

# PRODUCT SPECIFICATION

*Part Number*  
**PL03L-WDW24**

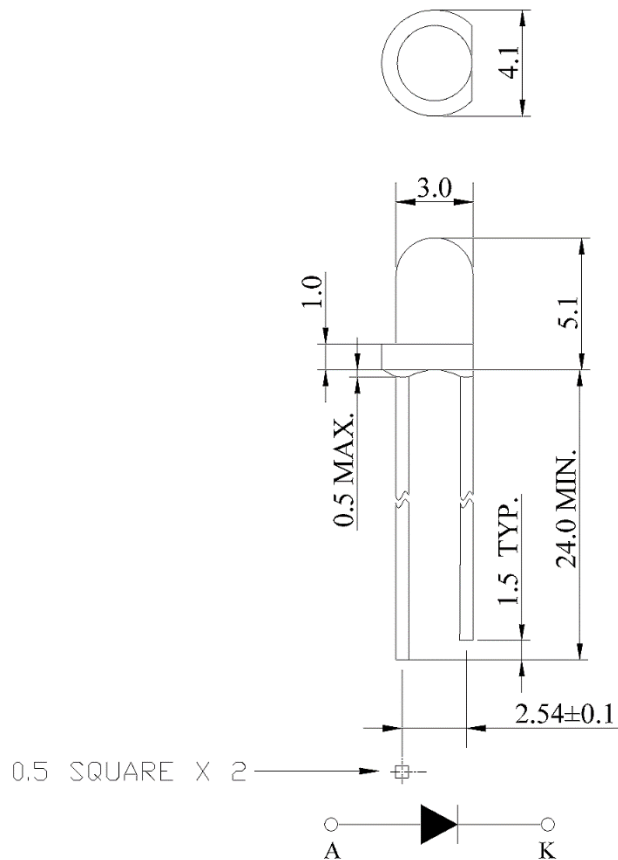
## *Details*

- 3mm Round Through-Hole LED
- Emitting Color: White
- InGaN/Sapphire dice used

## *Features*

- RoHS Compliant
- Low Power Consumption
- Rugged and Durable

## *Mechanical Dimensions*



## Notes:

1. All dimensions are in millimeters unless otherwise noted
2. Tolerance is  $\pm 0.25$  mm unless otherwise noted
3. Specifications subject to change without notice





### Device Selection Guide

Part Number	Chip		Lens
	Material	Emitting Color	
PL03L-WDW24	InGaN/Sapphire	White	White Diffused

### Absolute Maximum Ratings at Ta=25 °C

Parameter	Symbol	Rating	Unit
Power Dissipation	P <sub>D</sub>	120	mW
Reverse Voltage	V <sub>R</sub>	5	V
DC Forward Current	I <sub>F</sub>	30	mA
Reverse (Leakage) Current	I <sub>R</sub>	50	μA
Peak Current (duty cycle 1/10, 1KHz)	I <sub>PF</sub>	100	mA
Operating Temperature	T <sub>opr</sub>	-25~+85	°C
Storage Temperature	T <sub>stg</sub>	-40~+100	°C
Soldering Temperature (1.6mm from body)	T <sub>sol.</sub>	Dip Soldering : 260°C for 5 sec. Hand Soldering : 350°C for 3 sec.	
Electrostatic Discharge	ESD	6000	V

### Electrical and Optical Characteristics at Ta=25

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Forward Voltage	V <sub>F</sub>	--	3.2	4.0	V	I <sub>F</sub> =20mA
Luminous Intensity	I <sub>v</sub>	500	1200	--	mcd	I <sub>F</sub> =20mA
CIE Chromaticity	X	--	0.31	--	--	I <sub>F</sub> =20mA
Dominant Wavelength	Y	--	0.30	--	--	I <sub>F</sub> =20mA
Reverse (Leakage) Current	I <sub>r</sub>	--	--	50	μA	V <sub>r</sub> =5V
Viewing Angle	2θ1/2	--	60	--	--	deg

Notes: 1. IS tester used

2. Customer special requirements are welcomed.

3. Specifications subject to change without notice

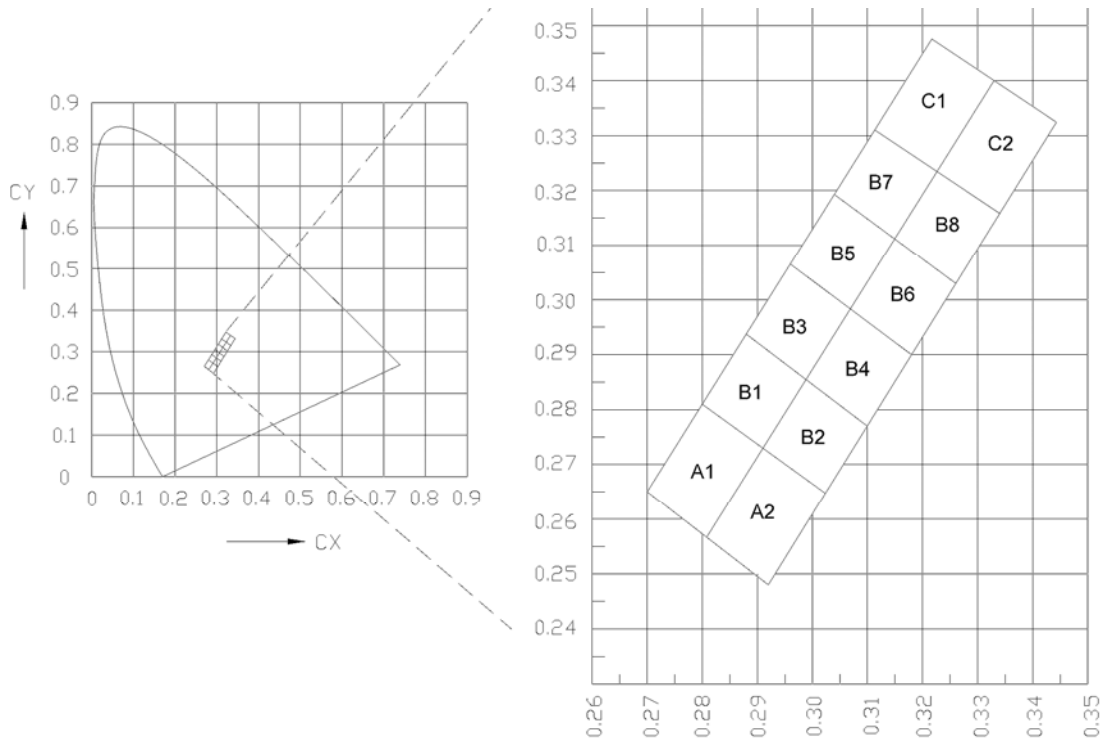
### Chromaticity Coordinates Specifications for Bin Grading

COLOR RANKS(IF=20Ma.Ta=25°C)

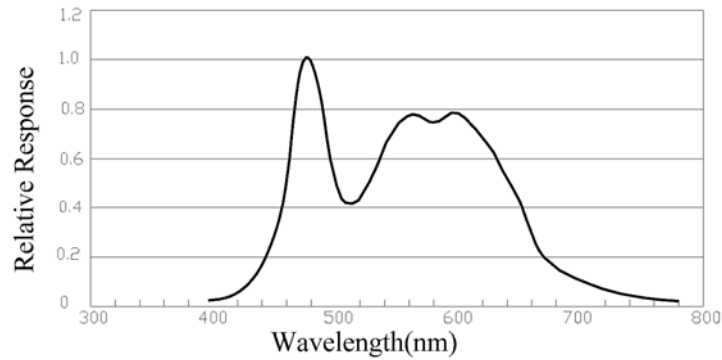
BiN	RANK					BiN	RANK				
A1	X	0.27	0.28	0.291	0.281	B5	X	0.296	0.304	0.315	0.307
	Y	0.265	0.282	0.273	0.256		Y	0.307	0.319	0.311	0.298
A2	X	0.281	0.291	0.302	0.292	B6	X	0.307	0.315	0.326	0.318
	Y	0.256	0.273	0.265	0.248		Y	0.298	0.311	0.303	0.29
B1	X	0.28	0.288	0.299	0.291	B7	X	0.304	0.312	0.323	0.315
	Y	0.282	0.294	0.286	0.273		Y	0.319	0.331	0.323	0.311
B2	X	0.291	0.299	0.31	0.302	B8	X	0.315	0.323	0.334	0.326
	Y	0.273	0.286	0.277	0.265		Y	0.311	0.323	0.315	0.303
B3	X	0.288	0.296	0.307	0.299	C1	X	0.312	0.322	0.333	0.323
	Y	0.294	0.307	0.298	0.286		Y	0.331	0.348	0.34	0.323
B4	X	0.299	0.307	0.318	0.31	C2	X	0.323	0.333	0.344	0.334
	Y	0.286	0.298	0.29	0.277		Y	0.323	0.34	0.332	0.315

Notes:X.Y Tolereanceeach Bin limit is $\pm 0.01$ .

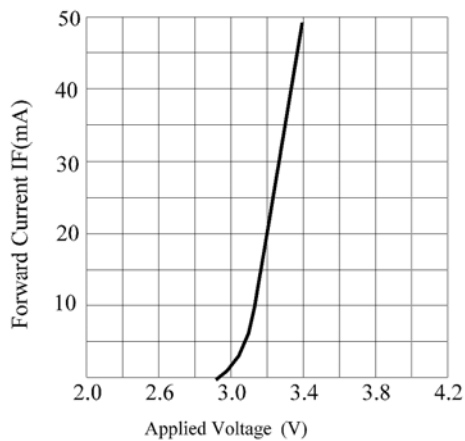
### Chromaticity Coordinates & Bin Grading Diagram



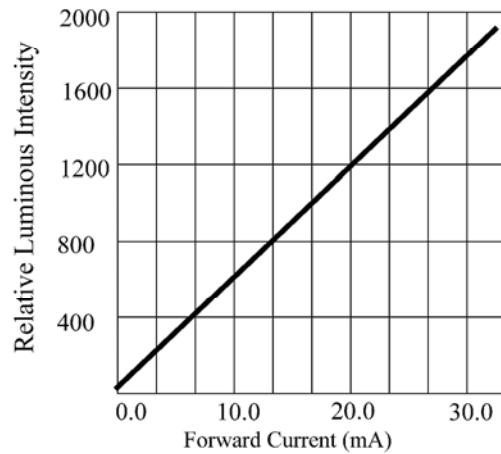
### Typical Electrical / Optical Characteristic Curves



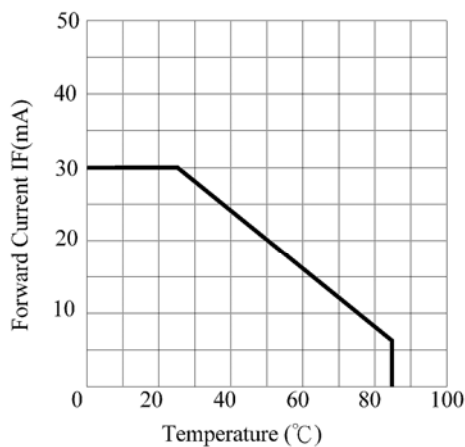
WHITE LED SPECTRUM VS. WAVELENGTH



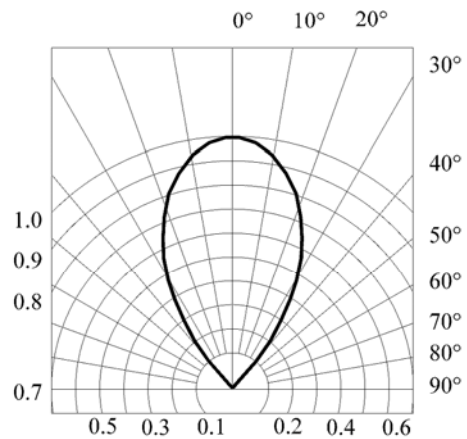
FORWARD CURRENT VS. APPLIED VOLTAGE



FORWARD CURRENT VS. LUMINOUS INTENSITY



FORWARD CURRENT VS. AMBIENT TEMPERATURE



RADIATION DIAGRAM

## ***Precautions For Use***

### **1. Temperature in use**

Since the light generated inside the LED needs to be emitted to outside efficiently, a resin with high light transparency is used; therefore, additives to improve the heat resistance or moisture resistance (silica gel, etc) which are used for semiconductor products such as transistors cannot be added to the resin.

Consequently, the heat resistant ability of the resin used for LED is usually low; therefore, please be careful on the following during use.

Avoid applying external force, stress, and excessive vibration to the resins and terminals at high temperature. The glass transition temperature of epoxy resin used for the LED is approximately 120-130°C.

At a temperature exceeding this limit, the coefficient of linear expansion of the resin doubles or more compared to that at normal temperature and the resin is softened.

If external force or stress is applied at that time, it may cause a wire rupture.

### **2. Soldering**

Please be careful on the following at soldering.

After soldering, avoid applying external force, stress, and excessive vibration until the products go to cooling process (normal temperature), <Same for products with terminal leads>

#### **(1) Soldering measurements:**

Distance between melted solder side to bottom of resin shall be 1.6mm or longer.

#### **(2) Dip soldering :**

Pre-heat: 90°C max. (Backside of PCB), Within 60 seconds.

Solder bath: 260±5°C (Solder temperature), Within 5 seconds.

#### **(3) Hand soldering: 350°C max. (Temperature of soldering iron tip), Within 3 seconds.**

### **3. Insertion**

Pitch of the LED leads and pitch of mounting holes need to be same.

### **4. Others**

Since the heat resistant ability of the LED resin is low, SMD components are used on the same PCB, please mount the LED after adhesive baking process for SMD components. In case adhesive baking is done after LED lamp insertion due to a production process reason, make sure not to apply external force, stress, and excessive vibration to the LED and follow the conditions below.

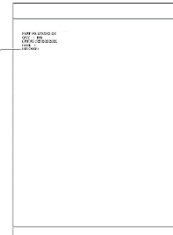
Baking temperature: 120°C max. Baking time: Within 60 seconds.

If soldering is done sequentially after the adhesive baking, please perform the soldering after cooling down the LED to normal temperature.

## Packaging

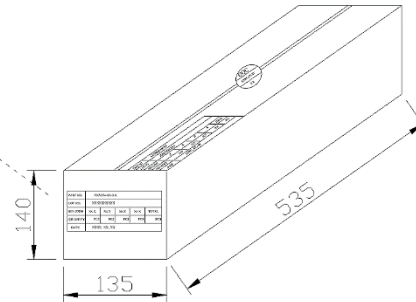
**PLASTIC PACKAGE**  
**QUANTITY: 200 PCS**

PART NO :LTXXXX-XX  
 Q'TY : PCS  
 LOT NO :XXXXXXXXXX  
 DATE :  
 BIN CODE:



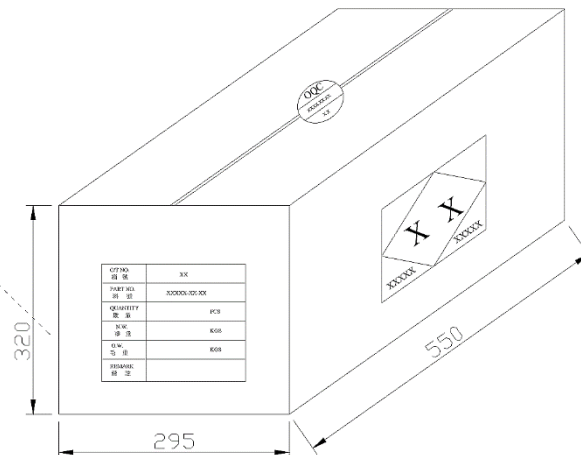
**INNER BOX**  
**QUANTITY: 40 PACKETS**  
**TOTAL: 8,000 PCS**

PART NO.	XXXXX-XX-XX				
LOT NO.	XXXXXXXXXX				
BIN CODE	Xx X	Xx X	Xx X	Xx X	TOTAL
QUANTITY	PCS	PCS	PCS	PCS	PCS
DATE	XXXX, XX, XX				



**OUTER CARTON**  
**QUANTITY: 4 BOX**  
**TOTAL: 32,000 PCS**

C/T NO. 箱 號	XX
PART NO. 料 號	XXXXX-XX-XX
QUANTITY 數 量	PCS
N.W. 淨 重	KGS
G.W. 毛 重	KGS
REMARK 備 註	





<b>PL03L-WDW24</b> <b>Customer Approval</b> <b>Signatures</b>	<b>Approved By</b>	<b>Checked By</b>	<b>Prepared By</b>

[illegible]