

SPECIFICATION

LT P/N

LT3014WH-B-Q

☒ R&D

☐ Mass Product



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4.1 Handling Precautions	16

1. Description

1.1 General Description

The White LED, which was fabricated by using a blue chip and the phosphor.

Product Package: 3.0mmX1.4mmX0.7mm.

LED, , : 3.0mmX1.4mmX0.7mm

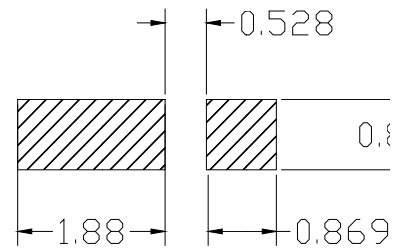
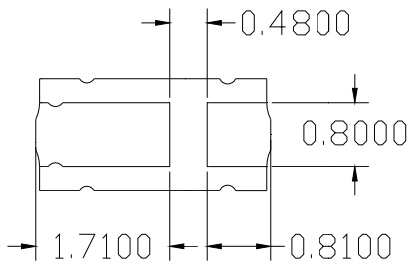
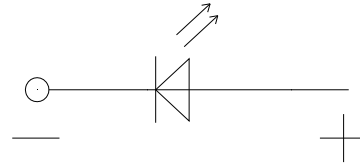
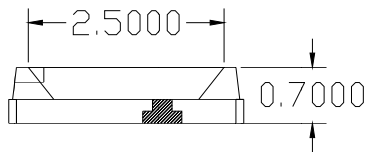
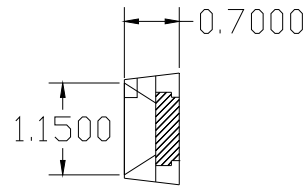
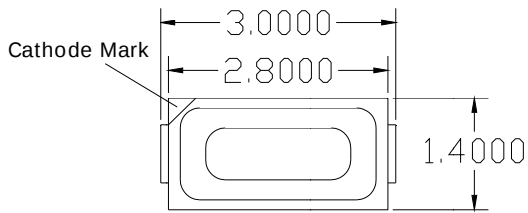
1.2 Features

- ▶ PLCC Package. PLCC
- ▶ Wide viewing angle.
- ▶ Suitable for all SMT assembly and solder process. SMT
- ▶ Available on tape and reel.
- ▶ Moisture sensitivity level: Level 3. Level 3
- ▶ RoHS compliant. RoHS

1.3 Application

- ▶ LCD Back Light. LCD

1.4 Package Dimension



Recommended soldering parameters

Notes

1. All dimensions units are millimeters.
2. All dimensions tolerances are $\pm 0.1\text{mm}$ unless otherwise noted.

1.5 Product Parameters

Table 1-1 Electrical / Optical Characteristics at Ts=25°C

Item	Symbol	Test Condition	Value			Unit
			Min.	Typ.	Max.	
Forward Voltage	V_F	$I_F=30\text{mA}$	---	3.1	---	V
Reverse Current	I_R	$V_R=5\text{V}$	---	---	1	μA
Luminous Intensity	I_v	$I_F=30\text{mA}$	---	4000	---	mcd
Viewing Angle	2θ1/2	$I_F=30\text{mA}$	---	120	---	deg

Table 1-2 Absolute Maximum Ratings at Ts=25°C

Parameter	Symbol	Rating	Units
Forward Current	I_F	35	mA
Peak Forward Current	I_{FP}	100	mA
Reverse Voltage	V_R	5	V
Electrostatic Discharge (HBM)	E_{SD}	2000	V
LED Junction Temperature (LED)	T_j	105	
Operating Temperature	T_{OPR}	-30 ~ + 85	
Storage Temperature	T_{STG}	-40~+100	

Notes

1. 1/10 Duty cycle, 0.1ms pulse width. 0.1ms,
2. The above forward voltage measurement allow
3. The above color coordinates measurement allo
4. The above luminous intensity measurement alk
5. Care is to be taken that power dissipation does
6. All measurements were made under the standa
7. When the LEDs are in operation the maximum c
temperature, junction temperature should not ex

1.6 Bin Range Of Forward BIN (IF=30mA)

Table 1-3 Bin Rang

BIN CODE	
	Min(mcd
P50	3850
P51	4050
P52	4250
P53	4450
P54	4650
P55	4850

Noti

V
IV

Table 1-6 Bin Range of Chromaticity Coordinates Block (IF=30mA ;Ta=25)

J13	0.2526	0.2260	J14	0.2612	0.2418	J15	0.2698	0.2576
	0.2612	0.2418		0.2698	0.2576		0.2784	0.2734
	0.2664	0.2418		0.2750	0.2576		0.2836	0.2734
	0.2578	0.2260		0.2664	0.2418		0.2750	0.2576
J16	0.2784	0.2734	K13	0.2578	0.2260	K14	0.2664	0.2418
	0.2870	0.2892		0.2664	0.2418		0.2750	0.2576
	0.2922	0.2892		0.2716	0.2418		0.2802	0.2576
	0.2836	0.2734		0.2630	0.2260		0.2716	0.2418
K15	0.2750	0.2576	K16	0.2836	0.2734	M13	0.2630	0.2260
	0.2836	0.2734		0.2922	0.2892		0.2716	0.2418
	0.2888	0.2734		0.2974	0.2892		0.2768	0.2418
	0.2802	0.2576		0.2888	0.2734		0.2682	0.2260
M14	0.2716	0.2418	M15	0.2802	0.2576	M16	0.2888	0.2734
	0.2802	0.2576		0.2888	0.2734		0.2974	0.2892
	0.2854	0.2576		0.2940	0.2734		0.3026	0.2892
	0.2768	0.2418		0.2854	0.2576		0.2940	0.2734

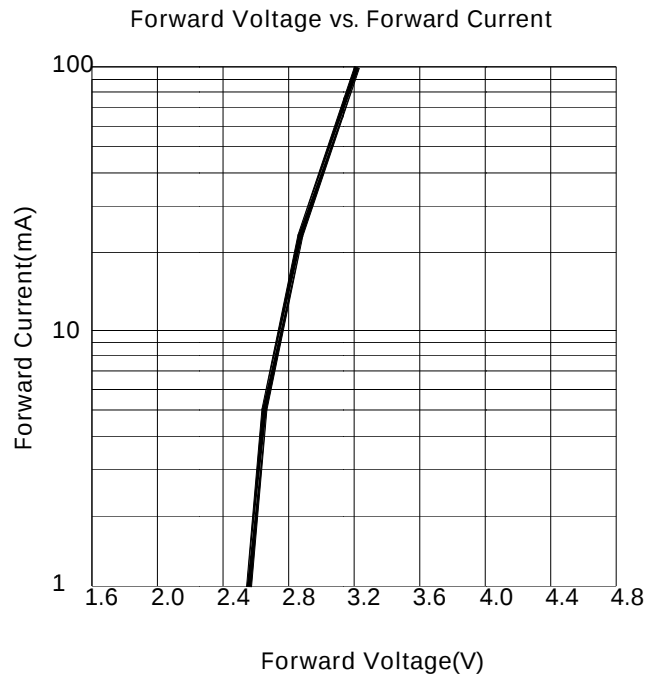
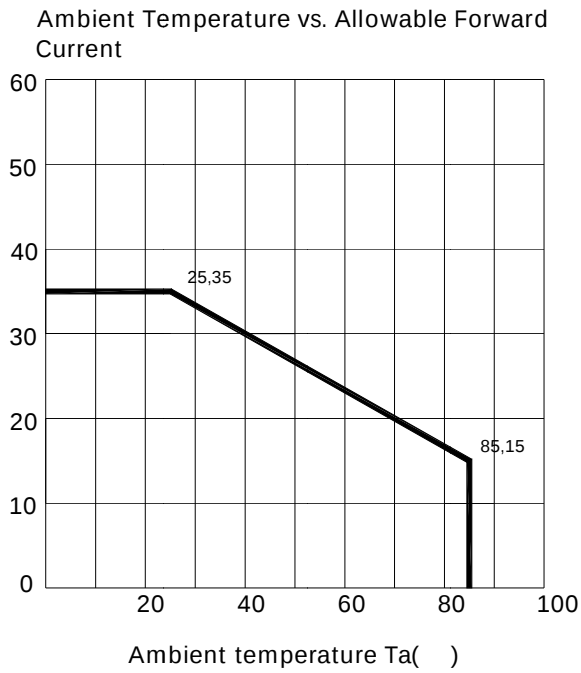
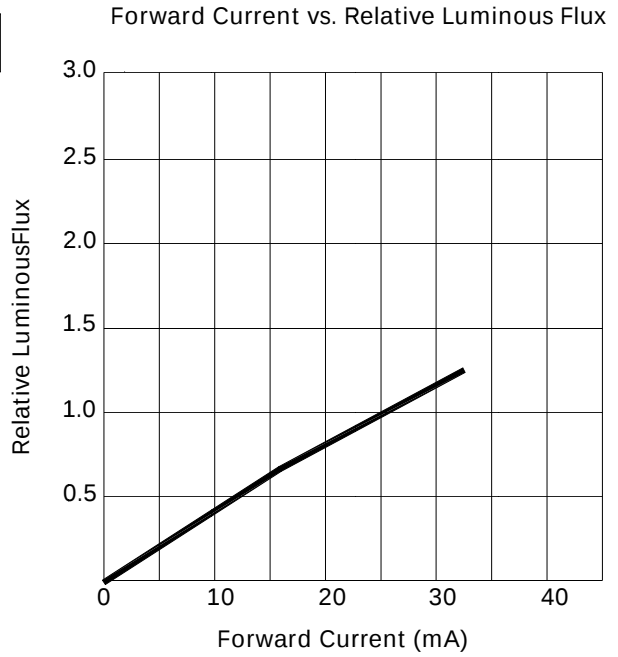
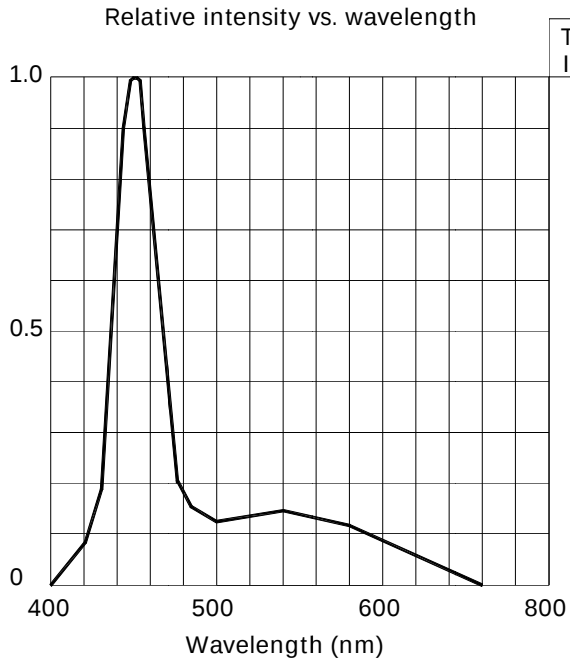
Notes

1 Measurement uncertainty of the color coordinates: ± 0.003 .

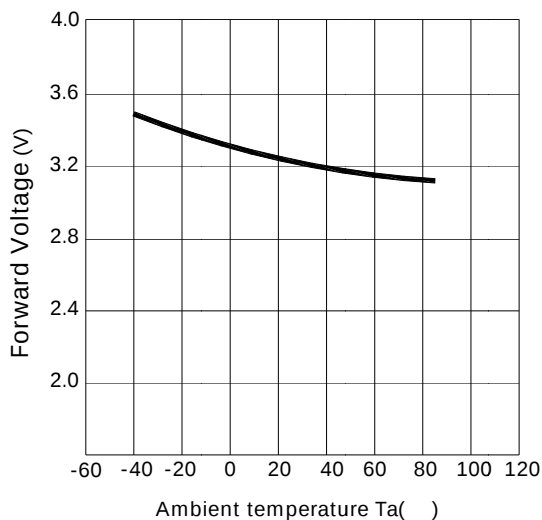
± 0.003 .

2 The new white dustbin refers to the application of small backlight standard.

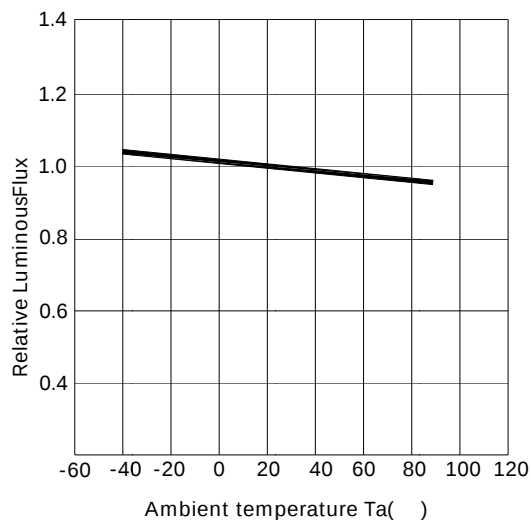
1.7 Typical Optical Characteristics Curves



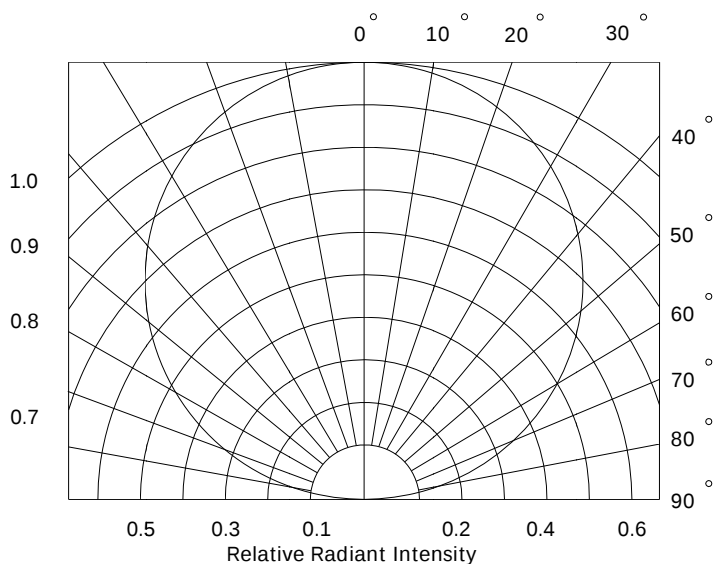
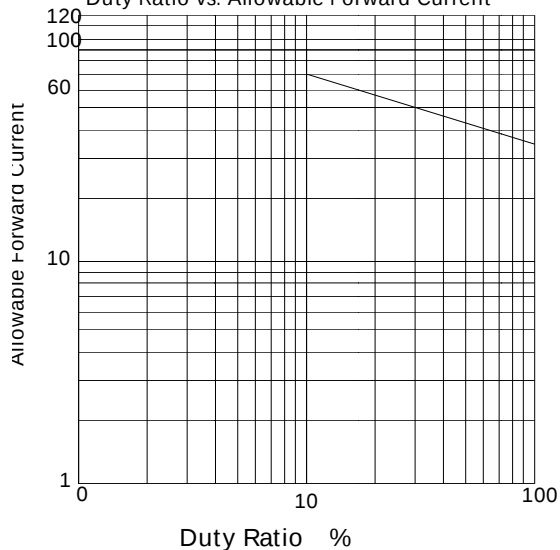
Ambient Temperature vs. Forward Voltage



Ambient Temperature vs. Relative Luminous Flux

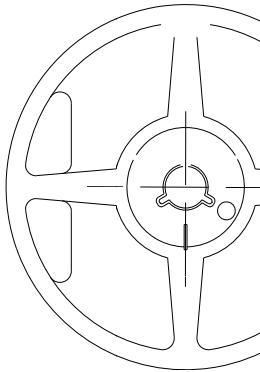


Duty Ratio vs. Allowable Forward Current

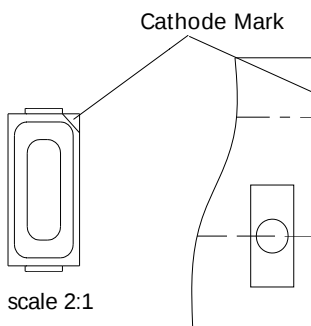


2.1 Packaging Specification

Package:4000pcs/reel



2.1.1 Carrier Tape Dimension



Notes

The tolerances unless mer

2.1.2 Label Form Specification

Table 2-2 Lable Map



Table 2-3 Label Form Specification

PART NO.	Part Number
BIN CODE	Bin Code
IV	Luminous intensity
V _F	Forward Voltage
WL	Wavelength
QTY	Packing Quantity
DATE	Made Date
LOT NO	Lot Number

2.2 Moisture Resistant Packing

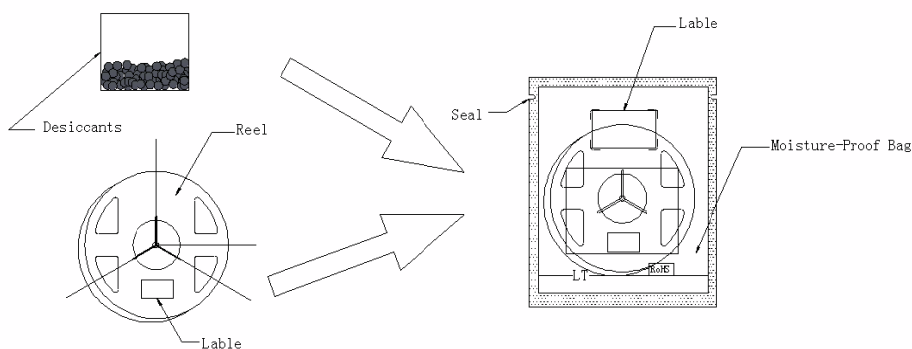


Fig.2-4 Moisture Resistant Packing

2.3 Cardboard Box

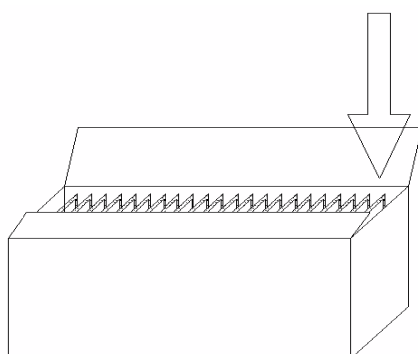


Fig.2-5 Cardboard Box

2.4 Reliability Test Items And Conditions

Table 2-6 Reliability Test Items And Conditions

Test Items	Test Condition
Reflow	Temp:260 max T=10 sec
Thermal Shock	-40 20min ↑↓10s 100 20min
High Temperature Storage	Temp:100
Low Temperature Storage	Temp:-40
Life Test	Ta=25 IF=30mA
High Temperature and Humidity storage	60 / 90
Temperature Humidity	

Forward Voltage	V_F	
Reverse Current	I_R	
Luminous Flux	Φ	

Notes

- 1.U.S.L: Upper standard level L.S.L: Lower standard level
- 2.The above reliability tests is based on the verification of a single/strip LED of LT existing experimental platform,the reliability experiment was taken under good heat dissipation conditions. when customers applies the LED to the series and parallel circuit, should take consideration of all the factors such as the current, voltage distribution, heat dissipation and others. / LED
- 3.The technical information shown in the data sheets is limited to the typical characteristics and circuit examples of the referenced products. It does not constitute the warranting of industrial property nor the granting of any license.

3. SMT Reflow Soldering Instructions SMT

3.1 SMT Reflow Soldering Instructions

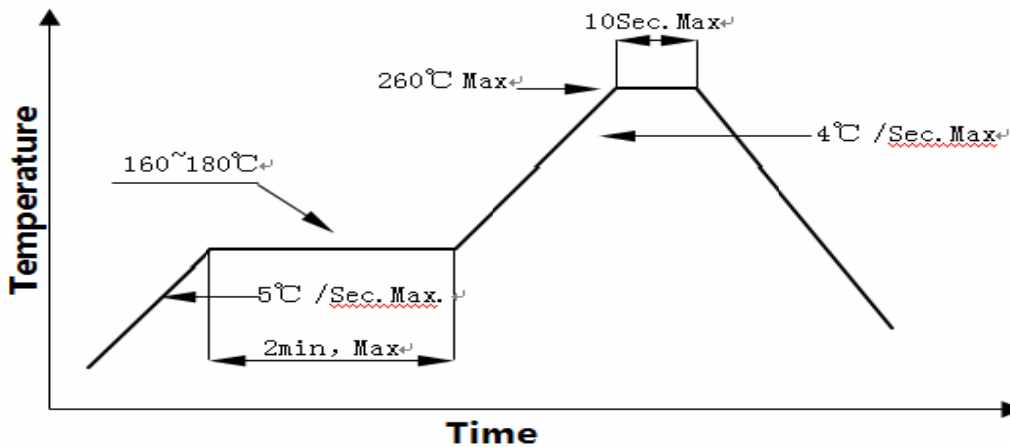


Fig.3-1 SMT Reflow Soldering Map

Fig.3-2 SMT Reflow Soldering Instructions SMT

Average temperature rise speed	T _{smax} T _P	5 °C/ Max 5 °C/ s
Preheating: minimum temperature	(T _{smin})	160 °C
Preheating: Max temperature	(T _{smax})	260 °C
Preheating: Time	T _{smin} T _{smax}	60 - 120 60s-120s
Time limited to maintain high temperature: the temperature	(T _L)	217 °C
Time limited to maintain high temperature: The Time	(t _L)	60 Max 60s
Peak /Classification of temperature: /	(T _P)	260 °C
Time limit classification of peak temperature time	t _p	10 Max 10s
(T _P) 5 °C Hold time within 5 °C with the actual peak temperature (TP)		30 Max 30s
Cooling speed		6 °C/ Max 6 °C/ s
25 °C Needed time from 25 °C to T _p		8 Max 8 minutes

Notes

(1)Reflow soldering should not be done more than twice. If more than 24 hours between the two solderings , LED will be damaged.

24 LED

(2)Whensoldering , do not put stress on the LEDs during heating.

3.1.1 Soldering Iron

(1) When do soldering by hand, keep the temperature of iron below less 300 less than 3 seconds.

300 3

(2) Soldering by hand should be done only one time.

3.1.2 Repairing

Repairing should not be done after the LEDs have been soldered. When repairing is unavoidable, a double-head soldering iron should be used (as below figure). It should be confirmed in advance whether the characteristics of LEDs will or not be damaged by repairing.

LED #w'@ D C ÊB \$ C , % ûN± \$ C , , ûN± µ+^ j' J÷ , 6B J Á ~ Ê. ÐAÚ!Š 0 Ĩ E P C P • ...LED b Dđ°(] >

3.1.3 Cautions # E ÁN⁻

(1) The encapsulated material of the LEDs is silicone. Therefore the LEDs have a soft surface on the top of package. The pressure to the top surface will be impacted on the reliability of the LEDs. Precautions should be taken to avoid the strong pressure on the encapsulated part. So when use the picking up nozzle, the pressure on the silicone resin should be proper. LED 7>û7, p.{ 7, ,>žM⁻ E¹Ež, +^ Ñ ? Á 7, %>žM⁻ P § LED %M-], !š Ê ?N° Lh à óFµ f ^ ? Á ž , , % µ+^ n j , , 7, %>žM⁻, ° Á Ñ Ê e ! % , ° >

(2) Components should not be mounted on warped (non coplanar) portion of PCB. After soldering, do not warp the circuit board. LED &¥* C?.'@ Ũ ^ e (, ° PCB µ @ , '@ Ũ • D , • C?· e Î4đ D%µ >

(3) Do not apply mechanical force or excess vibration during the cooling process to normal temperature after soldering. Do not rapidly cool device after soldering. #w'@ • D íªEy0A c , C?· / † Ĩ Ô Ö L Ñ , • C?· ?M= Ð , #w'@ D , C?· Gý+^%ö • íª , ° Ĩ E >

4. Handling Pre caution s Ý ÷ µ+^# E ÁN⁻

4.1 Handli ng Precautions Ý ÷ µ+^# E ÁN⁻

(1) LED operating environment and sulfur element composition cannot be over 100PPM in the LED mating usage material. This is provided for informational purposes only and is not a warranty or endorsement. LED ')ă¹ D LED F8Gf, °† Ĩ c. i y3V L > (Ÿ F 3 C %C»Ey100PPM. F e 6 ` 0Aă , C ' 1 < ÷ C^ ũ >

(2) In order to prevent ex-ternal material from getting into the inside of LED, which may cause the malfunction of LED, the single content of Bromine element is required to be less than 900PPM, the single content of Chlorine element is required to be less than 900PPM, the total content of Bromine element and Chlorine element in the external materials of the application products is required to be less than 1500PPM. This is provided for informational purposes only and is not a warranty or endorsement. p ¼Lh ĩ" L +, (ŸC^F > LED »G FV F LED , ° Z , v :)ă¹ v+^ • , 1• 1• , < 6, °\$ê y3V aH ?·"x E Ä 900PPM , < 6"e y3V aH ?· "x E Ä 900PPM , \$ê y3V D"e y3V q aH ũ N±E Ä 1500PPM. F e 6 ` 0Aă , C ' 1 < ÷ C^ ũ >

(3) VOCs (Volatile organic compounds) emitted from materials used in the construction of fixtures can penetrate silicone encapsulants of LEDs and discolor when exposed to heat and photonic energy. The result can be a significant loss of light output from the fixture. Knowledge of the properties of the materials selected to be used in the construction of fixtures can help prevent

these issues. LT advises against the use of any chemicals or materials that have been found or are suspected to have an adverse effect on device performance or reliability. To verify compatibility, LT recommends that all chemicals and materials be tested in the specific application and environment for which they are intended to be used. Attaching LEDs, do not use adhesives that outgas organic vapor.

LED

LED

LED

LED

(4) Handle the component along the side surface by using forceps or appropriate tools; do not directly touch or Handle the silicone lens surface, it may damage the internal circuitry.

(5) In designing a circuit, the current through each LED must exceed the absolute maximum rating specified for each LED. In the meanwhile, resistors for protection should be applied, otherwise slight voltage shift will cause big current change, burn out may happen. The driving circuit must be designed to allow forward voltage only when it is ON or OFF. If the reverse voltage is applied to LED, migration can be generated resulting in LED damage.

LED

LED

(6) Thermal Design is paramount importance because heat generation may result in the Characteristics decline, such as brightness decreased, Color change and so on. Please consider the heat generation of the LEDs when making the system design.

LED

(7) Compared to standard encapsulants, silicone is generally softer, and the surface is more likely to attract dust requiring special care during processing. In cases where a minimal level of dirt and dust particles cannot be guaranteed, a suitable cleaning solution must be applied to the surface after the soldering of components. LT suggests using isopropyl alcohol for cleaning. In case other solvents are used, it must be assured that these solvents do not dissolve the package or resin. Ultrasonic cleaning is not recommended. Ultrasonic cleaning may cause damage to the LED.

LED

Table 4-1Storage

Conditions		Temperature	Humidity	Time
Storage	Before Opening Aluminum Bag	≤ 30	$\leq 75\%$	Within 1 Year From Date
	After Opening Aluminum Bag	≤ 30	$\leq 60\%$	24hours 24
Baking		60 ± 5	-	≥ 24 hours 24

(8) If the moisture absorbent material silica gel has faded away or the LEDs have exceeded the storage time baking treatment should be performed after unpacking and based on the following condition 65 ± 5 for above 24 hours.

60 ± 5 24

If the package is flatulence or damaged, please notify the sales staff to assist.

*<

(9) Similar to most Solid state devices; LEDs are sensitive to Electro-Static Discharge (ESD) and Electrical Over Stress (EOS)
LED

Version History/

Date	Revisor	Version	Verifier	Remarks
2019/11/1		E/0		