



广州市东裕光电科技有限公司

# 产品规格书

## SPECIFICATION

客户名称 CUSTOMER	
产品名称 PRODUCTION	SMD LED
产品型号 MODEL	DYWH-19-215UWC-G(BL)
版本号 VERSION NO	A1.0

厂址(Add): 广东省广州市番禺区石基镇海涌路 3 号 10 号厂房 2 楼

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客户确认 CUSTOMER CONFIRMATION	审 核 CHECKED BY	编 制 PREPARED BY
	周毅兴	陈少龙

## 1. Features:

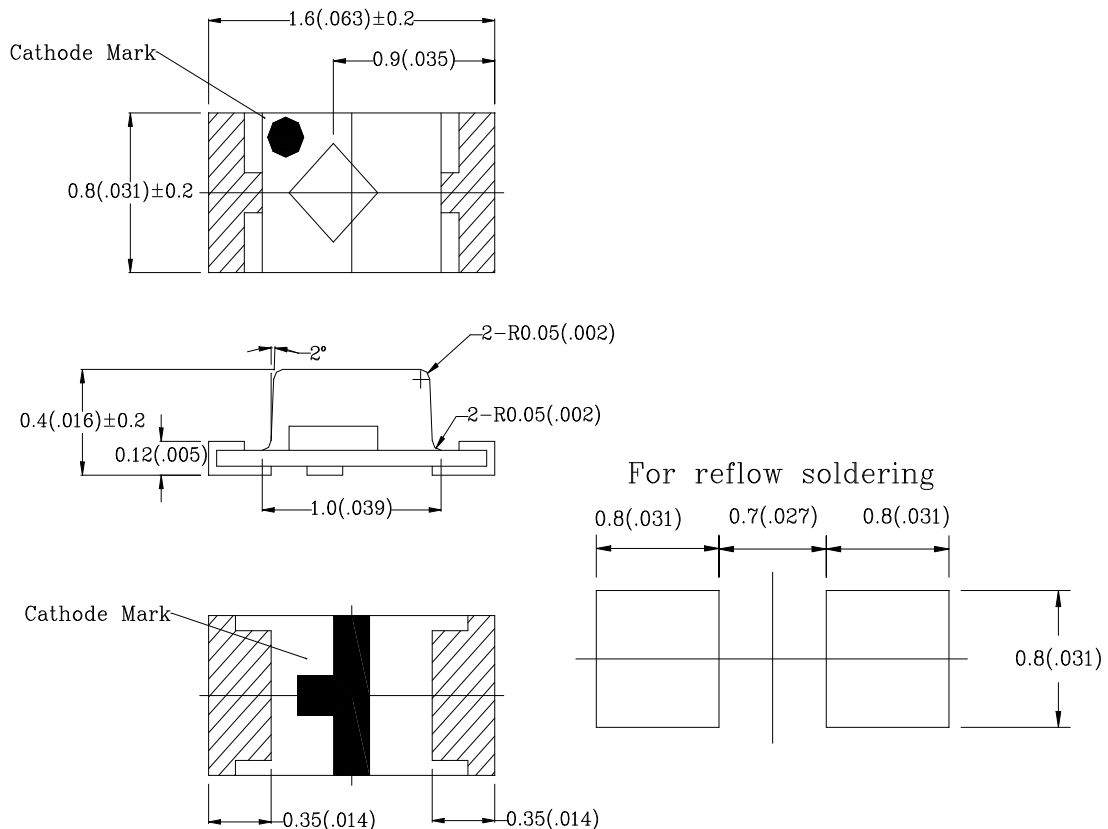
- Chip material: AlInGaN.
- Emitted Color : White .
- 1.6x0.8x0.4mm(0603) standard package.
- Suitable for all SMT assembly methods.
- Compatible with infrared and vapor phase reflow solder process.
- Compatible with automatic placement equipment.
- This product doesn't contain restriction substance, comply ROHS standard.



## 2. Applications:

- Automotive : Dashboards, stop lamps, turn signals.
- Backlighting : LCDs, Key pads advertising.
- Status indicators : Consumer & industrial electronics.
- General use.

## 3. Package Dimensions:



### NOTES:

- 1).All dimensions are in millimeters (inches).
- 2).Tolerance is  $\pm 0.10\text{mm}$  (0.004") unless otherwise specified.
- 3).Specifications are subject to change without notice.

#### 4. Absolute Maximum Ratings(Ta=25℃)

Parameter	Symbol	Rating	Unit
Power Dissipation	Pd	120	mW
Forward Current	I <sub>F</sub>	30	mA
Peak Forward Current <sup>*1</sup>	I <sub>FP</sub>	100	mA
Reverse Volage	V <sub>R</sub>	5	V
Operating Temperature	Topr	-40~100	℃
Storage Temperature	Tstg	-40~100	℃
Soldering Temperature	Tsol	260	℃
Electrostatic Discharge	ESD	2000(HBM)	V

<sup>\*1</sup> Condition for I<sub>FP</sub> is pulse of 1/10 duty and 0.1msec width.

#### 5. Electrical and optical characteristics(Ta=25℃)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Forward Voltage	V <sub>f</sub>	I <sub>F</sub> =5mA	2.6	2.8	3.0	V
Luminous Intensity	I <sub>v</sub>	I <sub>F</sub> =5mA	200	250	350	mcd
Reverse Current	I <sub>R</sub>	V <sub>R</sub> =5V	-	-	1	μA
Chromaticity Coordinates	x	I <sub>F</sub> =5mA	-	0.265	-	-
	y	I <sub>F</sub> =5mA	-	0.27	-	-
Veiwng Angle	2θ <sub>1/2</sub>	I <sub>F</sub> =5mA	-	132	-	deg

## 6. Typical Electro-Optical Characteristics Curves

Fig.1 Relative intensity vs. wavelength

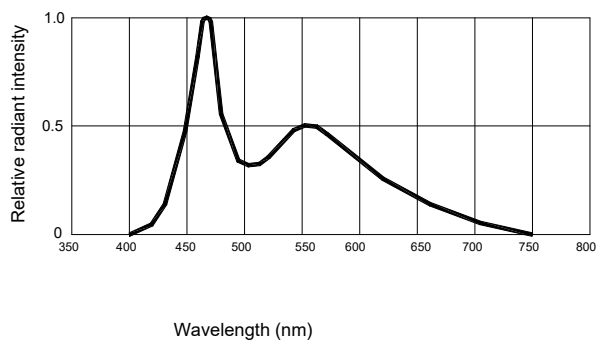


Fig.2 Forward current derating curve vs. ambient temperature

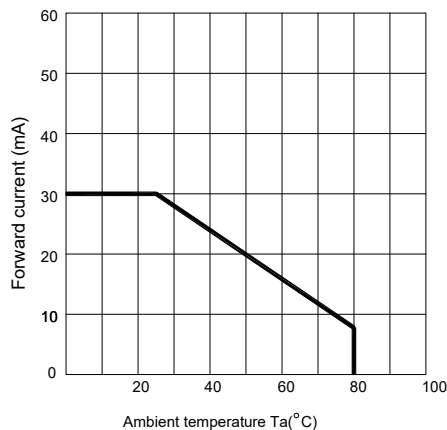


Fig.3 Forward current vs. forward voltage

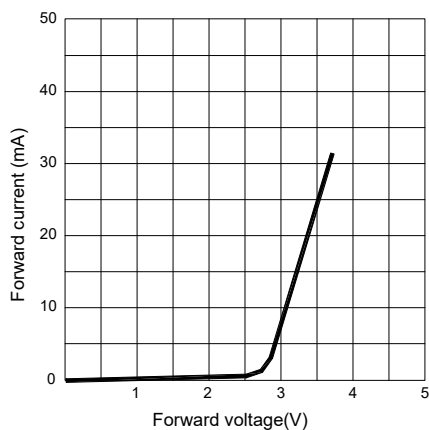


Fig.4 Relative luminous intensity vs. ambient temperature

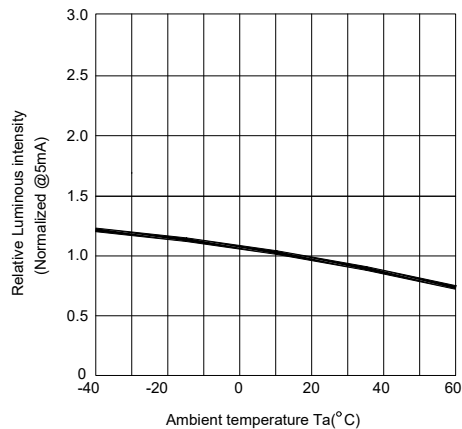


Fig.5 Relative luminous intensity vs. forward current

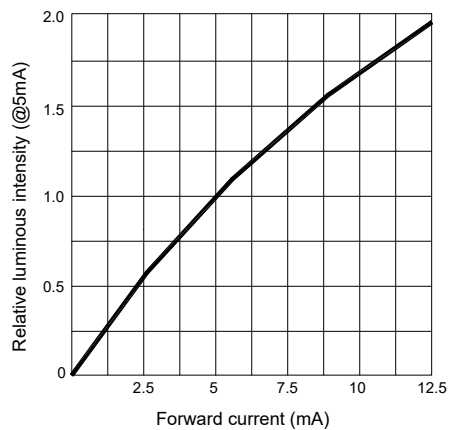
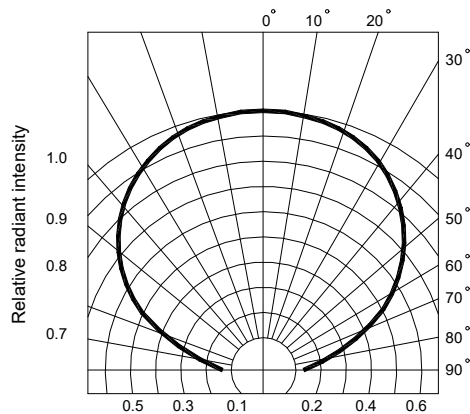


Fig.6 Radiation diagram





## 7. Bin Limits

Intensity Bin Limits ( At 5 m A)

BIN CODE	Min. ( mcd)	Max. ( mcd)
Q	200	250
W	250	300
E	300	350

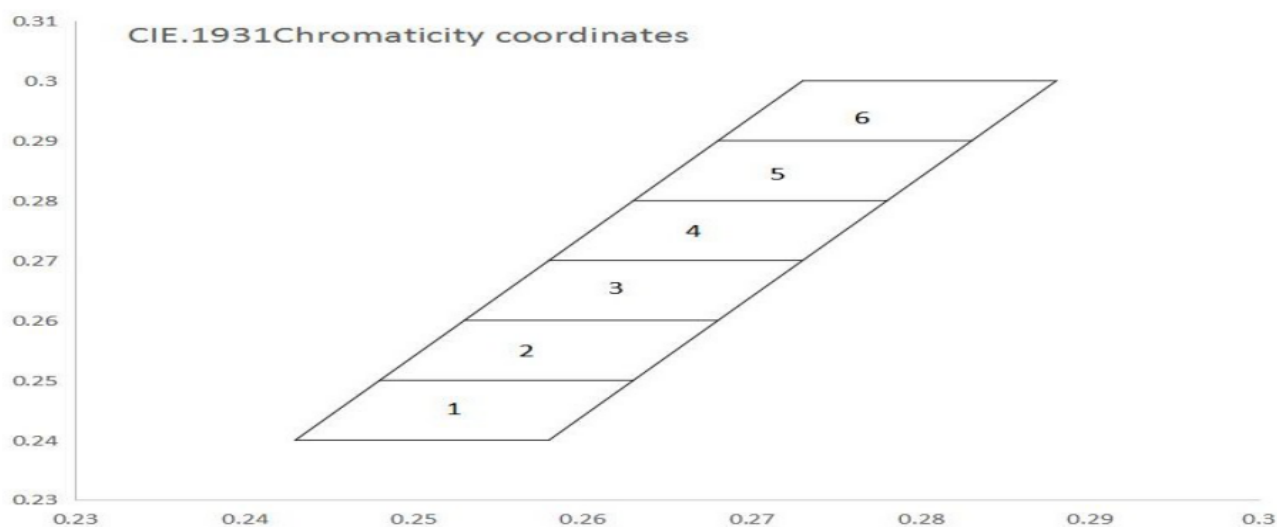
Tolerance for each Bin limit is  $\pm 5\%$

$V_F$  Bin Limits ( At 5 m A)

BIN CODE	Min.( v)	Max.( v)
S	2.6	2.7
D	2.7	2.8
F	2.8	2.9
G	2.9	3.0

Tolerance for each Bin limit is  $\pm 0.05\text{ V}$

Color Bin Limits ( At 5 m A)



Color Bin Limits ( At 5 m A)

BIN	X	Y	BIN	X	Y	BIN	X	Y
1	0.243	0.24	2	0.248	0.25	3	0.253	0.26
	0.248	0.25		0.253	0.26		0.258	0.27
	0.263	0.25		0.268	0.26		0.273	0.27
	0.258	0.24		0.263	0.25		0.268	0.26
4	0.258	0.27	5	0.263	0.28	6	0.268	0.29
	0.263	0.28		0.268	0.29		0.273	0.3
	0.278	0.28		0.283	0.29		0.288	0.3
	0.273	0.27		0.278	0.28		0.283	0.29

## 8. BIN:

CAT : Luminous Intensity Rank ( unit : mcd )

HUE : CIE 1931 Coordinate Rank REF :

Forward Voltage Rank unit : V )

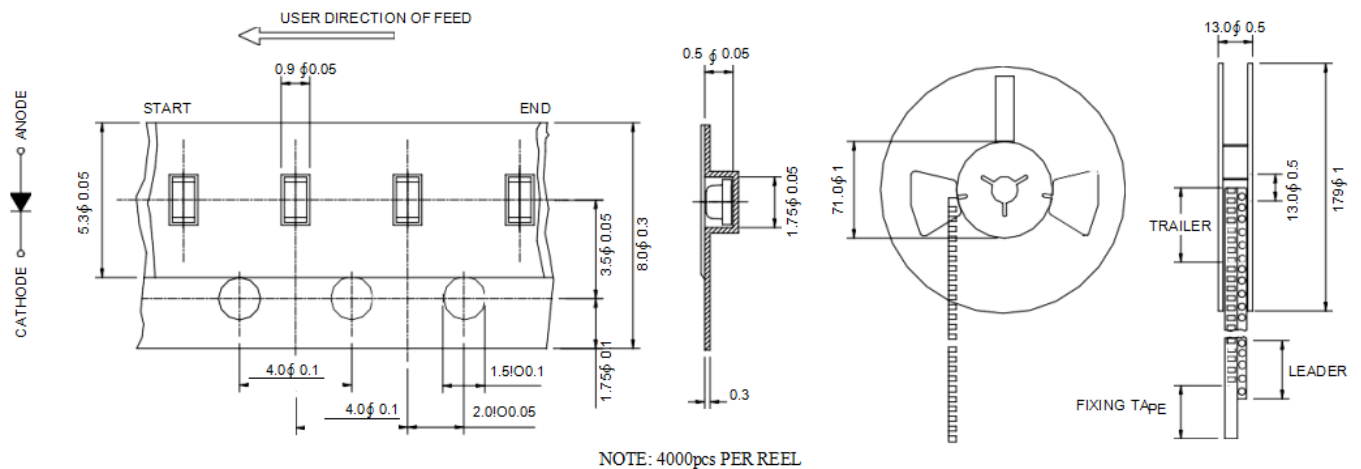
Rank Tolerance:

a. Luminous Intensity:  $\pm 15\%$

b. HUE:  $\pm 0.005$

c. Forward Voltage:  $\pm 0.02V$

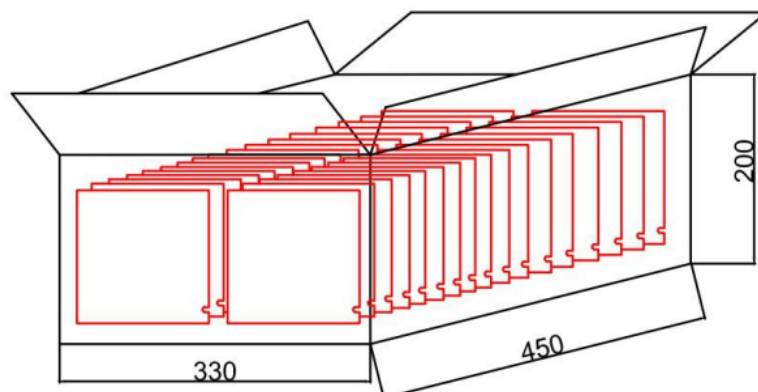
## 9. Tapping and packaging specifications (Units: mm)



## 10. Package Method:(unit:mm) Vacuum

50bag/box

4000pcs/bag



## 11. Reliability Test

Classification	Test Item	Reference Standard	Test Conditions	Result
Endurance Test	Operation Life	MIL-STD-750D:1026 MIL-STD-883D:1005 JIS-C-7021 :B-1	Connect with a power $I_f=5\text{mA}$ $T_a$ =Under room temperature Test time=1,000hrs	0/20
	High Temperature High Humidity Storage	MIL-STD-202F:103B JIS-C-7021 :B-11	$T_a=+100^\circ\text{C}\pm 5^\circ\text{C}$ RH=90%-95% Test time=240hrs	0/20
	High Temperature Storage	MIL-STD-883:1008 JIS-C-7021 :B-10	High $T_a=+100^\circ\text{C}\pm 5^\circ\text{C}$ Test time=1,000hrs	0/20
	Low Temperature Storage	JIS-C-7021 :B-11	Low $T_a=-40^\circ\text{C}\pm 5^\circ\text{C}$ Test time=1,000hrs	0/20
Environmental Test	Temperature Cycling	MIL-STD-202F:107D MIL-STD-750D:1051 MIL-STD-883D:1010 JIS-C-7021 :A-2	$-40^\circ\text{C} \sim +25^\circ\text{C} \sim +100^\circ\text{C} \sim +25^\circ\text{C}$ 30min 5min 30min 5min Test Time=10cycle	0/20
	Thermal Shock	MIL-STD-202F:107D MIL-STD-750D:1051 MIL-STD-883D:1011	$-40^\circ\text{C}\pm 5^\circ\text{C} \sim +100^\circ\text{C}\pm 5^\circ\text{C}$ 20min 20min Test Time=10cycle	0/20
	Solder Resistance	MIL-STD-202:201A MIL-STD-750:2031 JIS-C-7021 :A-1	Preheating: $140^\circ\text{C}-160^\circ\text{C}$ , within 2 minutes. Operation heating: $260^\circ\text{C}$ (Max.), within 10seconds. (Max.)	0/20

## 12. Judgment criteria of failure for the reliability

Measuring items	Symbol	Measuring conditions	Judgement criteria for failure
Forward voltage	$V_F$ ( V )	$I_F=5\text{mA}$	Initial Level*1.1
Reverse current	$I_R(\mu\text{A})$	$V_R=5\text{V}$	Over $U \times 2$
Luminous intensity	$I_v$ ( mcd )	$I_F=5\text{mA}$	Initial Level*0.7

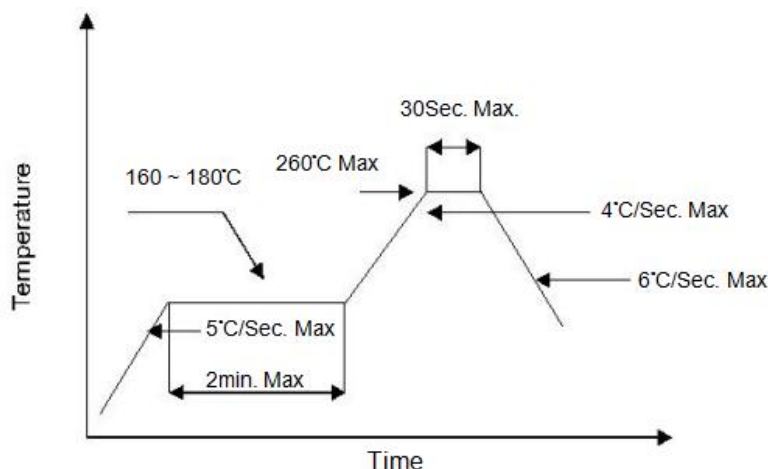
Note: 1).U means the upper limit of specified characteristics. S means initial value.

2).Measurement shall be taken between 2 hours and after the test pieces have been returned to normal ambient conditions after completion of each test.

### 13. Soldering :

SMD LED encapsulation is very flexible, outside force easily demolish radiant surface and plastic, As soldering , Please handle with care!

- (1) With No-clean Flux, according to reflow soldering cure condition when soldering, Reflow soldering should not be done more than two times, simultaneity you must insure clean on the radiant surface. Otherwise, foreign objects can affect radiant color.
- (2) Don't process manual soldering except repair. Recommended to be soldered with 25W Anti-static iron, The temp. of the iron should be lower than 300°C and soldering time should not be done more than three seconds, at the same time iron can't touch radiant surface and plastic.
- (3) Don't twist LED in course of manual soldering and experiment, otherwise, the lights will not work possibly.
- (4) Please use the same BIN grade in one panel, and don't mix the difference BIN grade in one panel when soldering. Otherwise, it will cause a serious uneven color problem.
- (5) Please control the sulfur content of solder paste and PCB.
- (6) Pb-free solder temp.-time profile as below: 260°C Max.



### 14. Cleaning :

- (1) Don't be cleaned with ultrasonic. Recommended to be wiped with isopropyl alcohol or pure alcohol, wiping time should not be more than one minute. LED must be placed at room temperature for fifteen minutes before using. After cleaning, you must insure clean on the radiant surface. Otherwise, foreign objects can affect radiant color.
- (2) LED can not be in contact with isoamyl acetate, trichloroethylene, acetone, sulfide, nitride, acid, alkali, salt. These matter can destroy LED.

### 15. Sealing:

- (1) Sealing glue can not contain sodium ion, sulfide, because these matter can affect fluorescence powder poisoning.
- (2) When using normal sealing glue, Recommended to be operated life for 168hrs under normal temperature.

## 16. Storage:

- (1) Don't open the moisture proof bag before ready to use the LEDs.
- (2) The LEDs should be kept at 30°C or less and 60%RH or less before opening the package. The max. storage period before opening the package is 1 year.
- (3) After opening the package, the LEDs should be kept at 30-35%RH or less, and it should be used within 3 days. If the LEDs should be kept at 30-35%RH or more, and it should be used within 4 hours.
- (4) If the LEDs be kept over the conditions of 20%, baking is required before mounting. Baking condition as below: 70±5°C for 12 hrs for bulk goods, 105±5°C for 1 hrs for roll goods.
- (5) The environment have no acid, alkali, corrosive gas, intensively shake and high magnetic field.

## 17. Static:

- (1) Static and Peak surge voltage can destroy LED, Avoiding Instantaneous voltage when turn on or turn off the lights.
- (2) Please wear Anti-static wrist band, Anti-static glove, Anti-static shoes in the course of operation, and the equipment must be grounded.

## 18. Test:

- (1) Customer must apply the current limiting resistor in the circuit so as to drive the LEDs within the rated current. Otherwise slight voltage shift maybe will cause big current change and burn out will happen.
- (2) Also, caution should be taken not to overload the LEDs with instantaneous high voltage at the turning ON and OFF of the circuit. Otherwise, The LEDs will be destroyed, testing methods as follows:
- (3) The reverse voltage mustn't exceed 5v when lighting on or testing the LED, otherwise, The LEDs will be damaged.

## 19. Else:

Radiant color of LEDs have a little change with the current, recommended that LED is used in series and resistance, when lighting, please don't see directly radiant surface of LED, otherwise LED will burn eyes.