



Spec No. :DS20-2018-0217 Effective Date: 05/08/2019

Revision: -

LITE-ON DCC

RELEASE

BNS-OD-FC001/A4



Through Hole Lamp

LTW-42FDV6J-061A

Rev	<u>Description</u>	<u>By</u>	<u>Date</u>			
P001	Preliminary SPEC (RDR-20181254-01)	Nick	09/17/2018			
	Above data for PD and Customer tracking only					
-	NPPR Received and Upload on OPNC	Chalinee	12/27/2018			



1. Description

Through hole white LEDs are offered in a variety of packages such as 3mm, 4mm, 5mm, rectangular and cylinder which are suitable for all applications requiring status indication. Several intensity and viewing angle choices are available in each package for design flexibility.

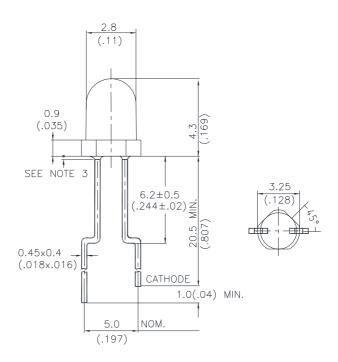
1.1. Features

- Lead (Pb) free product RoHS compliant
- Low power consumption & High efficiency.
- Versatile mounting on p.c. board or panel.
- I.C. compatible/low current requirement.
- Popular T-1 diameter InGaN White & White diffuse lens

1.2. Applications

- Computer
- Communication
- Consumer
- Home appliance
- Industrial

2. Outline Dimensions



Notes:

- 1. All dimensions are in millimeters (inches).
- 2. Tolerance is ±0.25mm (.010") unless otherwise noted.
- 3. Protruded resin under flange is 1.0mm (.04") max.
- 4. Lead spacing is measured where the leads emerge from the package.
- 5. Specifications are subject to change without notice.



3. Absolute Maximum Ratings at TA=25°C

Parameter	Maximum Rating	Unit		
Power Dissipation	90	mW		
Peak Forward Current				
(Duty Cycle≦1/10, Pulse Width≦10ms)	100	mA		
DC Forward Current	30	mA		
Derating Linear From 30°C	0.39	mA/°C		
Operating Temperature Range	-40℃ to + 85℃	;		
Storage Temperature Range	-40℃ to + 100℃			
Lead Soldering Temperature				
[2.0mm (.079") From Body]	260℃ for 5 Seconds	260℃ for 5 Seconds Max.		

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

Parameter	Symbol	Min.	Тур.	Max.	Unit	Test Condition
Luminous Intensity	IV	2500	4800	8500	mcd	IF = 20mA Note 1,3,4
Viewing Angle	201/2	-	60	-	deg	Note 2 (Fig.6)
	х	-	0.29	-	nm	IF = 20mA, Note 5
Chromaticity Coordinates	у	-	0.28	-	nm	Hue Spec. Table & Chromaticity Diagram
Forward Voltage	VF	2.8	3.0	3.4	V	IF = 20mA
Reverse Current	IR	-	-	10	μΑ	VR = 5V

NOTE:

- 1. Luminous intensity is measured with a light sensor and filter combination that approximates the CIE eye-response curve.
- 2. θ 1/2 is the off-axis angle at which the luminous intensity is half the axial luminous intensity.
- 3. Iv classification code is marked on each packing bag.
- 4. The Iv guarantee must be included with ±15% testing tolerance.
- 5. The chromaticity coordinates (x, y) is derived from the 1931 CIE chromaticity diagram..
- 6. Reverse voltage (VR) condition is applied for IR test only. The device is not designed for reverse operation.



5. Typical Electrical / Optical Characteristics Curves

(25°C Ambient Temperature Unless Otherwise Noted)

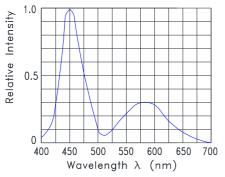
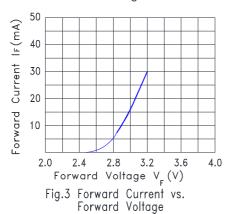


Fig.1 Relative Intensity VS. Wavelength



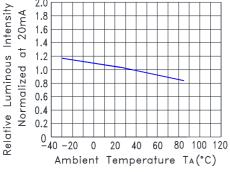


Fig.5 Relative Luminous Intensity VS. Ambient Temperature

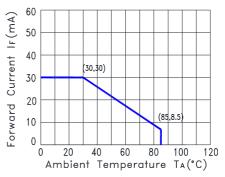


Fig.2 Forward Current Derating Curve

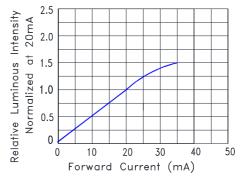


Fig.4 Relative Luminous Intensity vs. Forward Current

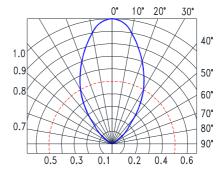


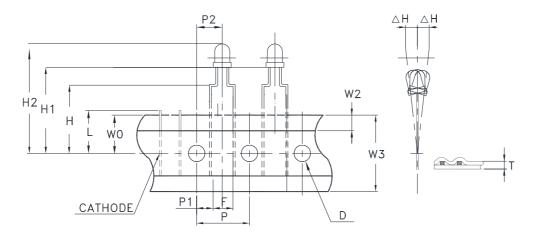
Fig.6 Spatial Distribution



6. Taping Features

- * Compatible with radial lead automatic insertion equipment.
- * Most radial lead plastic lead lamps available packaged in tape and folding.
- * 5mm (0.197") formed lead spacing available.
- * Folding packaging simplifies handling and testing.
- * Reel packaging is available by removing suffix "A" on option.
- * Ammo packing series lamp type 24 LED+GAP.

Package Dimensions



TAPE FEED DIRECTION

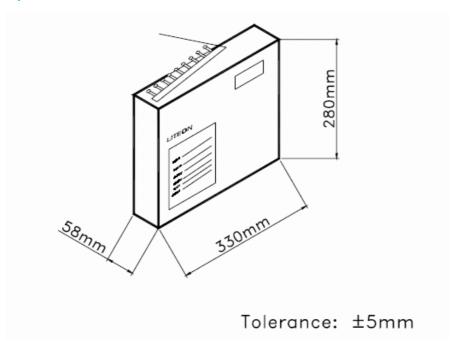
		Specification			
Item	Symbol	Minimum		Maximum	
		mm	inch	mm	inch
Tape Feed Hole Diameter	D	3.8	0.149	4.2	0.165
Component Lead Pitch	F	4.8	0.188	5.8	0.228
Front to Rear Deflection	ΔH			2.0	0.078
Height of Seating Plane	Н	15.5	0.610	16.5	0.649
Feed Hole to Bottom of Component	H1	21.2	0.834	23.2	0.913
Feed Hole to Overall Component Height	H2	25.2	0.992	27.8	1.094
Lead Length After Component Height	L	W0		11.0	0.433
Feed Hole Pitch	Р	12.4	0.488	13.0	0.511
Lead Location	P1	3.15	0.124	4.55	0.179
Center of Component Location	P2	5.05	0.198	7.65	0.301
Total Tape Thickness	Т			0.90	0.035
Feed Hole Location	W0	8.5	0.334	9.75	0.384
Adhesive Tape Position	W2	0	0	3.0	0.118
Tape Width	W3	17.5	0.689	19.0	0.748

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7. Packing Spec.

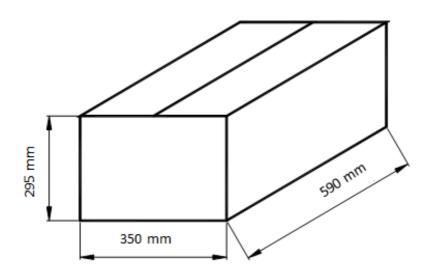
Total 3,000 pcs per inner carton



10 Inner cartons per outer carton

Total 30,000 pcs per outer carton

In every shipping lot, only the last pack will be non-full packing





8. Bin Table Specification

Luminous Intensity Iv (mcd) IF@20mA						
Bin Code	Min.	Max.				
U1	2500	4500				
V1	4500	6500				
W1	6500	8500				

Note: Tolerance of each bin limit is ±15%

Forward Voltage VF (V) IF@20mA						
Bin Code Min. Max.						
3E	2.8	3.0				
4E	3.0	3.2				
5E	3.2	3.4				
6E	3.4	3.6				

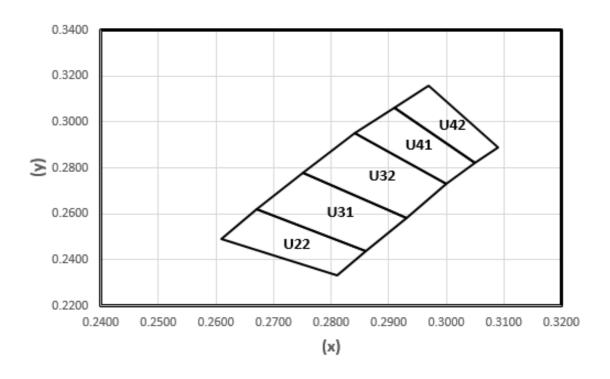
Note: Forward Voltage Measurement allowance is ±0.1V

Hue Ranks	Chromaticity Coordinates CC(x, y) IF@20mA					
U22	х	0.2610	0.2810	0.2860	0.2670	
022	у	0.2490	0.2330	0.2440	0.2620	
U31	х	0.2670	0.2860	0.2930	0.2750	
UST	у	0.2620	0.2440	0.2580	0.2780	
U32	х	0.2750	0.2930	0.3000	0.2840	
032	у	0.2780	0.2580	0.2730	0.2950	
U41	х	0.2840	0.3000	0.3050	0.2910	
041	у	0.2950	0.2730	0.2820	0.3060	
U42	х	0.2910	0.3050	0.3090	0.2970	
U42	у	0.3060	0.2820	0.2890	0.3160	

Note: Color Coordinates Measurement allowance is ±0.01



C.I.E. 1931 Chromaticity Diagram





9. CAUTIONS

9.1. Application

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

9.2. Storage

The storage ambient for the LEDs should not exceed 30°C temperature or 70% relative humidity. It is re-commended 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.

9.3. Cleaning

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

9.4. 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.

9.5. Soldering

When soldering, leave a minimum of 2mm 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:

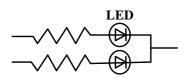
	Soldering iron	Wave soldering		
Temperature Soldering time Position	350℃ Max. 3 seconds Max. (one time only) No closer than 2mm from the base of the epoxy bulb	Pre-heat Pre-heat time Solder wave Soldering time Dipping Position	100℃ Max. 60 seconds Max. 260℃ Max. 5 seconds Max. No lower than 2mm from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

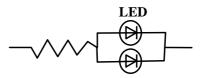
9.6. Drive Method

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)



Circuit model (B)



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



9.7. 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

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

Static-Safe Workstation & Work Areas

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

Personnel Grounding

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

Note: *50V for Blue LED.

Device Handling

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

Others

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

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10. Reliability Test

Classification	Test Item	Test Condition	Sample Size	Reference Standard
	Operation Life	Ta = Under Room Temperature IF = Per Data Sheet Maximum Rating Test Time= 1000hrs	22 PCS (CL=90%; LTPD=10%)	MIL-STD-750D:1026 (1995) MIL-STD-883G:1005 (2006)
Endurance	High Temperature High Humidity storage (THB)	Ta = 60℃ RH = 90% Test Time= 240hrs	22 PCS (CL=90%; LTPD=10%)	MIL-STD-202G:103B (2002) JEITA ED-4701:100 103 (2001)
Test	High Temperature Storage	Ta= 105 ± 5℃ Test Time= 1000hrs	22 PCS (CL=90%; LTPD=10%)	MIL-STD-750D:1031 (1995) MIL-STD-883G:1008 (2006) JEITA ED-4701:200 201 (2001)
	Low Temperature Storage	Ta= -55 ± 5℃ Test Time= 1000hrs	22 PCS (CL=90%; LTPD=10%)	JEITA ED-4701:200 202 (2001)
	Temperature Cycling	$100^\circ \text{C} \sim 25^\circ \text{C} \sim -40^\circ \text{C} \sim 25^\circ \text{C}$ 30mins 5mins 30mins 5mins Test time: 30 Cycles	22 PCS (CL=90%; LTPD=10%)	MIL-STD-750D:1051 (1995) MIL-STD-883G:1010 (2006) JEITA ED-4701:100 105 (2001) JESD22-A104C (2005)
	Thermal Shock	100 ± 5℃ ~ -30℃ ± 5℃ 15mins 15mins Test time: 30 Cycles	22 PCS (CL=90%; LTPD=10%)	MIL-STD-750D:1056 (1995) MIL-STD-883G:1011 (2006) MIL-STD-202G:107G (2002) JESD22-A106B (2004)
Environmental Test	Solder Resistance	T.sol = 260 ± 5℃ Dwell Time= 10±1 seconds 2mm from the base of the epoxy bulb	11 PCS (CL=90%; LTPD=18.9%)	MIL-STD-750D:2031(1995) JEITA ED-4701: 300 302 (2001)
	Solderability	T. sol = 245 ± 5 °C Dwell Time= 5 ± 0.5 seconds (Lead Free Solder, Coverage ≥ 95 % of the dipped surface)	11 PCS (CL=90%; LTPD=18.9%)	MIL-STD-750D:2026 (1995) MIL-STD-883G:2003 (2006) MIL-STD-202G:208H (2002) IPC/EIA J-STD-002 (2004)
	Soldering Iron	T. sol = 350 ± 5 °C Dwell Time= 3.5 ± 0.5 seconds	11 PCS (CL=90%; LTPD=18.9%)	MIL-STD-202G:208H (2002) JEITA ED-4701:300 302 (2001)

11. Others

White LED is materialized by combining blue LED and phosphors. Color of White LED is changed a little by an operating current.

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