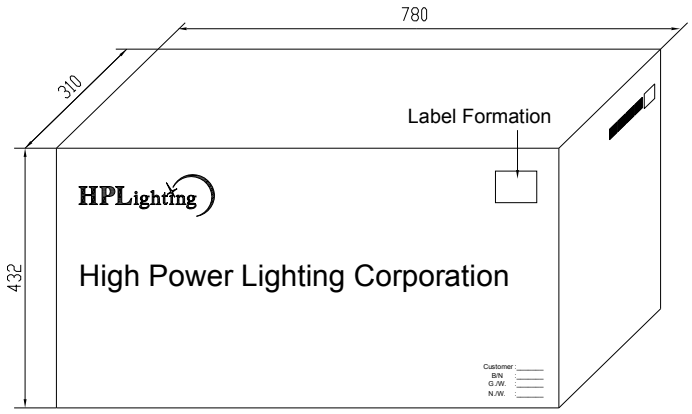




Large Box

Unit : mm

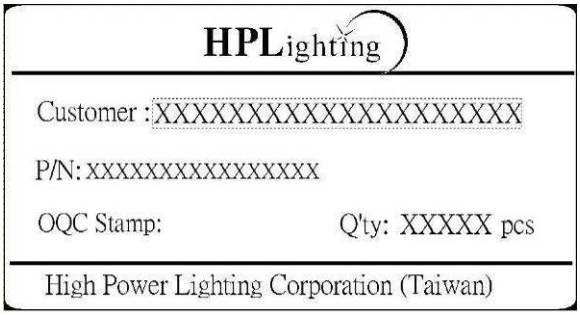




Label Formation

70mm

40mm



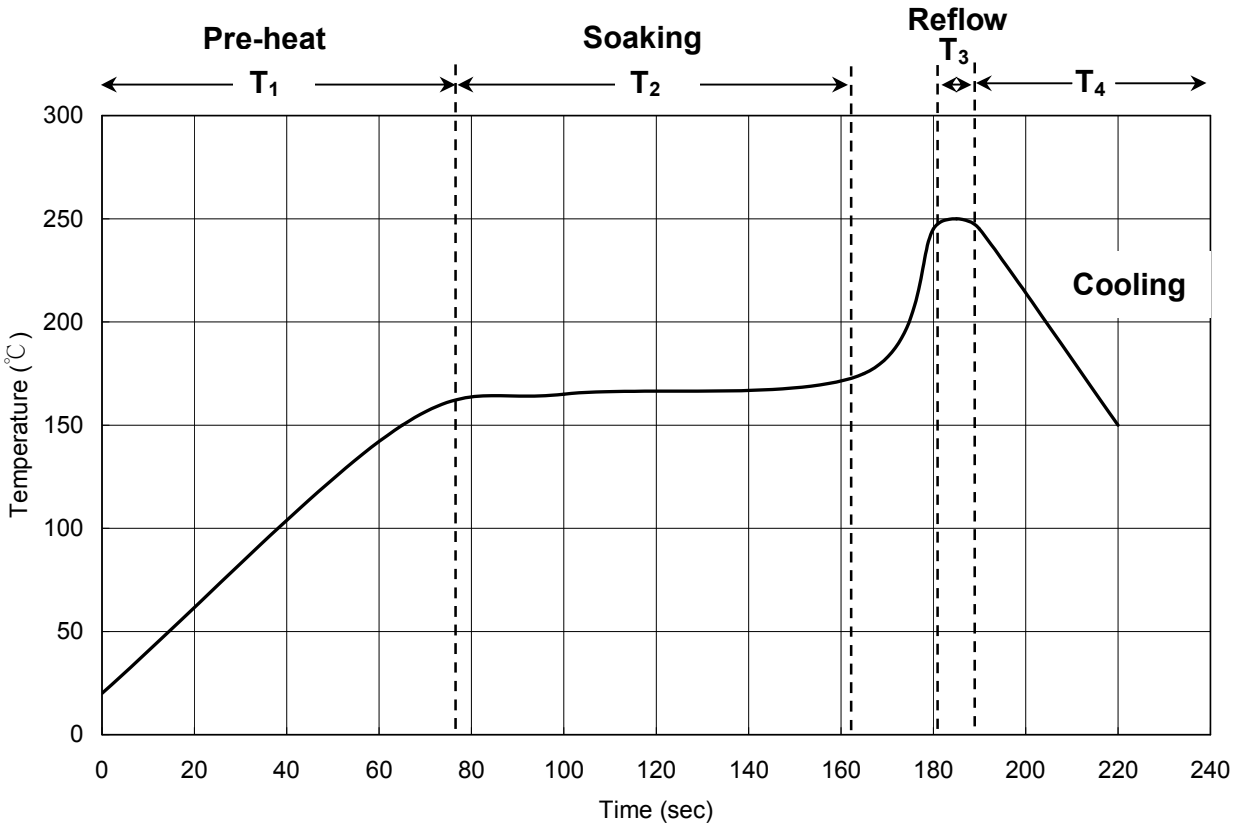
Qualification Reliability Testing

Classification	Test Item	Test conditions	Referance Standard
Endurance Test	Operation Life	I_F = 150mA Ta = 25℃ Test Duration = 1000hrs	MIL-STD-750: 1026 MIL-STD-883: 1005 JIS C 7021: B-1
	High Temperature High Humidity Storage	Ta = 85±5℃ RH = 85±5% Test Duration = 1000hrs	MIL-STD-202: 103B JIS C 7021: B-11
	High Temperature Storage	Ta = 105±5℃ Test Duration = 1000hrs	MIL-STD-202: 1008 JIS C 7021: B10
	Low Temperature Storage	Ta = -40±5℃ Test Duration = 1000hrs	JISC 7021: B-12
Environmental Test	Temperature Cycling	-30℃ ~ 25℃ ~ 105℃ ~ 25℃ 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±5℃ ~ 105±5℃ 30min 30min Test Duration = 10 cycle	MIL-STD-202: 107D MIL-STD-750: 1051 MIL-STD-883: 1011
	Solder Resistance	Tsol = 260±5℃ 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 = 150mA	V_F shift > 10%
Luminous	Iv%	I_F = 150mA	I_V% shift > 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.

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