

PRODUCT SPECIFICATION

Part Number
PLBT3535HPC-WCxxxx

Details

- High Power Color 3535 Ceramic LED
- 3.5 x 3.5 x 2.0mm
- 1,000 piece reels
- Emitting Color: Multiple Colors
- InGaN or AlInGaP dice used

Features

- Good thermal dissipation
- MSL2 qualified according to J-STD 020
- ESD 8KV (HGM: MIL-STD883 Class 3B)
- RoHS & REACH Compliant



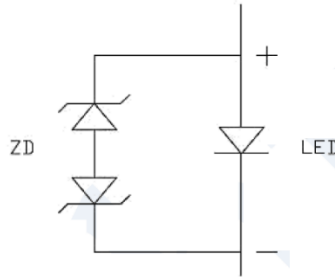
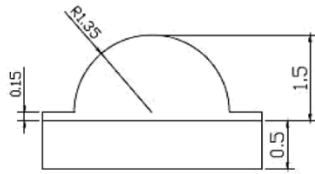
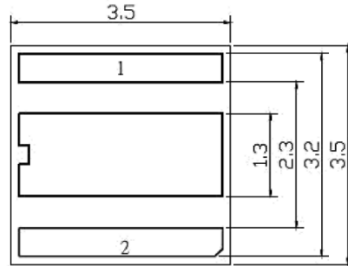
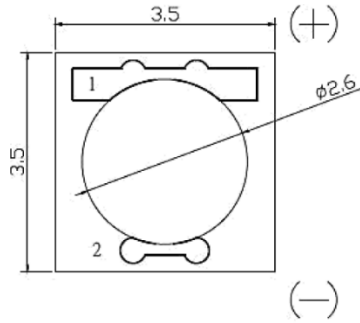
Note:

1. Specifications subject to change without notice

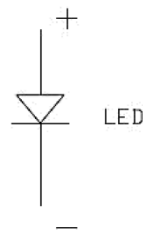
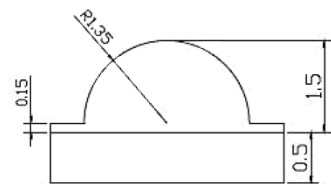
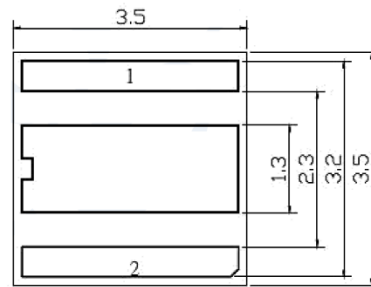
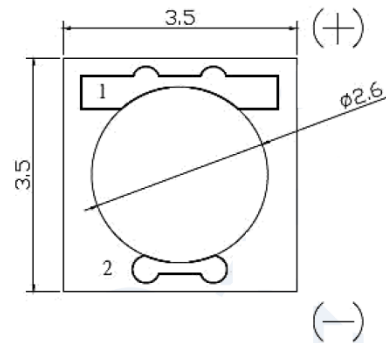


Mechanical Dimensions

- *Blue & Green*



- *Red & Yellow*



Notes:

1. Dimensions in millimeters and tolerance is $\pm 0.13\text{mm}$ unless otherwise noted



Device Selection Guide

Model Number	Color	Luminous Flux (lm)			Wavelength (nm)	Forward Voltage (V)	
		Group	350 mA	700 mA		Min	Max
PLBT3535HPC-WCB17	Blue	B16	20	33	460-470	2.8	3.4
		B17	22	36			
		B18	24	38			
		B19	26	42			
		B20	28	46			
PLBT3535HPC-WCG77	Green	B31	80	132	520-530	3.0	3.8
		B32	90	148			
		B33	100	165			
		B34	110	181			
PLBT3535HPC-WCR27	Red	B24	45	76	620-630	1.8	2.8
		B25	50	85			
		B26	55	93			
		B27	60	102			
		B28	65	110			
PLBT3535HPC-WCY27	Yellow	B25	50	85	585-595	1.8	2.8
		B26	55	93			
		B27	60	102			
		B28	65	119			
PLBT3535HPC-WCR77	Red	B14	16	27	650-670	1.8	2.8
		B15	18	30			
		B16	20	34			
PLBT3535HPC-WCB47	Blue	B13	14	23	450-460	2.8	3.4
		B15	16	26			
		B16	18	29			

Notes: 1. Forward voltage (V_F) $\pm 0.05V$, Luminous flux (Φ_v) $\pm 5\%$
 2. IS standard testing.



Absolute Maximum Ratings at Ta=25 °C

Parameter	Symbol	Rating			Unit
		Min	Typical	Max	
DC Forward Current	IF	--	350	700	mA
Pulse Forward Current	IPF	--	--	1000	mA
Forward Voltage – Blue / Green	VF	2.8	--	3.8	V
Forward Voltage – Red / Yellow	VF	1.8	--	2.8	V
Reverse Voltage	VR	--	-5	--	V
Leakage Current (5V)	IR	--	--	10	µA
Junction Temperature	TJ	--	150	--	°C
Storage Temperature	Tstg	-40	--	100	°C
Soldering Temperature	Tsol	--	260	--	°C
Thermal Resistance Junction / Solder Point	RTH	6	--	8	°C/W
Viewing Angle	2θ ½	--	120	--	deg

- Notes: 1. For other ambient, limited setting of current will depend on derating curves
 2. D=0.01s duty 1/10
 3. When drive on maximum current, TJ must be kept below 150
 4. Viewing angle (2θ ½) ±10°



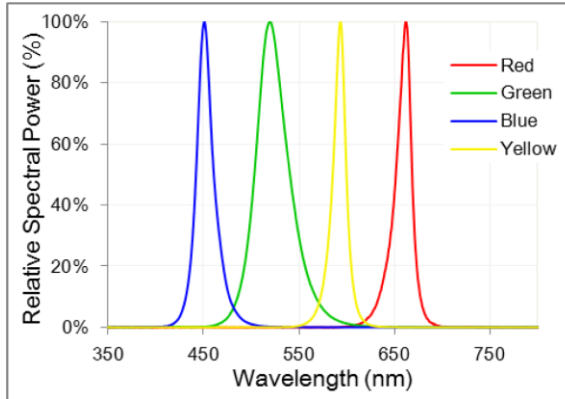
Intensity Binning

Bin Code (350mA)	Min. Φ_v (lm)	Max. Φ_v (lm)
B13	14	16
B14	16	18
B15	18	20
B16	20	22
B17	22	24
B18	24	26
B19	26	28
B20	28	30
B23	40	45
B24	45	50
B25	50	55
B26	55	60
B27	60	65
B28	65	70
B29	70	75
B30	75	80
B31	80	90
B32	90	100
B33	100	110
B34	110	120

Forward Voltage Binning

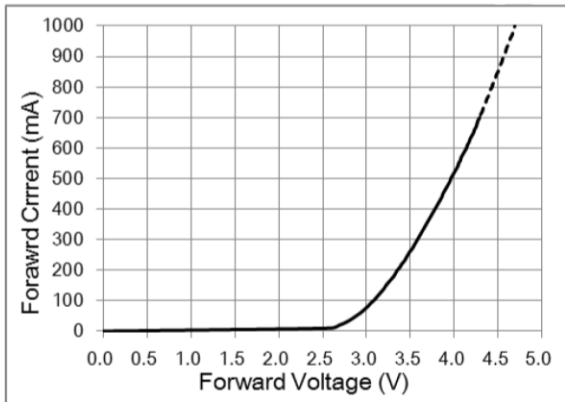
Bin Code (350mA)	Min. VF (V)	Max. VF (V)
B1820	1.8	2.0
V2022	2.0	2.2
V2224	2.2	2.4
V2426	2.4	2.6
V2628	2.6	2.8
V2830	2.8	3.0
V3032	3.0	3.2
V3234	3.4	3.4
V3436	3.4	3.6
V3638	3.6	3.8

Relative Spectral Power Distribution

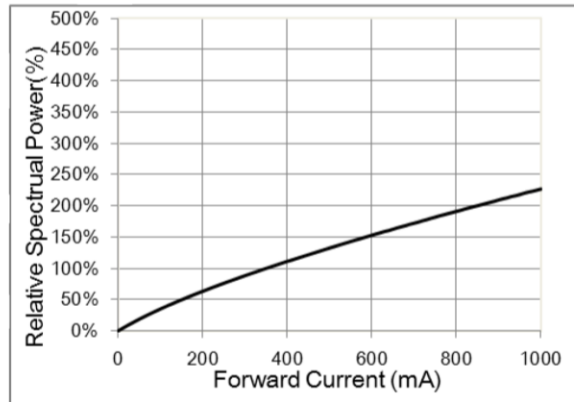


Electronic-Optical Characteristics

Forward Current vs. Forward Voltage (Ta=25°C)

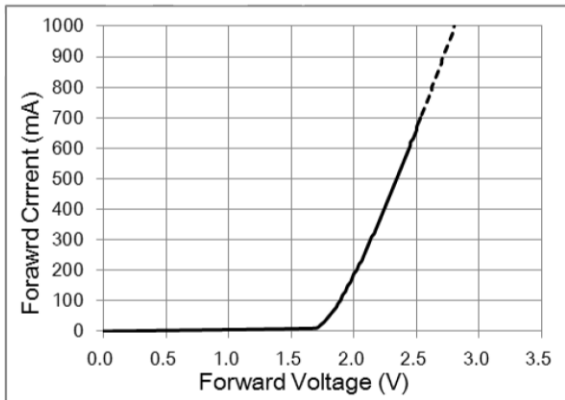


Relative luminous Flux vs. Forward Current (Ta=25°C)

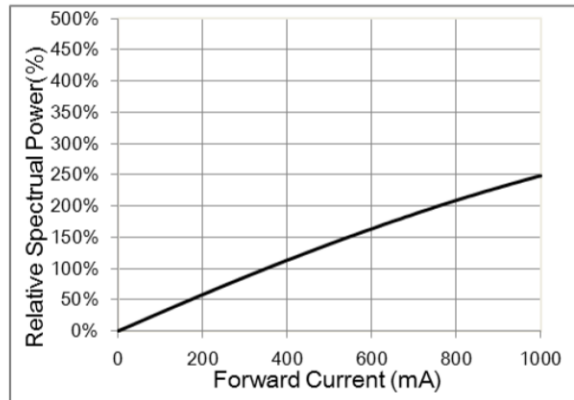


Red & Yellow

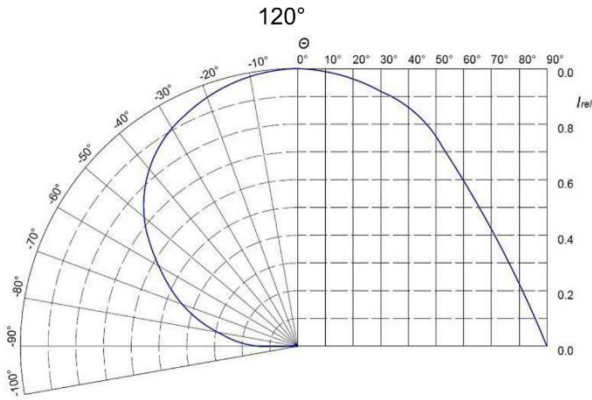
Forward Current vs. Forward Voltage (Ta=25°C)



Relative luminous Flux vs. Forward Current (Ta=25°C)

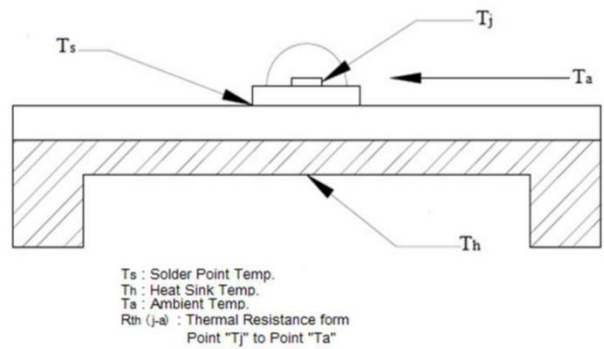
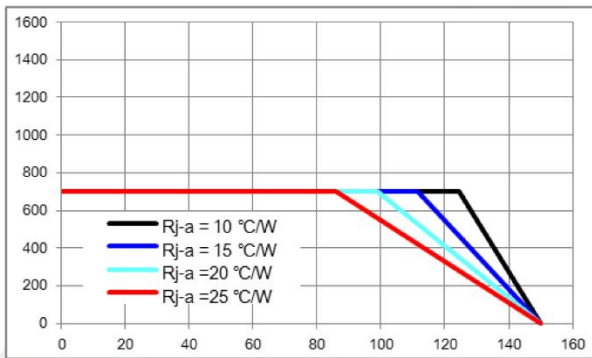


Typical Spatial Distribution

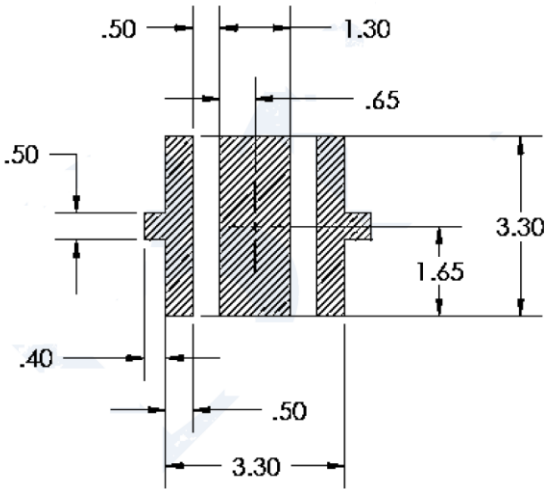


Thermal Design for De-Rating

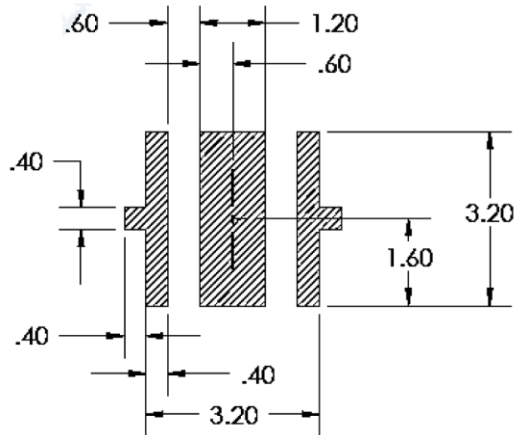
- The maximum forward current is determined by the thermal resistance between the LED junction and ambient. It is crucial for the end product to be designed in a manner that minimizes the thermal resistance from the solder point to ambient in order to optimize lamp life and optical characteristics.



Suggested Stencil Pattern (Recommendations for Reference)



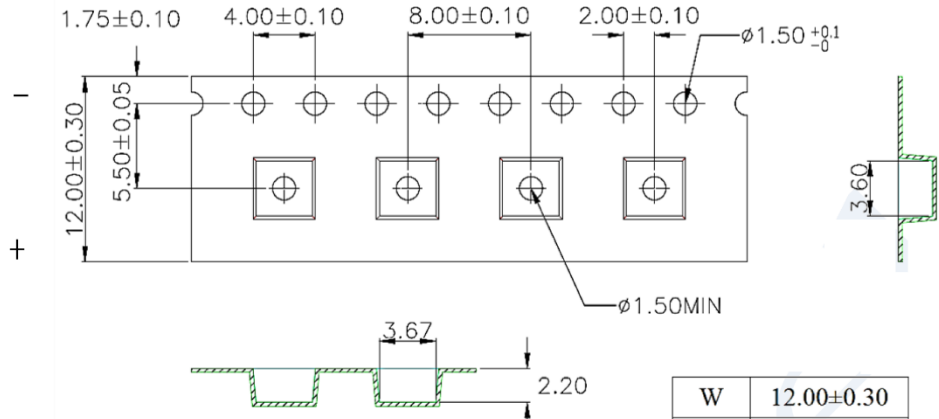
RECOMMENDED PCB SOLDER PAD



**RECOMMENDED STENCIL PATTERN
(HATCHED AREA IS OPENING)**

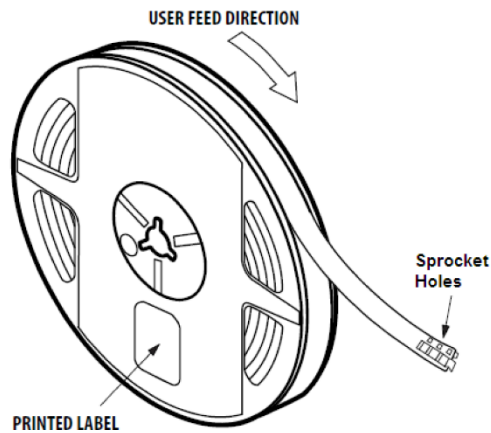
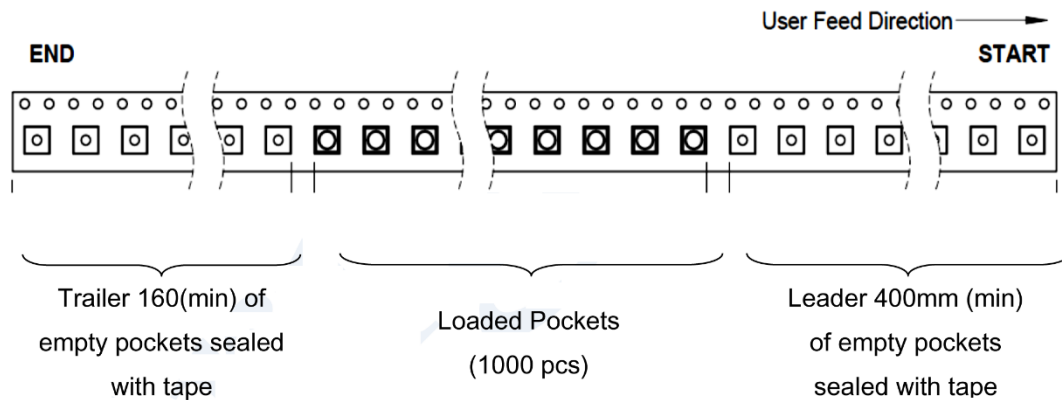
Note: Suggested stencil $t = 0.12\text{mm}$

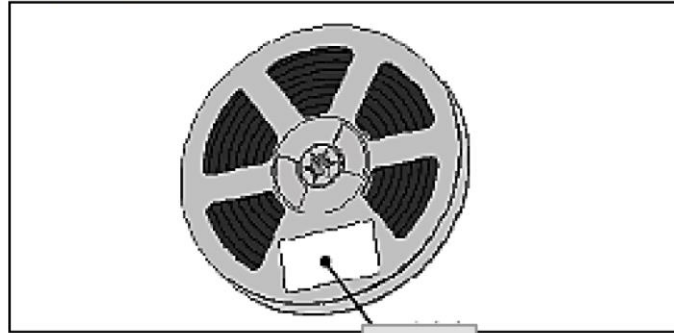
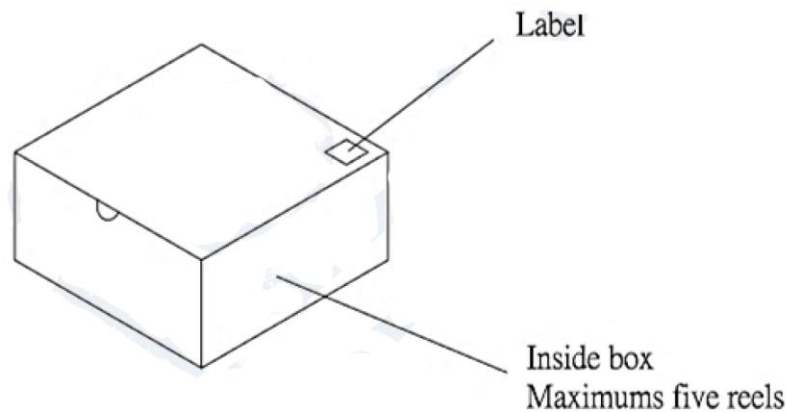
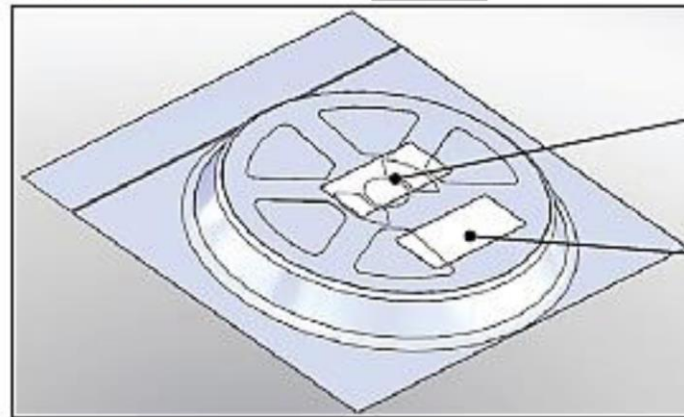
Packaging and Reel Dimensions



1. 10 sprocket hole pitch cumulative tolerance ± 0.20 .
2. Carrier camber is within 1 mm in 250 mm.
3. Material : Black Conductive Polystyrene Alloy.
4. All dimensions meet EIA-481-D requirements.
5. Thickness : 0.30 ± 0.05 mm.

W	12.00±0.30
A0	3.67±0.10
B0	3.60±0.10
K0	2.20±0.10

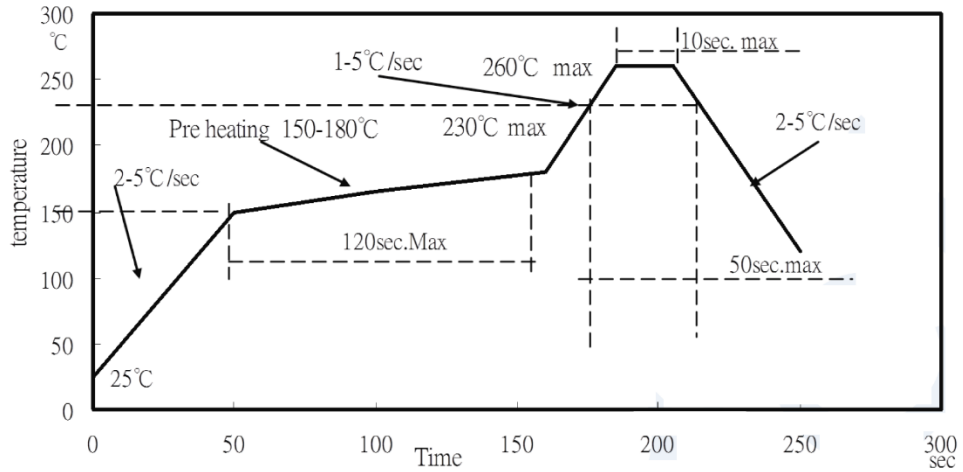


Unpackaged Reel

Packaged Reel

Notes:

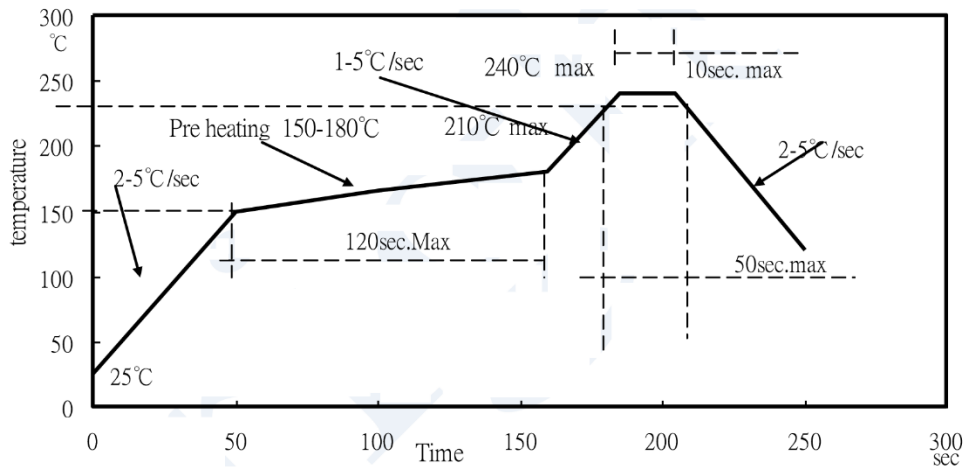
1. Reeled products (minimum number of pieces is 100 and maximum is 1000) packed in sealed moisture-proof bags along with a desiccant; a maximum of five moisture-proof bags packed inside the box (size: 240mm x 195mm x 100mm \pm 5mm) and a maximum of four inside boxes are put in the outside box
2. (size: 410mm x 255mm x 240mm \pm 5mm) together with buffer material packed.
3. (Part No., Lot No., quantity should appear on the label of the moisture-proof bag and the cardboard box.)

Reflow Profile

Lead Free solder



Lead solder



Precautions

1. Recommendation for using LEDs

1.1 The lens of LEDs should not be exposed to dust or debris. Excessive dust and debris may cause a drastic decrease in the luminosity.

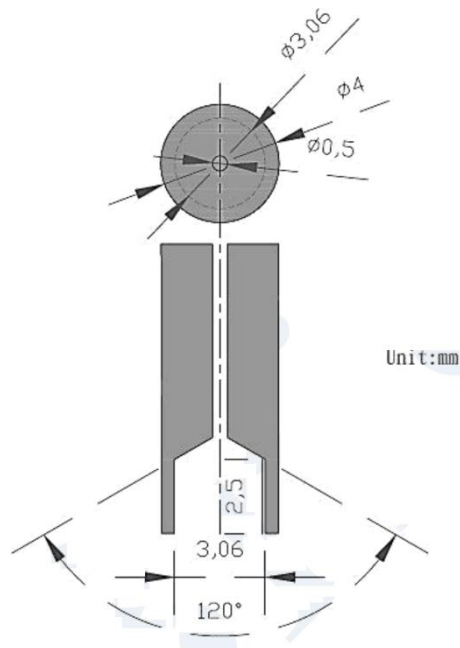
1.2 Avoid mechanical stress on LED lens.

1.3 Do not touch the LED lens surface. It would affect the optical performance of the LED due to the LED lens' damage.

1.4 Pick & place tools are recommended for the remove of LEDs from the factory tape & reel packaging

2. Pick & place nozzle

The pickup tool was recommended and shown as below)



3. Lens handling

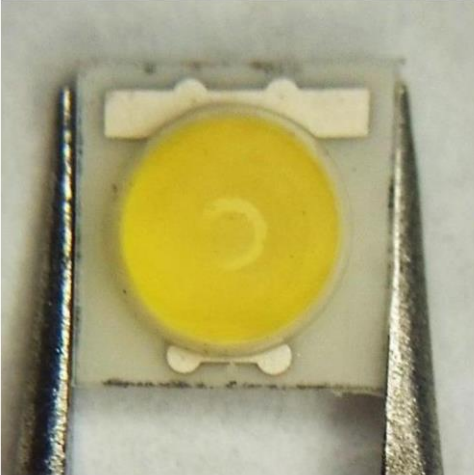
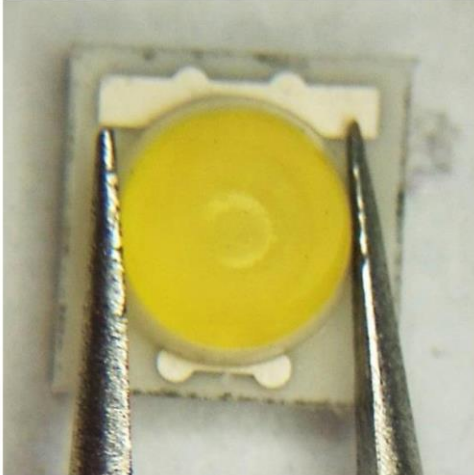
Please follow the guideline to pick LEDs

3.1 Use tweezers to pick LEDs

3.2 Do not touch the lens by using tweezers

3.3 Do not touch lens with fingers

3.4 Do not apply more than 4N of lens (400g) directly onto the lens

Correct (√)	Wrong (X)
	

4. Lens cleaning

In the case which a small amount of dirt and dust particles remain on the lens surface, a suitable cleaning solution can be applied.

4.1 Try a gentle wiping with dust-free cloth

4.2 If needed, use dust-free cloth and isopropyl alcohol to gently clean the dirt from the lens surface.

4.3 Do not use other solvents as they may directly react with the LED assembly

4.4 Do not use ultrasonic cleaning which will damage the LEDs

5. Carrier tape handling

The following items are recommended when handling the carrier tape of LEDs

5.1 Do not twist the carrier tape

5.2 The inward bending diameter should not be smaller than 6cm for each carrier tape.

5.3 Do not bend the tape outward.



Test Items and Results of Reliability

Test Item	Test Conditions	Duration/ Cycle	Number of Damage	Reference
Thermal Shock	-40°C 30min ↑ ↓ 5min 125°C 30min	100 cycles	0/22	AEC-Q101
High Temperature Storage	T _a =100°C	1000 hrs	0/22	EIAJ ED-4701 200 201
Humidity Heat Storage	T _a =85°C RH=85%	1000 hrs	0/22	EIAJ ED-4701 100 103
Low Temperature Storage	T _a =-40°C	1000 hrs	0/22	EIAJ ED-4701 200 202
Life Test	T _a =25°C I _f =350mA	1000 hrs	0/22	Tested with P-tec Standard
High Humidity Heat Life Test	85°C RH=85% I _f =350mA	1000 hrs	0/22	Tested with P-tec Standard
High Temperature Life Test	T _a =85°C	1000 hrs	0/22	Tested with P-tec Standard
ESD(HBM)	2KV at 1.5kΩ;100pf	3 Times	0/22	MIL-STD-883

Criteria for Judging the Damage

Item	Symbol	Condition	Criteria for Judgment	
			Min	Max
Forward Voltage	V _F	I _f =350mA	—	USL 1×1.1
Reverse Current	I _R	V _R =5V	—	100μA
Luminous Intensity	I _v	I _f =350mA	LSL 2×0.7	—

Notes: 1. USL: Upper specification level

2. LSL: Lower specification level

