

DATASHEET

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LM3535LD

(Preliminary)

(TL3535WUXxxNAxx)

- Water Proof Module (IPX8)
- Deep Ultraviolet LED
- UV Radiant power up to 15mW
- DC Driving Circuit (12V, 24V)
- RoHS Compliant



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Table of Contents

1. Product description	3
2. Absolute maximum ratings	3
3. Electro-optical characteristics (Ta=25°C).....	4
4. Part list.....	4
5. Ranks (Ta=25°C).....	5
6. Characteristic Graphs (Ta=25°C).....	5
7. Outline Dimensions	6
8. Reliability test items and conditions.....	7
9. Packing	7
10. Product and Model name Nomenclature.....	8-9
11. Cautions	10-12

1. Product description

(1) Description

- The Module is designed for Water proof application.
- Spec output peak wavelengths are typical 275nm which enable powerful and compact applications in disinfection

(2) Features

- Water-proof Module : Φ 38.0 x 19.6mm
- Ceramic type LED Package : 3.5mm x 3.5mm x 1.55mm (L x W x H)
- Available in from 270nm to 280nm
- Viewing angle of 115 degrees
- Chip material : AlGaIn based

(3) Applications

- Disinfection (Water / Surface / Air)
- In-device sterilization

2. Absolute maximum ratings

Parameters	Symbol	Value	Unit
Power dissipated	P_D	0.4 ~ 1.9	W
Input voltage	V_{IN}	DC 12	V
Operating temperature	T_{OPR}	-10 ~ +55	°C
Storage temperature	T_{STG}	-30 ~ +65	°C

3. Electro-optical chart (Ta=25°C)

Parameter	Symbol	Min	Typ	Max	Unit
Peak wavelength	λ_p	270	275	280	nm
Radiant power	Φ_e	3.0	-	15.0	mW
Input voltage	V_{in}	DC 12			V
FWHM	$\Delta\lambda$	-	10	-	nm
View angle	$2\theta_{1/2}$	-	115	-	deg.
IP Grade	-	-	IPX8	-	-

- Lumens maintains a tolerance of $\pm 2\text{nm}$ on Peak wavelength measurements.
- Lumens maintains a tolerance of $\pm 10\%$ on Radiant power measurements.
- Lumens maintains a tolerance of $\pm 0.5\text{V}$ on Forward voltage measurements.

4. Part List

No.	Part		Specification	Quantity (pcs)
1	PCB		LED Mounted on the PCB	1
2	LED		3535 Ceramic LED (3mW or 10mW)	1
3	Guard	TOP	Module cap (POM, white)	1
4		Bottom	Outer cap (POM, white)	1
5	Cover		Quartz glass	1
6	Sealing rubber		Guard(red), Quartz glass(clear)	5
7	Fixed board		PCB, Molding	2
8	Circuit		DC 12V or 24V	1
9	Molding		Silicone type (gray)	1
10	Wire		Red wire (+), Black wire (-)	2
11	Connector		2Pin (XH2.54, white)	1

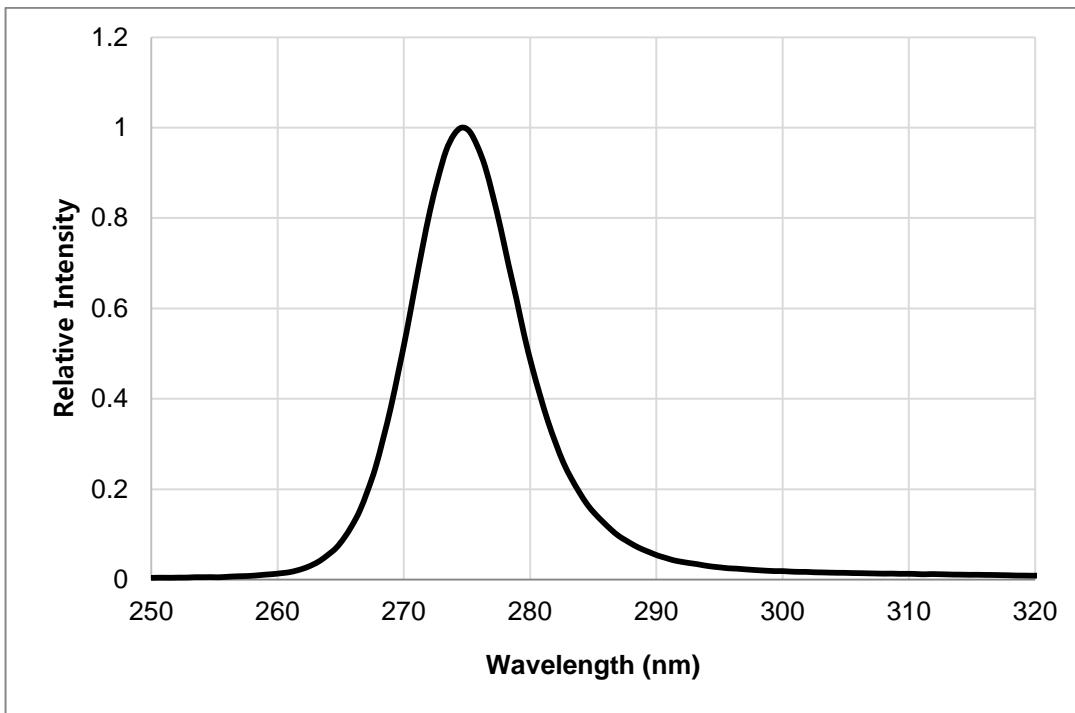
5. Ranks (Ta=25°C)

Item	Symbol	Model name	Wavelength Range (nm)	Rank	LED PKG Range value			If (mA)	Unit
					Min	Typ	Max		
Radiant Power	Φe	TL3535WUX27NAxx	270 - 280	PA	3.0	-	5.0	38-42	mW
		TM3535WUX27NAxx	270 - 280	PC	10.0	-	15.0	78-82	
Forward voltage	Vf	All		VA	5.5	-	6.5	-	V
				VB	6.5	-	7.5		

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- Lumens maintains a tolerance of $\pm 10\%$ on Radiant power measurements.
- Lumens maintains a tolerance of $\pm 0.5\text{V}$ on Forward voltage measurements.

6. Characteristic Graphs (Ta=25°C)

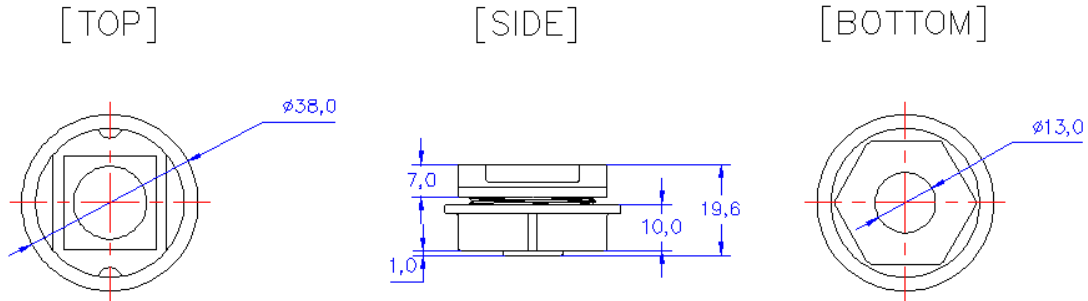
- Relative Spectral Intensity vs. Wavelength



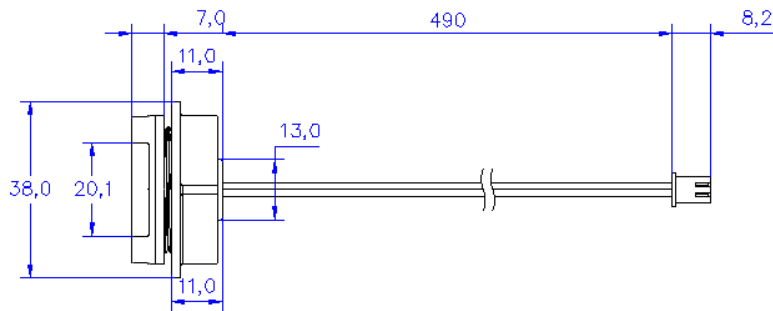
7. Outline Dimensions

- Module outline (circle) of $\Phi 38.0$ mm x 19.6mm
- Wire length is 490mm ± 10 mm (standard)
- Undefined tolerance is ± 0.1 mm

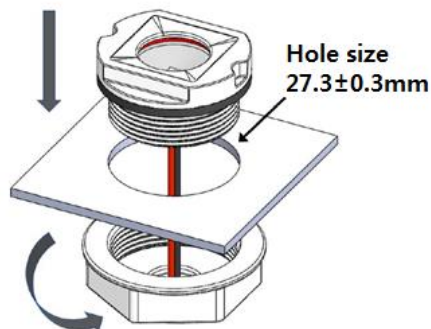
(Unit : mm)



[SIDE Detail]



- Hole size = $\Phi 27.3$ mm ± 0.3 mm



8. Reliability test items and conditions

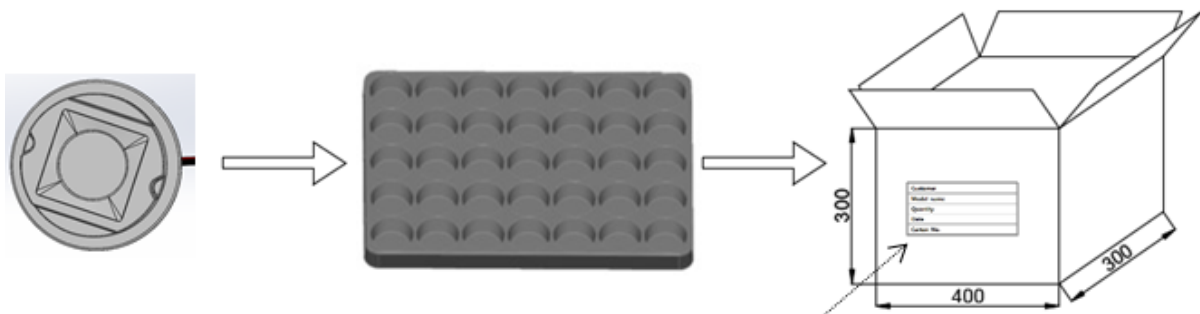
Item	Reference	Test Conditions	Duration Cycle
Room Temperature Operating Life (RTOL)	Internal Reference	Ta = 25°C, Vin = DC12V	1,000 hours

(1) Criteria for judging the damage

Item	Symbol	Condition	Criteria for Judgment	
			MIN	MAX
Radiant Intensity	Φ_e	DC 12V	LSL (2) x 0.7	-

- USL : Upper Standard Level
- LSL : Lower Standard Level

9. Packing



- Water-proof Module (1pcs)

- 1Tray = 35pcs (5x7 array)

- 1Box = 12Tray (12x 35pcs = 420pcs)

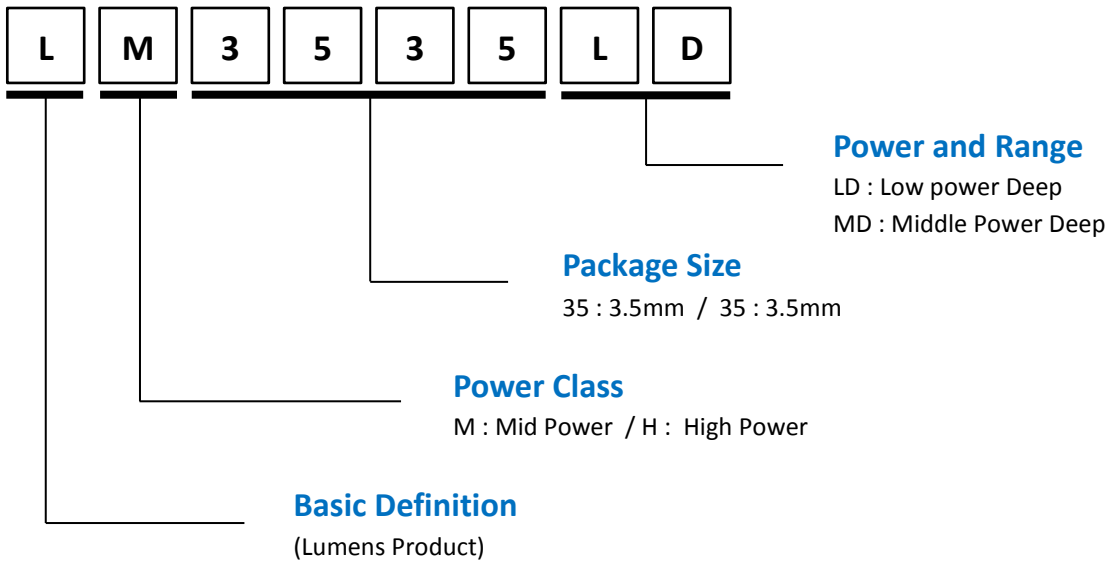
- Box size = 400x300x300mm

- Box Label

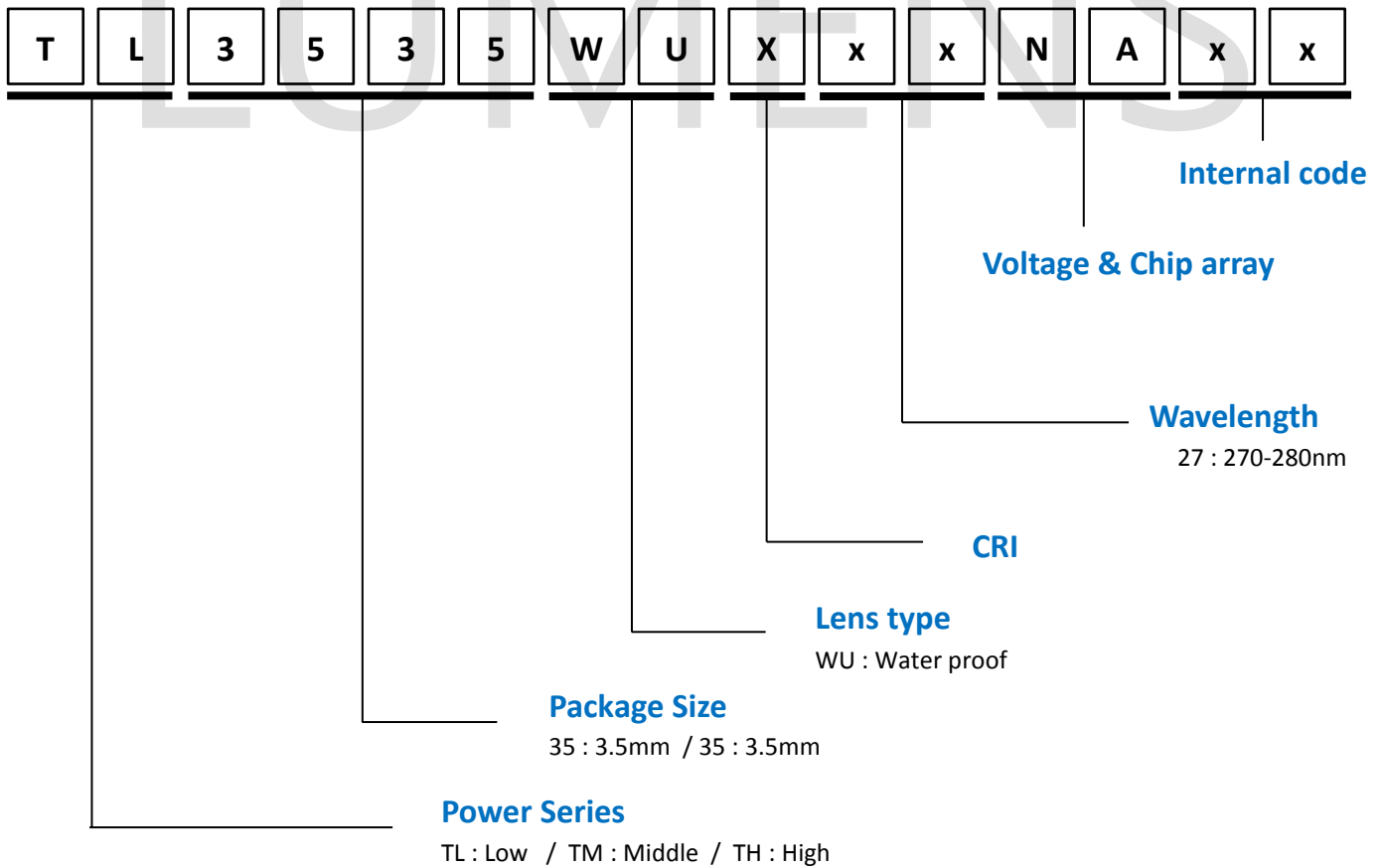
Customer	
Model name	
Quantity	
Date	
Carton No.	

10. Product and Model name Nomenclature

(1) Product detail

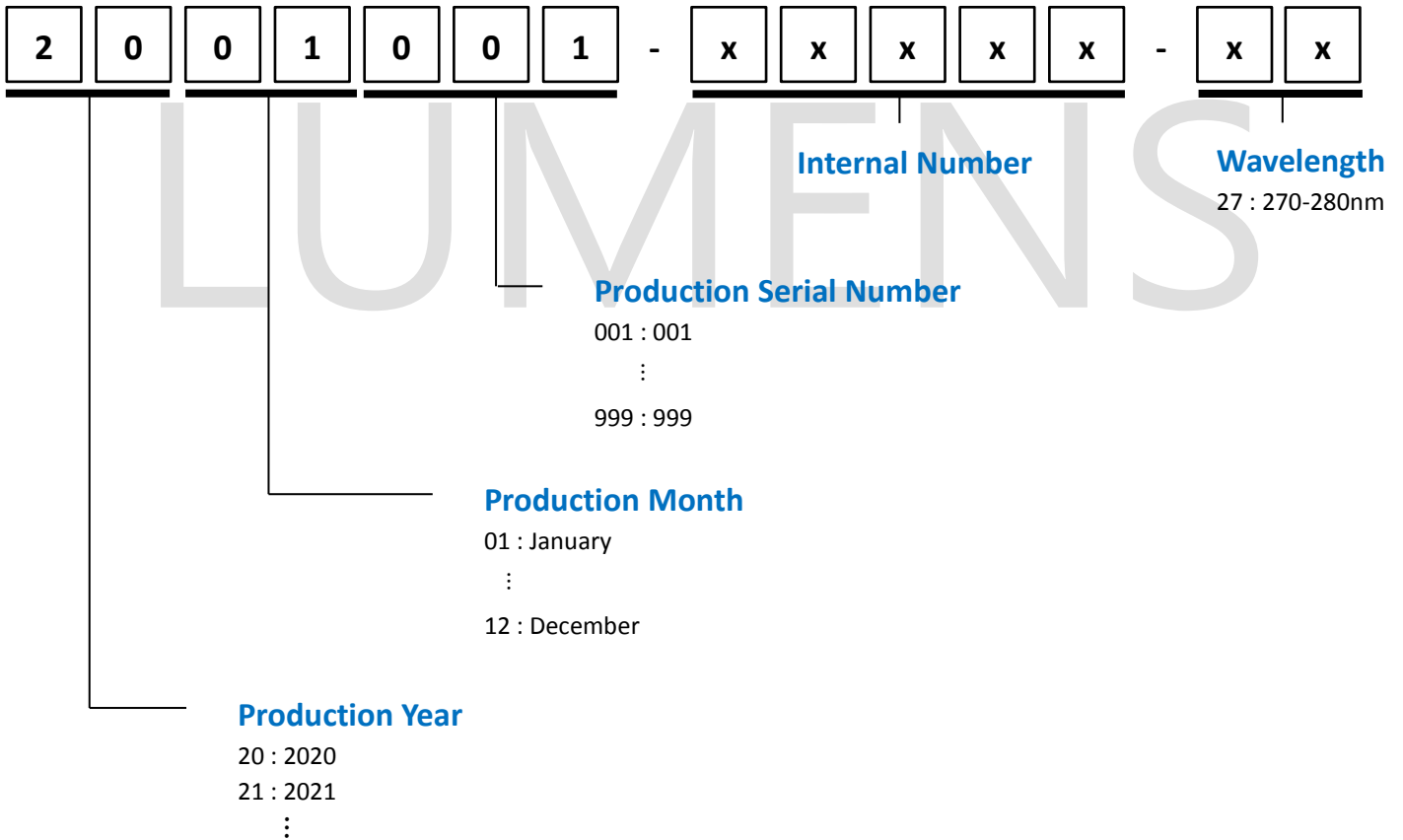
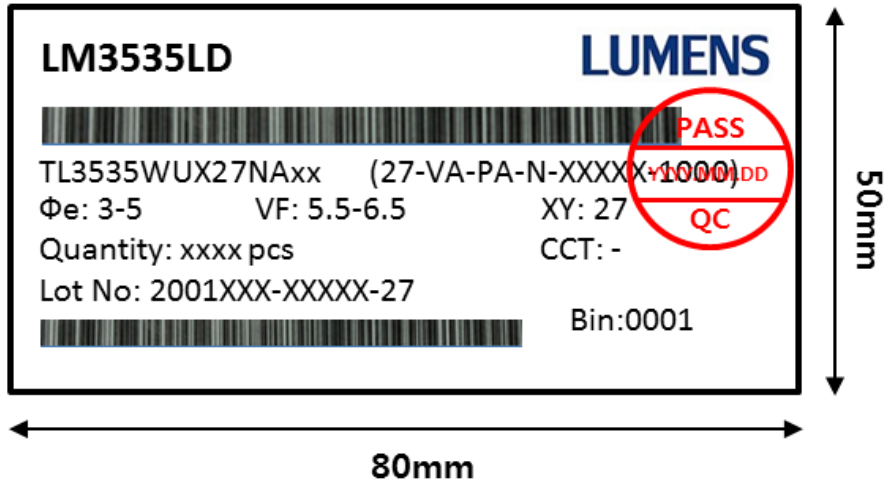


(2) Model name detail



(3) Label structure and detail

The lot number is composed of the following characters.



11. Cautions

(1) Eye and Skin Safety Guidelines

Do not directly look at the light when the LEDs are on. Proceed with caution to avoid any risks of damage to the eyes when examining the LEDs with optical instruments. Protect your eyes and skin while operating. Equipment should be designed to completely screen or filter UV radiation



The attached label should be used on products and systems that use UV LEDs

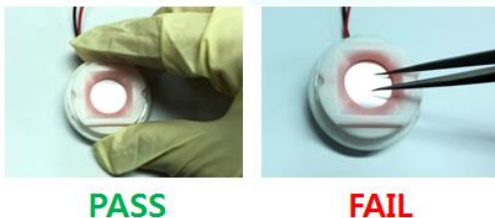


(2) Cleaning

- 2.1 Do not scrub the LEDs using hard brush or with excessive force
- 2.2 Do not clean LEDs using acetone or trichloroethylene.
- 2.3 To clean LEDs, only use soft foam-tip clean-room swab and isopropyl alcohol with gentle cleaning motions. Distilled water can be used for rinsing, but LEDs must be completely dried. (for example with nitrogen blow dry) before they can be used
- 2.4 Electrical and optical measurements are recommended before and after cleaning to ensure that LEDs are not damaged.

(3) Handling of **Glass** (Lens) LED Module

- 3.1 Avoid silicone resin parts especially with sharp tools such as tweezers.
- 3.2 Avoid leaving fingerprints on silicone lens part.



(4) Thermal Management

The thermal design of the system must be considered, particularly at the beginning of the system design process. In order to maximize performance it is necessary to reduce heat in the system by optimizing thermal conductivity of circuit boards and housings and also by minimizing density of the LED array and other components.

(5) Static Electricity

Wristbands and anti-electrostatic gloves are strongly recommended and all devices, equipment and machinery must be properly grounded when handling the LEDs, which are sensitive to static electricity. Precautions should be taken against surge voltage to the equipment that mounts the LEDs. Unusual characteristics such as significant increase of current leakage, decrease of turn-on voltage, or non-operation at a low current can occur when the LED is damaged

(6) Moisture-Proof Package

- 6.1 When moisture is absorbed into the LED package it may vaporize and expand products during soldering. There is a possibility that this may cause exfoliation of the contacts and damage to the optical characteristics of the LEDs. For this reason, the moisture-proof package is used to keep moisture to a minimum in the package.
- 6.2 A package of a moisture-absorbent material (silica gel) is inserted into the shielding bag. The silica gel changes its color from blue to pink as it absorbs moisture.

(7) Current limiting

A resistor should be used to limit current spikes that can be caused by voltage fluctuations. Otherwise damage could occur.

(8) Storage Conditions

- 8.1 Before opening the package: The LEDs should be kept at 30°C or less and 90%RH or less. The LEDs should be used within a year. When storing the LEDs, moisture-proof packaging with moisture-absorbent material (silica gel) is recommended.
- 8.2 After opening the package: The LEDs should be kept at 30°C or less and 70%RH or less. The LEDs should be soldered within 168 hours (7 days) after opening the package. If unused LEDs remain, they should be stored in moisture-proof packages, such as sealed containers with packages of moisture-absorbent material (silica gel). It is also recommended to return the LEDs to the original moisture-proof bag and to reseal the moisture-proof bag again.
- 8.3 If the moisture-absorbent material (silica gel) has faded away or the LEDs have exceeded the recommended storage time, baking treatment should be performed using the following conditions.
Baking treatment: more than 24 hours at 65±5°C
- 8.4 Lumens LED electrode sections are comprised of a silver-plated copper alloy. The silver surface may be affected by environments which contain corrosive gases and so on. Please avoid condition which may cause difficulty environments during soldering operations. It is recommended that the user uses the LEDs as soon as possible.
- 8.5 Please avoid rapid transitions in ambient temperature, especially in high humidity environments where condensation can occur.

(9) Usage

9.1 Do not exceed the values given in this specification.

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