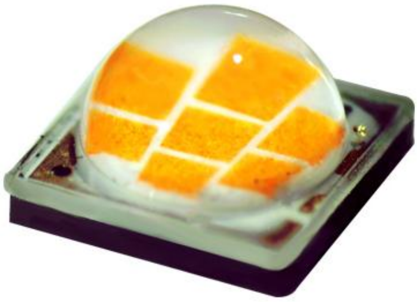
3838 Ceramics LED Series

Product Data Sheet



DESIGNED	CHECKED	APPROVED	CUSTOMER	REV.
2021.11.01	2021.11.01	2021.11.01		2021.11.01
QINYALI	ZHAOSHENGLI	HEYIDE		A02

Introduction

3838 Ceramics LED Series

The XDlumen 3838 Ceramics LED Series boasts the efficiency and reliability demanded by the spotlight market,high visibility, high stability and other requirements. It delivers optimized performance in combination with the Quality of Light needed for distributed light source applications in four performance levels. In addition to offering specified correlated color temperature and color rendering combinations, XDlumen 3838 series is available in Three products.

FEATURES AND BENEFITS

- Supports ENERGY STAR lumen maintenance certification requirements
- Low thermal resistance，Low Voltage，Superior Lumen，High light efficiency
- Full spectrum configurations for design flexibility
- ANSI color binning delivers tight color control
- According to McAdam spectroscopic color separation,SDCM<5
- Minimum color tolerance is less than 3 step

APPLICATIONS

General lighting

Spotlight

Specialty Lighting

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Typical Electrical & Optical Characteristics(T = 25°C)

Item	Condition	Symbol	Min	Avg	Max	unit
Forward Current	----	I_f	---	210	---	mA
Reverse Current	5V	I_R	---	---	2	μA
View Angle	210mA	Θ1/2		120		°

Typical Electrical & Optical Characteristics(T = 25°C)

parameter	Symbol	Condition	Min	Avg	Max	unit
Luminous Intensity	Φ	I_F=210mA	480	500	520	Lm
Color Temperature	CCT/nm	I_F=210mA	2900		3200	K
Forward Voltage	V_F	I_F=210mA	21	22.5	24	V
Color Rendering index	Ra	I_F=210mA	-	90	-	– –
Thermal Resistance Junction To Board	$RΘ_{J-B}$	I_F=210mA	--	10	--	°C/W
50% Power Angle	2 ½	I_F=210mA	--	120	--	deg
Reverse Current	I_R	V_R=5V	--		2	μA

Typical Electrical Characteristics(T = 25°C)

Item	Condition	Symbol	Min	Avg	Max	unit
Forward Voltage	210mA	Vf	21	22.5	24	V

1.xdlumen maintains a tolerance of ±0.03V on forward voltage measurements

2.Measured by 25°C .Pulse test

Absolute Maximum Rating(T = 25°C)

Items	Symbol	Absolute maximum Rating	Unit
Forward Current	I_F	210	mA
Pulse Forward Current	Im	525	mA
Inverse voltage	V_R	5	V
Consumed Power	P_D	5	W
Operation Temperature	T_{opr}	-30 to + 60	°C
Storage Temperature	Tstg	-30 to + 60	°C
Junction temperature	Tj	125	°C
Junction To Solder Pad	Rth	10	°C/W
ESD Sensitivity	V	3000	V
SolderingTemperature	T	260（JEDEC 020D）	°C
Allowable Reflow Cycles	Times	2	T
intersectionTemperature	T	85	°C

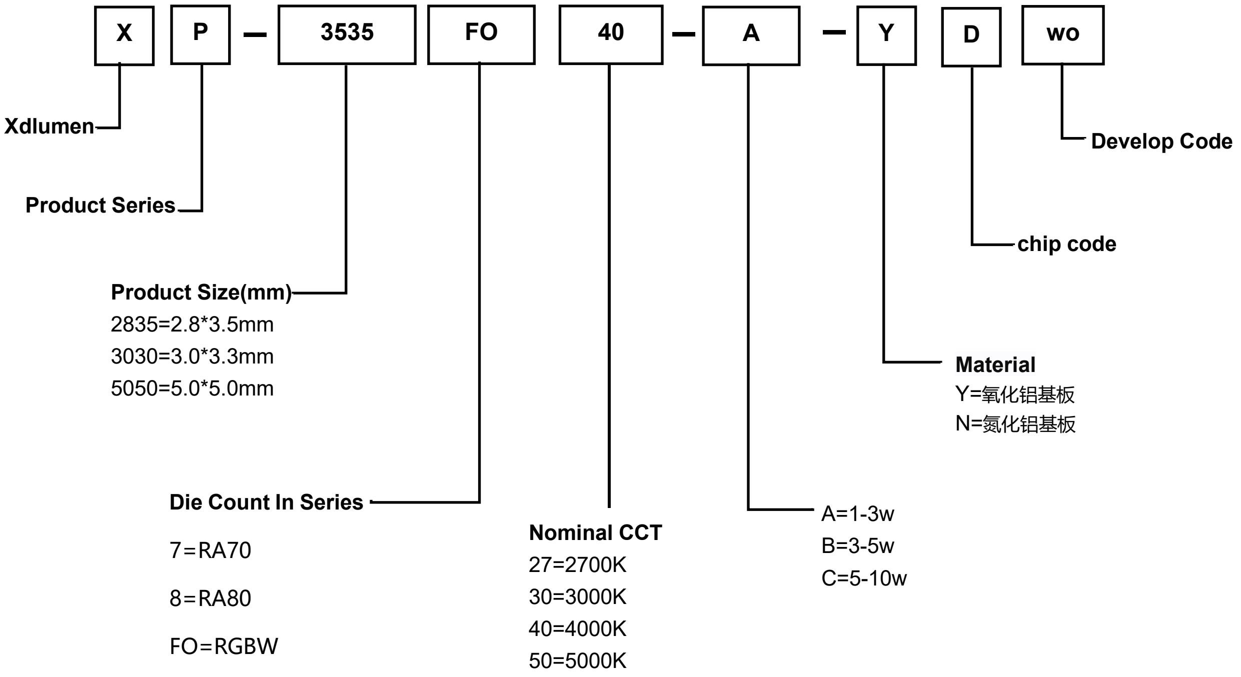
1、Proper current derating must be observed to maintain the junction temperature below the maximum allowable junction temperature

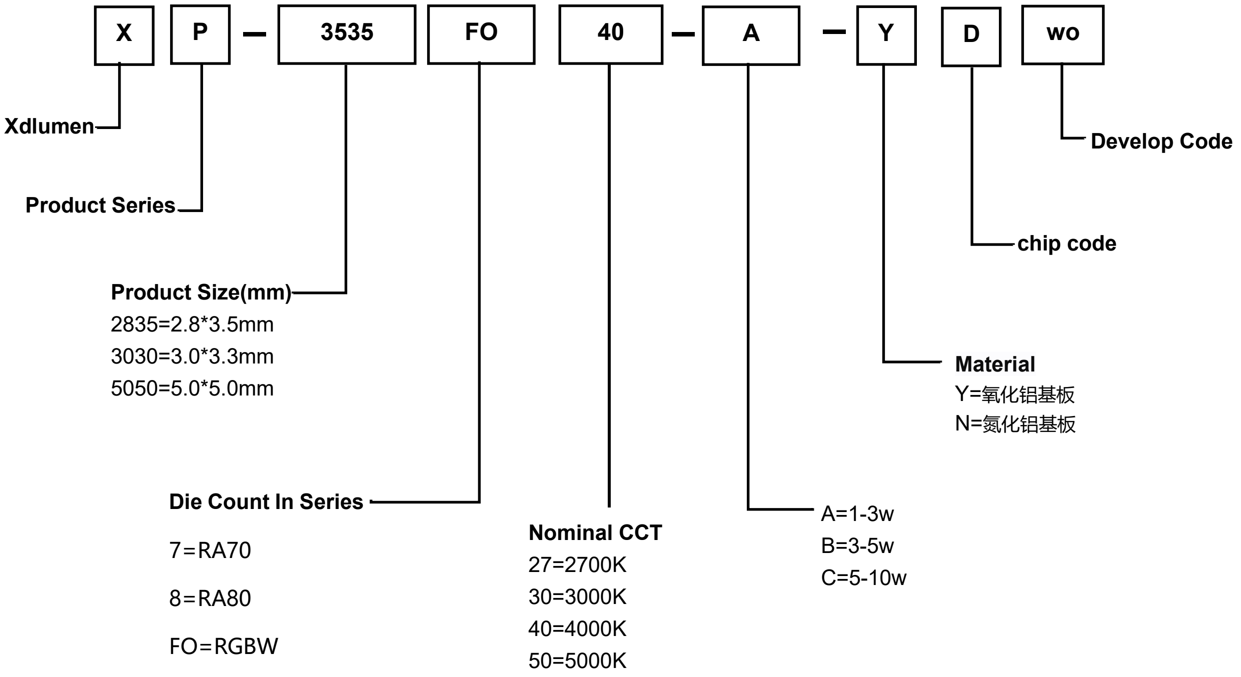
2、Residual periodic variations due to power conversion from alternating current (AC) to direct current (DC), also called “ripple,” are acceptable if the following conditions are met:

- The frequency of the ripple current is 100Hz or higher
- The average current for each cycle does not exceed the maximum allowable DC forward current
- The maximum amplitude of the ripple does not exceed the maximum peak pulsed forward current
- At 10% duty cycle with pulse width of 10ms.
- Proper current derating must be observed to maintain the junction temperature below the maximum allowable junction temperature.

Part Number Nomenclature

The part number designation for Xdlumen High Lumen Density Series LED arrays is explained as follows:


X
P
—
3535
FO
40
—
A
—
Y
D
wo
Xdlumen
Product Series
Product Size(mm)
2835=2.8*3.5mm
3030=3.0*3.3mm
5050=5.0*5.0mm
Die Count In Series
7=RA70
8=RA80
FO=RGBW
Nominal CCT
27=2700K
30=3000K
40=4000K
50=5000K
A=1-3w
B=3-5w
C=5-10w
Material
Y=氧化铝基板
N=氮化铝基板
chip code
Develop Code



X
P
—
3535
FO
40
—
A
—
Y
D
wo
Xdlumen
Product Series
Product Size(mm)
2835=2.8*3.5mm
3030=3.0*3.3mm
5050=5.0*5.0mm
Die Count In Series
7=RA70
8=RA80
FO=RGBW
Nominal CCT
27=2700K
30=3000K
40=4000K
50=5000K
A=1-3w
B=3-5w
C=5-10w
Material
Y=氧化铝基板
N=氮化铝基板
chip code
Develop Code

LED Classification standard

VF bincode

Symbol	VF（V）	
	MIN	MAX
V1	21	24

LM bincode

Symbol	Flux(lm)	
	MIN	MAX
A	480	500
B	500	520

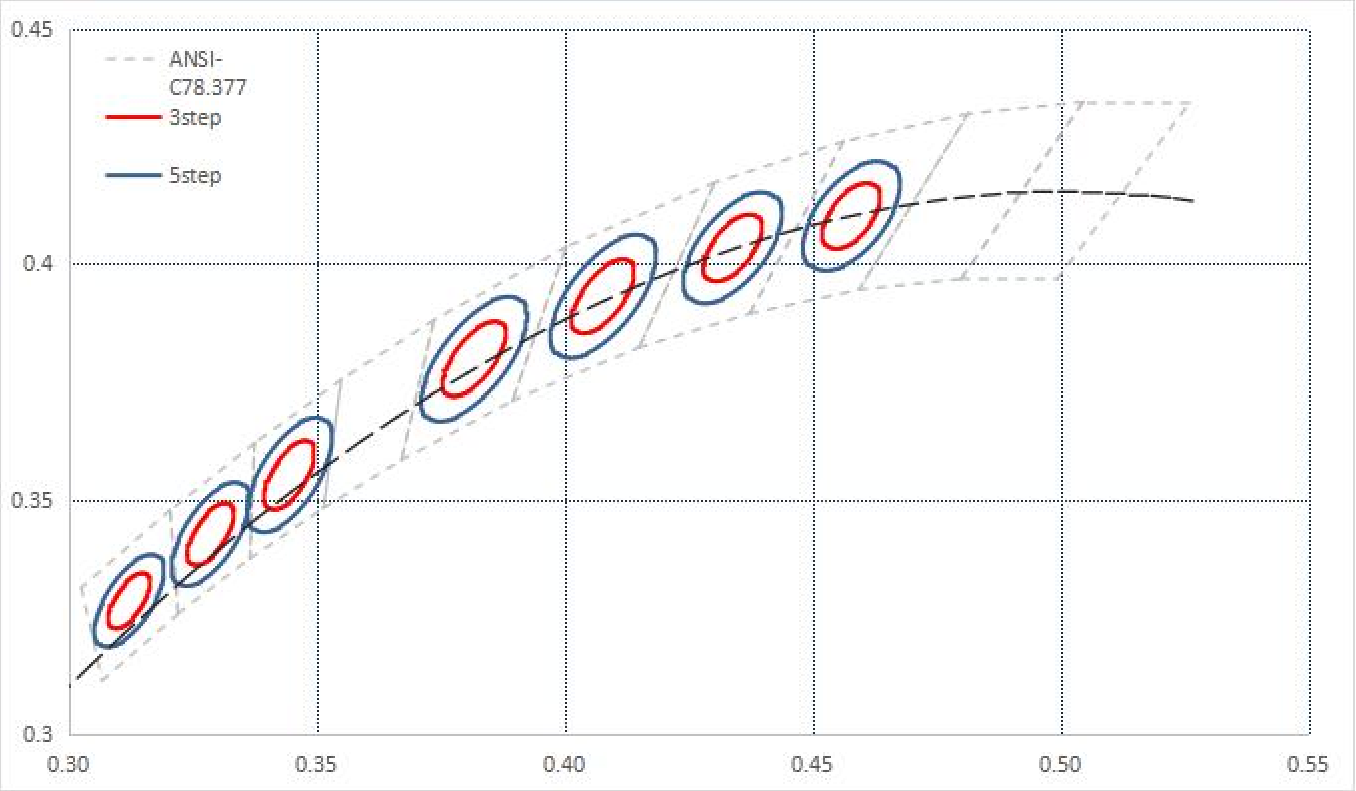
1.The error value of X and Y in the color region is ± 0.001

2.Test conditions is IF=210mA,25℃

3.Nominal CCT as defined by ANSI C78.377-2015

Color Binning Information

Figure 1: Graph of Test Bins in CIE1931xy Color Space (Pulsed Test Conditions, Tc = 25°C)



1.The error value of X and Y in the color region is ± 0.001

2.Test conditions is IF=210mA,25℃

3.Nominal CCT as defined by ANSI C78.377-2015

Table 3: 3-step MacAdam ellipse color bin definitions for Xdlumen CoB Core Range

Nominal CCT	Center Point		MAJOR AXIS (a , b)		Ellipse Rotation Angel, θ
	X	Y	3-Step	5-Step	
2700K	0.4578	0.4101	(0.00810 0.00420)	(0.01350, 0.00700)	53.70
3000K	0.4338	0.4030	(0.00834, 0.00408)	(0.01390, 0.00680)	53.22
3500K	0.4073	0.3917	(0.00927 0.00414)	(0.01545, 0.00690)	54.00
4000K	0.3818	0.3797	(0.00939, 0.00402)	(0.01565, 0.00670)	53.72
5000K	0.3447	0.3553	(0.00822, 0.00354)	(0.01370, 0.00590)	59.62
5700K	0.3287	0.3417	(0.00747, 0.00321)	(0.01245, 0.00535)	59.09
6500K	0.3123	0.3282	(0.00669, 0.00285)	(0.01115, 0.00475)	58.57

Spectral Power Distribution Characteristics

Figure1. Typical normalized power vs. wavelength for 90 CRI

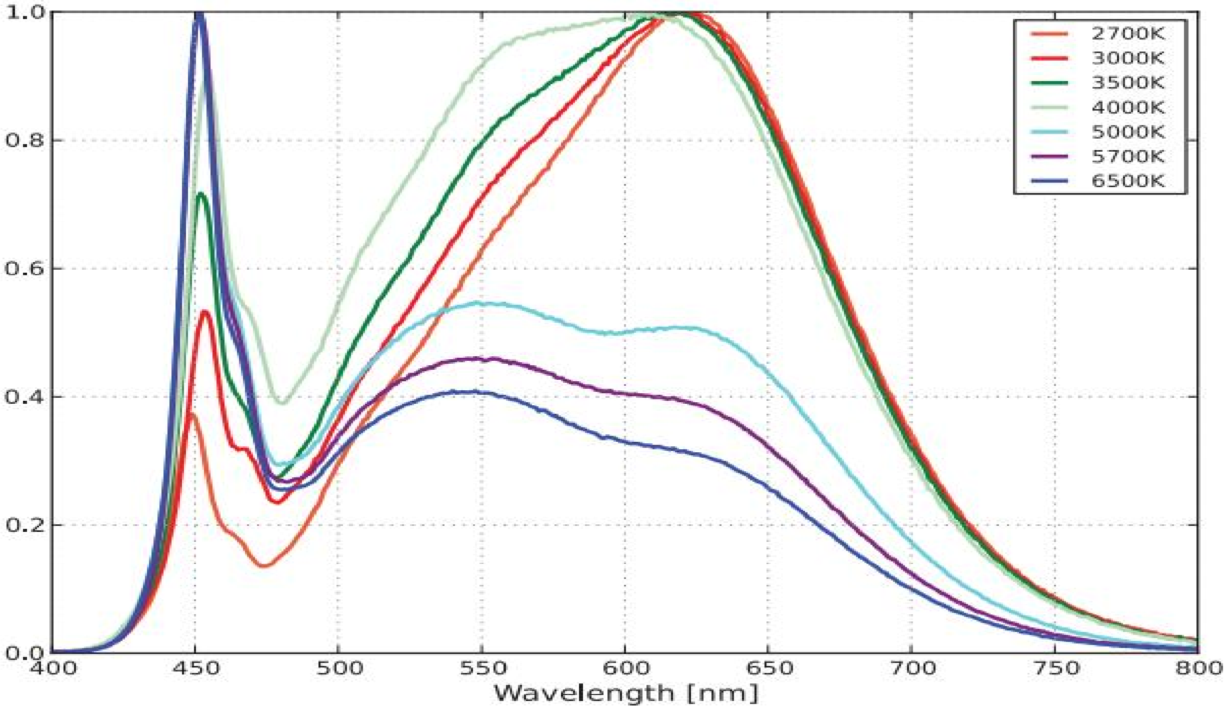
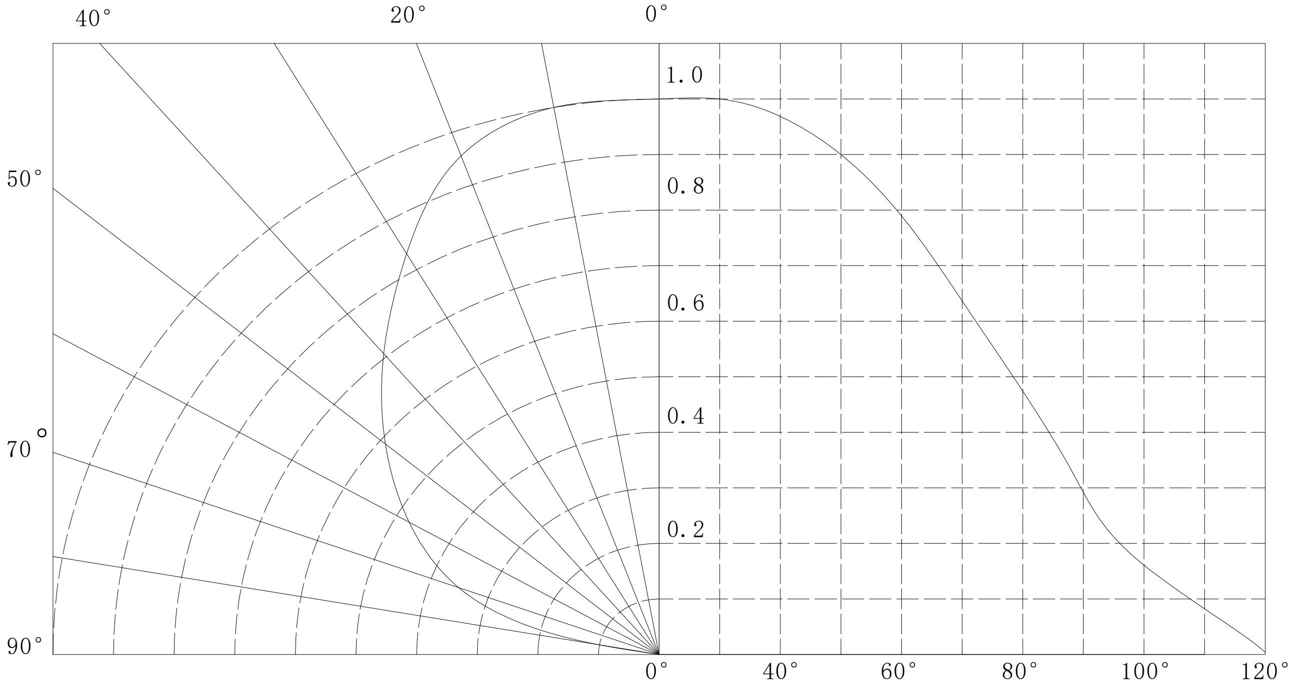


Figure2. Typical Polar Radiation Pattern



Typicalelectrical characteristic curve

Figure3.Relative spectral distribution

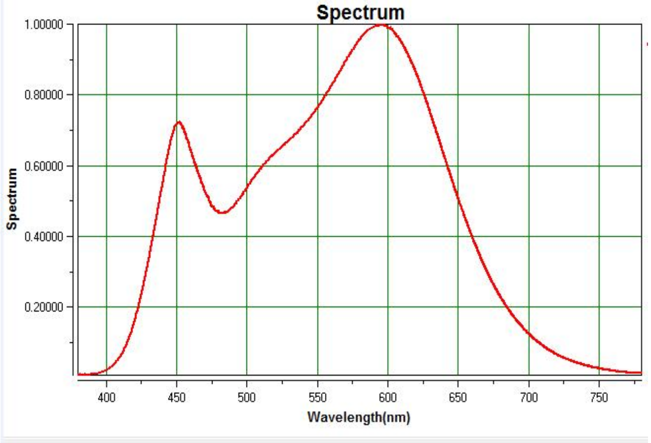


Figure4.Junction temperature relative to light output and current

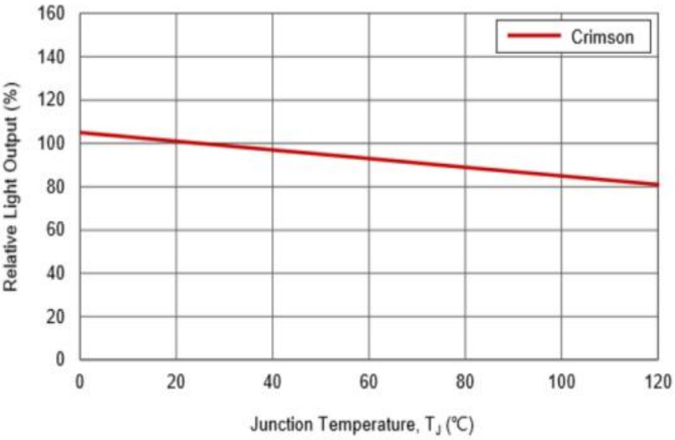


Figure5. Forward current and temperature

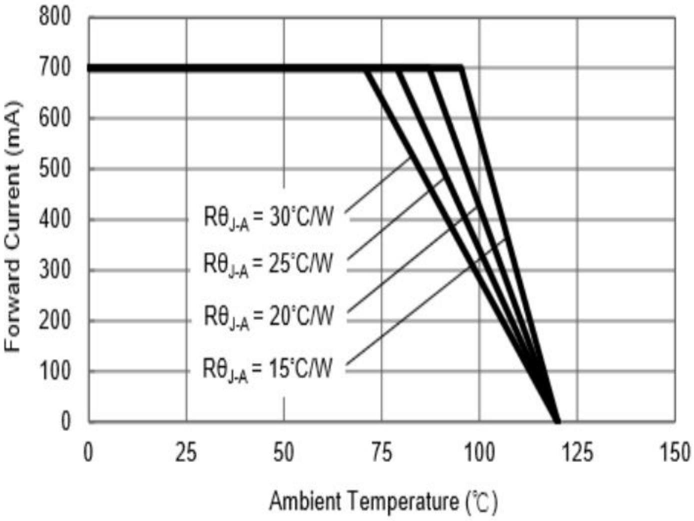
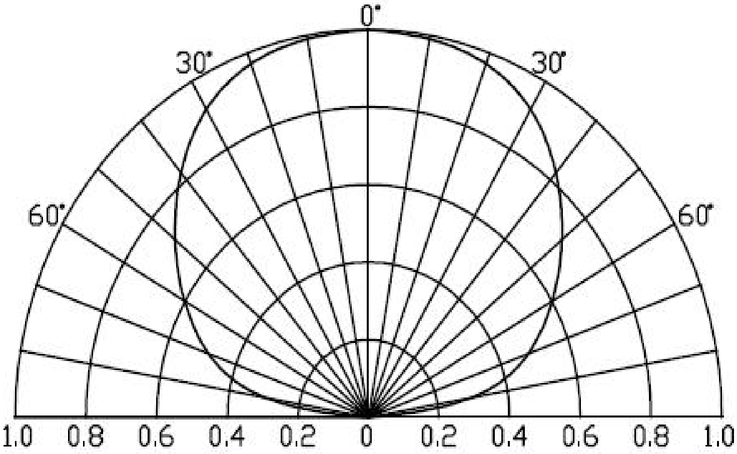
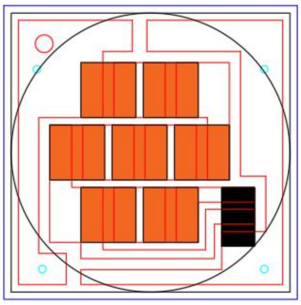


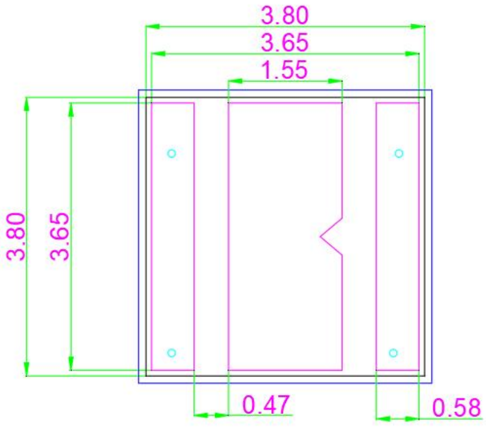
Figure6.Radiation Diagram

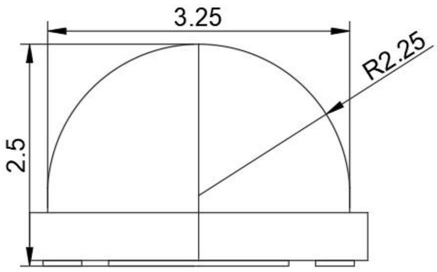


1. Xdlumen does not recommend driving our LED arrays at low currents. Doing so may produce unpredictable results.
2. Products tested based on operation under DC(Direct current) with LED array mounted onto a heat sink with thermal interface material and Tc (case temperature) = 25°C. Base on Xdlumen test set up, values also depending on the thermal design and exposed environment to which the luminaire is subjected.

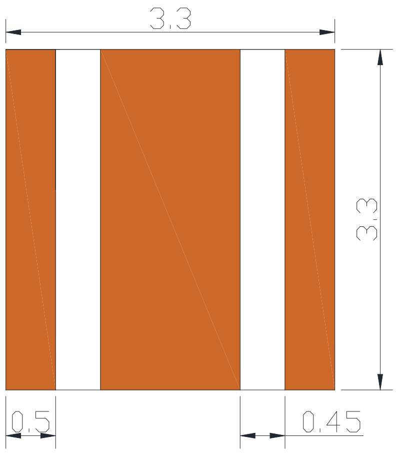
Product Packing Dimensions（Unit:mm）



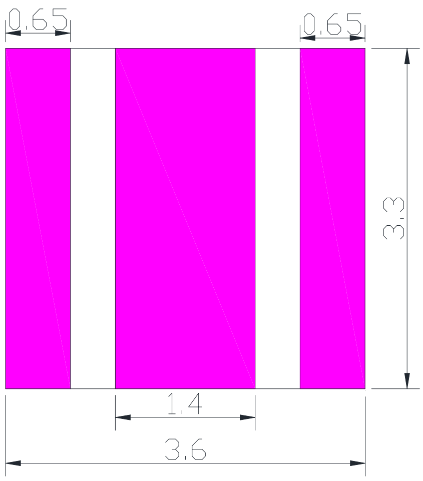

3.80
3.65
1.55
3.80
3.65
0.47
0.58



Solder Pad Design（Unit:mm）



Recommended Copper Layout


0.65
0.65
3.3
1.4
3.6

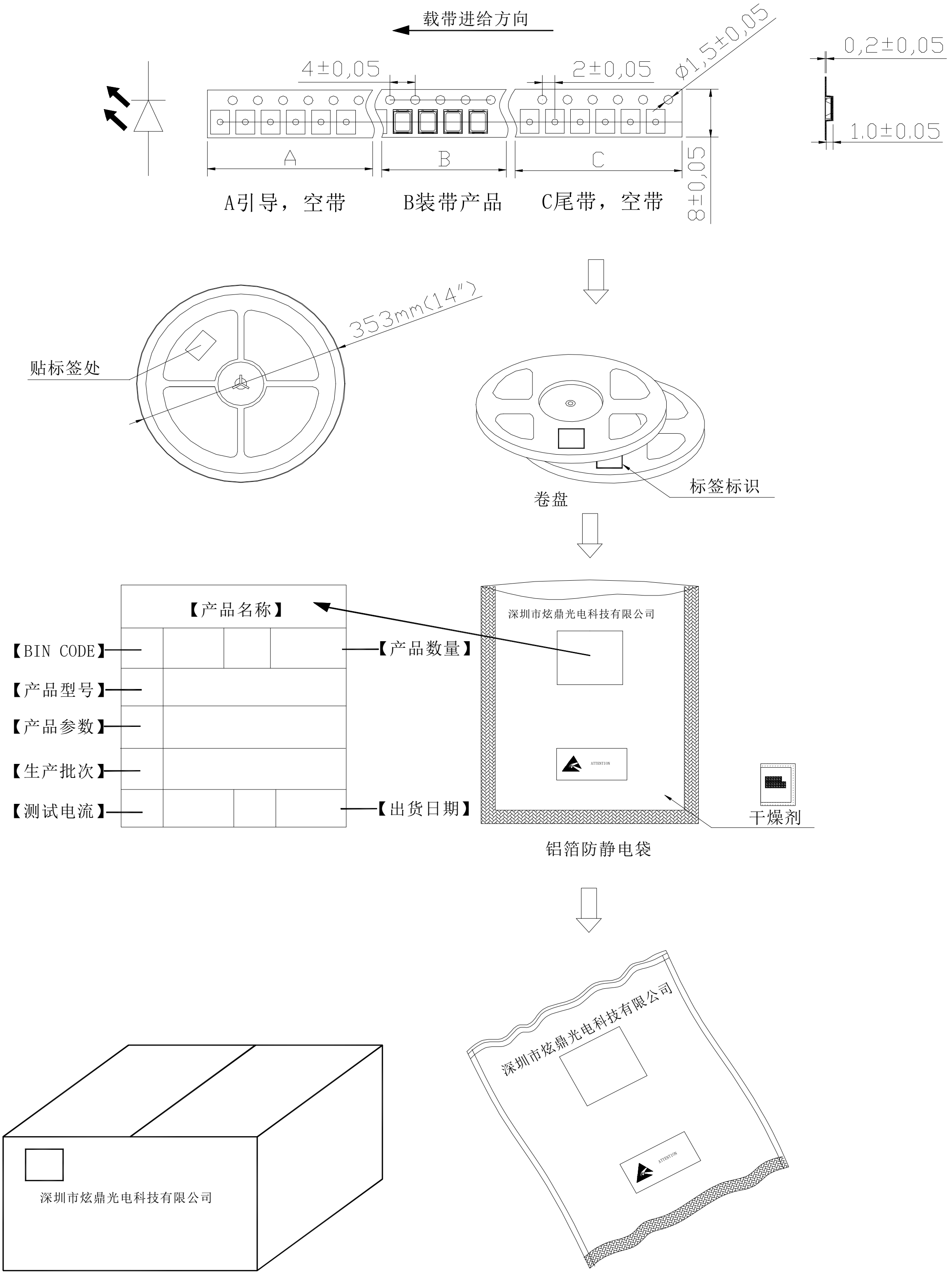
Recommended Solder Pad

1.All dimension tolerance is ±0.05mm unless otherwise noted.

Product Packing（Unit:mm)

1.The general packaging specifications: 1K/Reel，

2. Static bag packaging，Each package:1K



载带进给方向
4±0,05
2±0,05
φ1,5±0,05
0,2±0,05
1,0±0.05
8±0,05
A
B
C
A引导，空带
B装带产品
C尾带，空带
353mm(14")
贴标签处
卷盘
标签标识
【产品名称】
【BIN CODE】
【产品型号】
【产品参数】
【生产批次】
【测试电流】
【产品数量】
【出货日期】
深圳市炫鼎光电科技有限公司
ATTENTION
干燥剂
铝箔防静电袋
深圳市炫鼎光电科技有限公司
ATTENTION
深圳市炫鼎光电科技有限公司

Application notes

1. Recommended current：210mA
2. Moisture Proof Packing

✧ In order to prevent moisture absorption into SMT-LED during the transportation and storage, SMT-LED is packed in a moisture barrier bag. Desiccants and a humidity indicator are packed together with SMT-LED as the secondary protection. The indication of humidity indicator card provides the information of humidity within SMD packing.Humidity sensitive grade2A

3. Storage

✧ Shelf life in original sealed bag at storage condition of <40°C and <60%RH is 6 months. Baking is required whenever shelf life is expired.

✧ Before unpacking, please check whether there is air leak in the packing bag,After bag opening, the SMT-LED must be stored under the condition < 30°C and < 50%RH. Under this condition, SMT-LED must be used (subject to reflow) within 24 hours after bag opening, and re-baking is required when exceeding 24 hours.

✧ For baking, place SMT-LED in oven at temperature 60°C±5°C and relative humidity <=10%RH, for 24 hours.

4. Cleaning

✧ Don't use unspecified chemical liquids to clean the SMT-LED; the chemical could harm the SMT-LED. When washing is necessary, please immerse the SMT-LED in alcohol at normal room temperature for less than 1 minute and dry at normal room temperature for 15 minutes before use.

✧ The influence of ultrasonic cleaning on the SMT-LED depending on factors such as ultrasonic power and the way SMT-LED are mounted. Ultrasonic cleaning shall be pre-qualified to ensure this will not cause damage to the SMT-LED.

5. Electrostatic Discharge and Surge current

✧ Electrostatic discharge (ESD) or surge current (EOS) may damage SMT-LED.

✧ Precautions such as ESD wrist strap, ESD shoe strap or antistatic gloves must be worn whenever handling of SMT-LED.

✧ All devices, equipment and machinery must be properly grounded.

✧ It is recommended to perform electrical test to screen out ESD failures at final inspection.

✧ It is important to eliminate the possibility of surge current during circuitry design

6. Heat Management

✧ Heat management of SMT-LED must be taken into consideration during the design stage of SMT-LED application. The current should be de-rated appropriately by referring to the de-rating curve attached on each product specification.

7. Soldering

Manual soldering by soldering iron：

✧ The use of a soldering iron of less than 25W is recommended and the temperature of the iron must be kept at below 315°C, with soldering time within 3 seconds.

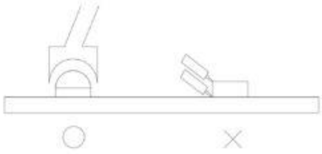
✧ The epoxy resin of SMT-LED should not be in contact with tip of soldering iron.

✧ No mechanical stress should be exerted on the resin portion of SMT-LED during soldering.

✧ Handling of SMT-LED should be done when the package has been cooled down to below 40°C or less. This is to prevent the SMT-LED failures due to thermal-mechanical stress during handling.

8. Repair

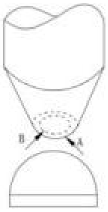
- LED Should not be repaired in reflow，When repair is inevitable，a double-head soldering iron should be used .It should be confirmed in advance whether the characteristics of LEDs will or will not be damaged by repair

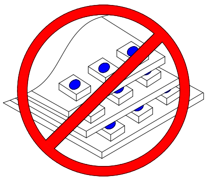


9. Handling precautions

- Compare to epoxy encapsulant that is hard and brittle, silicone is softer and flexible. Although its characteristic significantly reduces thermal stress, it is more prone to damage by external mechanical force . As a result, Special handling precautions must be observed during assembling using silicone encapsulated LED products, Failure to comply might leads to damage and premature failure of the LED.
- Handle the component along the side surface by using forceps or appropriate tools; do not directly touch or Handle the silicone lens surface, it may damage the internal circuitry

- The outer diameter of the SMD pickup nozzle should not exceed the size of the LED to prevent air leaks. The inner diameter of the nozzle should be as large as possible. A pliable material is suggested for the nozzle tip to avoid scratching or damaging the LED surface during pickup. The dimensions of the component must be accurately programmed in the pick-and-place machine to insure precise pickup and avoid damage during production.





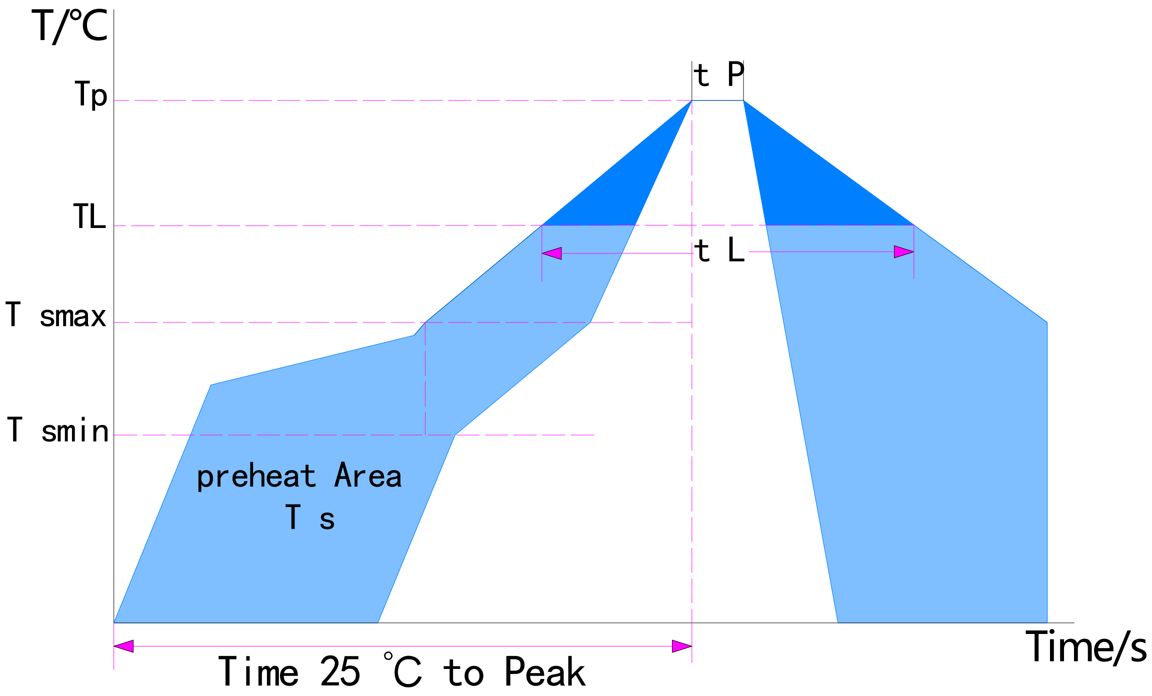
- Do not stack together assembled PCBs containing LEDs. Impact may scratch the silicone lens or damage the internal circuitry
- Not suitable to operate in acidic environment, PH<7

10. Gluing LED

- When we need to use external glue for LED application products, please make sure that the external glue matches the LED packaging glue. Additionally ,as most of LED packaging glue is silica gel, and it has strong Oxygen permeability as well as strong moisture permeability; in order to prevent external material from getting into the inside of LED, which may cause the malfunction of LED, the single content of Bromine element is required to be less than 900PPM,the single content of Chlorine element is required to be less than 900PPM,the total content of Bromine element and Chlorine element in the external glue of the application products is required to be less than 1500PPM
- When we need to use external glue for LED application products， we need to control the surface temperature under 55℃， As we mentioned at 9-6,the enternal glue contain Chlorine element, it can destroy the led.

SMT Reflow Soldering Instructions

✧ **Suggested Welding Temperature Curve**:



PROFILE FEATURE	LEADED COMPONENTS	LEAD-FREE ASSEMBLY
preheat minimumtemperature(min)	100℃	150℃
preheat maxmum temperature(min)	150℃	180℃
preheat time (Tmin-Tmax)	60-120s	60-180s
Ramp-Up Rate (TL to Tp)	5℃/S max	6℃/S max
Liquidus Temperature (TL)	170℃	200℃
Time Maintained Above Temperature(TL)	60-120s	60-120s
Peak / Classification Temperature (Tp)	180℃	220℃
Time Within 5°C of Actual Temperature (tp)	10-25s	20-35s
Peak descent average speed	7℃/S max	6℃/S max
Time 25°C to Peak Temperature	300S max	360S max