MANLUX TECHNOLOGIES INC.

CMO 3535 A21B Family

Superior efficacy and lumen in advanced robust mid power package

- CMO3535 is a high-throughput, high light efficiency mid power LED
- Adopting industry standard packaging and universal dimensions of 3.5mm x 3.5mm
- CMO3535 uses ANSI CCT for stardard products
- We can provide different high light efficiency solutions and application parameters according to customer needs
- Widely applicable to the indoor and outdoor lighting market

Features and Benefits
Industry general size specifications
Operates at a maximum power of 5.0W
Maximum light efficiency: 220Lm@ 1 W
Strengthened Anti-sulfurization
High thermal steady-state maintenance

Primary Applications
Street Lights
Stadium Lights
Floodlights
High Bay
Down Lights

Table of Contents

Mechanical Dimensions

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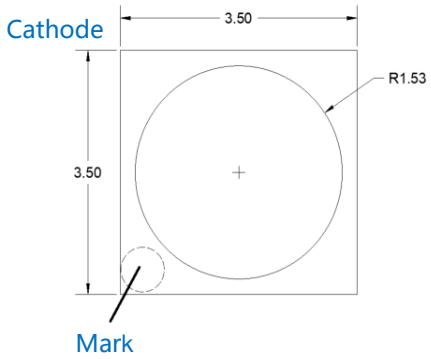
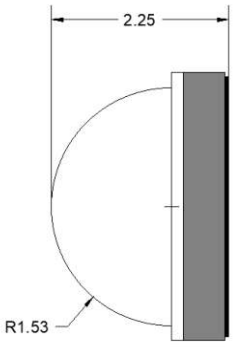
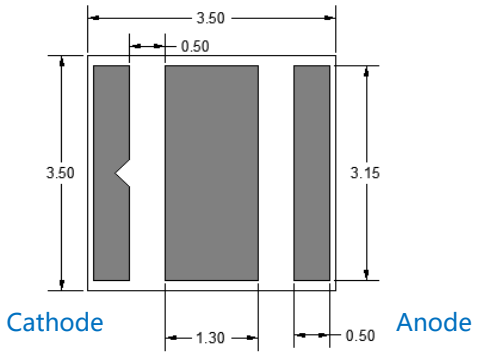
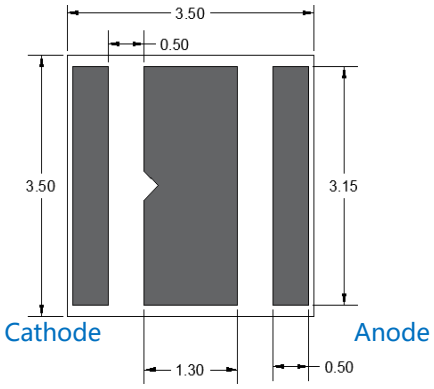




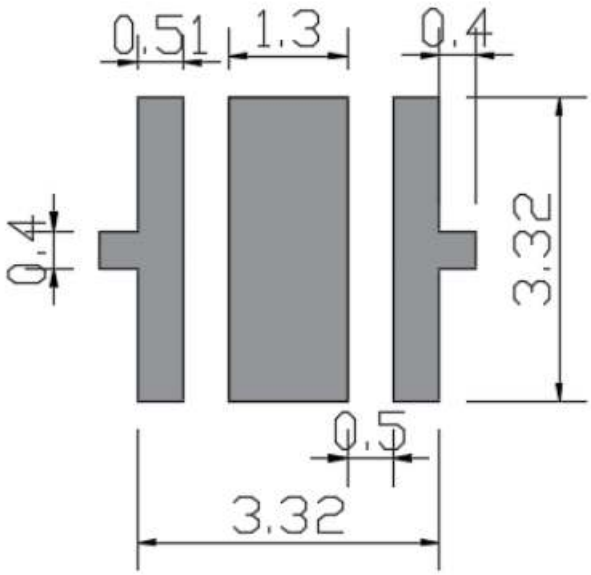


Bottom View



Alternate Bottom View

Recommended Solder Pad



Notes for figures
1.Drawings are not for scale.
2.All dimensions are in mm and tolerance is ±0.1mm.

Part Number Nomenclature

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
O	3	5	3	5	A	2	1	B	0	1	0	1	0	0	0	1

Number	PKG Information	Code	Specification
1 2 3 4 5	Product Family	O3535	CMO3535
6 7 8 9	Product Line	A21B	Product Line
10 11 12 13	Chip Design Scheme	0101	Chip Design Scheme
14 15 16 17	Parameter Code	0001	Parameter Code

Absolute Maximum Ratings @ Ta = 25℃

Item	Symbol	Absolute Maximum Rating	Unit
Forward Current	IF	1500	mA
Pulse Forward Current	IFP	2400	mA
Reverse Voltage	VR	Backdrive not allowed	V
Maximum Power	PD	5.0	W
Operating Temperature	Topr	-40~+85	℃
Storage Temperature	Tstg	-40~+85	℃
Junction Temperature	TJ	150	℃
Thermal Resistance@1W	Rth	6.5	℃/W
Electrostatic Discharge	ESD	8000 (HBM)	V

Performance Characteristics

Product Selection Guide

RA Min.	Product Family	Nomina CCT(K)	Product Code	Colour BIN	Flux Typical(Φv, lm) 350mA@85℃	350mA@25℃
70	CMO 3535	2700	O3535A21B01010001	27A0/S	180	200
		3000	O3535A21B01010002	30A0/S	185	206
		3500	O3535A21B01010003	35A0/S	191	212
		4000	O3535A21B01010004	40A0/S	198	220
		5000	O3535A21B01010005	50A0/S	195	217
		5700	O3535A21B01010006	57A0/S	191	212
		6500	O3535A21B01010007	65A0/S	189	210

Flux Rank @Ta = 25℃

CCT	BIN	FLUX RANK	Unit	Condition
2700	E1	190-200	LM	IF=350mA
	G1	200-210		
3000	F1	195-205		
	H1	205-215		
3500	G1	200-210		
	I1	210-220		
4000	J1	215-225		
	L1	225-235		
5000	J1	215-225		
	L1	225-235		
5700	I1	210-220		
	K1	220-230		
6500	H1	205-215		
	J1	215-225		

Forward Voltage Rank @Ta = 25℃

No.	Min.	Max.	Unit	Condition
1	2.8	3.0	V	IF=350mA
2	3.0	3.2		
3	3.2	3.4		
4				

Typical Light Parameters Of Different Current Of The Product@Ta = 25℃

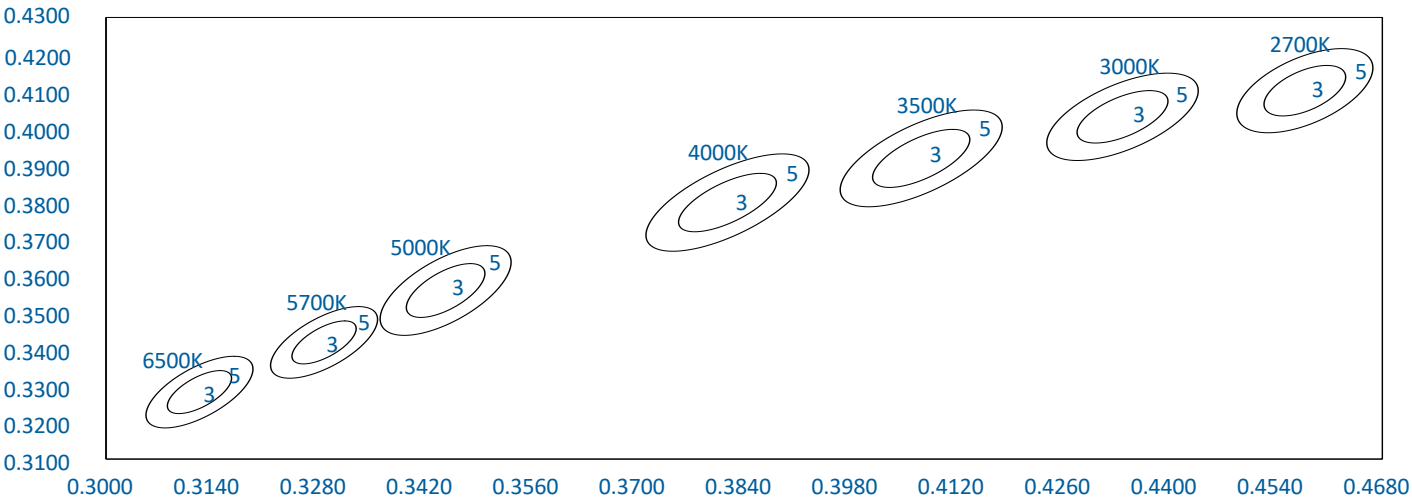
Product Code	Nominal CCT (K)	RA Min.	Flux Typical (LM)			
			350mA@0.99W	700mA@2.08W	1000mA@3.10W	1500mA@4.95W
O3535A21B01010001	2700	70	199.7	372.2	506.3	710.9
O3535A21B01010002	3000	70	206.2	384.5	523.0	734.3
O3535A21B01010003	3500	70	212.8	396.7	539.7	757.8
O3535A21B01010004	4000	70	220.4	409.0	556.4	781.2
O3535A21B01010005	5000	70	217.2	404.9	550.8	773.4
O3535A21B01010006	5700	70	212.8	396.7	539.7	757.8
O3535A21B01010007	6500	70	210.6	392.6	534.1	750.0

Notes for Table:

1、Product data is obtained at Ta= 25°C.

2、Manlux products maintain tolerances of ±5% on luminous flux measurement, and ±0.15V on voltage.

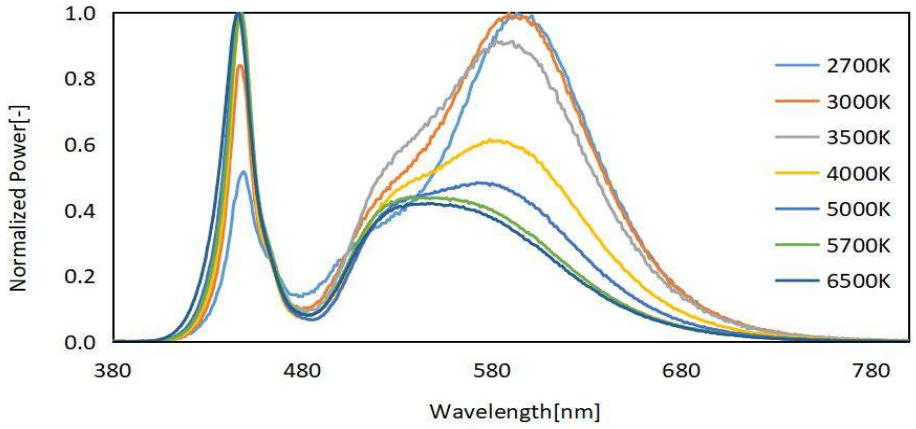
CIE Chromaticity Diagram @IF=350 mA ,Ta=25℃



CCT and XY

Nominal	Center Point		MAJOR AXIS (a,b)			Ellipse
CCT	X	Y	2-Step	3-Step	5-Step	Rotation
2700K	0.4578	0.4101	(0.00540, 0.00280)	(0.00810, 0.00420)	(0.0135, 0.007)	53.70
3000K	0.4339	0.4033	(0.00560, 0.00272)	(0.00830, 0.00408)	(0.0139, 0.0068)	53.22
3500K	0.4078	0.3930	(0.00620, 0.00276)	(0.00930, 0.00414)	(0.0155, 0.0069)	54.00
4000K	0.3818	0.3797	(0.00630, 0.00268)	(0.00940, 0.00402)	(0.0157, 0.0067)	53.72
5000K	0.3446	0.3551	(0.00550, 0.00236)	(0.00822, 0.00354)	(0.0137, 0.0059)	59.62
5700K	0.3287	0.3425	(0.00500, 0.00213)	(0.00750, 0.00320)	(0.0124, 0.0053)	59.09
6250K	0.3156	0.3405	(0.00460, 0.00190)	(0.00690, 0.00285)	(0.0115, 0.0048)	58.57
6500K	0.3123	0.3283	(0.00450, 0.00190)	(0.00670, 0.00285)	(0.0112, 0.0048)	58.57

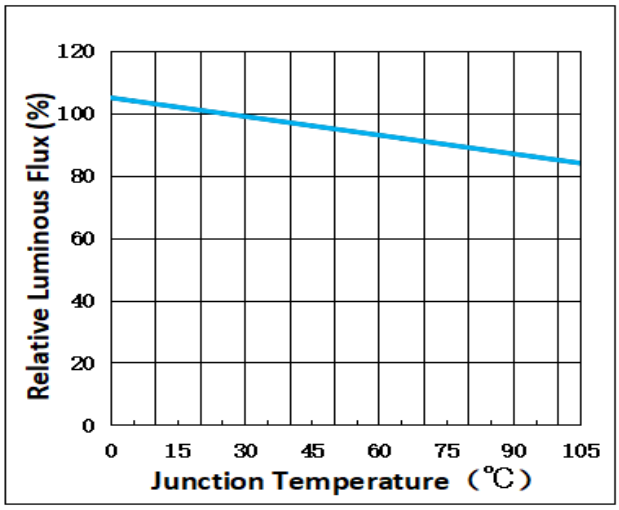
Spectral Distribution



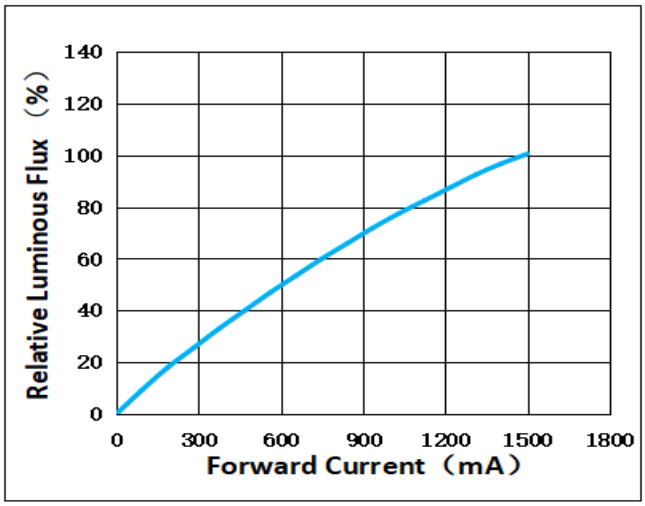
CRI70+

Typical Optical Characteristic Curve @Ta=25℃

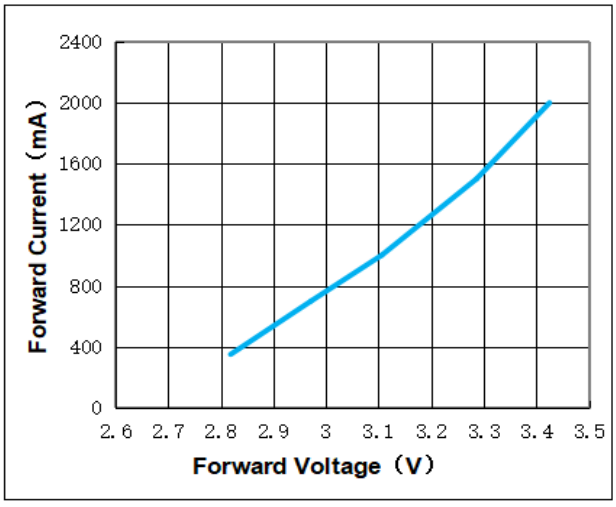
Relative Luminous Intensity VS Junction Temperature.



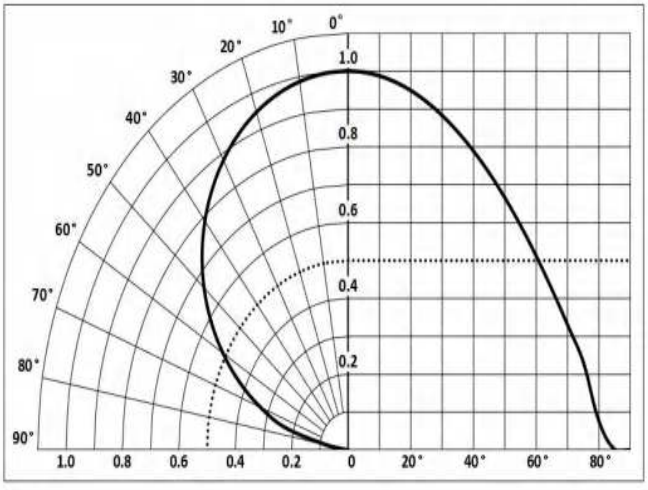
Relative Luminous Intensity VS Forward Current.



Forward Current VS Forward Voltage.



RadiationPatternCharacteristics (Tj=25/IF=350mA)



Reliability Test Items And Conditions

Test Item	Ref.Standard	Test Conditions	Time	Quantity（pcs）
High Temperature Storage	JESD22-A103	Temp:100℃±5℃	1000hrs	22
Low Temperature Storage	JESD22-A119	Temp:-40℃±5℃	1000hrs	22
Thermal Shock	JESD22-A104	100℃±5℃ 30min ↓↑15S-40℃±5℃ 30min	200cycle	22
Reflow	JESD22-B106	Temp:max260℃ Time:10sec8min/cycle	3cycle	22
LifeTest	JESD22-A108	Ta=25℃±5℃ IF=1500mA	1000hrs	22
High Temperature Life Test	JESD22-A108	Ta=105℃±5℃ IF=1500mA	1000hrs	22
High Temperature High Humidity Life Test	JESD22-A101	85℃±5℃/85%RH IF=1500mA	1000hrs	22

Criteria For Judging Malfunction

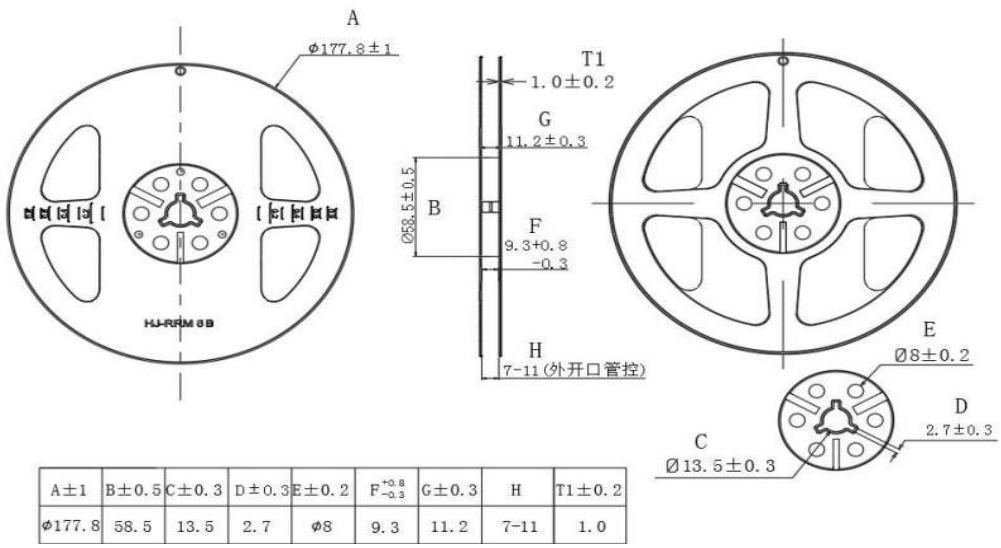
Item	Symbol	Test Conditions	Criteria for Judgement	
			Min	Max
Forward Voltage	VF	IF=1500mA	_	（U.S.L*）×1.1
Luminous Intensity	ΦV	IF=1500mA	（L.S.L*）×0.7	_

Label And Packaging Instructions

Label template does not represent the corresponding product label

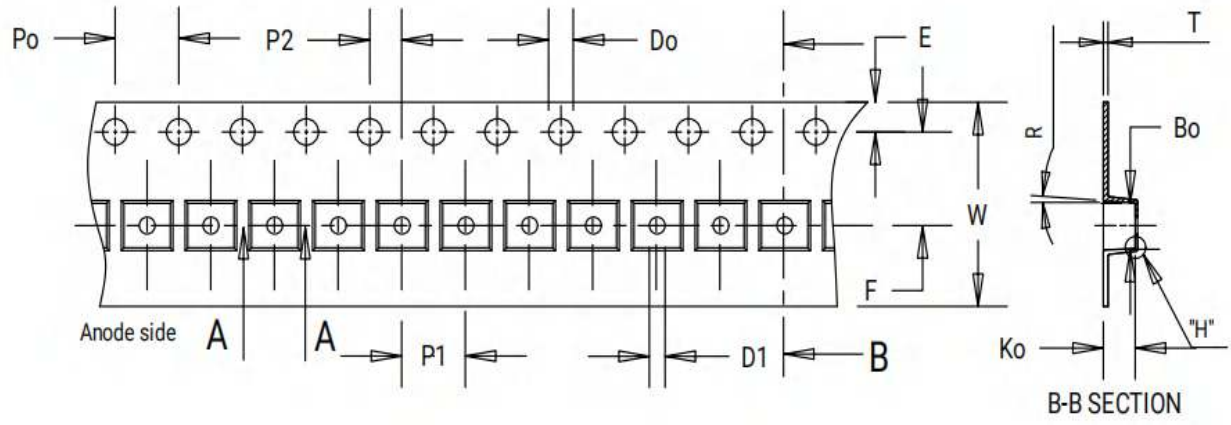
Number	Meaning
①	Production Batch Number
②	Product Part Number
③	Product Famliy
④	Traceability Code
⑤	Product Information Summary
⑥	Color Bin
⑦	Performance Characteristics
⑧	Quantity

Reel Dimension



A±1	B±0.5	C±0.3	D±0.3	E±0.2	F$^{+0.8}_{-0.3}$	G±0.3	H	T1±0.2
Φ177.8	58.5	13.5	2.7	Φ8	9.3	11.2	7-11	1.0

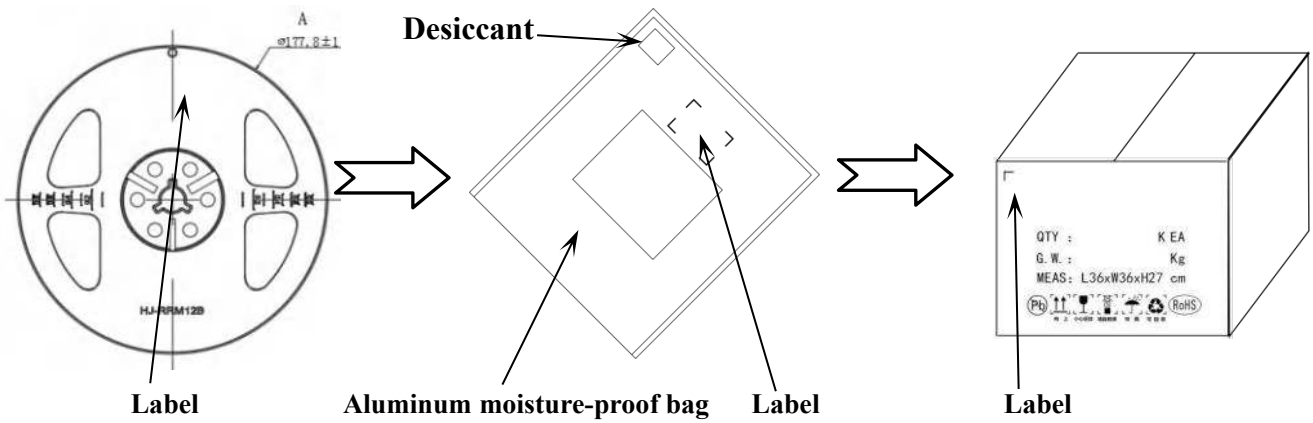
Carrier Tape Dimensions



W	12.0±0.10	T	0.30±0.02	D1	1.50±0.10	Unit	MM
E	1.75±0.10	F	5.50±0.10	DO	1.55±0.10	Material	PC
PO	4.00±0.10	P1	8.00±0.10	P2	2.00±0.10	Model	3535
AO	3.70±0.10	BO	3.70±0.10	KO	2.40±0.10		

Quantity of whole roll packaging：1000PCS

Moisture-proof packaging



Negative terminal facing the positioning hole, in line with ANSI/ELARS-481 specification.

Precautions Of Use

Precautions when using overcurrent protection

Resistors must be used for protection, otherwise a slight voltage change will cause a large current change (which will cause burnout.)

Storage

1. Do not open the moisture-proof bag before the product is used.

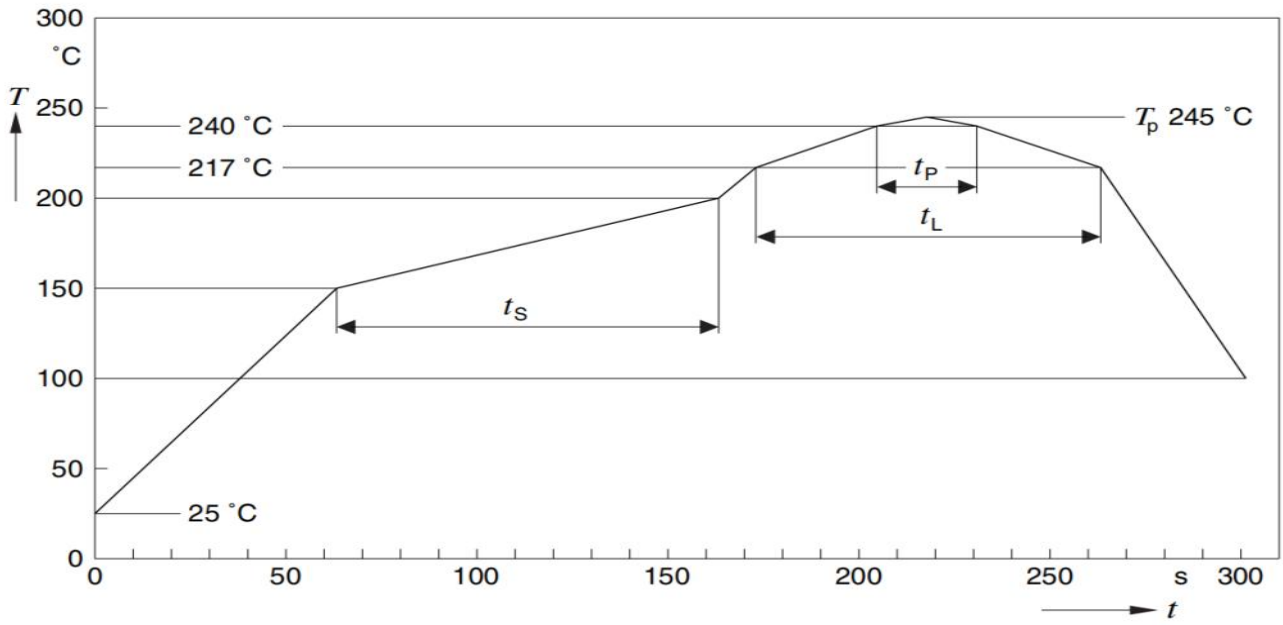
2. Storage conditions before opening: 5-30°C , maximum relative humidity of 60%.

3. After opening the package, the LED should be soldered within 4 hours.

Soldering Condition

1. The product only can be reflow soldering twice .Before second reflow soldering , the product must be cooled to room temperature.

2. Recommended welding conditions:



3. Content of sulfur or compound of sulfur can not exceed 25ppm.

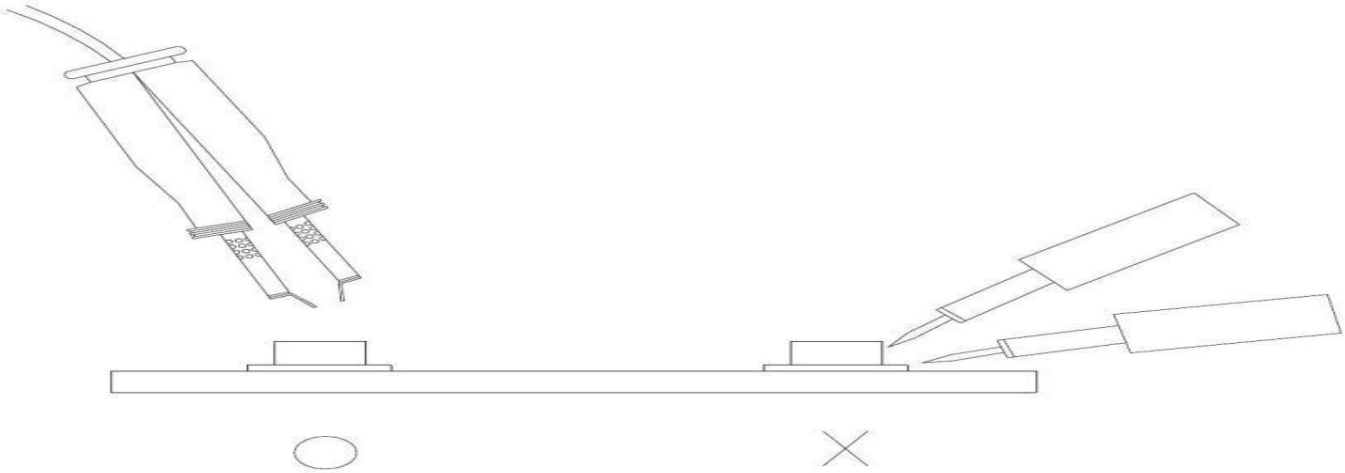
Soldering Iron

1. When welding by hand, keep the temperature below 250°C for less than 10 seconds.

2. Manual welding can only be done once.

Repairing

After LED soldering, no repair should be done. When repairs are necessary, Should be use a double-ended soldering iron, (as shown in the picture below). And confirm in advance whether this maintenance method will damage the LED or not .



Cautions:

1. Please check for air leakage before opening the package, if so, please return the goods to us for drying before use.

2. Vacuum packaging materials can be normally used within 6 months. After the bag is opened, the product must be:

A. be welded within 4 hours;

B. Use conditions: temperature: within 30°C, humidity: below 60%RH.

3. If the product has not been used for more than 6 months, the product needs to be taken out of the vacuum packaging bag and baked at 70/12H to dehumidify before use.

4. Issue of product difference color .

Between different BIN , the LED photoelectric parameters are differences, Before use need evalution careful.

5. Electro-Static Discharge protection

LED belongs to Class I electrostatic sensitive devices, during touch and use should be taken anti-static protection.

6. Clean condition

If the surface of the lamp bead colloid is dirty, it can be cleaned with alcohol,Corrosive cleaning solvents such as acetone are not allowed.

7. Circuit and heat dissipation design

a) Normal Operating temperature of the product: TS point (negative electrode pad) is less than 85 ℃. If the requirements given by our company are exceeded, the customer must conduct a product reliability assessment at the customer's risk.

b) Power driver selection: This product needs to be driven by a constant current source, and the output current must meet the power range specified in the data sheet，If need a constant voltage source or other conditions of use, please conduct a risk assessment on the effect of use.

8.Environmental requirement

a) The product is not suitable for any of the following conditions. If the product is used under any of the following conditions, please confirm its normal performance and reliability. For example, moisture, condensation, salt water air, corrosive gases (CL, H2S, NH3, SO2, NOX, etc.); Outdoor exposure to direct sunlight, dust, water, oil, liquid chemicals, organic solvents.

b) The chemical composition of the gas inside the lamp and the environment around the light source are critical to the lifetime of the lamp. Especially when you choose to use chemical components in the lamp design.It is important to consult the product supplier or LED manufacturer before considering the use of any material.The more information you get before using a certain material, the higher the performance of the lamp during its lifetime.

Pay attention when using anti-sulfur elements

Due to the LED lamp bead back pad and internal functional areas have silver plating, When using a light source, please be careful not to use it in an containing sulfur environment . The relevant kits used should avoid sulfur elements, so as to avoid serious color drift, light decay, and light source failure caused by the intrusion of sulfur elements.

About MANLUX

MANLUX TECHNOLOGIES INC.

Based in USA, with Innovations from Silicon Valley in California, Manlux Technologies is High Efficacy Leader focusing on the research, development and design of high efficiency optoelectronic products, the company has a strong technical foundation in the field of outdoor high performance lighting. Manlux Technologies aspires to provide total lighting solutions for its global customers and positioned to be a world leading enterprise in high performance LED with outstanding comprehensive product protfolio.