



LIGITEK ELECTRONICS CO.,LTD.
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0.2W Power Light LED



Lead-Free Parts

LG-5630WK-1-T60-P-X-DXXX

DATA SHEET

DOC. NO : QW0905-LG-5630WK-1-T60-P-X-DXXX

REV. : A

DATE : 18 - Jun. - 2012



Product Model Designation System

LG - 56 30 WK Z - 1 - T60 - P - C - D8 01
 A B C D E F G H I J K

A	B	C	D	E
Title	Dimension(L)	Dimension(W)	Emitting Color	Zener
LG:Ligitek	57:5.7mm 56:5.6mm	30:3.0mm	WK:White Color	
F	G	H	I	J
Chip Modification	Test Current	Patent	Chromaticity Coordinates	CRI Characteristics
-X: 2 chip in 1(Parallel) -1: 1 chip in 1 -2: 2 chip in 1(Series)	T60: 60mA	P: IP Free	-CW: Cool White -NW: Neutral White -WW: Warm White	D7 : CRI>70 D8 : CRI>80
K				
Bin Modification				

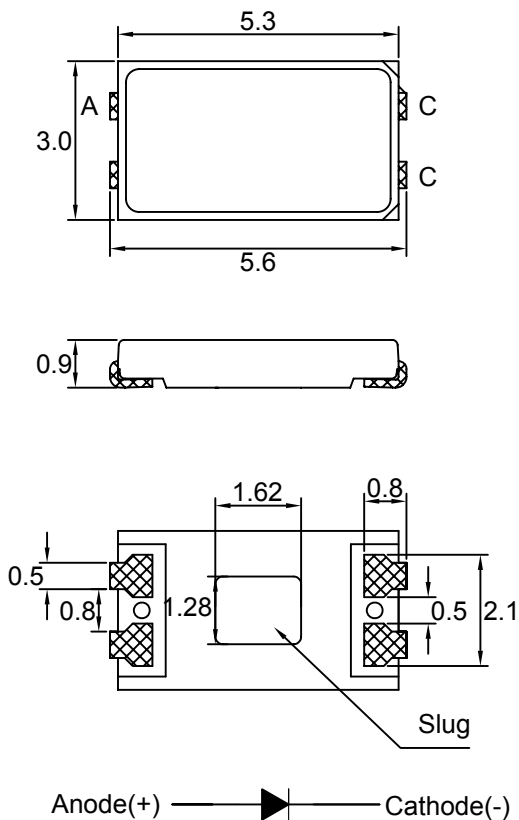
Features

- *. White colored SMTpackage
- *.Suitable for all SMT assembly and soldering methodes
- *. Pb-Free Reflow soldering application
- *. More Energy Efficient than Incandescent and most Halogen lamps.
- *. RoHS compliant

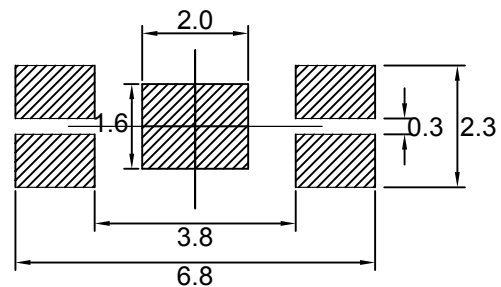
Typical Applications

- *. Reading Light (car,bus,aircraft)
- *. Portable(flashlight,bicycle).
- *. Backlights(Monitor,TV) / Light Guides.
- *. Automotive Exterior (Stop-Tail-Tum,CHMSL,Mirror Side Repeat).
- *. Commercial and Residential Architectural lighting.
- *. Mini-accent / Uplighters / Downlighters / Orientation lighting
- *. Fiber Optic Alternative / Decorative / Entertainment lighting.
- *. Security / Garden lighting.
- *. Cove / Undershef / Task lighting.
- *. Traffic signaling / Beacons / Rail crossing and Wayside lighting.

Dimension



Recommended Solder Patterns



Note:

- 1.The tolerance unless mentioned is $\pm 0.1\text{mm}$,unit=mm.
- 2.It is strongly recommended to apply on electrically isolated heat conducting film between the slug and contact surfaces.

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Ratings	UNIT
		White	
DC Forward Current	I _F	60	mA
Power Dissipation	PD	0.22	W
Peak pulse current Duty 1/10@10KHz	I _{FP}	100	mA
LED junction Temperature	T _j	125	°C
Reverse Current(V _R =5V)	I _r	10	μA
ESD Sensitivity	V _B	±500	V
Storage Temperature	T _{stg}	-40 ~ +100	°C
Operating Temperature	T _{opr}	-40 ~ +85	°C
Soldering Temperature	T _p	260	°C

Note:

1. Proper current derating must be observed to maintain temperature below the maximum.
2. LEDs are not designed to be driven in reverse bias.

Device Selection Guide:

Part No.	MATERIAL	COLOR	
		Emitted	Lens
LG-5630WK-1-T60-P-X-DXXX	InGaN/GaN	Cool White	Yellow Diffused
		Warm White	

Luminous Intensity Characteristics at 60mA

(Ratings At 25°C Ambient)

Part No.	Emission Color	Luminous Intensity			Units
		Min.	Typ.	Max.	
LG-5630WK-1-T60-P-X-DXXX	White	14	----	30	lm

Note :

1. White emitters are built with InGaN.
2. Luminous Intensity is measured with an accuracy of $\pm 10\%$

Forward Voltage Characteristics at 60mA

(Ratings At 25°C Ambient)

Part No.	Emission Color	Vf			Units
		Min.	Typ.	Max.	
LG-5630WK-1-T60-P-X-DXXX	White	2.8	----	3.6	V

Note : Forward Voltage is measured with an accuracy of $\pm 0.1V$

Chromaticity Coordinates Characteristics at 60mA

(Ratings At 25°C Ambient)

Part No.	Emission Color	Chromaticity Coordinates			
		X		Y	
		Min.	Max.	Min.	Max.
LG-5630WK-1-T60-P-X-DXXX	White	0.3028	0.4813	0.3113	0.4319

Note : Chromaticity Coordinates is measured with an accuracy of ± 0.01 .

Emission Angle Characteristics at 60mA

(Ratings At 25°C Ambient)

Part No.	Emission Color	Lambertian	Units
LG-5630WK-DT-1-T60-X-XX-XXX	White	120	Degrees

Product List

Part No.	CCT(K)		CRI	Luminous Intensity(lm)		
	Min.	Max.	Min.	Min.	Typ.	Max.
LG-5630WK-1-T60-P-C-D812	5310	6500	80	16	18	----
LG-5630WK-1-T60-P-W-D813	2580	2870	80	14	16	----

Note : CRI is measured with an accuracy of ± 2.0 .

Bin Code Description

Bin Code		
Luminous Intensity	CIE	Forward Voltage
F20D	WO	3.0-3.1

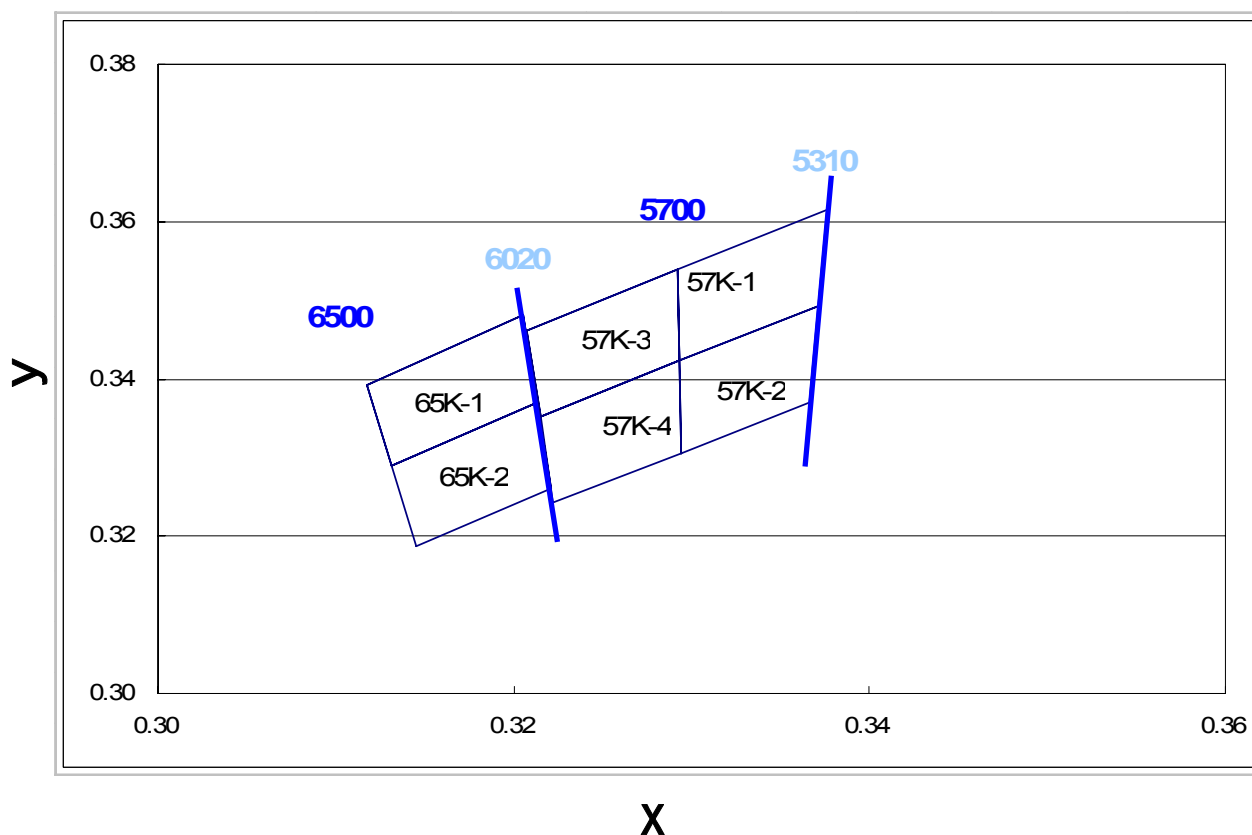
Luminous Intensity (lm) @IF=60mA		
Bin Code	Min.	Max.
F14D	14	16
F16D	16	18
F18D	18	20
F20D	20	22
F22D	22	24
F24D	24	26
F26D	26	28
F28D	28	30

Color Rank @IF=60mA	
CW	WW
65K-1	27K-1
65K-2	27K-2
57K-1	27K-3
57K-2	27K-4
57K-3	
57K-4	

Forward Voltage(V) @IF=60mA
2.8-2.9
2.9-3.0
3.0-3.1
3.1-3.2
3.2-3.3
3.3-3.4
3.4-3.5
3.5-3.6

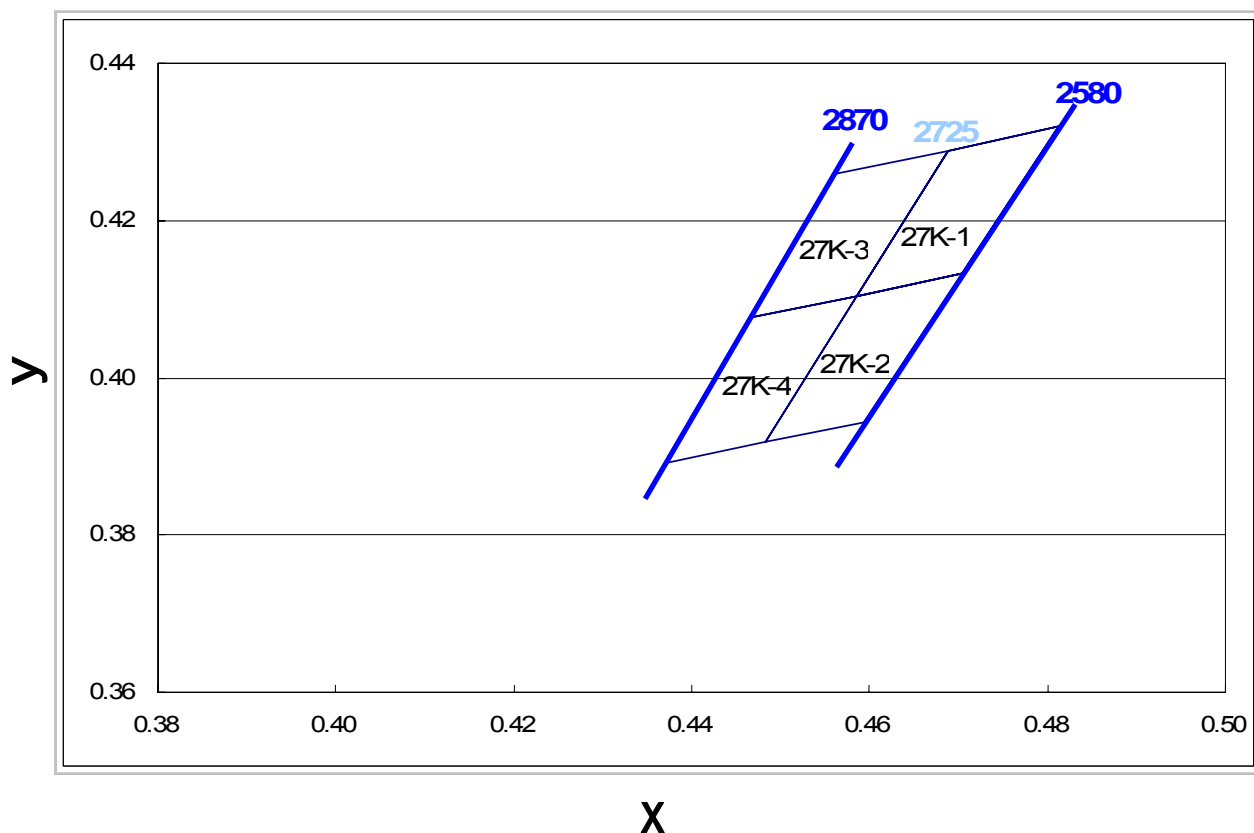
Bins Code of CW chromaticity coordinates

CCT(K) Reference Range	BIN CODE	1		2		3		4	
		X	Y	X	Y	X	Y	X	Y
6020-6500	65K-1	0.3205	0.3481	0.3117	0.3393	0.3131	0.3290	0.3213	0.3371
	65K-2	0.3213	0.3371	0.3131	0.3290	0.3145	0.3187	0.3221	0.3261
5310-5700	57K-1	0.3376	0.3616	0.3292	0.3539	0.3293	0.3423	0.3371	0.3493
	57K-2	0.3371	0.3493	0.3293	0.3423	0.3294	0.3306	0.3366	0.3369
5700-6020	57K-3	0.3292	0.3539	0.3207	0.3462	0.3215	0.3353	0.3293	0.3423
	57K-4	0.3293	0.3423	0.3215	0.3353	0.3222	0.3243	0.3294	0.3306



Bins Code of WW chromaticity coordinates

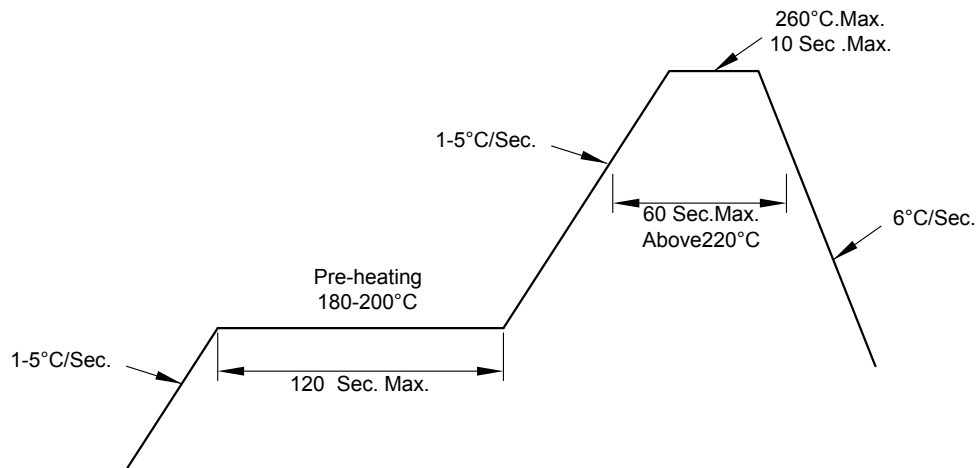
CCT(K) Reference Range	BIN CODE	1		2		3		4	
		X	Y	X	Y	X	Y	X	Y
2580-2725	27K-1	0.4813	0.4319	0.4688	0.4290	0.4585	0.4104	0.4703	0.4132
	27K-2	0.4703	0.4132	0.4585	0.4104	0.4483	0.3919	0.4593	0.3944
2725-2870	27K-3	0.4688	0.4290	0.4562	0.4260	0.4468	0.4077	0.4585	0.4104
	27K-4	0.4585	0.4104	0.4468	0.4077	0.4373	0.3893	0.4483	0.3919



Recommended Profile for Reflow Soldering

Pb -free solder temperature profile

Pb -free solder Temperature profile	
Pre-heat	180-200°C
Pre-heat time	120 Sec Max
Peak-Temperature	260°C Max
Soldering time condition	10 Sec Max



- (1) Reflow soldering should not be done more than two times.
- (2) When soldering, do not put stress on the LEDs during heating.
- (3) After soldering, do not warp the circuit board.
- (4) The encapsulated material of the LEDs is silicone.
Precautions should be taken to avoid the strong pressure on the encapsulated part. So when using the chip mounter, the picking up nozzle that does not affect the silicone resin should be used.

Hand Soldering Conditions:

Do not exceed 3 seconds at maximum 320°C under soldering iron. (one time only)

Fig.1 Forward current vs. Forward Voltage

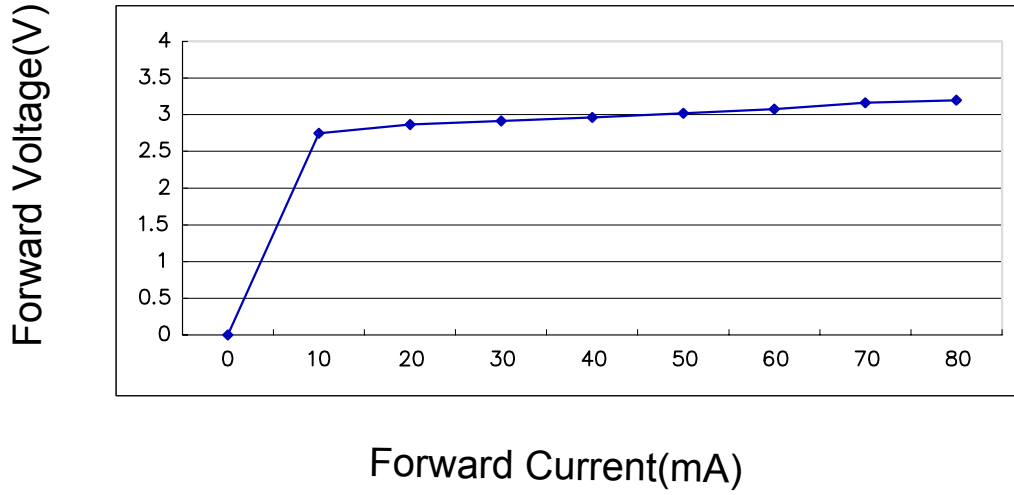


Fig.2 Forward current vs. Luminous Intensity

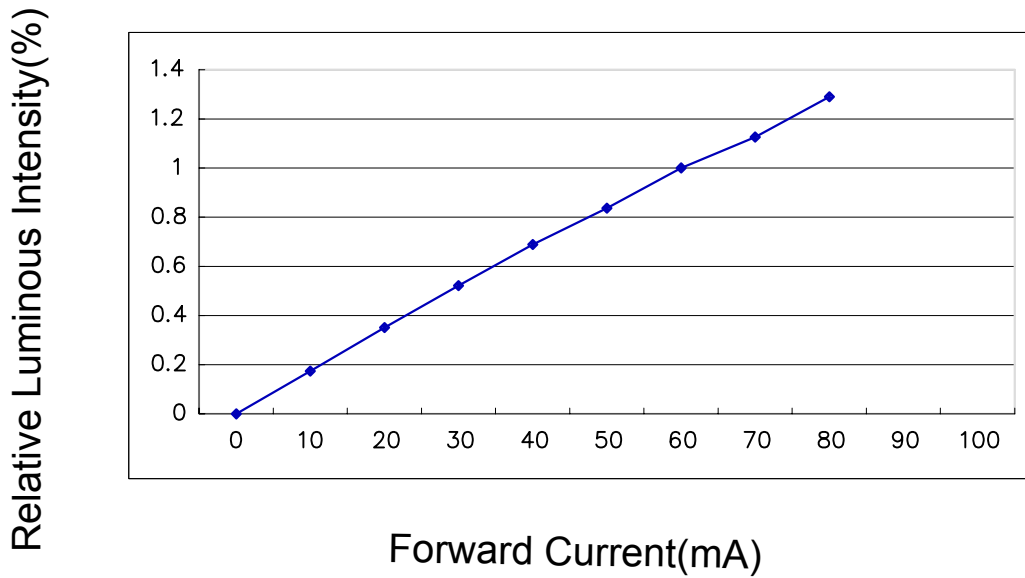


Fig.3 Luminous Spectrum(Ta=25°C)

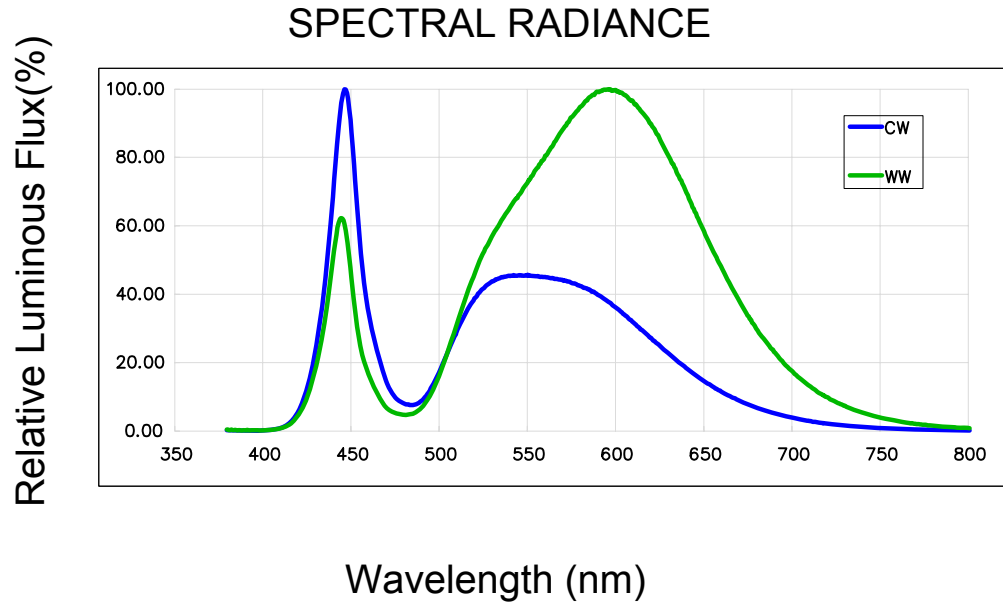
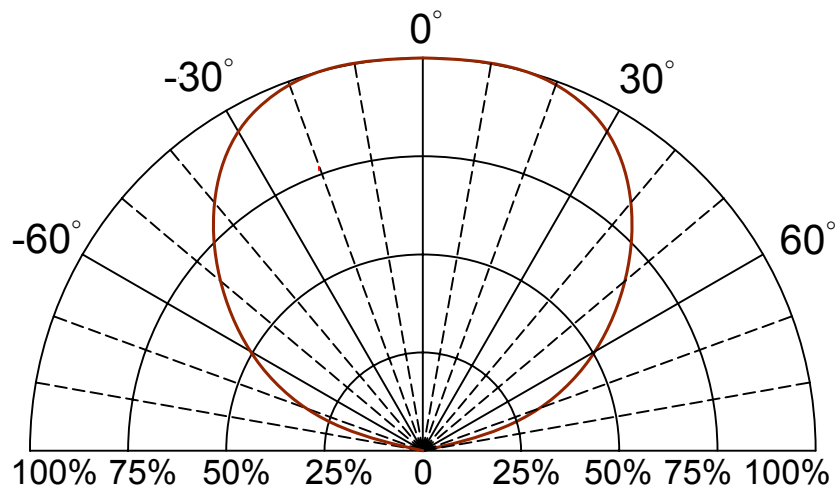
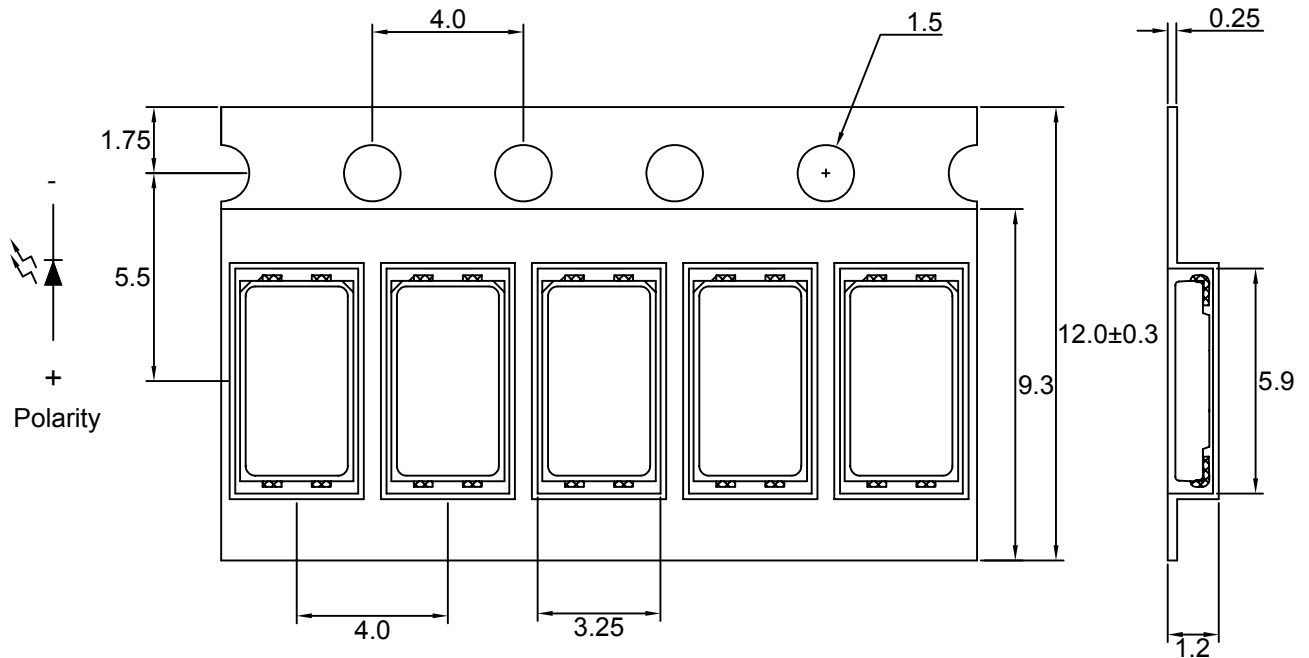


Fig.4 Directivity Radiation

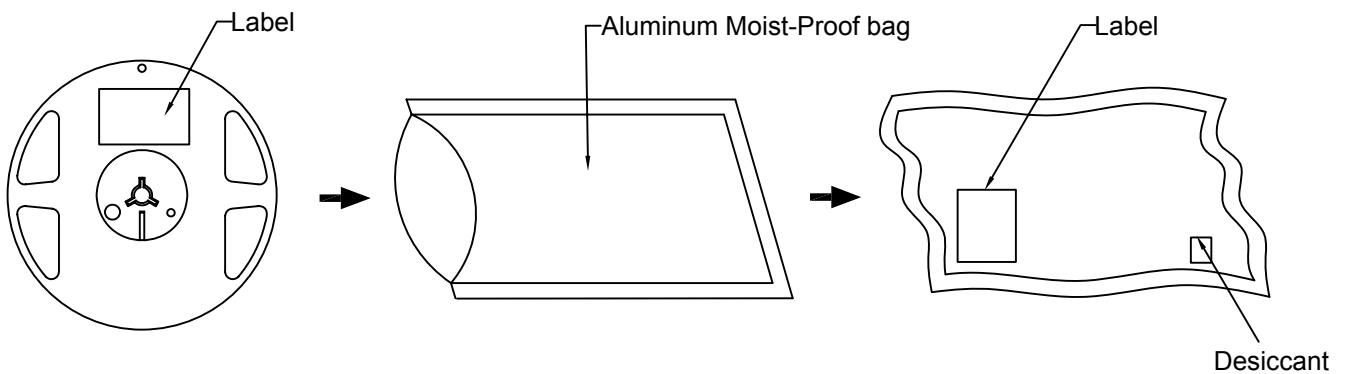


Carrier Type Dimensions









Note : The tolerances unless mentioned is $\pm 0.2\text{mm}$.

Packing Specifications



Label Explanation

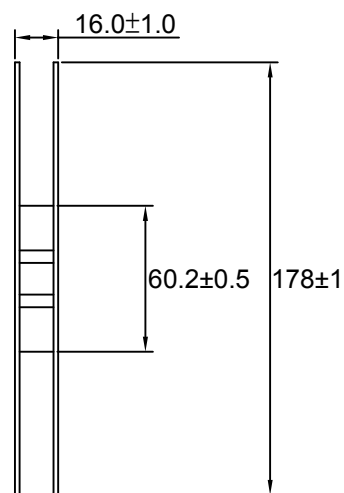
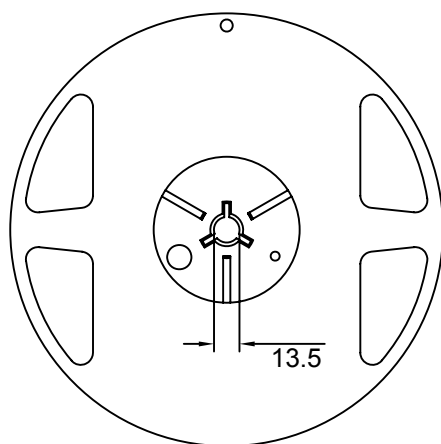
	LIGITEK ELECTRONICS CO., LTD.	
		
	PART :	LG-5630WK-1-T60-P-C-D801
		
	LOT :	GS1-060109
		
QTY(PCS):	2000	
		
BIN/HUE :	F20D/27K-1	VF:3.1-3.2

BIN : Luminous Flux

HUE : Chromaticity Coordinates
(CIE_x , CIE_y)

3.1 - 3.2 : Forward Voltage

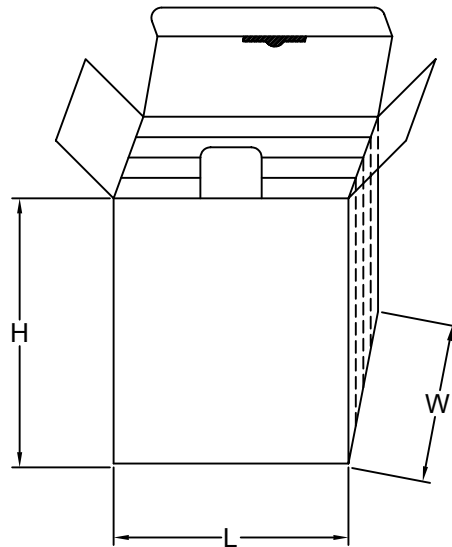
Reel Dimensions



Box Explanation

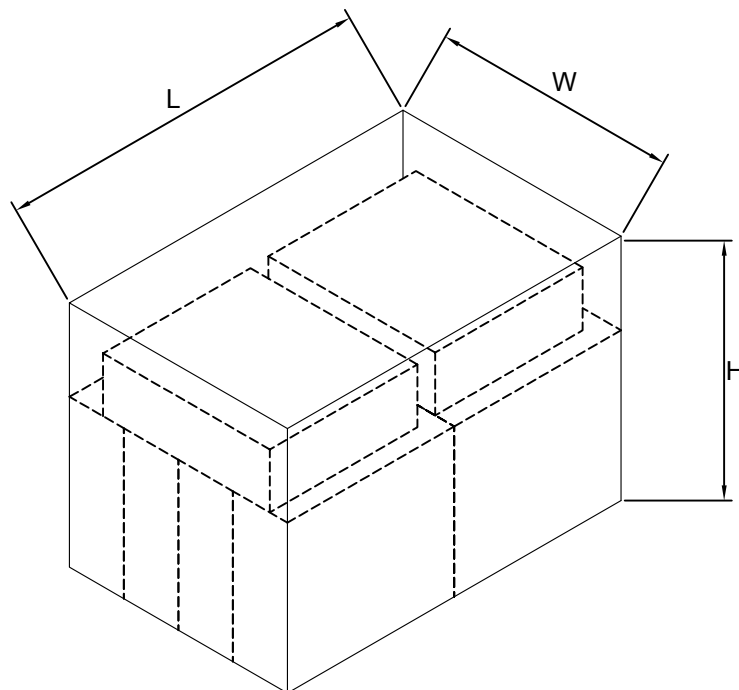
1. 4 BAG / INNER BOX

2. INNER BOX SIZE : L X W X H 23cm X 8.5cm x 26cm



3. 10 INNER BOXES / CARTON

4. CARTON SIZE : L X W X H 58cm X 34cm x 35cm



Reliability Test:

(1)Test items and results

Classification	Test Item	Test Condition	Sample Size
Endurance Test	Operating Life Test	1.Ta=Under Room Temperature As Per Data Sheet Maximum Rating. 2.If=60mA 3.t=1000 hrs	22
	High Temperature Storage Test	1.Ta=105°C±5°C 2.t=500 hrs	22
	Low Temperature Storage Test	1.Ta=-40°C±5°C 2.t=1000 hrs	22
	High Temperature High Humidity Storage Test	1.IR-Reflow In-Board, 2 Times 2.Ta=85°C±5°C 3.RH=90%~95% 4.t=500hrs±2hrs	22
Environmental Test	Thermal Shock Test	1.IR-Reflow In-Board,2 times 2.Ta=105°C ±5°C & -40°C±5°C (30min) (30min) 3.total 100 cycles	22
	Reflow Soldering Test	1.T.Sol=260°C±5°C 2.Dwell Time= 10Max.	22
	Temperature Cycling	1.105°C ~ 25°C ~ -40°C 30mins 15mins 30mins 2.100 Cyeles	22

(2)Criteria for judging the damage

Item	Symbol	Test Conditions	Criteria for Judgement	
			Min.	Max.
Forward Voltage	Vf	If=60mA	-	U.S.L x1.2
Reverse Current	Ir	Vr=5V	-	U.S.L x2.0
Luminous Intensity	Iv	If=60mA	L.S.L x 0.5	-

Precautions For Use:

Storage time:

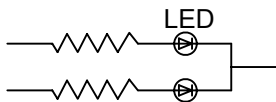
- 1.The operation of Temperatures and RH are : $5^{\circ}\text{C}\sim 35^{\circ}\text{C}$,RH60%.
- 2.Once the package is opened, the products should be used within a week.
Otherwise, they should be kept in a damp proof box with desiccating agent.
Considering the tape life, we suggest our customers to use our products within a year(from production date).
- 3.If opened more than one week in an atmosphere $5^{\circ}\text{C} \sim 35^{\circ}\text{C}$,RH60%, they should be treated at $60^{\circ}\text{C}\pm 5^{\circ}\text{C}$ for 15hrs.

Drive Method:

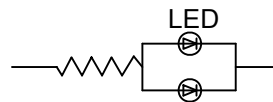
LED is a current operated device, and therefore, requires some kind of current limiting incorporated into the driver circuit. This current limiting typically takes the form of a current limiting resistor placed in series with the LED.

Consider worst case voltage variations than could occur across the current limiting resistor. The forward current should not be allowed to change by more than 40% of its desired value.

Circuit model A



Circuit model B



(A) Recommended circuit.

(B) The difference of brightness between LED could be found due to the VF-IF characteristics of LED.

Cleaning:

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

ESD(Electrostatic Discharge):

Static Electricity or power surge will damage the LED. Use of a conductive wrist band or anti-electrostatic glove is recommended when handling these LED. All devices, equipment and machinery must be properly grounded.