

PRODUCT SPECIFICATION

Part Number
PLBT3535HPF-YDxxxx

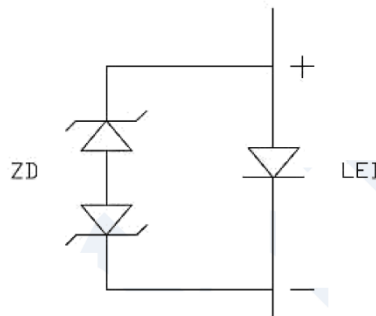
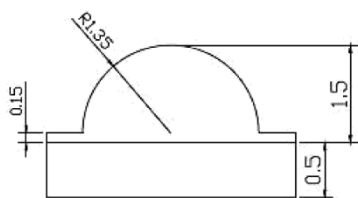
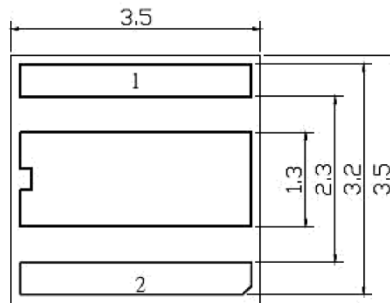
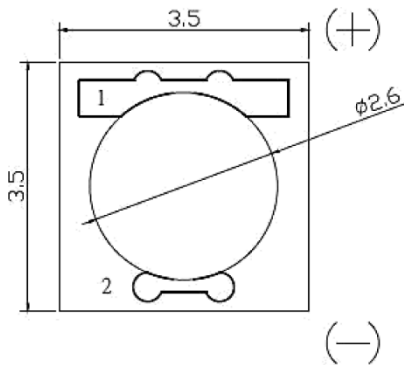
Details

- High Power 3535 FlipChip LED
- 3.5 x 3.5 x 2.0mm
- 1,000 piece reels
- Emitting Color: White
- InGaN based phosphor converted LED

Features

- Binning based on ANSI C78.377
- MSL2 qualified according to J-STD 020
- ESD 8KV (HGM: MIL-STD883 Class 3B)
- RoHS & REACH Compliant

Mechanical Dimensions



Notes:

1. Dimensions in millimeters and tolerance is $\pm 0.13\text{mm}$ unless otherwise noted
2. Specifications subject to change without notice



Device Selection Guide

Model Number	CRI	Luminous Flux (lm)					Typical CCT (K)	Forward Voltage (V)	
		Basic Order Code 350mA			Calculated Min. @ 85°C			Min	Max
		Group	Min @ 25°C	Min @ 85°C	700 mA	1000 mA			
PLBT3535HPF-YDCW70	>70	B35	120	102	178	224	5710-6530	2.8	3.4
		B36	130	110	192	242			
PLBT3535HPF-YDCW82	>82	B34	110	93	162	204	5710-6530	2.8	3.4
		B35	120	102	178	224			
PLBT3535HPF-YDPW82	>82	B34	110	93	162	204	5310-6020	2.8	3.4
		B35	120	102	178	224			
		B36	130	110	192	242			
PLBT3535HPF-YDPW70	>70	B35	120	102	178	224	4745-5310	2.8	3.4
		B36	130	110	192	242			
PLBT3535HPF-YDNW70	>70	B34	110	93	162	204	3710-4260	2.8	3.4
		B35	120	102	178	224			
		B36	130	110	192	242			
PLBT3535HPF-YDNW82	>82	B33	100	85	148	187	3710-4260	2.8	3.4
		B34	110	93	162	204			
		B35	120	102	178	224			
		B32	90	76	133	167			
PLBT3535HPF-YDWW82	>82	B32	90	76	133	167	2725-3045	2.8	3.4
		B33	100	85	148	187			
		B34	110	93	162	204			
PLBT3535HPF-YDWW70	>70	B29	70	59	122	133	1980-2240	2.8	3.4
		B30	75	63	131	142			
		B31	80	68	119	149			
PLBT3535HPF-YDCW82A	>82	B34	110	93	162	204	6500	2.8	3.4
		B30	120	102	178	224			
		B31	130	110	192	242			
PLBT3535HPF-YDWW82A	>82	B32	90	76	133	167	3000	2.8	3.4
		B33	100	85	148	187			

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

Absolute Maximum Ratings at Ta=25 °C

Parameter	Symbol	Rating			Unit
		Min	Typical	Max	
DC Forward Current	IF	--	350	1000	mA
Pulse Forward Current	IPF	--	--	1500	mA
Forward Voltage	VF	2.8	--	3.2	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	--	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°

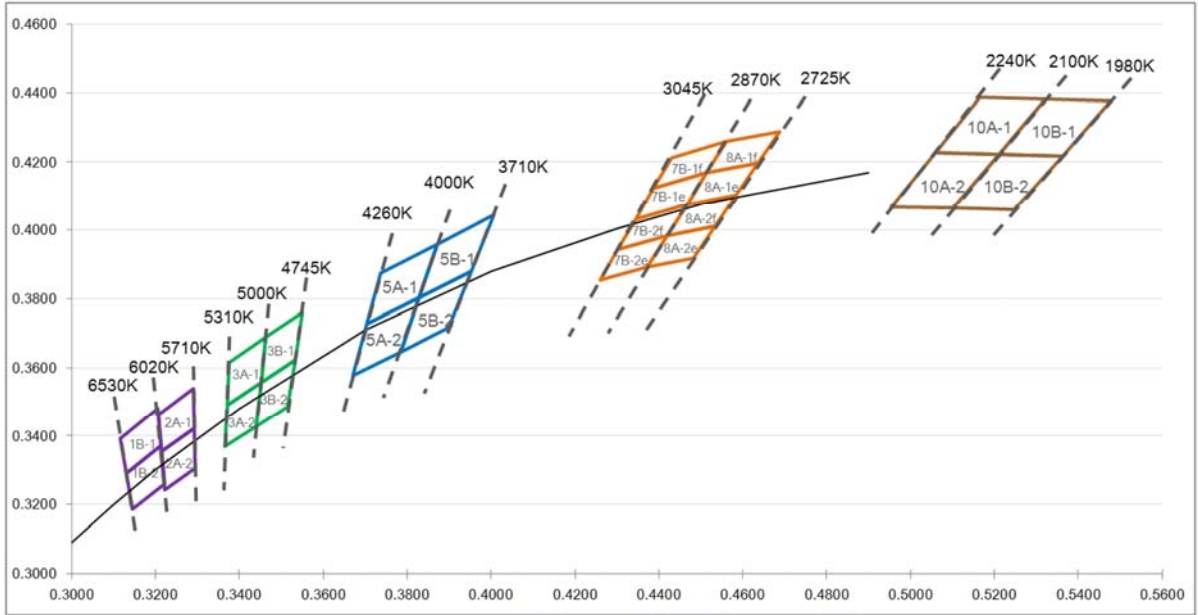
Intensity Binning

Bin Code (350mA)	Min. Φ_v	Max. Φ_v
B29	70	75
B30	75	80
B31	80	90
B32	90	100
B33	100	110
B34	110	120
B35	120	130
B36	130	140

Forward Voltage Binning

Bin Code (350mA)	Min. VF	Max. VF
V2830	2.8	3.0
V3032	3.0	3.2

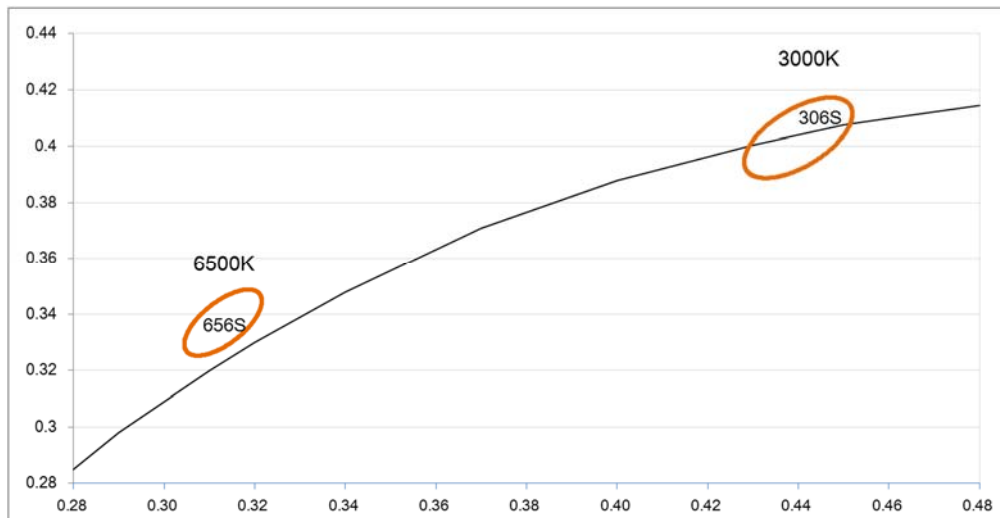
Color Coordinate Binning



BIN	CIE X	CIE Y	BIN	CIE X	CIE Y	BIN	CIE X	CIE Y	BIN	CIE X	CIE Y
1B-1	0.3205	0.3481	1B-2	0.3213	0.3371	2A-1	0.3292	0.3539	2A-2	0.3293	0.3423
	0.3117	0.3393		0.3131	0.3290		0.3207	0.3462		0.3215	0.3353
	0.3131	0.3290		0.3145	0.3187		0.3215	0.3353		0.3222	0.3243
	0.3213	0.3371		0.3221	0.3261		0.3293	0.3423		0.3294	0.3306
3A-1	0.3463	0.3688	3A-2	0.3452	0.3558	3B-1	0.3452	0.3558	3B-2	0.3441	0.3428
	0.3376	0.3616		0.3371	0.3492		0.3463	0.3688		0.3452	0.3558
	0.3371	0.3492		0.3366	0.3369		0.3550	0.3760		0.3533	0.3624
	0.3452	0.3558		0.3441	0.3428		0.3533	0.3624		0.3515	0.3487
5A-1	0.3871	0.3959	5A-2	0.3828	0.3803	5B-1	0.4006	0.4044	5B-2	0.3952	0.3880
	0.3736	0.3874		0.3703	0.3726		0.3871	0.3959		0.3828	0.3803
	0.3703	0.3726		0.3670	0.3578		0.3828	0.3803		0.3784	0.3647
	0.3828	0.3803		0.3784	0.3647		0.3952	0.3880		0.3898	0.3716
7B-1e	0.4515	0.4168	7B-1f	0.4562	0.4260	7B-2e	0.4420	0.3985	7B-2f	0.4467	0.4076
	0.4467	0.4076		0.4515	0.4168		0.4373	0.3893		0.4420	0.3985
	0.4345	0.4033		0.4388	0.4123		0.4260	0.3854		0.4303	0.3944
	0.4388	0.4123		0.4430	0.4213		0.4303	0.3944		0.4345	0.4033

BIN	CIE X	CIE Y	BIN	CIE X	CIE Y	BIN	CIE X	CIE Y	BIN	CIE X	CIE Y
8A-1e	0.4636	0.4197	8A-1f	0.4687	0.4289	8A-2e	0.4534	0.4011	8A-2f	0.4585	0.4104
	0.4585	0.4104		0.4636	0.4197		0.4483	0.3918		0.4534	0.4011
	0.4467	0.4076		0.4515	0.4168		0.4373	0.3893		0.4420	0.3985
	0.4515	0.4168		0.4562	0.426		0.442	0.3985		0.4467	0.4076
10A-1	0.5322	0.4383	10A-2	0.5211	0.4223	10B-1	0.5478	0.4377	10B-2	0.5363	0.4218
	0.5165	0.4389		0.5060	0.4228		0.5322	0.4383		0.5211	0.4223
	0.5060	0.4228		0.4954	0.4068		0.5211	0.4223		0.5101	0.4064
	0.5211	0.4223		0.5101	0.4064		0.5363	0.4218		0.5247	0.4060

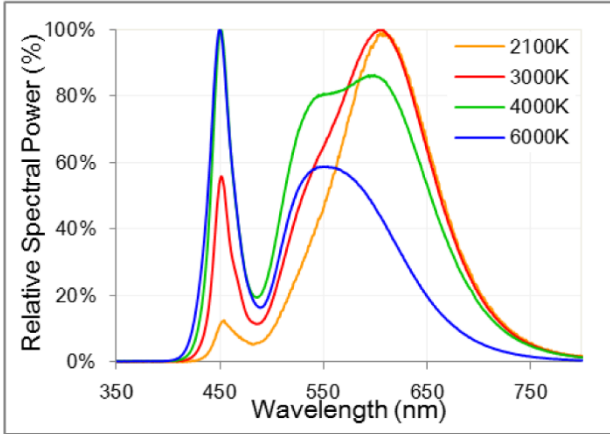
Color Coordinate Binning



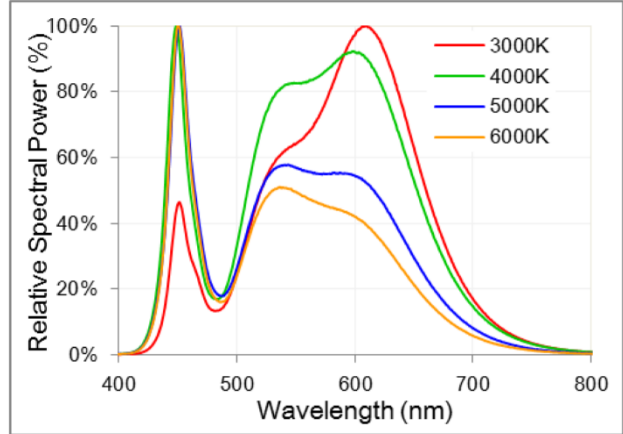
CCT	3000K	
CIE	X	Y
Center	0.4400	0.4030
306S	6STEP	
CCT	6500K	
CIE	X	Y
Center	0.3130	0.3370
656S	6STEP	

Relative Spectral Power Distribution

CRI >70

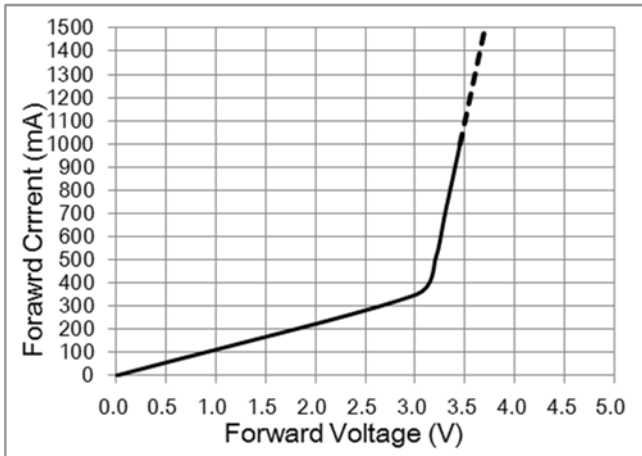


CRI >82

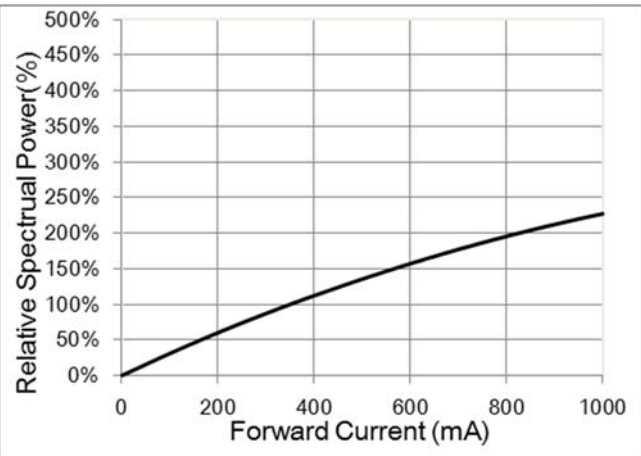


Electronic-Optical Characteristics

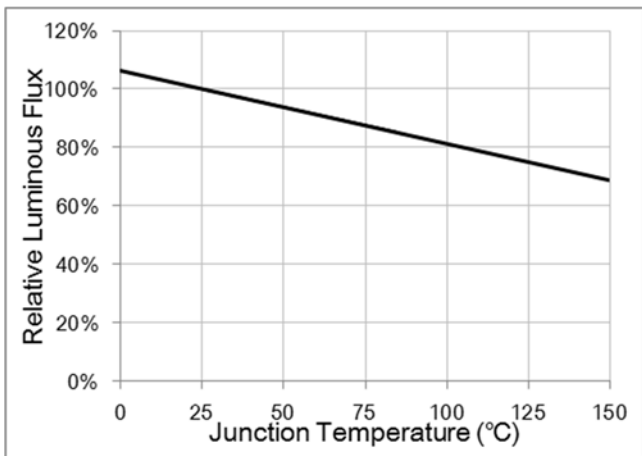
Forward Current vs. Forward Voltage ($T_a=25^\circ\text{C}$)



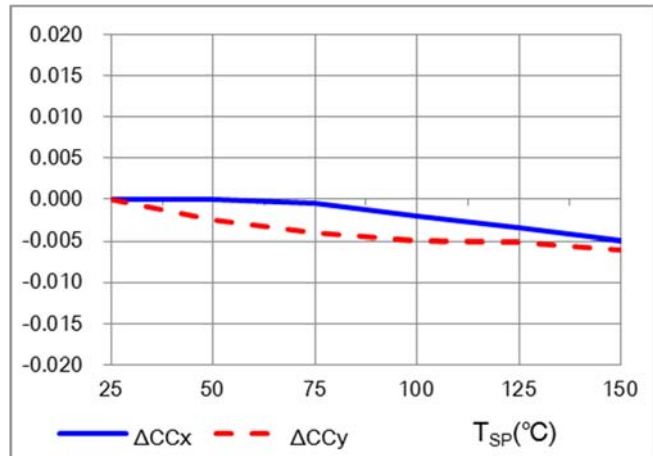
Relative luminous Flux vs. Forward Current ($T_a=25^\circ\text{C}$)



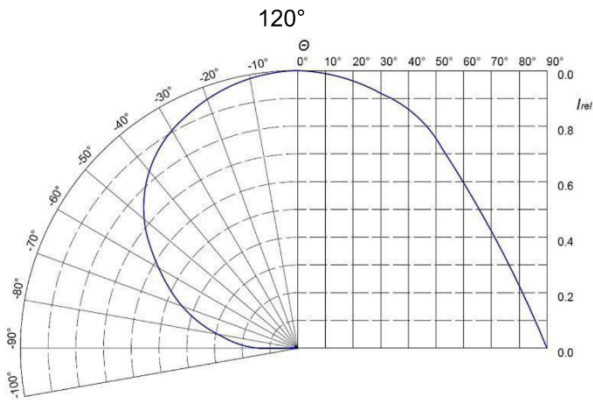
Relative Flux vs. Junction Temperature ($I_F=350\text{mA}$)



Relative Chromaticity vs. Ambient temperature ($I_F=350\text{mA}$)

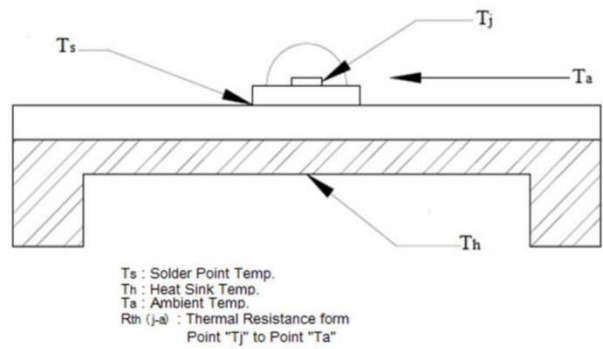
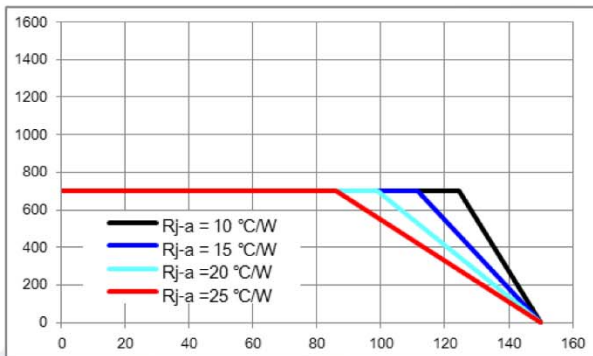


Typical Spatial Distribution

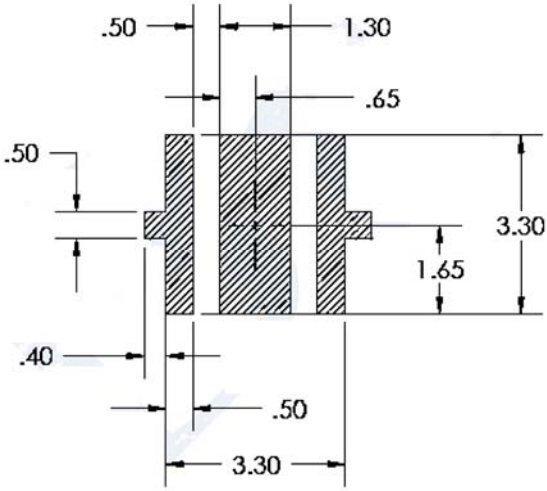


Thermal Design for De-Rating

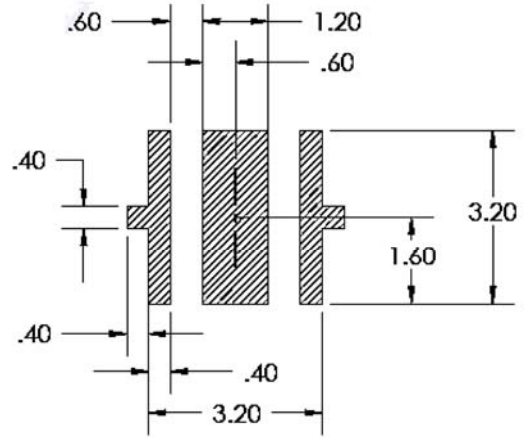
- The maximum forward current is determined by the thermal resistance between the LED junction and ambient. It is crucial for the end product to be designed in a manner that minimizes the thermal resistance from the solder point to ambient in order to optimize lamp life and optical characteristics.



Suggested Stencil Pattern (Recommendations for Reference)



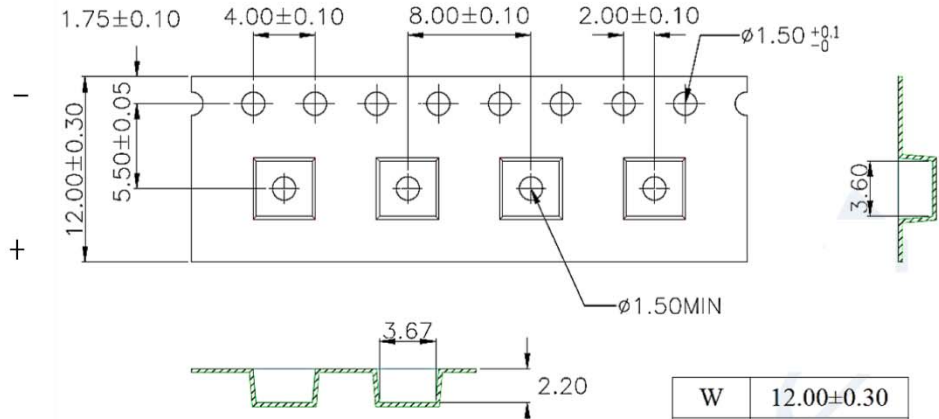
RECOMMENDED PCB SOLDER PAD



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

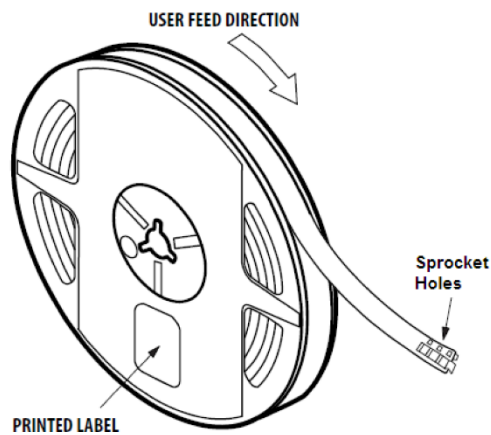
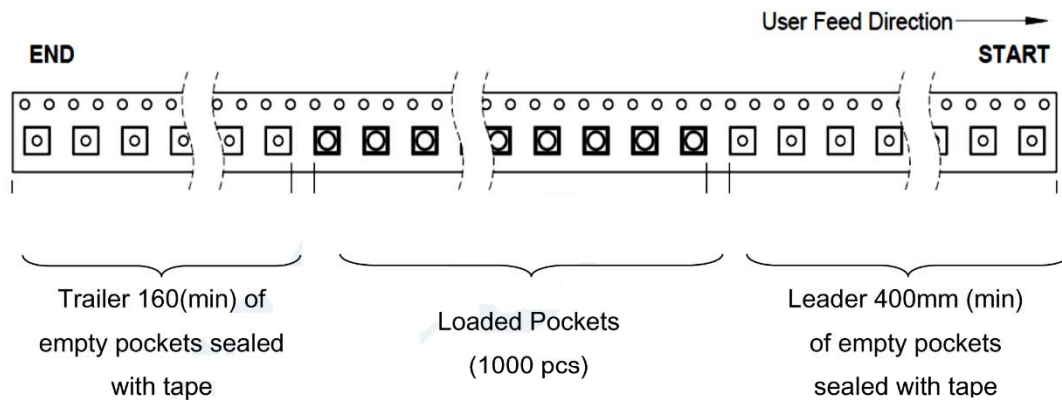
Note: Suggested stencil $t = 0.12\text{mm}$

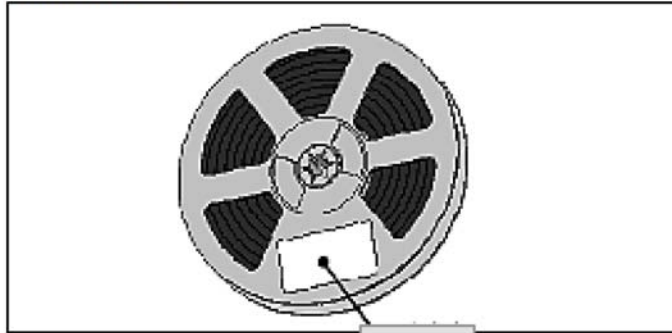
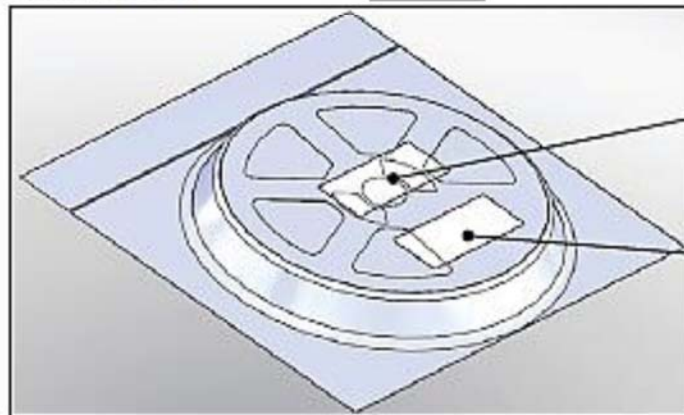
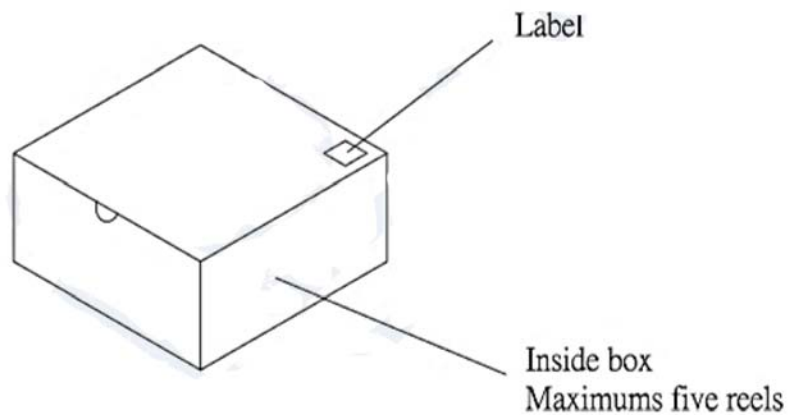
Packaging and Reel Dimensions



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

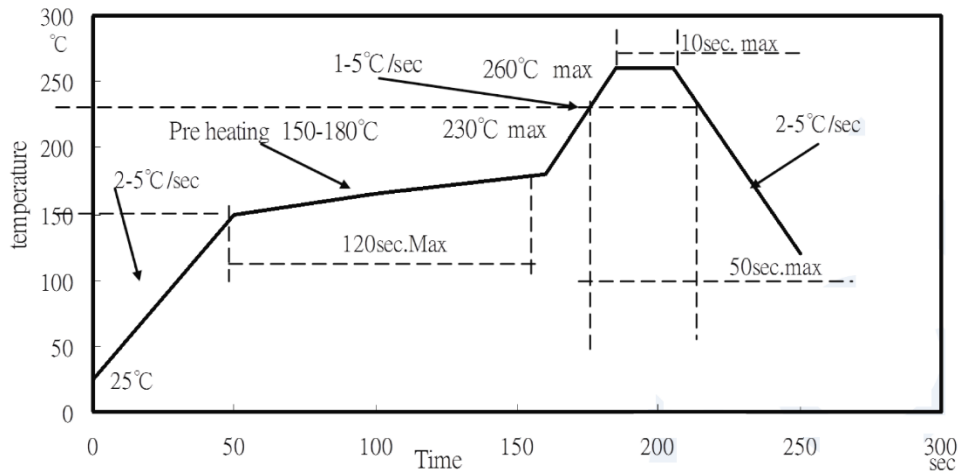


Unpackaged Reel

Label
Packaged Reel

Label
Label

Notes:

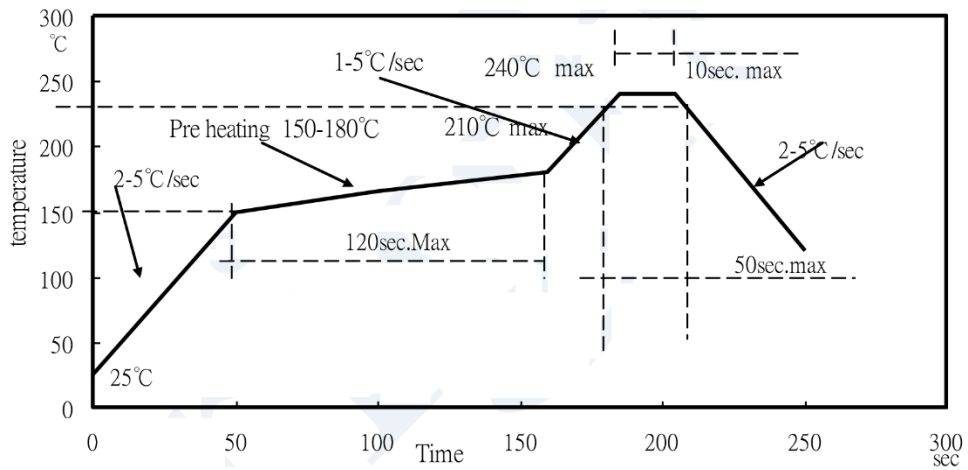
1. Reeled products (minimum number of pieces is 100 and maximum is 1000) packed in sealed moisture-proof bags along with a desiccant; a maximum of five moisture-proof bags packed inside the box (size: 240mm x 195mm x 100mm \pm 5mm) and a maximum of four inside boxes are put in the outside box
2. (size: 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.

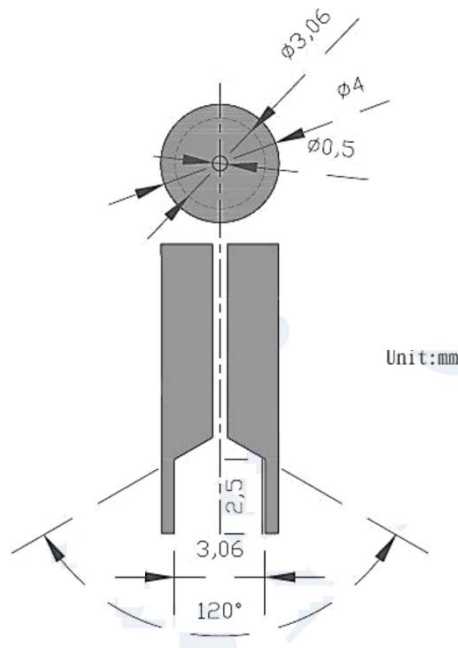
1.2 Avoid mechanical stress on LED lens.

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

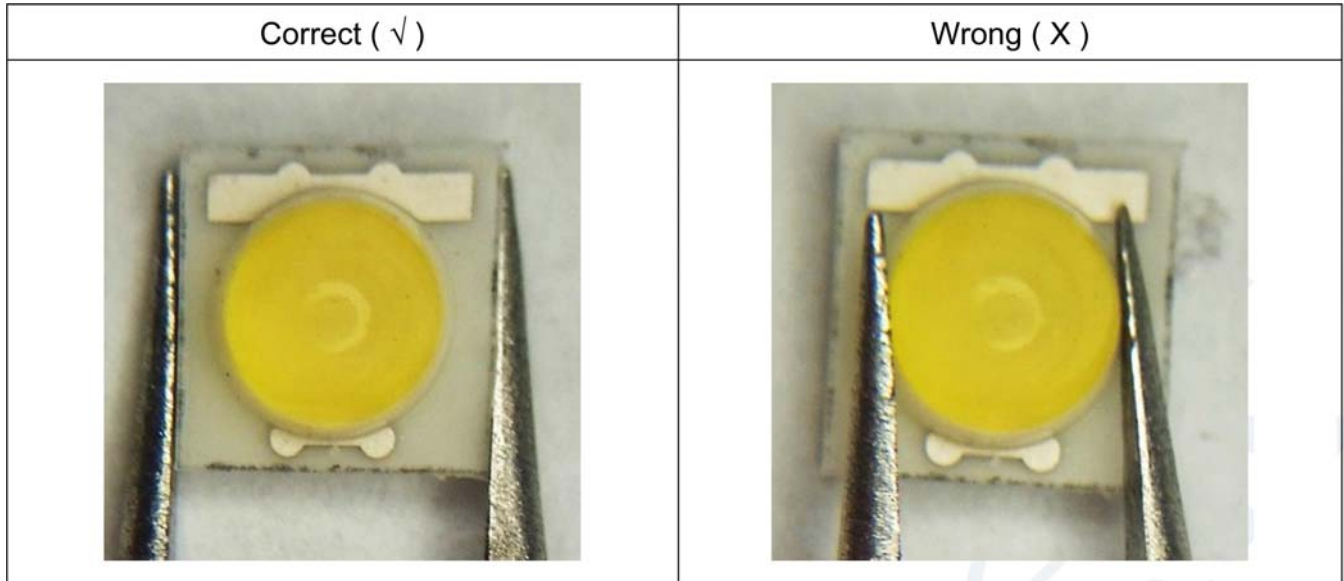
Please follow the guideline to pick LEDs

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



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

