

XPH 5050 B24B Family

Superior efficacy and lumen in advanced robust mid power package

- XPH 5050 is a high-throughput, high light efficiency mid power LED
- Adopting industry standard packaging and universal dimensions of 5.0mm x 5.0mm
- XPH5050 is an ultra-efficient LED developed by the R&D team of Manlux Semiconductor Optoelectronics Co., Ltd. based on the EMC5050 design.
- 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: 245 Lm/W @ 1W

Strengthened Anti-sulfurization

High thermal steady-state maintenance

Primary Applications

Street Lights

Stadium Lights

Floodlights

High Bay

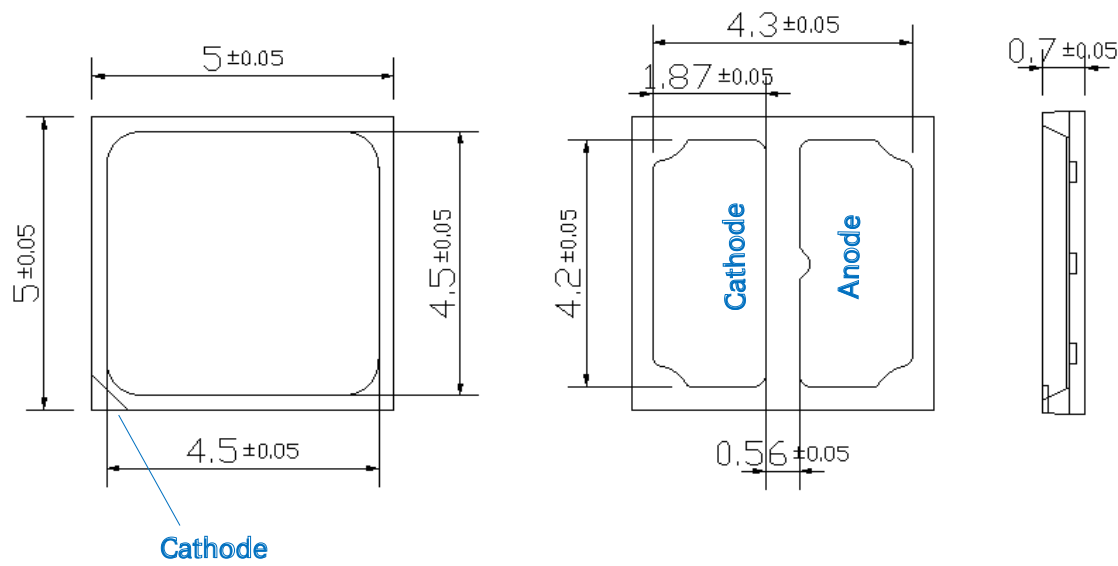
Down Lights

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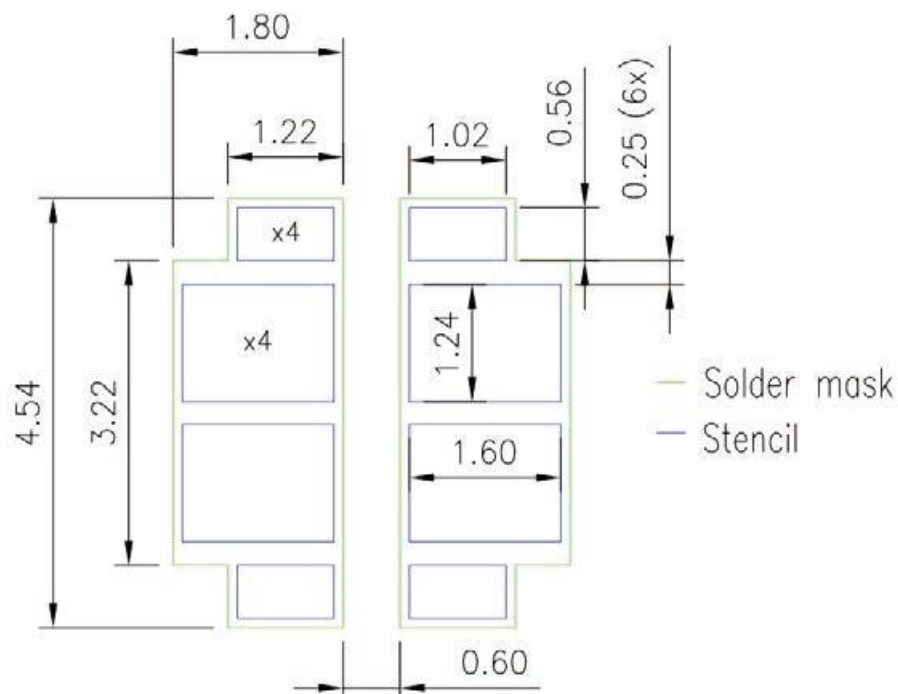
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Mechanical Dimensions

Mechanical Dimensions



Recommended Solder Pad



Notes for figures
1. Drawings are not for scale.
2. All dimensions in millimeters.

Part Number Nomenclature

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

Number	PKG Information	Code	Specification
1 2 3 4 5	Product Family	Y5050	XP5050
6 7 8 9	Product Line	B24B	Product Line
10 11 12 13	Chip Design Scheme	0205	Chip Design Scheme
14 15 16 17	Parameter Code	0001	Parameter Code

Absolute Maximum Ratings @ Ta = 25°C

Item	Symbol	Absolute Maximum Rating	Unit
Forward Current	IF	800	mA
Pulse Forward Current	IFP	1500	mA
Reverse Voltage	VR	Backdrive not allowed	V
Maximum Power	PD	5.0	W
Operating Temperature	Topr	-40~+105	°C
Storage Temperature	Tstg	-30~+100	°C
Junction Temperature	TJ	125	°C
Thermal Resistance@1W	Rth	4.5	°C/W
Electrostatic Discharge	ESD	2000 (HBM)	V

Performance Characteristics

Product Selection Guide@Ta = 25°C

RA Min.	Nominal CCT (K)	Product Family	Product Code	Colour BIN	Flux Typical (Φv, lm)640mA	Efficacy Range (Lm/W)160mA
70	2700	XPH5050	Y5050B24B02050001	27H0	739	215-225
	3000	XPH5050	Y5050B24B02050002	30H0	764	225-235
	3500	XPH5050	Y5050B24B02050003	35H0	788	230-240
	4000	XPH5050	Y5050B24B02050004	40H0	812	240-250
	5000	XPH5050	Y5050B24B02050005	50H0	804	240-250
	5700	XPH5050	Y5050B24B02050006	57H0	788	230-240
	6250	XPH5050	Y5050B24B02050007	63H0	780	225-235
	6500	XPH5050	Y5050B24B02050008	65H0	780	225-235
80	2700	XPH5050	Y5050B24B02050009	27H0	665	195-205
	3000	XPH5050	Y5050B24B02050010	30H0	687	200-210
	3500	XPH5050	Y5050B24B02050011	35H0	709	210-220
	4000	XPH5050	Y5050B24B02050012	40H0	731	215-225
	5000	XPH5050	Y5050B24B02050013	50H0	724	215-225
	5700	XPH5050	Y5050B24B02050014	57H0	709	210-220
	6250	XPH5050	Y5050B24B02050015	63H0	702	210-220
	6500	XPH5050	Y5050B24B02050016	65H0	702	210-220

Forward Voltage Rank @Ta = 25°C

No.	Min.	Max.	Unit	Condition
1	5.2	5.4	V	IF=160mA
2	5.4	5.6		
3	5.6	5.8		
4				

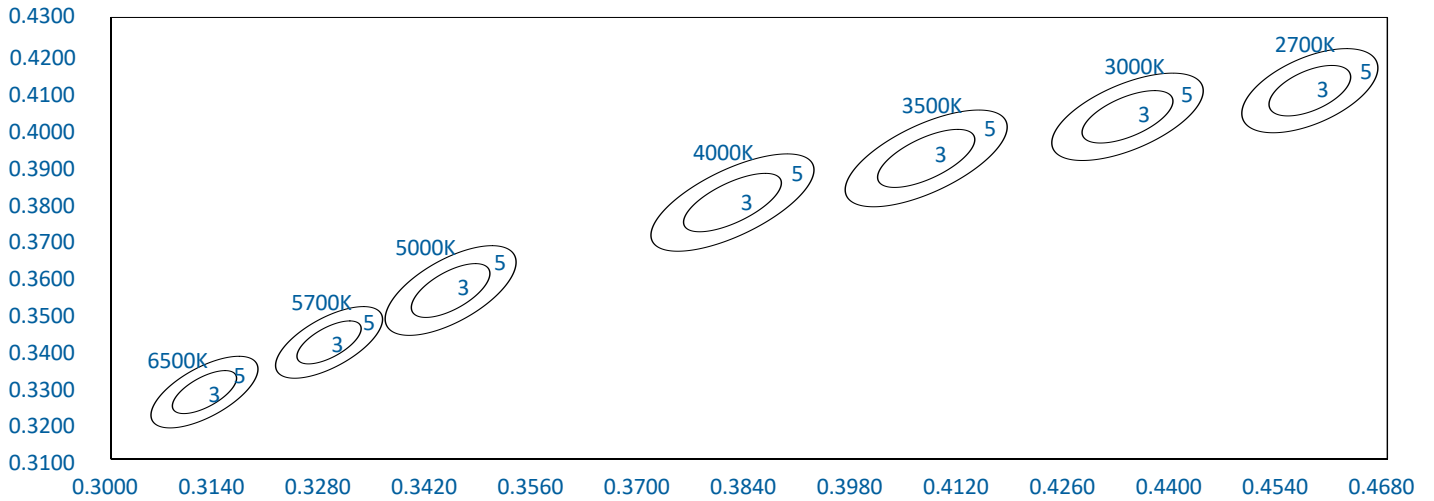
Typical Light Parameters Of Different Current Of The Product@Ta = 25°C

Product Code	Nominal CCT (K)	RA Min.	Flux 90mA@0.48W	Efficacy 232	Flux 160mA@0.87W	Efficacy 226	Flux 320mA@1.82W	Efficacy 211	Flux 480mA@2.83W	Efficacy 199	Flux 640mA@3.92W	Efficacy 189
Y5050B24B02050001	2700	70	111.2	232	196.7	226	384.8	211	563.5	199	739.1	189
Y5050B24B02050002	3000	70	114.9	239	203.1	234	397.5	218	582.1	206	763.5	195
Y5050B24B02050003	3500	70	118.6	247	209.6	241	410.2	225	600.7	212	787.8	201
Y5050B24B02050004	4000	70	122.2	255	216.1	248	422.9	232	619.3	219	812.2	207
Y5050B24B02050005	5000	70	121.0	252	213.9	246	418.7	230	613.1	217	804.1	205
Y5050B24B02050006	5700	70	118.6	247	209.6	241	410.2	225	600.7	212	787.8	201
Y5050B24B02050007	6250	70	117.3	245	207.5	239	406.0	223	594.5	210	779.7	199
Y5050B24B02050008	6500	70	117.3	245	207.5	239	406.0	223	594.5	210	779.7	199
Y5050B24B02050009	2700	80	100.1	209	177.0	203	346.4	190	507.2	179	665.2	170
Y5050B24B02050010	3000	80	103.4	215	182.8	210	357.8	197	523.9	185	687.1	175
Y5050B24B02050011	3500	80	106.7	222	188.7	217	369.2	203	540.6	191	709.0	181
Y5050B24B02050012	4000	80	110.0	229	194.5	224	380.6	209	557.3	197	731.0	187
Y5050B24B02050013	5000	80	108.9	227	192.5	221	376.8	207	551.8	195	723.7	185
Y5050B24B02050014	5700	80	106.7	222	188.7	217	369.2	203	540.6	191	709.0	181
Y5050B24B02050015	6250	80	105.6	220	186.7	215	365.4	201	535.1	189	701.7	179
Y5050B24B02050016	6500	80	105.6	220	186.7	215	365.4	201	535.1	189	701.7	179

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.

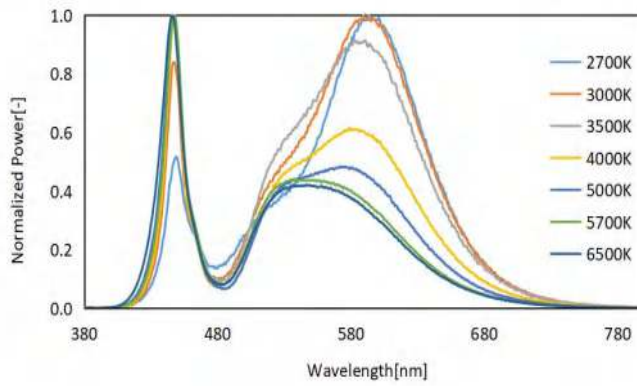
CIE Chromaticity Diagram @IF=160mA ,Ta=25°C



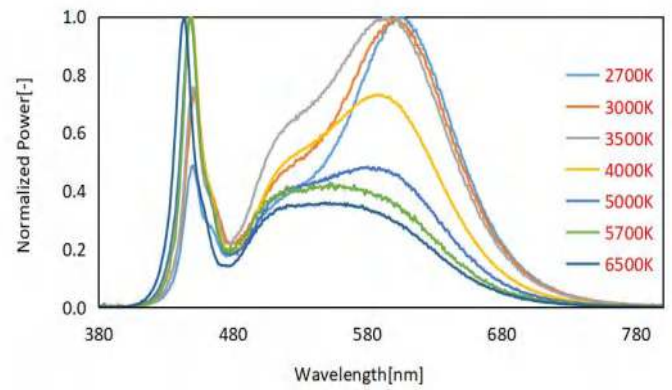
CCT and XY

Nominal	Center Point		MAJOR AXIS (a,b)			Ellipse
CCT	X	Y	2-Step	3-Step	5-Step	Rotation
2700K	0.4653	0.4244	(0.00540, 0.00280)	(0.00810, 0.00420)	(0.0135, 0.007)	53.70
3000K	0.4413	0.4223	(0.00560, 0.00272)	(0.00830, 0.00408)	(0.0139, 0.0068)	53.22
3500K	0.4175	0.4215	(0.00620, 0.00276)	(0.00930, 0.00414)	(0.0155, 0.0069)	54.00
4000K	0.3941	0.4130	(0.00630, 0.00268)	(0.00940, 0.00402)	(0.0157, 0.0067)	53.72
5000K	0.3508	0.3778	(0.00550, 0.00236)	(0.00822, 0.00354)	(0.0137, 0.0059)	59.62
5700K	0.3300	0.3605	(0.00500, 0.00213)	(0.00750, 0.00320)	(0.0124, 0.0053)	59.09
6250K	0.3160	0.3401	(0.00450, 0.00190)	(0.00670, 0.00285)	(0.0112, 0.0048)	58.57
6500K	0.3140	0.3341	(0.00450, 0.00190)	(0.00670, 0.00285)	(0.0112, 0.0048)	58.57

Spectral Distribution



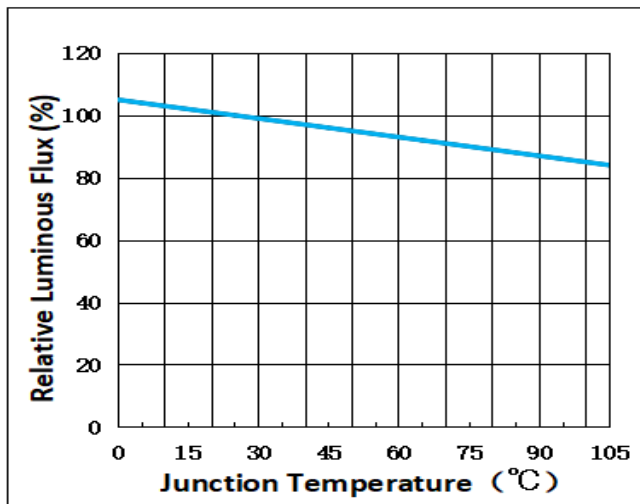
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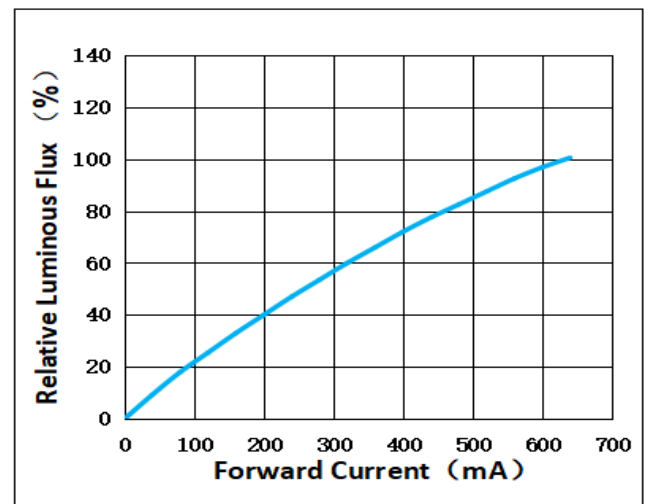
CRI80+

Typical Optical Characteristic Curve @Ta=25°C

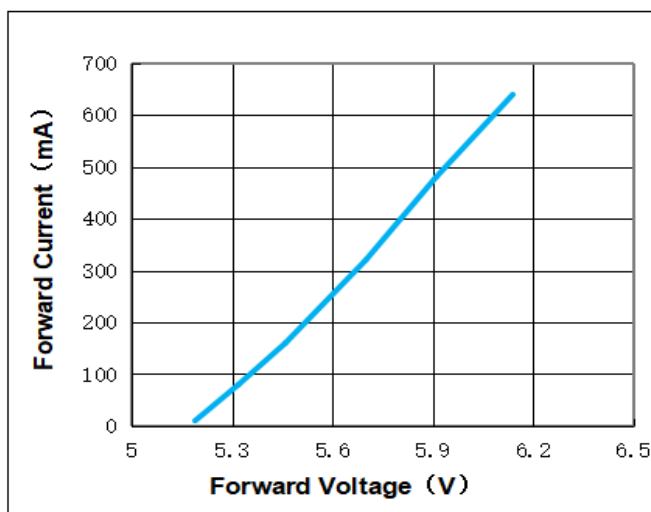
Relative Luminous Intensity VS Junction Temperature.



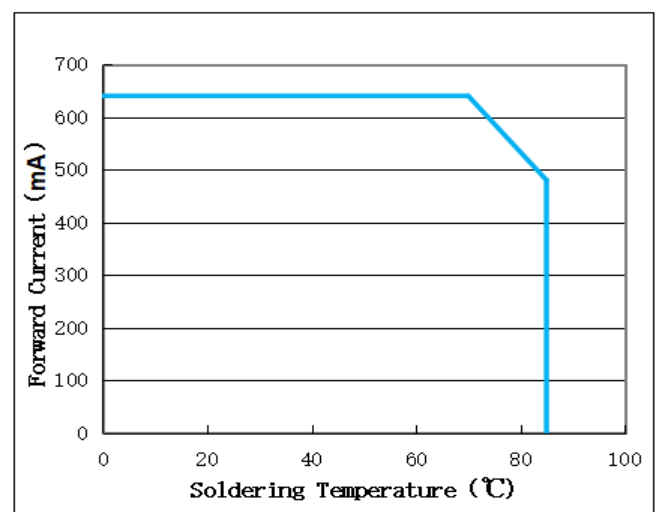
Relative Luminous Intensity VS Forward Current.



Forward Current VS Forward Voltage.



Forward Current VS Soldering Temperature.



Reliability Test Items And Conditions

Test Item	Ref.Standard	Test Conditions	Time	Quantity (pcs)
High Temperature Storage	JESD22-A103	Temp:100°C±5°C	1000hrs	22
Low Temperature Storage	JESD22-A119	Temp:-40°C±5°C	1000hrs	22
Thermal Shock	JESD22-A104	100°C±5°C 30min ↓↑15S-40°C±5°C 30min	200cycle	22
Reflow	JESD22-B106	Temp:max260°C Time:10sec8min/cycle	3cycle	22
LifeTest	JESD22-A108	Ta=25°C±5°C IF=640mA	1000hrs	22
High Temperature Life Test	JESD22-A108	Ta=105°C±5°C IF=640mA	1000hrs	22
High Temperature High Humidity Life Test	JESD22-A101	85°C±5°C/85%RH IF=640mA	1000hrs	22

Criteria For Judging Malfunction

Item	Symbol	Test Conditions	Criteria for Judgement	
			Min	Max
Forward Voltage	VF	IF=640mA	—	(U.S.L*) ×1.1
Luminous Intensity	ΦV	IF=640mA	(L.S.L*) ×0.7	—

Label And Packaging Instructions



P.F: XPH 5050-B24B ③



L.N: C1S23051664C21B3153 ①



① Label template does not represent the corresponding product label

P.N: Y5050B24B02040004 ②



ID: RBD065230611265 ④



01

QTY: 2000PCS ⑧



Co: 40H0-5/S ⑥

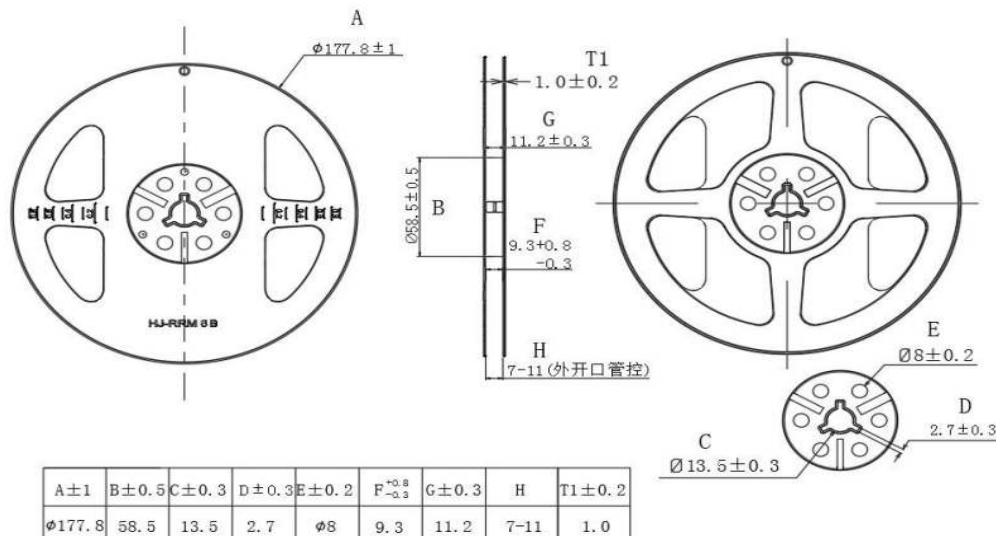


⑤

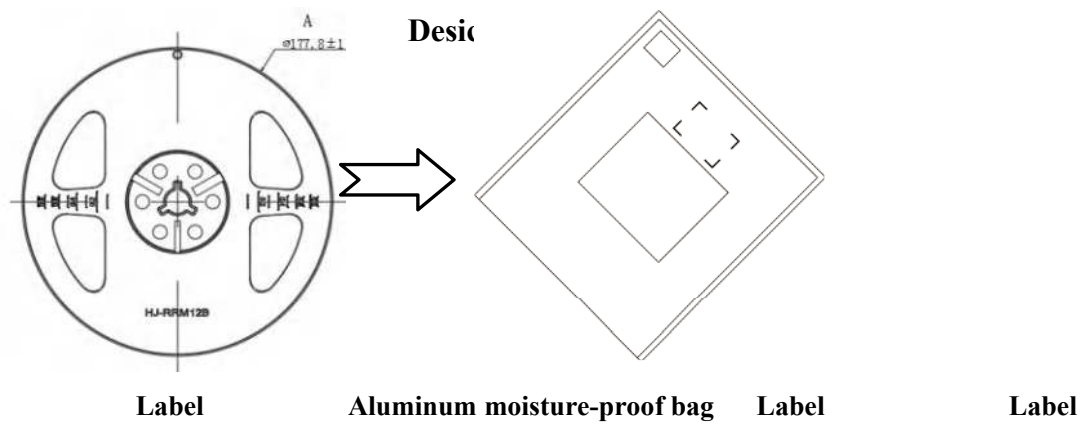
⑦ 1.0W\160mA\5.4-5.8V\4000K\RA70\240-250Lm/W

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

Reel Dimension



Carrier Tape Dimensions



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

Precautions Of Use

Precautions when using overcurrent protection

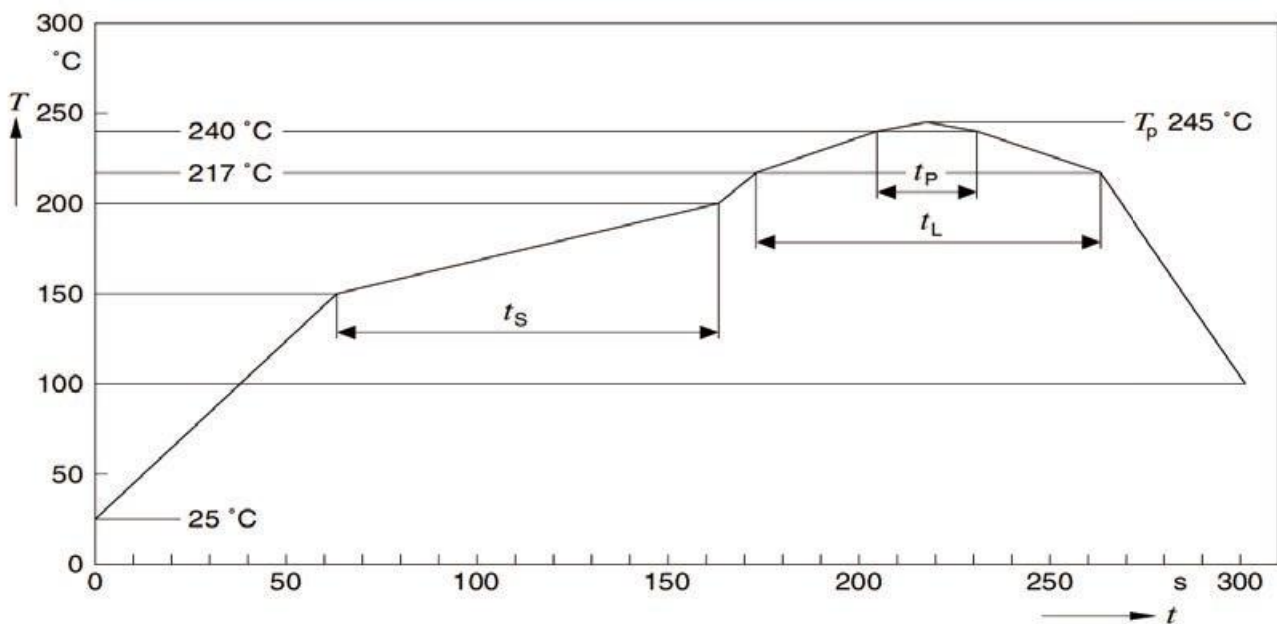
Resistors must be used for protection, otherwise a slight voltage change will cause a large current change (which will cause burnout.)

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:



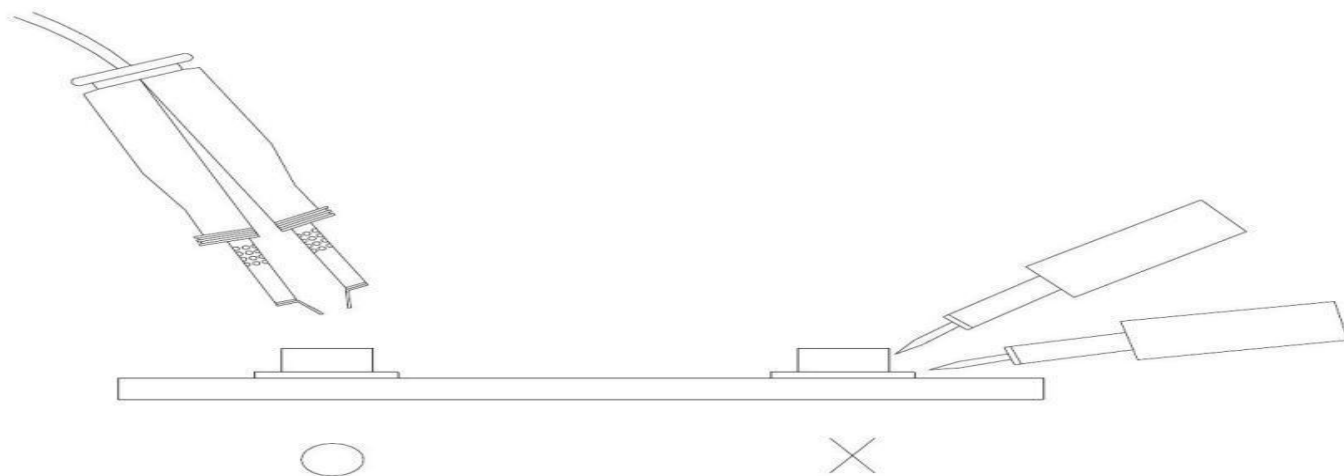
3. Content of sulfur or compound of sulfur can not exceed 25ppm.

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 °C. 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 portfolio.