



**Specific Lighting
Product Data Sheet**
LTPL-C035DP660

Spec No. :DS23-2021-0050
Effective Date: 10/07/2021
Revision: B

LITE-ON DCC

RELEASE

BNS-OD-FC001/A4

Specific Lighting LTPL-C035DP660

1. Description

The LITEON C03 LED is a revolutionary, energy efficient and ultra-compact new light source, combining the lifetime and reliability advantages of Light Emitting Diodes with the brightness of conventional lighting. It gives you total design freedom and unmatched brightness, creating a new opportunity for solid state lighting to displace conventional lighting technologies

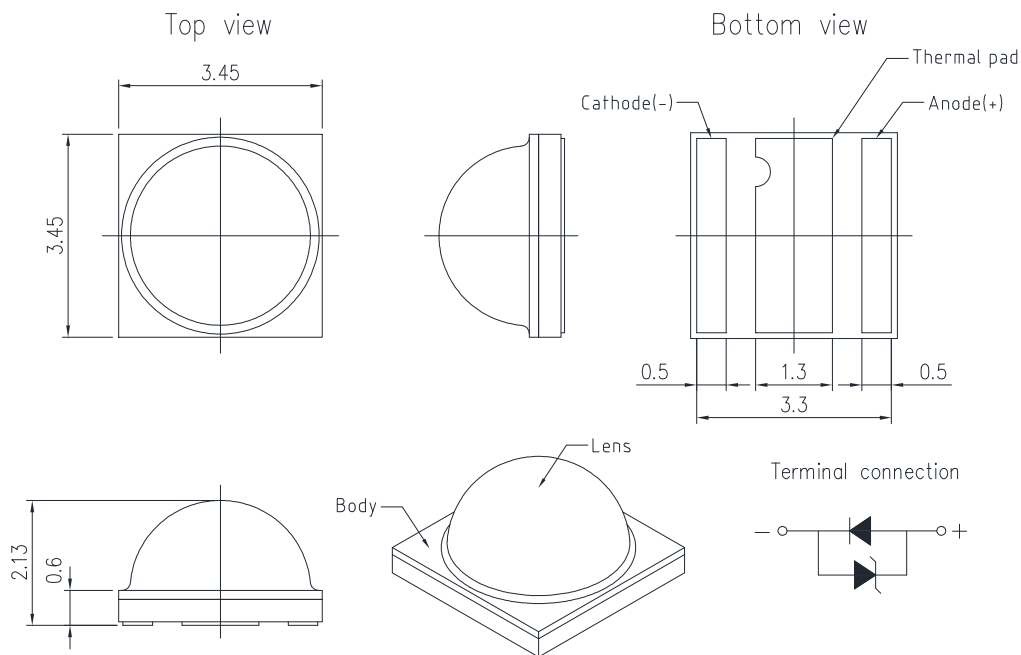
1.1 Features

- High power LED
- Compatible with reflow soldering process
- Low thermal resistance
- Long operation life
- RoHS compliant and Pb free

1.2 Applications

- Horticulture Lighting
- LED tube lighting

2. Outline Dimensions



Notes :

1. All dimensions are in millimeters and dimension tolerances are $\pm 0.2\text{mm}$ except lens height and ceramic length / width dimension tolerance are $\pm 0.1\text{mm}$.
2. Thermal pad of the device is electrically neutral from the anode and cathode pads.

**Specific Lighting
LTPL-C035DP660**

3. Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Rating	Unit
DC Forward Current	<i>I_f</i>	1400	mA
Power Consumption	<i>P_o</i>	3.08	W
Operating Temp Range	<i>T_{opr}</i>	-40 ~ +125	°C
Storage Temp Range	<i>T_{stg}</i>	-55 ~ +125	°C
Junction Temperature	<i>T_j</i>	135	°C

Notes:

Operating the LED under reverse bias condition long time might result in damage or failure of the component.

Specific Lighting LTPL-C035DP660

4. Electro-Optical Characteristics at Ta=25°C

Parameter	Symbol	Values		Test Condition	Unit
Forward Voltage	V_f	Min.	1.80	$I_f = 700\text{mA}$	V
		Typ.	2.06		
		Max.	2.20		
Radiant Flux	$\Phi_e^{[1]}$	Min.	975	$I_f = 700\text{mA}$	mW
		Typ.	1050		
		Max	1180		
Peak Wavelength	W_p	Min.	650	$I_f = 700\text{mA}$	nm
		Typ.	660		
		Max	670		
Photosynthetic Photon Flux	$PPF^{[2]}$	Typ.	5.84	$I_f = 700\text{mA}$	$\mu\text{mol/s}$
Photon Flux Efficacy	PPE	Typ.	4.05	$I_f = 700\text{mA}$	$\mu\text{mol/J}$
Viewing Angle	$2\theta_{1/2}$	Typ.	130	$I_f = 700\text{mA}$	°
Thermal Resistance	$R_{th_{js}}$	Typ.	3.6	-	°C/W
ESD	ESD	Max	8	HBM	kV

Notes:

1. Radiant flux (Φ_e) is the total Radiant flux output as measured with an integrating sphere.
2. Photosynthetic Photon Flux (PPF) including wavelength from 400 to 700 nm.

**Specific Lighting
LTPL-C035DP660**

5. Bin Code List

Vf : Forward Voltage Spec. Table		
Vf Bin	Vf (V) @ If = 700mA	
	Min.	Max.
V0	1.8	2.0
V1	2.0	2.2

Forward Voltage Tolerance: +/- 0.1 V

Φe : Radiant Flux Spec. Table		
Φe Bin	Φe (mW) @ If = 700mA	
	Min.	Max.
D7	975	1020
D8	1020	1070
D9	1070	1125
D10	1125	1180

Radiant Flux Tolerance: +/- 10%

Wp: Peak Wavelength Spec table		
Wp Bin	Wp (nm) @ If = 700mA	
	Min.	Max.
P6R	650	670

Peak Wavelength Tolerance: +/- 3nm

Notes:

1. Bin classification code is marked on each packing bag

**Specific Lighting
LTPL-C035DP660**

6. Typical Electrical / Optical Characteristics Curves

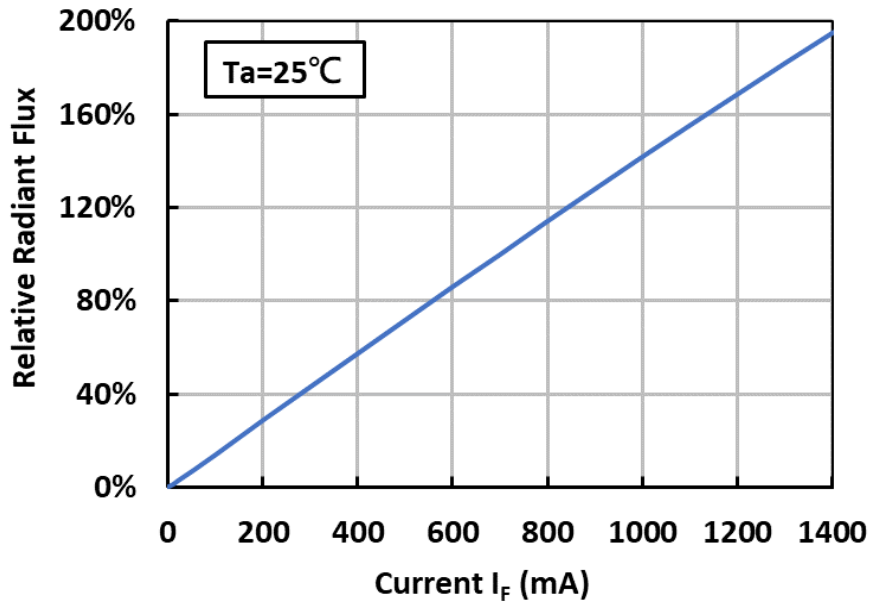


Fig 1. Relative Radiant Flux vs. Forward Current

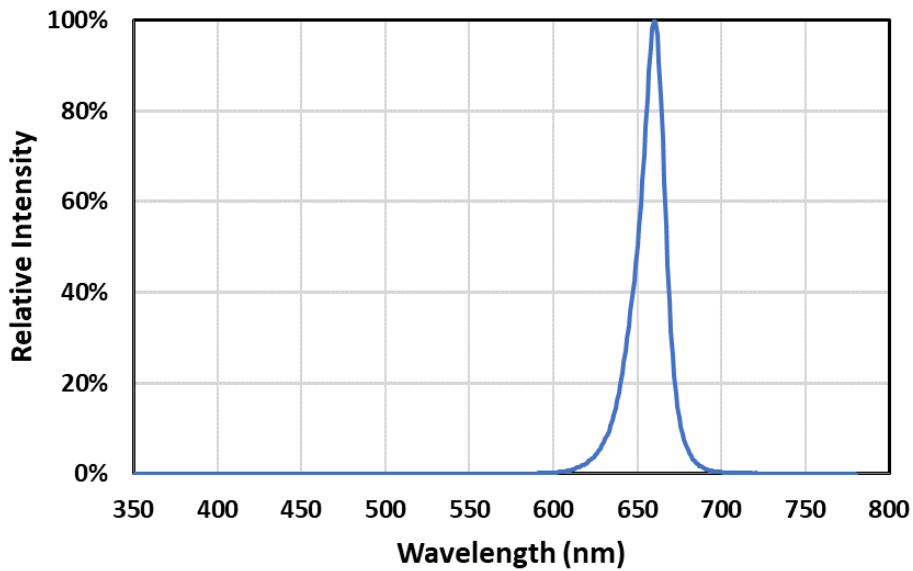


Fig 2. Relative Spectral Distribution

Specific Lighting
LTPL-C035DP660

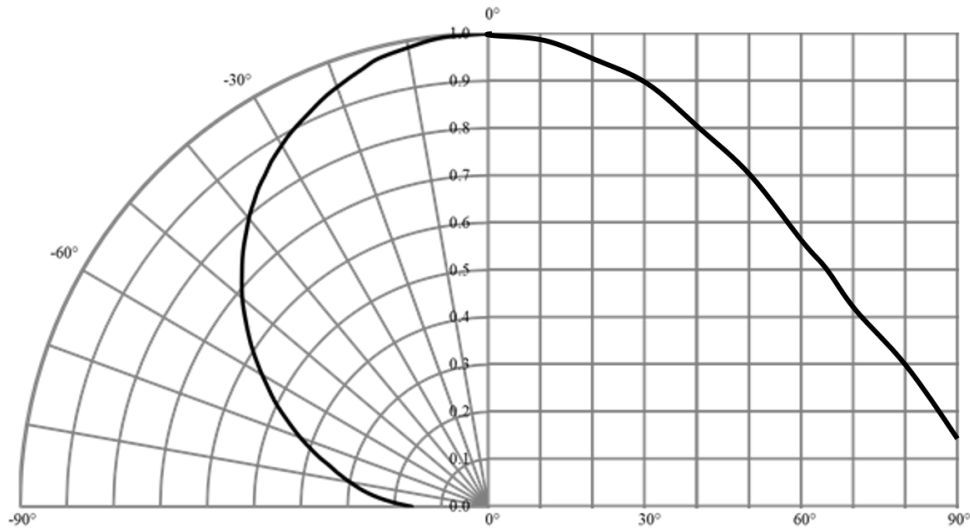


Fig 3. Radiation Characteristics

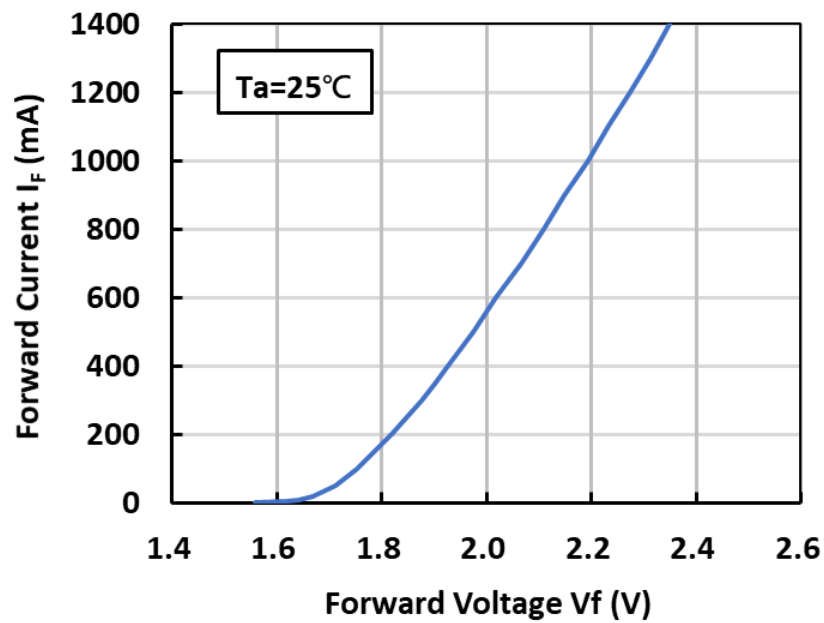


Fig 4. Forward Current vs. Forward Voltage

**Specific Lighting
LTPL-C035DP660**

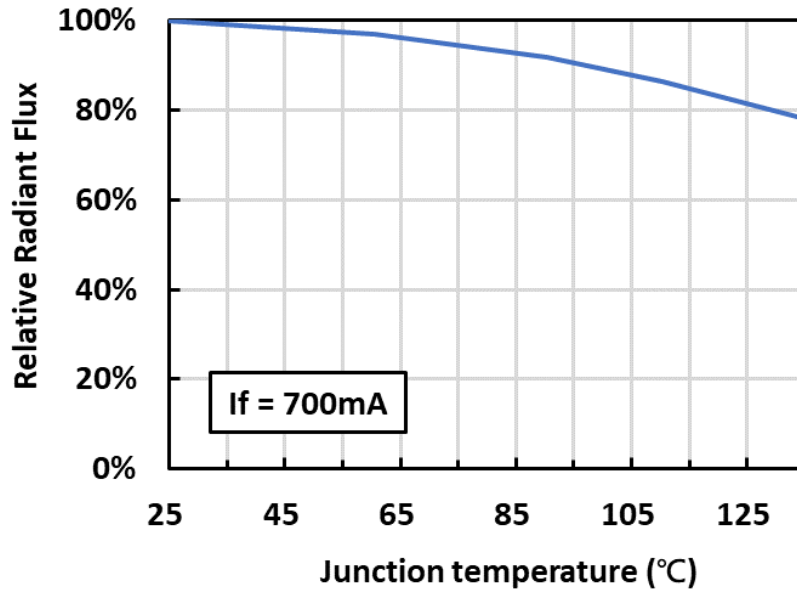


Fig.5 Relative Radiant Flux vs Junction Temperature

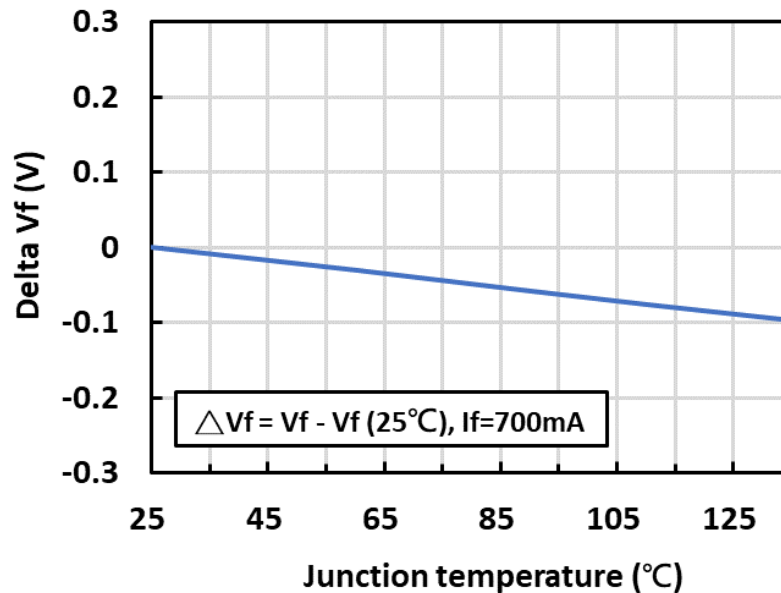


Fig.6 Delta Voltage vs Junction Temperature

**Specific Lighting
LTPL-C035DP660**

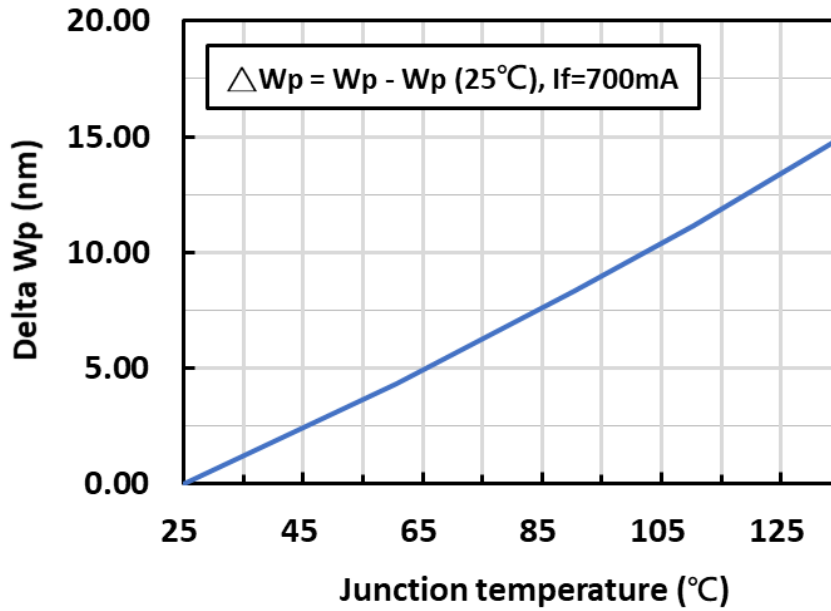
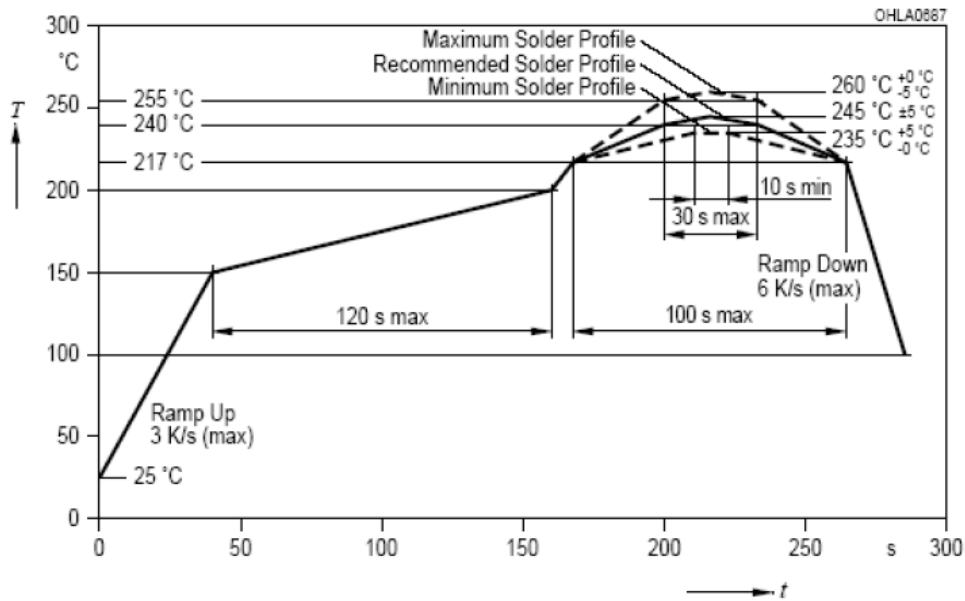


Fig.7 Delta Peak Wavelength vs Junction Temperature

Specific Lighting LTPL-C035DP660

7. User Guide

Suggested Reflow Soldering Characteristics

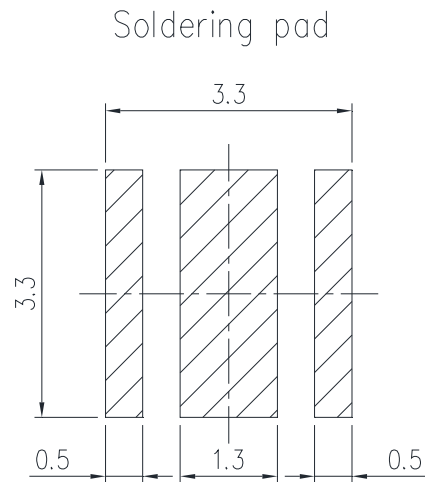


Notes:

1. All temperatures refer to topside of the package, measured on the package body surface.
2. The soldering profile could be further referred to different soldering grease material characteristic. The grease vendor will provide this information.
3. A rapid-rate process is not recommended for the LEDs cooling down from the peak temperature.
4. Although the recommended reflow conditions are specified above, the reflow or hand soldering condition at the lowest possible temperature is desirable for the LEDs.
5. LiteOn cannot make a guarantee on the LEDs which have been already assembled using the dip soldering method.

Specific Lighting
LTPL-C035DP660

Recommend Printed Circuit Board Attachment Pad

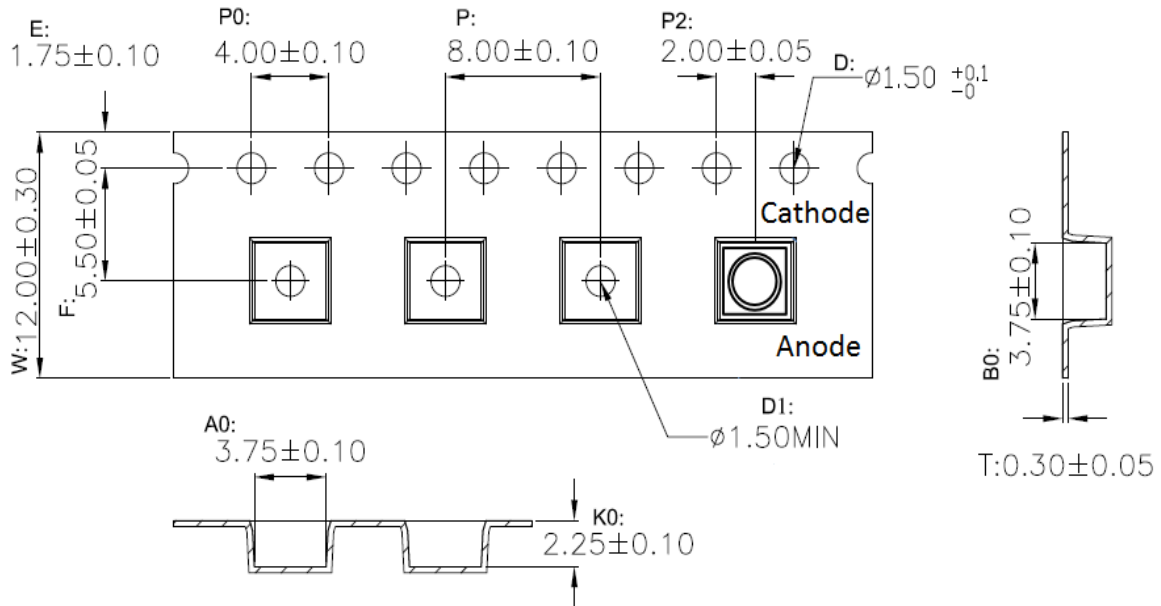


Notes:

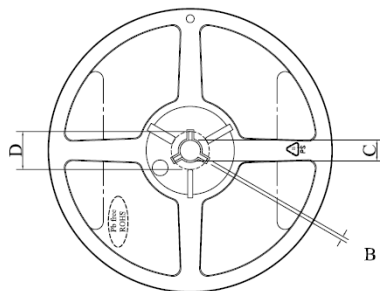
1. The LEDs can be soldered using the reflow soldering or hand soldering method. The recommended hand soldering condition is 300°C max. and 2secs max. on ly once, and the operation of reflow soldering is only up to three times at maximum.
2. All temperatures refer to topside of the package, measured on the package body surface.
3. The soldering profile could be further referred to different soldering grease material characteristic. The grease vendor will provide this information.
4. A rapid-rate process is not recommended for the LEDs cooling down from the peak temperature.
5. Although the recommended reflow conditions are specified above, the reflow or hand soldering condition at the lowest possible temperature is desirable for the LEDs.
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Specific Lighting LTPL-C035DP660

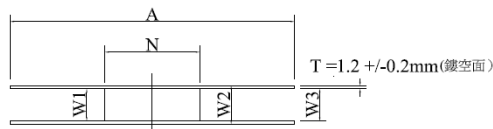
Package Dimensions of Tape



Package Dimensions of Reel



A	N	W1	W2	W3	D	B	C
178±1.0	60±1.5	12.4 ^{+2.0} / _{-0.0}	15.0±1.0	> 12	21.0 ^{+0.8}	2.2±0.5	13.0 ^{+0.5} / _{-0.2}



Notes:

1. Empty component pockets sealed with top cover tape.
2. 7 inch reel-maximum 500 pieces per reel.
3. The maximum number of consecutive missing lamps is two.
4. In accordance with EIA-481-1-B specifications.

Specific Lighting LTPL-C035DP660

8. Cautions

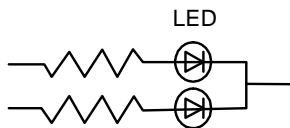
Cleaning

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

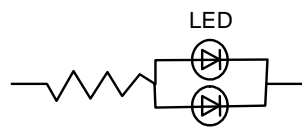
Do not use unspecified chemical liquid to clean LED, it could harm the package.

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 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.

© This LED should be used under forward current, particularly not used under continuous reverse current to avoid the damage to LED.

The electrode pads are plated with gold, but it is still not recommended to the use under any of the following conditions, please confirm the performance and reliability are well enough if you use it under any of the following conditions

- Do not use sulfur-containing materials in commercial products including the materials such as seals and adhesives that may contain sulfur.
- Do not put this product in a place with a lot of moisture (over 85% relative humidity), dew condensation, briny air, and corrosive gas (Cl, H₂S, NH₃, SO₂, NO_x, etc.).

Manual Handling Remark

The LED should only be picked up by making contact with the sides of the LED body. It should not put any pressure on the lens either by finger or any hand tool. Do not puncture or push the lens.

Specific Lighting LTPL-C035DP660

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 LED's plastic lens as a result of friction between LEDs during storage and handling.

ESD-damaged LEDs will exhibit abnormal characteristics such as high reverse leakage current, low forward voltage, or "no light up" at low currents. To verify for ESD damage, check for "light up" and V_F of the suspect LEDs at low currents. The V_F of "good" LEDs should be $>1.0V$ at $0.5mA$.

Training and Certification

1. Working area is ESD-certified.
2. Training records and re-certification dates monitored.

Static-Safe Workstation & Work Areas

1. Static-safe working stations or work-areas have ESD signs.
2. All surfaces and objects at all static-safe workstation and within 1 ft measure less than 100V.
3. All ionizer activated, positioned towards the units.
4. Each work surface mats grounding is good.

Personnel Grounding

1. Every person (including visitors) handling ESD sensitive (ESDS) items wear wrist strap, heel strap or conductive shoes with conductive flooring.
2. If conductive footwear used, conductive flooring also present.
3. Garments, hairs or anything closer than 1 ft to ESD items measure less than 100V.
4. The wrist strap or heel strap/conductive shoes are checked daily and result recorded.
5. All wrist strap or heel strap checkers calibration up to date.

Device Handling

1. Each ESDS items identified by EIA-471 labels on item or packaging..
2. No static charge generators (e.g. plastics) inside shielding containers with ESDS items.
3. All flexible conductive and dissipative package materials are inspected before reuse or recycles

Specific Lighting LTPL-C035DP660

Storage

This product is qualified as Moisture sensitive Level 3 per JEDEC J-STD-020 Precaution when handling this moisture sensitive product is important to ensure the reliability of the product.

The package is sealed:

The LEDs should be stored at 30°C or less and 85%RH or less. And the LEDs are limited to use within one year, while the LEDs is packed in moisture-proof package with the desiccants inside.

The package is opened:

The LEDs should be stored at 30°C or less and 60%RH or less. The LEDs are limited to solder process within 168hrs. If the Humidity Indicator shows the pink color in 10% even higher or exceed the storage limiting time since opened, we recommended to baking LEDs at 60°C at least 24hours before solder. To seal the remainder LEDs return to package, it's recommended to be with workable desiccants in original package.