# PRODUCT SPECIFICATION

***Part Number***

**PL03L-WDW24**

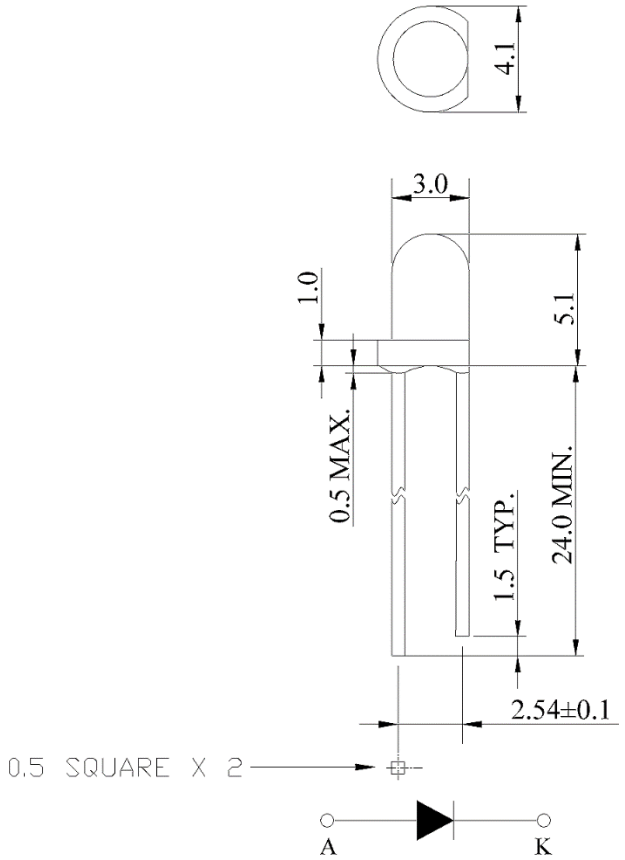
***Details***

- 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±0.25mm 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℃*

| Parameter | Symbol | Rating | Unit |
|---|---|---|---|
| Power Dissipation | $P_D$ | 120 | mW |
| Reverse Voltage | VR | 5 | V |
| DC Forward Current | IF | 30 | mA |
| Reverse (Leakage) Current | IR | 50 | μA |
| Peak Current (duty cycle 1/10, 1KHz) | $I_{PF}$ | 100 | mA |
| Operating Temperature | Topr | -25~+85 | ℃ |
| Storage Temperature | Tstg | -40~+100 | ℃ |
| Soldering Temperature (1.6mm from body) | Tsol. | Dip Soldering : 260℃ for 5 sec.<br>Hand Soldering : 350℃ for 3 sec. | |
| Electrostatic Discharge | ESD | 6000 | V |

## *Electrical and Optical Characteristics at Ta=25*

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Condition |
|---|---|---|---|---|---|---|
| Forward Voltage | VF | -- | 3.2 | 4.0 | V | IF=20mA |
| Luminous Intensity | Iv | 500 | 1200 | -- | mcd | IF=20mA |
| CIE Chromaticity | X | -- | 0.31 | -- | -- | IF=20mA |
| Dominant Wavelength | Y | -- | 0.30 | -- | -- | IF=20mA |
| Reverse (Leakage) Current | Ir | -- | -- | 50 | μA | Vr=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

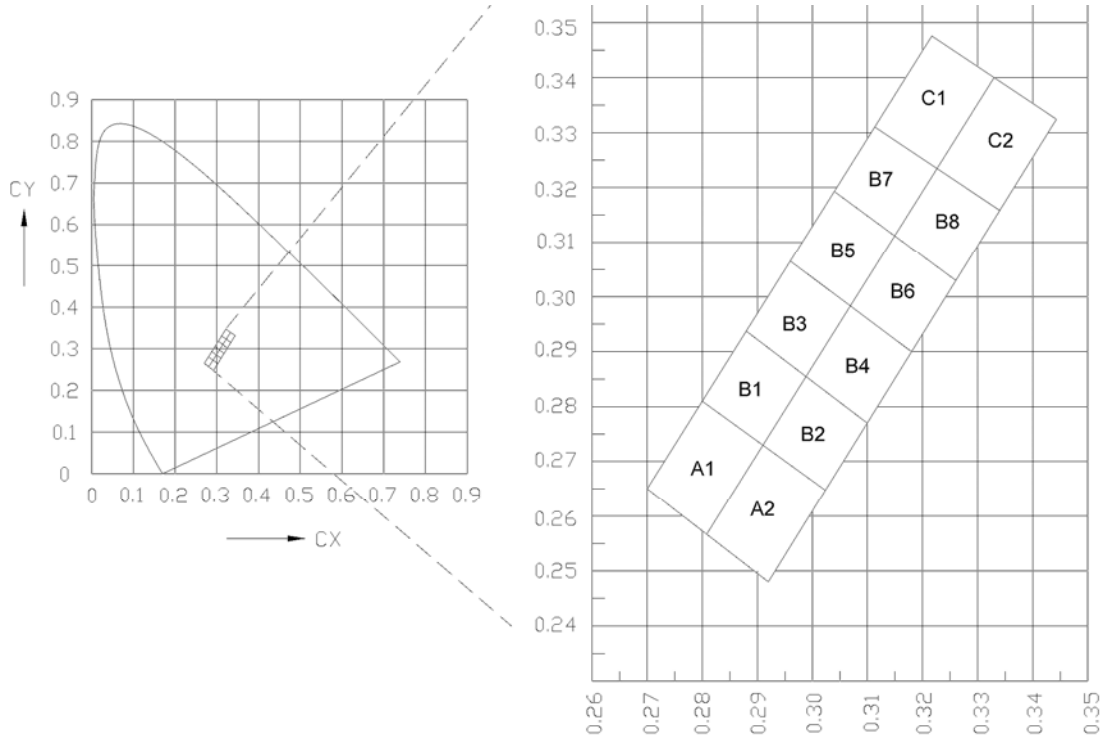
## *Chromaticity Coordinates Specifications for Bin Grading*

COLOR RANKS(IF=20Ma.Ta=25℃)

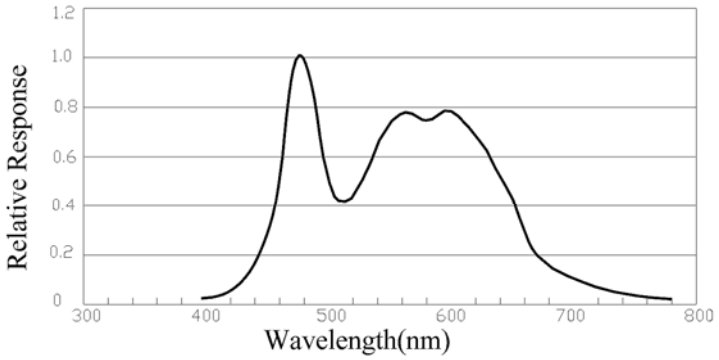
| BiN | RANK | | | | | BiN | RANK | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| A1 | X | 0.27 | 0.28 | 0.291 | 0.281 | B5 | X | 0.296 | 0.304 | 0.315 | 0.307 |
| | Y | 0.265 | 0.282 | 0.273 | 0.256 | | Y | 0.307 | 0.319 | 0.311 | 0.298 |
| A2 | X | 0.281 | 0.291 | 0.302 | 0.292 | B6 | 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±0.01.

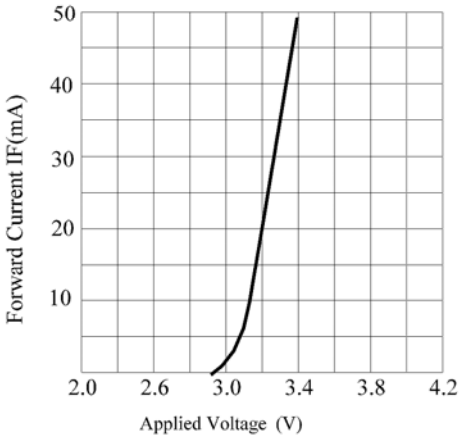
## *Chromaticity Coordinates & Bin Grading Diagram*



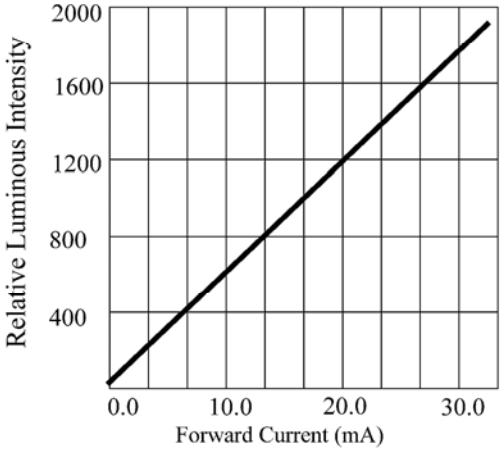
## *Typical Electrical / Optical Characteristic Curves*



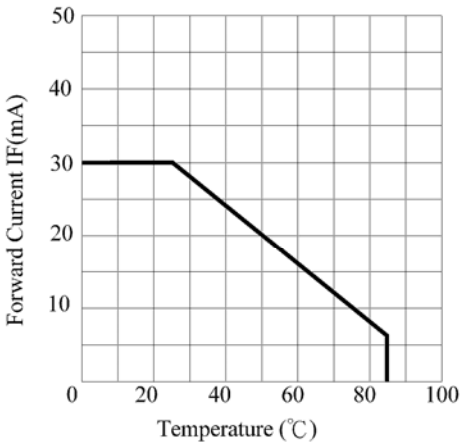

**WHITE LED SPECTRUM VS. WAVELENGTH**



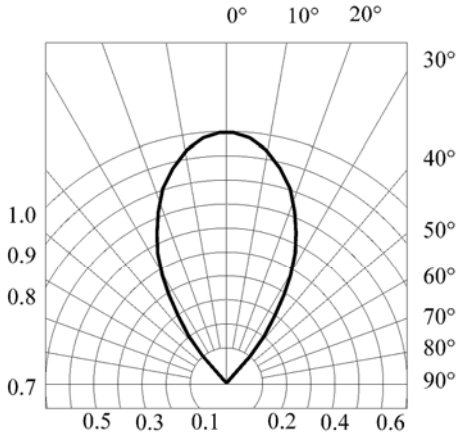

**FORWARD CURRENT VS.APPLIED VOLTAGE**




**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℃.

   At a temperature exceeding this limit, the coefficient of liner 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, avoided 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℃ max. (Backside of PCB), Within 60 seconds.

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

   (3) Hand soldering: 350℃ 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.

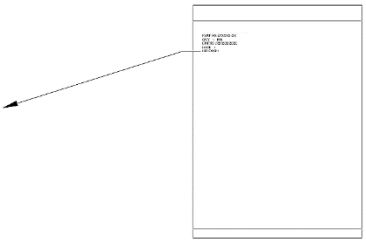
   Baking temperature: 120℃ max. Baking time: Within 60 seconds.

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

## *Packaging*

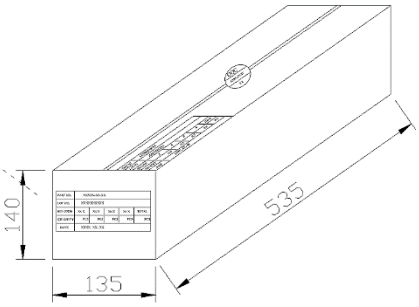
PLASTIC PACKAGE
QUANTITY: 200 PCS

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



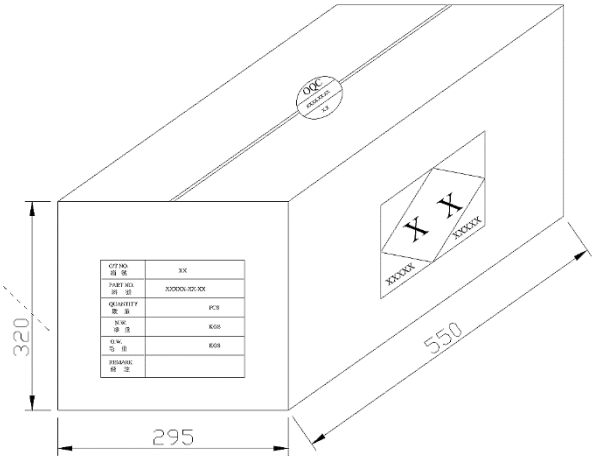
INNER BOX
QUANTITY: 40 PACKETS
TOTAL: 8,000 PCS

| | | | | | |
|---|---|---|---|---|---|
| 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.<br>箱 號 | XX |
| PART NO.<br>料 號 | XXXXX-XX-XX |
| QUANTITY<br>數 量 | PCS |
| N.W.<br>淨 重 | KGS |
| G.W.<br>毛 重 | KGS |
| REMARK<br>備 註 | |



| PL03L-WDW24 Customer Approval Signatures | Approved By | Checked By | Prepared By |
|---|---|---|---|
| | | | |

| Record Of Revisions | | | |
|---|---|---|---|
| **Rev.** | **Comments** | **Page** | **Date** |
| 0 | Released Spec | -- | 01/05/15 |
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