



# Through Hole Lamp Product Data Sheet LTLA2V3EX3K

Spec No.: DS20-2015-0229

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Revision: A

**LITE-ON DCC**

**RELEASE**

BNS-OD-FC001/A4

**Through Hole Lamp**  
**LTLA2V3EX3K**

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<u>Rev</u>	<u>Description</u>	<u>By</u>	<u>Date</u>
<b>Above data for PD and Customer tracking only</b>			
-	New data sheet	Lewis Liu	08/06/2015
A	Add wave soldering profile and condition	Lewis Liu	09/17/2015

**Customer Name:**

**Customer Signature:**

**Print Name:**

**LiteON Sales Signature:**

**Print Name:**

## Through Hole Lamp LTLA2V3EX3K

### 1. Description

5mm round lamp is a popular design with a smooth uniform view angle radiation pattern suitable in Full color signboard, Billboard sign, Message sign and bus sign. High luminous intensity output has a higher emitting efficiency to save power energy. Advanced epoxy technology has a good moisture resistance and UV protection to be used in package, and it can reduce the effect of long term exposure in outdoor environment.

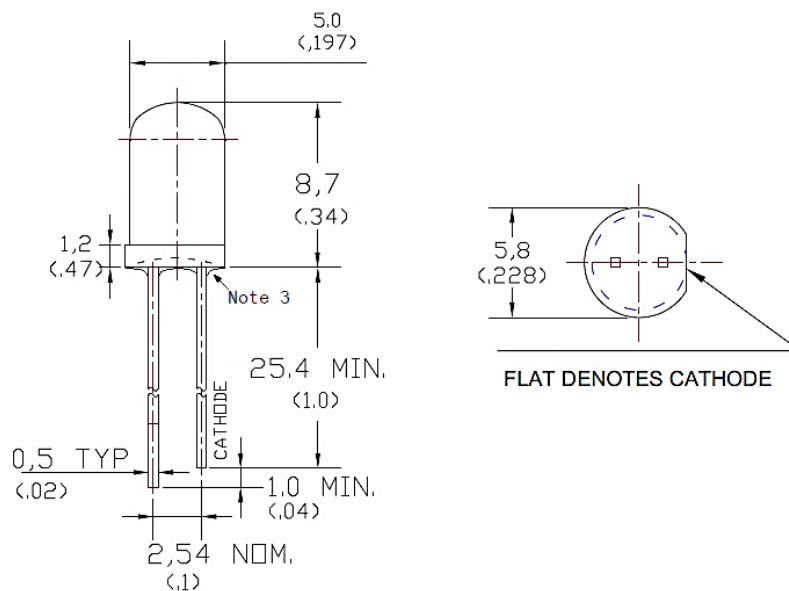
#### 1.1. Features

- High Luminous intensity output.
- Low power consumption & High efficiency.
- Superior resistance to moisture
- Good UV inhibitor
- Lead free & RoHS Compliant
- Popular T-1  $\frac{3}{4}$  diameter, Red AlInGaP 624nm Lamp, Water clear package.
- Viewing angle 30°.

#### 1.2. Applications

- Motorcycle lighting

### 2. Outline Dimensions



#### Notes :

1. All dimensions are in millimeters (inches).
2. Tolerance is  $\pm 0.25$ mm (.010") unless otherwise noted.
3. Protruded resin under flange is 0.8mm (.032") max.
4. Lead spacing is measured where the leads emerge from the package.
5. Specifications are subject to change without notice.

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### 3. Absolute Maximum Ratings at TA=25°C

Parameter	Maximum Rating	Unit
Power Dissipation	120	mW
Peak Forward Current (Duty Cycle $\leq$ 1/10, Pulse Width $\leq$ 10ms)	100	mA
DC Forward Current	50	mA
Derating Linear From 4°C	0.93	mA/°C
Reverse Voltage	5	V
Junction Temperature	125°C	
Operating Temperature Range	-40°C to + 100°C	
Storage Temperature Range	-40°C to + 100°C	
Lead Soldering Temperature [2.0mm (.079") From Body]	260°C for 5 Seconds Max.	

### 4. Electrical / Optical Characteristics at TA=25°C

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Condition
Luminous Intensity	Iv	7200		12000	mcd	IF = 20mA Note 1,5
Viewing Angle	$2\theta_{1/2}$		30		deg	Note 2,7 (Fig.6)
Peak Emission Wavelength	$\lambda_P$		631		nm	Measurement @Peak (Fig.1)
Dominant Wavelength	$\lambda_d$	619		626.5	nm	Note 4
Spectral Line Half-Width	$\Delta\lambda$		17		nm	
Forward Voltage	VF	1.8	2.1	2.4	V	IF = 20mA
Reverse Current	IR			10	$\mu$ A	VR = 5V

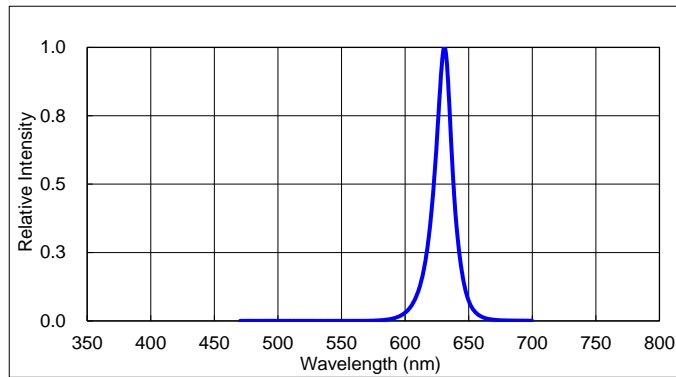
#### NOTE:

- Luminous intensity is measured with a light sensor and filter combination that approximates the CIE eye-response curve.
- $\theta_{1/2}$  is the off-axis angle at which the luminous intensity is half the axial luminous intensity.
- Iv classification code is marked on each packing bag.
- The dominant wavelength,  $\lambda_d$  is derived from the CIE chromaticity diagram and represents the single wavelength which defines the color of the device.
- Iv guarantee must be included with  $\pm 15\%$  testing tolerance.
- Reverse voltage (VR) condition is applied for IR test only. The device is not designed for reverse operation.
- View angle measurement is  $\pm 2$  degree tolerance.

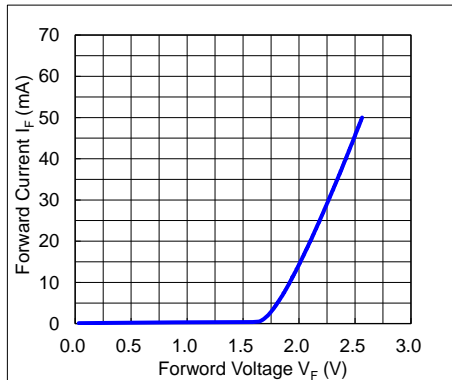
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## 5. Typical Electrical / Optical Characteristics Curves

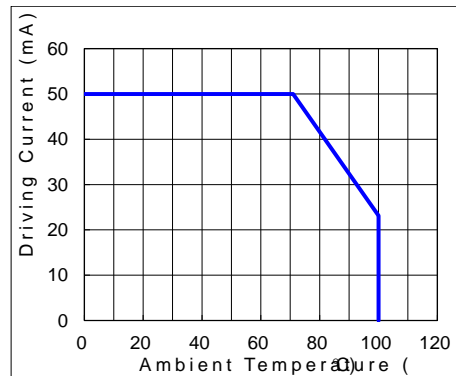
(25°C Ambient Temperature Unless Otherwise Noted)



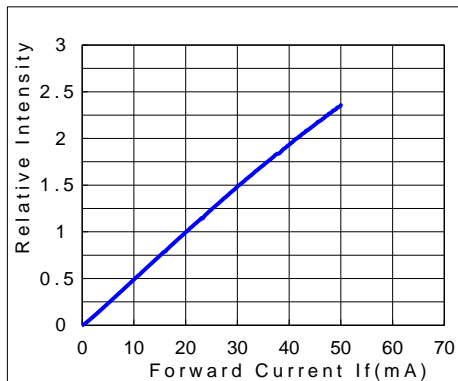
Spectrum



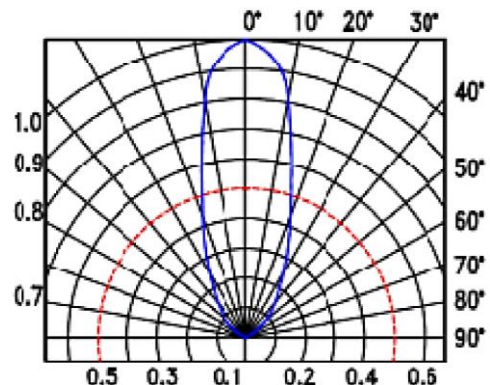
Forward Voltage vs. Forward Current



Ambient Temperature vs. Forward Current



Forward Current vs. Relative Luminous Intensity

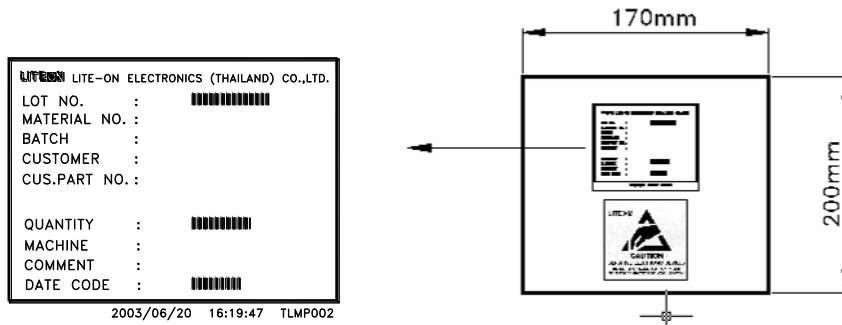


Directivity

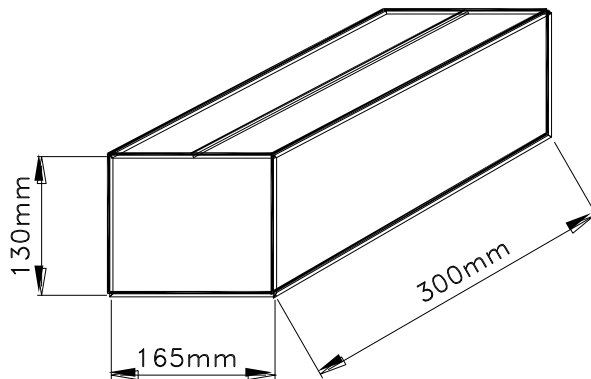
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### 6 Packing Spec.

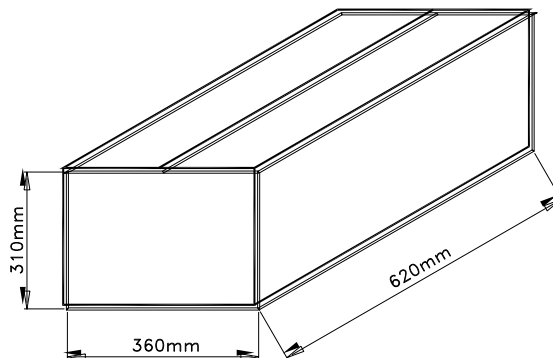
500 pcs per packing bag



8 Packing bags per inner carton  
Total 5,000 pcs per inner carton



8 Inner cartons per outer carton  
Total 40,000 pcs per outer carton  
In every shipping lot, only the last pack will be non-full packing



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**7 Bin Table Specifications**

Luminous Intensity Iv (mcd) IF@20mA		
Bin Code	Min.	Max.
X	7200	9300
Y	9300	12000

Note: Tolerance of each bin limit is  $\pm 15\%$

Forward Voltage Vf Unit : V @20mA		
Bin Code	Min	Max
1A	1.8	2.0
2A	2.0	2.2
3A	2.2	2.4

Note: Tolerance of each bin limit is  $\pm 0.1V$

Dominant Wavelength Unit : nm @20mA		
Bin Code	Min	Max
R1	619	621.5
R2	621.5	624
R3	624	626.5

Note: Tolerance of each bin limit is  $\pm 1nm$

# Through Hole Lamp LTLA2V3EX3K

## 8. CAUTIONS

### 8.1. Application

This LED lamp is good for application of indoor and outdoor sign, also ordinary electronic equipment.

### 8.2. Storage

The storage ambient for the LEDs should not exceed 30°C temperature or 70% relative humidity. It is recommended that LEDs out of their original packaging are used within three months. For extended storage out of their original packaging, it is recommended that the LEDs be stored in a sealed container with appropriate desiccant or in desiccators with nitrogen ambient.

### 8.3. Cleaning

Use alcohol-based cleaning solvents such as isopropyl alcohol to clean the LEDs if necessary.

### 8.4. Lead Forming & Assembly

During lead forming, the leads should be bent at a point at least 3mm from the base of LED lens. Do not use the base of the lead frame as a fulcrum during forming. Lead forming must be done before soldering, at normal temperature. During assembly on PCB, use minimum clinch force possible to avoid excessive mechanical stress.

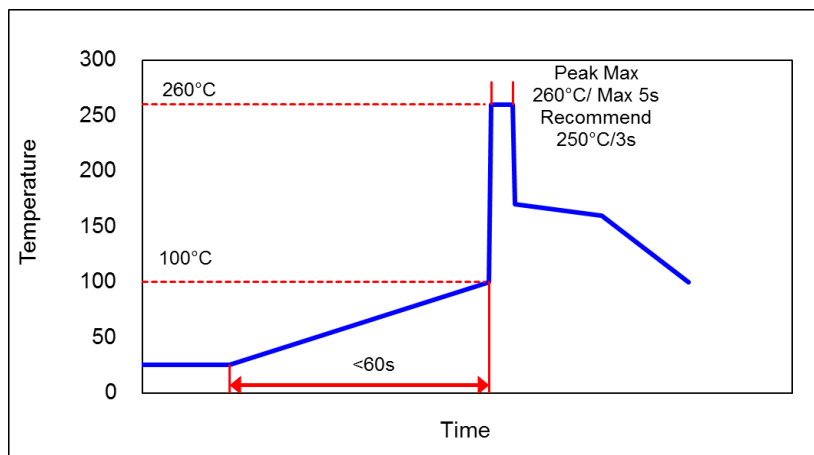
### 8.5. Soldering

When soldering, leave a minimum of 3mm clearance from the base of the lens to the soldering point. Dipping the lens into the solder must be avoided. Do not apply any external stress to the lead frame during soldering while the LED is at high temperature.

#### Recommended soldering conditions:

Soldering iron		Wave soldering	
Temperature	350°C Max.	Pre-heat	100°C Max.
Soldering time	3 seconds Max. (one time only)	Pre-heat time	60 seconds Max.
Position	No closer than 2mm from the base of the epoxy bulb	Solder wave	260°C Max.
		Soldering time	5 seconds Max.
		Dipping Position	No lower than 2mm from the base of the epoxy bulb

Note: Excessive soldering temperature and/or time might result in deformation of the LED lens or catastrophic failure of the LED. IR reflow is not suitable process for through hole type LED lamp product.



Wave soldering profile (under PCB); turning off top heater in preheating stage is recommended

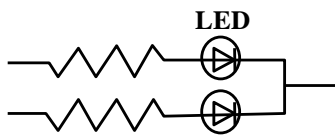


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### 8.6. Drive Method

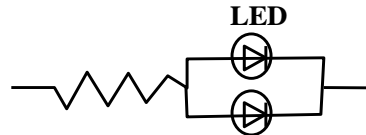
An LED is a current-operated device. In order to ensure intensity uniformity on multiple LEDs connected in parallel in an application, it is recommended that a current limiting resistor be incorporated in the drive circuit, in series with each LED as shown in Circuit A below.

**Circuit model (A)**



(A) Recommended circuit

**Circuit model (B)**



(B) The brightness of each LED might appear different due to the differences in the I-V characteristics of those LEDs.

### 8.7. ESD (Electrostatic Discharge)

#### Static Electricity or power surge will damage the LED.

#### Suggestions to prevent ESD damage:

- Use a conductive wrist band or anti- electrostatic glove when handling these LEDs
- All devices, equipment, and machinery must be properly grounded
- Work tables, storage racks, etc. should be properly grounded
- Use ion blower to neutralize the static charge which might have built up on surface of the LEDs plastic lens as a result of friction between LEDs during storage and handing

#### Suggested checking list:

#### Training and Certification

- 8.7.1.1. Everyone working in a static-safe area is ESD-certified?
- 8.7.1.2. Training records kept and re-certification dates monitored?

#### Static-Safe Workstation & Work Areas

- 8.7.2.1. Static-safe workstation or work-areas have ESD signs?
- 8.7.2.2. All surfaces and objects at all static-safe workstation and within 1 ft measure less than 100V?
- 8.7.2.3. All ionizer activated, positioned towards the units?
- 8.7.2.4. Each work surface mats grounding is good?

#### Personnel Grounding

- 8.7.3.1. Every person (including visitors) handling ESD sensitive (ESDS) items wear wrist strap, heel strap or conductive shoes with conductive flooring?
- 8.7.3.1. If conductive footwear used, conductive flooring also present where operator stand or walk?
- 8.7.3.2. Garments, hairs or anything closer than 1 ft to ESD items measure less than 100V\*?
- 8.7.3.3. Every wrist strap or heel strap/conductive shoes checked daily and result recorded for all DLs?
- 8.7.3.4. All wrist strap or heel strap checkers calibration up to date?

Note: \*50V for Blue LED.

#### Device Handling

- 8.7.4.1. Every ESDS items identified by EIA-471 labels on item or packaging?
- 8.7.4.2. All ESDS items completely inside properly closed static-shielding containers when not at static-safe workstation?
- 8.7.4.3. No static charge generators (e.g. plastics) inside shielding containers with ESDS items?
- 8.7.4.4. All flexible conductive and dissipative package materials inspected before reuse or recycle?

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### Others

- 8.7.5.1. Audit result reported to entity ESD control coordinator?
- 8.7.5.2. Corrective action from previous audits completed?
- 8.7.5.3. Are audit records complete and on file?

## 9. Reliability Test

Item	Test Description	Test Conditions	#Lots	#Tested	#Failed
1	Parameters at RT	Electric Test @ 25°C	1	132	0
2	Pre-conditioning	260°C/5S x2	1	132	0
3	Temperature Cycling	100°C~ 25°C~ -40°C~ 25°C 30 min~5 min~30 min~5 min,500x	1	22	0
4	Temperature Shock	105°C ~ -40°C ± 5°C 30 min ~ 30 min 500x	1	22	0
5	High Temperature Forward Bias	85°C/IF=40mA, 1000h	1	22	0
6	High Temperature High Humidity Bias	85°C,85% RH,IF=12mA,1000h	1	22	0
7	High Temperature Storage	100°C±5°C,1000h	1	22	0
8	Low Temperature Storage	-40°C±5°C, 1000hrs	1	22	0

## 10. Others

The appearance and specifications of the product may be modified for improvement, without prior notice.