

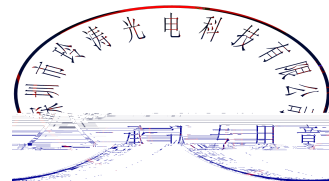
# SPECIFICATION

LT P/N

LT3004WH-A-Q

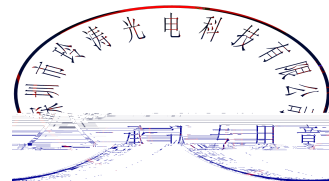
R&D

Mass Product



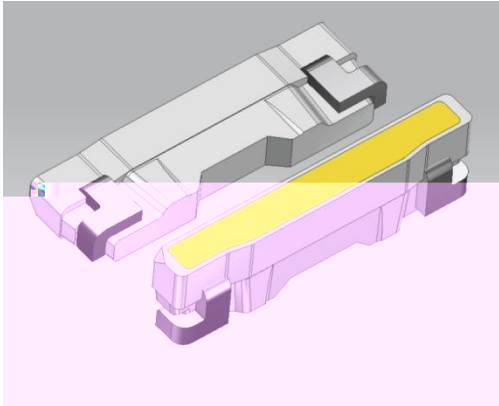
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## 1. Description

### 1.1 General Description



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

Product Package: 3.0mmX0.85mmX0.42mm.

LED, , : 3.0mmX0.85mmX0.42mm

### 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

Mobile Phones.

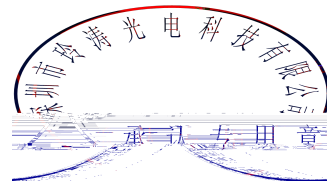
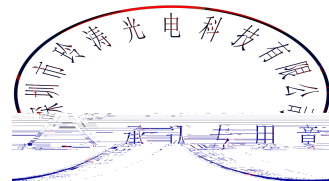




Table 1



## 1.6 Bin Range Of Forward Voltage and Luminous Intensity (IF=20mA)

### BIN (IF=20mA)

Table 1-3 Bin Range Of Luminous Intensity Bin (IF=20mA)

BIN CODE	IF=20mA Test			
	Min(mcd)	Max(mcd)	Min(lm)	Max(lm)
30	2150	2250	6.00	6.25
31	2250	2350	6.25	6.50
32	2350	2450	6.50	6.75
33	2450	2550	6.75	7.00
34	2550	2650	7.00	7.25
35	2650	2750	7.25	7.50
36	2750	2850	7.50	7.75
37	2850	2950	7.75	8.00
38	2950	3050	8.00	8.25
39	3050	3150	8.25	8.50
40	3150	3250	8.50	8.75
41	3250	3350	8.75	9.00
42	3350	3450	9.00	9.25
43	3450	3550	9.25	9.5
44	3550	3650	9.5	9.75
45	3650	3750	9.75	10.0

Table 1-4 Bin Range Of Forward Voltage Bin

BIN CODE	Min.	Max.	Unit	Condition
V0	2.7	2.8	V	IF=20mA
V1	2.8	2.9		
V2	2.9	3.0		
V3	3.0	3.1		
V4	3.1	3.2		
V5	3.2	3.3		

#### Notes

VF Tolerance:  $\pm 0.03V$  @ IF= 20mA @ Ta=25°C

IV Tolerance:  $\pm 3\%$  @ IF= 20mA @ Ta=25°C

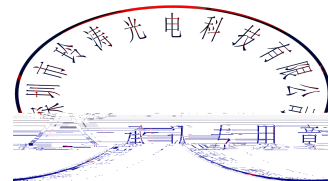


Fig. 1-5 The C.I.E. 1931 Chromaticity Diagram: ( )

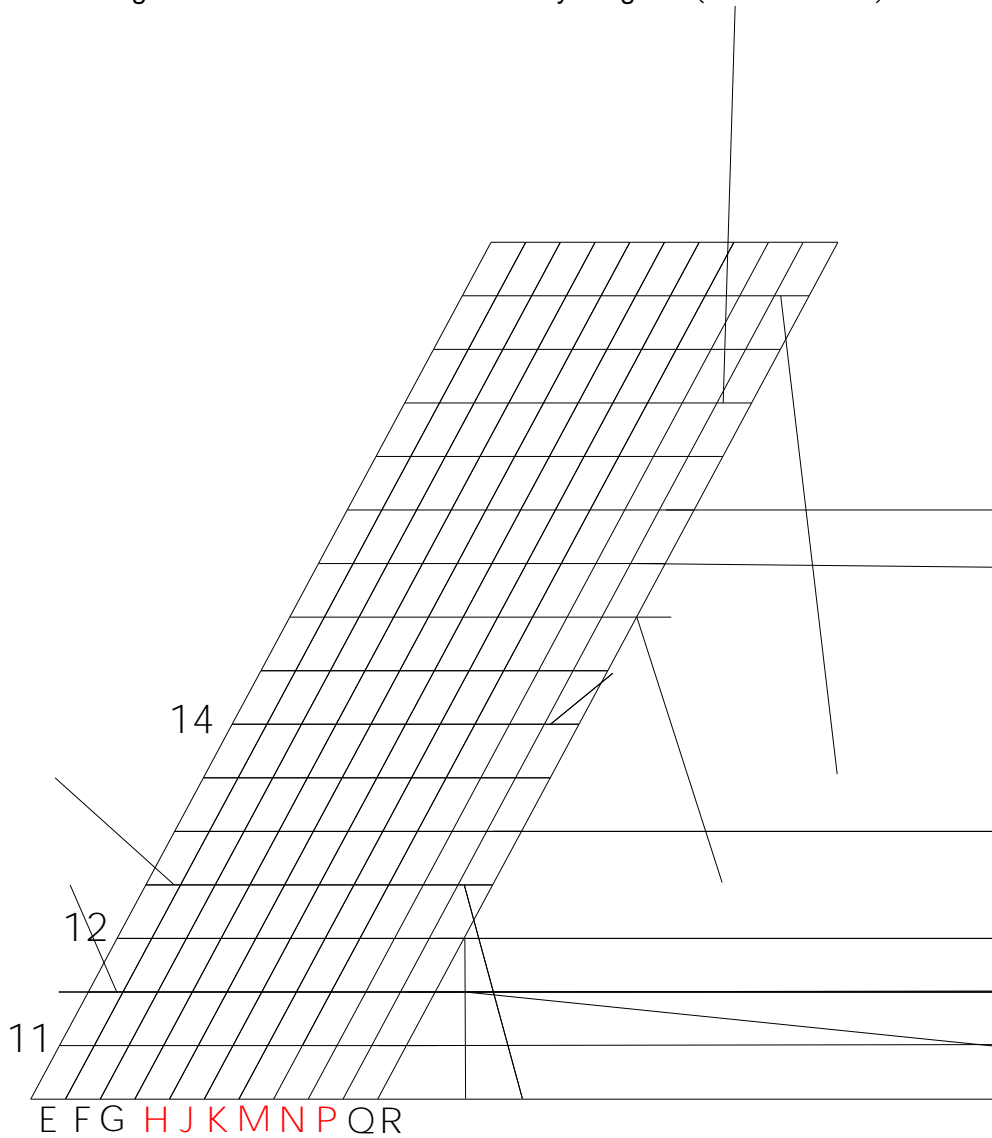


Table 1-6 Bin Range of Chromaticity Coordinates Block (IF=20mA ; Ta=25 )

H11X	0.2302	0.1944	J11X	0.2354	0.1944	K11X	0.2406	0.1944	M11X	0.2458	0.1944	N11X	0.2510	0.1944	P11X	0.2562	0.1944
	0.2345	0.2023		0.2397	0.2023		0.2449	0.2023		0.2501	0.2023		0.2553	0.2023		0.2605	0.2023
	0.2397	0.2023		0.2449	0.2023		0.2501	0.2023		0.2553	0.2023		0.2605	0.2023		0.2657	0.2023
	0.2354	0.1944		0.2406	0.1944		0.2458	0.1944		0.2510	0.1944		0.2562	0.1944		0.2614	0.1944
H11S	0.2345	0.2023	J11S	0.2397	0.2023	K11S	0.2449	0.2023	M11S	0.2501	0.2023	N11S	0.2553	0.2023	P11S	0.2605	0.2023
	0.2388	0.2102		0.2440	0.2102		0.2492	0.2102		0.2544	0.2102		0.2596	0.2102		0.2648	0.2102
	0.2440	0.2102		0.2492	0.2102		0.2544	0.2102		0.2596	0.2102		0.2648	0.2102		0.2700	0.2102
	0.2397	0.2023		0.2449	0.2023		0.2501	0.2023		0.2553	0.2023		0.2605	0.2023		0.2657	0.2023
H12X	0.2388	0.2102	J12X	0.2440	0.2102	K12X	0.2492	0.2102	M12X	0.2544	0.2102	N12X	0.2596	0.2102	P12X	0.2648	0.2102
	0.2431	0.2181		0.2483	0.2181		0.2535	0.2181		0.2587	0.2181		0.2639	0.2181		0.2691	0.2181
	0.2483	0.2181		0.2535	0.2181		0.2587	0.2181		0.2639	0.2181		0.2691	0.2181		0.2743	0.2181



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	0.2440	0.2102		0.2492	0.2102		0.2544	0.2102		0.2596	0.2102		0.2648	0.2102		0.2700	0.2102
	0.2431	0.2181		0.2483	0.2181		0.2535	0.2181		0.2587	0.2181		0.2639	0.2181		0.2691	0.2181
	0.2474	0.2260		0.2526	0.2260		0.2578	0.2260		0.2630	0.2260		0.2682	0.2260		0.2734	0.2260
H12S			J12S			K12S			M12S			N12S					P12S



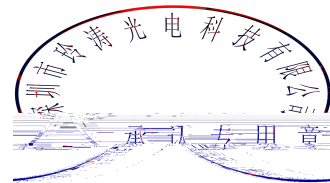
	0.2956	0.3050		0.3008	0.3050		0.3060	0.3050		0.3112	0.3050		0.3164	0.3050		0.3216	0.3050
	0.2913	0.2971		0.2965	0.2971		0.3017	0.2971		0.3069	0.2971		0.3121	0.2971		0.3173	0.2971
H18X	0.2904	0.3050	J18X	0.2956	0.3050	K18X	0.3008	0.3050	M18X	0.3060	0.3050	N18X	0.3112	0.3050	P18X	0.3164	0.3050
	0.2947	0.3129		0.2999	0.3129		0.3051	0.3129		0.3103	0.3129		0.3155	0.3129		0.3207	0.3129
	0.2999	0.3129		0.3051	0.3129		0.3103	0.3129		0.3155	0.3129		0.3207	0.3129		0.3259	0.3129
	0.2956	0.3050		0.3008	0.3050		0.3060	0.3050		0.3112	0.3050		0.3164	0.3050		0.3216	0.3050
H18S	0.2947	0.3129	J18S	0.2999	0.3129	K18S	0.3051	0.3129	M18S	0.3103	0.3129	N18S	0.3155	0.3129	P18S	0.3207	0.3129
	0.2990	0.3208		0.3042	0.3208		0.3094	0.3208		0.3146	0.3208		0.3198	0.3208		0.3250	0.3208
	0.3042	0.3208		0.3094	0.3208		0.3146	0.3208		0.3198	0.3208		0.3250	0.3208		0.3302	0.3208
	0.2999	0.3129		0.3051	0.3129		0.3103	0.3129		0.3155	0.3129		0.3207	0.3129		0.3259	0.3129
H19X	0.2990	0.3208	J19X	0.3042	0.3208	K19X	0.3094	0.3208	M19X	0.3146	0.3208	N19X	0.3198	0.3208	P19X	0.3250	0.3208
	0.3033	0.3287		0.3085	0.3287		0.3137	0.3287		0.3189	0.3287		0.3241	0.3287		0.3293	0.3287
	0.3085	0.3287		0.3137	0.3287		0.3189	0.3287		0.3241	0.3287		0.3293	0.3287		0.3345	0.3287
	0.3042	0.3208		0.3094	0.3208		0.3146	0.3208		0.3198	0.3208		0.3250	0.3208		0.3302	0.3208
H19S	0.3033	0.3287	J19S	0.3085	0.3287	K19S	0.3137	0.3287	M19S	0.3189	0.3287	N19S	0.3241	0.3287	P19S	0.3293	0.3287
	0.3076	0.3366		0.3128	0.3366		0.3180	0.3366		0.3232	0.3366		0.3284	0.3366		0.3336	0.3366
	0.3128	0.3366		0.3180	0.3366		0.3232	0.3366		0.3284	0.3366		0.3336	0.3366		0.3388	0.3366
	0.3085	0.3287		0.3137	0.3287		0.3189	0.3287		0.3241	0.3287		0.3293	0.3287		0.3345	0.3287

#### 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

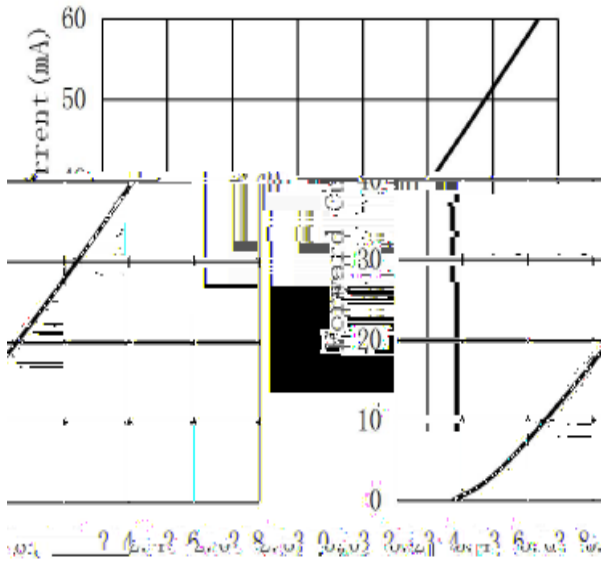


Fig. 1-7 Forward Voltage Vs Forward Current

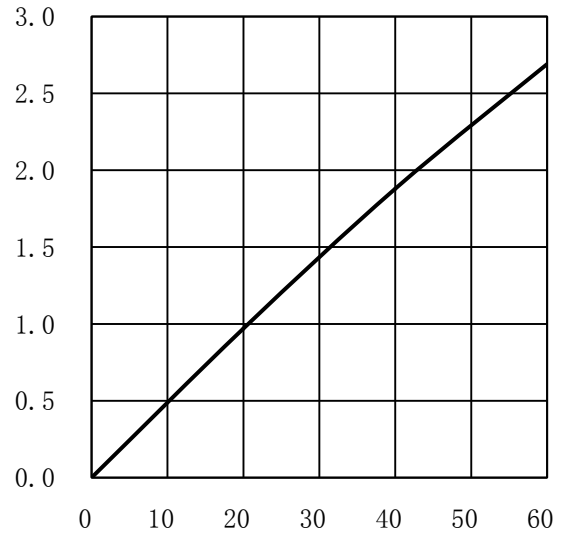


Fig. 1-8 Forward Current Vs Relative Intensity

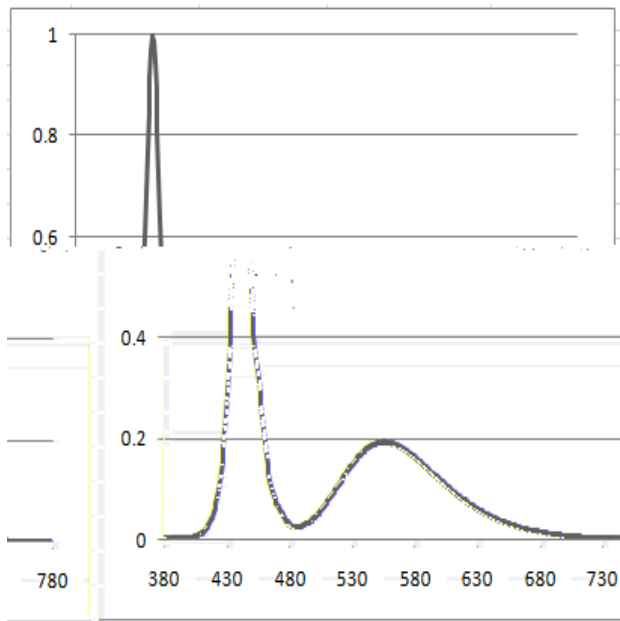


Fig. 1-9 Spectrum Distribution

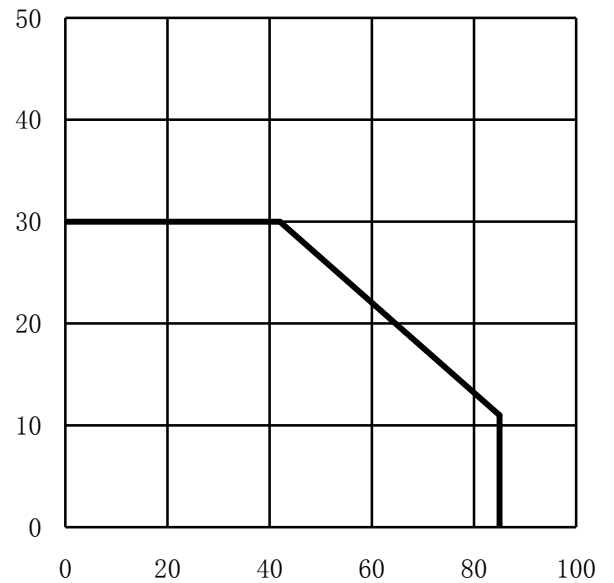
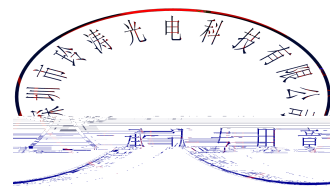


Fig. 1-10 Solder Temperature Vs Forward Current

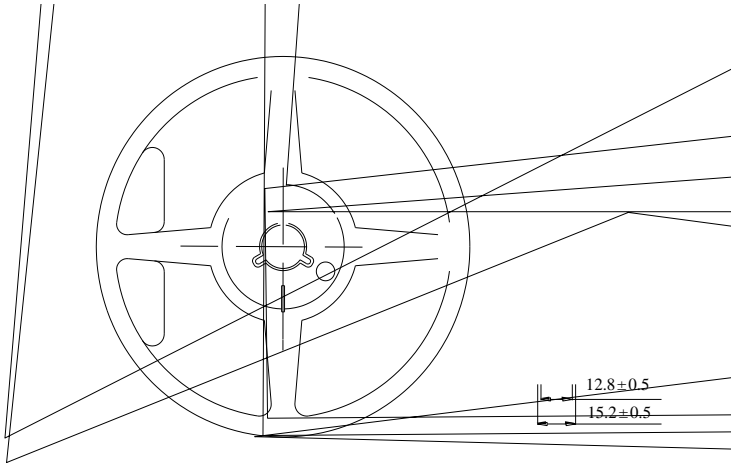
T<sub>j</sub> 105



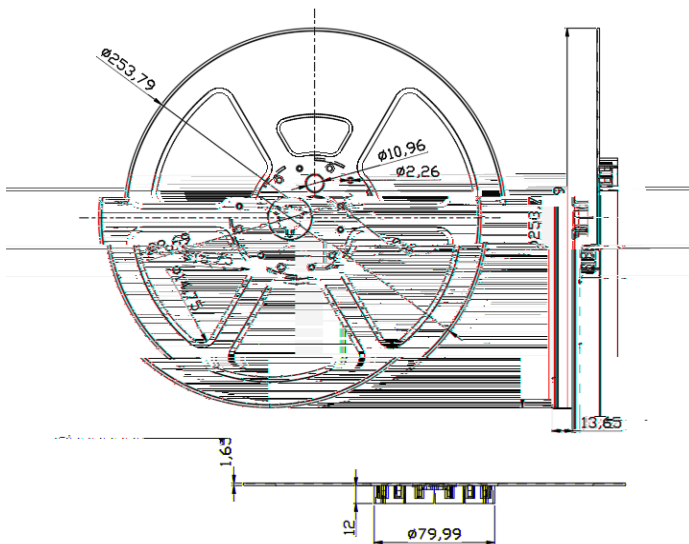
## 2. Packaging

### 2.1 Packaging Specification

A.Package:5000pcs/reel.                      5000pcs

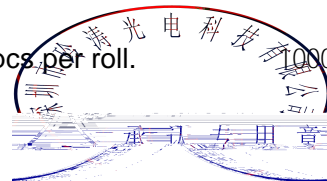


B.Package:10000pcs/reel.                      10000pcs



#### Notes

When the quantity is less than 10000pcs/roll, the quantity is 5000pcs per roll. 10000pcs / 5000pcs





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## 2.1.1 Carrier Tape Dimension

P0	4.00±0.10	P2	2±0.05	P1	4.00±0.10	D0	1.60±0.10	D1	0.60±0.10
E	1.75±0.10	F	5.50±0.10	W					

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

TestItems	Test Condition	Time	Quantity
-----------	----------------	------	----------

Life Test	Ta=25 If=20mA	1000hrs.	20pcs.	0/1
High Temperature and Humidity storage	60 / 90%RH	1000hrs.	20pcs.	0/1
Temperature Humidity Operation Life	60 / 90%RH If=15mA	500hrs	20pcs.	0/1

## 2.5 Criteria For Judging Damage

Table 2-7 Criteria For Judging Damage

Test Items	Symbol	Test Condition	Criteria For Judgement	
			Min.	Max.
Forward Voltage	$V_F$	$I_F=20mA$	-	$>U.S.L^*)x1.1$
Reverse Current	$I_R$	$V_R = 5V$	-	$>U.S.L^*)x2.0$
Luminous Flux		$I_F=20mA$	$<L.S.L^*)x0.7$	-

### 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

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

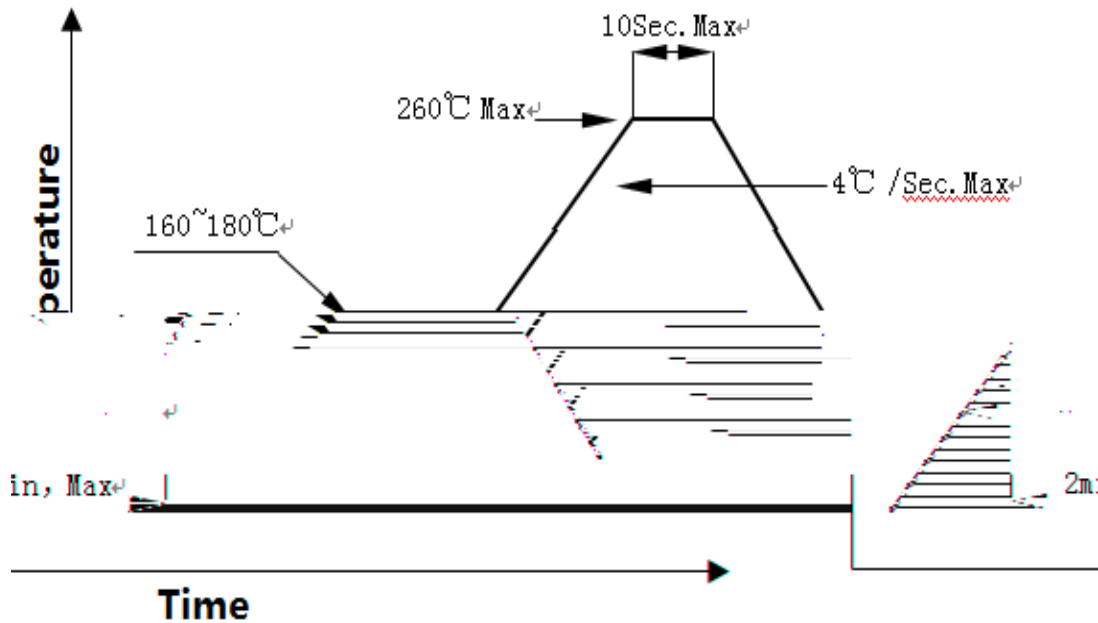


Fig.3-1 SMT Reflow Soldering Map

Fig.3-2 SMT Reflow Soldering Instructions SMT

Average temperature rise speed	T <sub>smax</sub> T <sub>P</sub>	5 °C/ Max 5 °C/ s
Preheating: minimum temperature	(T <sub>smin</sub> )	160 °C
Preheating: Max temperature	(T <sub>smax</sub> )	260 °C
Preheating: Time	T <sub>smin</sub> T <sub>smax</sub>	60 - 120 60s-120s
Time limited to maintain high temperature: the temperature	(T <sub>L</sub> )	217 °C
Time limited to maintain high temperature: The Time	(t <sub>L</sub> )	60 Max 60s
Peak /Classification of temperature:	/ (T <sub>P</sub> )	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°C less than 3 seconds.

300

3

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

#### 3.1.2





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

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 4-1 Storage

Conditions		Temperature	Humidity	Time
Storage	Before Opening Aluminum Bag	30	75%	Within 1 Year From Date
	After Opening Aluminum Bag	30	60%	24hours 24
Baking		60± 5	-	24hours 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 ) °C 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

