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1.0W Power Light LED



Lead-Free Parts

**LGXW-521E/TR1-CW**

**DATA SHEET**

DOC. NO : QW0905-LGXW-521E/TR1-CW

REV. : B

DATE : 18 - Jun. - 2012



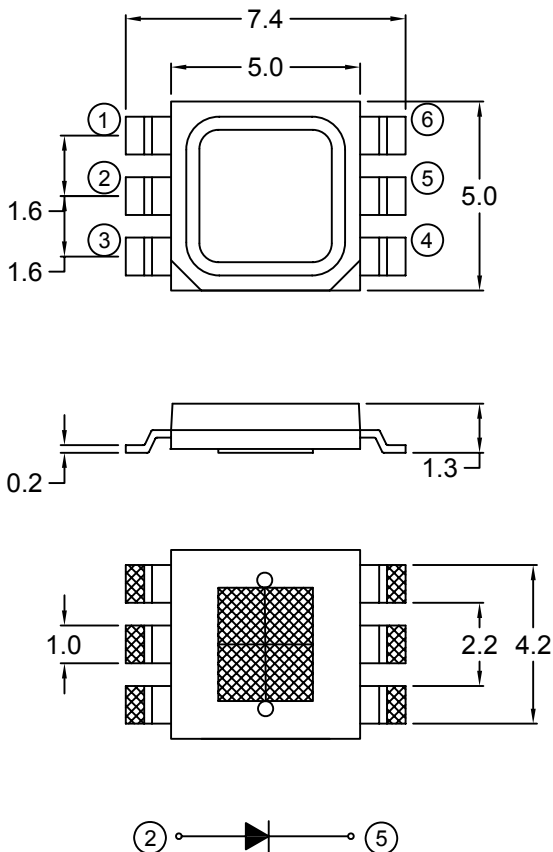
## Features

- \* High Flux per LED
- \* Very long operating life(up to 100k hours).
- \* Available in White.
- \* More Energy Efficient than Incandescent and most Halogen lamps.
- \* Low voltage DC operated..
- \* Cool beam, safe to the touch.
- \* Instant light(less than 100 ns).
- \* Fully dimmable.
- \* No UV.

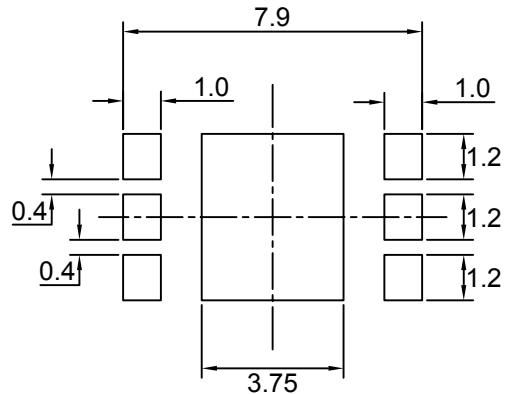
## Typical Applications

- \* Reading Light (car,bus,aircraft)
- \* Portable(flashlight,bicycle).
- \* LCD Backlights / 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.
- \* Decorative.
- \* Sign and channel Letter.

## Dimension



## Recommended Solder Patten



Note : The tolerances unless mentioned is  $\pm 0.1$ mm,Unit=mm.

Note : 1.All dimension are in millimeter tolerance is  $\pm 0.2$ mm unless otherwise noted.  
2.Specifications are subject to change without notice.

## Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Ratings	UNIT
		White	
DC Forward Current	IF	350	mA
Power Dissipation	PD	1.0	W
Peak pulse current Duty 1/10@10KHz	IFP	500	mA
LED junction Temperature	Tj	125	°C
Reverse Current(VR=5V)	I <sub>r</sub>	50	μA
ESD Sensitivity	V <sub>B</sub>	±500	V
Storage Temperature	T <sub>stg</sub>	-30 ~ +100	°C
Operating Temperature	T <sub>opr</sub>	-20 ~ +80	°C
Soldering Temperature	T <sub>p</sub>	260	°C
Hand Soldering Time at320°C(Max)	T <sub>sol</sub>	3	seconds

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.

## Luminous Intensity Characteristics at 350mA (Ratings At 25°C Ambient)

PART NO	Emission Color	Luminous Flux @350mA			Units
		Min.	Typ.	Max.	
LGXW-521E/TR1-CW	White	60	75	----	lm
		20	25	----	cd

Note :

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

## Forward Voltage Characteristics at 350mA

(Ratings At 25°C Ambient)

PART NO	Emission Color	Vf			Units
		Min.	Typ.	Max.	
LGXW-521E/TR1-CW	White	----	3.5	4.0	V

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

## Chromaticity Coordinates Characteristics at 350mA

(Ratings At 25°C Ambient )

PART NO	Emission Color	Chromaticity Coordinates			
		X		Y	
		Min.	Max.	Min.	Max.
LGXW-521E/TR1-CW	White	0.3076	0.348	0.3106	0.386

Note :  $\pm 0.01$  is tester tolerance.

## Emission Angle Characteristics at 350mA

(Ratings At 25°C Ambient )

PART NO	Emission Color	Lambertian	Units
LGXW-521E/TR1-CW	White	120	Degess

## Bin Code Description

Bin Code		
Luminous Intensity	CIE	Forward Voltage
F24-2	WO	3.1-3.2

Luminous Intensity (mcd) @IF=350mA		
Bin Code	Min.	Max.
F23-2	60	67.2
F24-1	67.2	75
F24-2	75	87.4
F25-1	87.4	100

Color Rank @IF=350mA
VP-XM

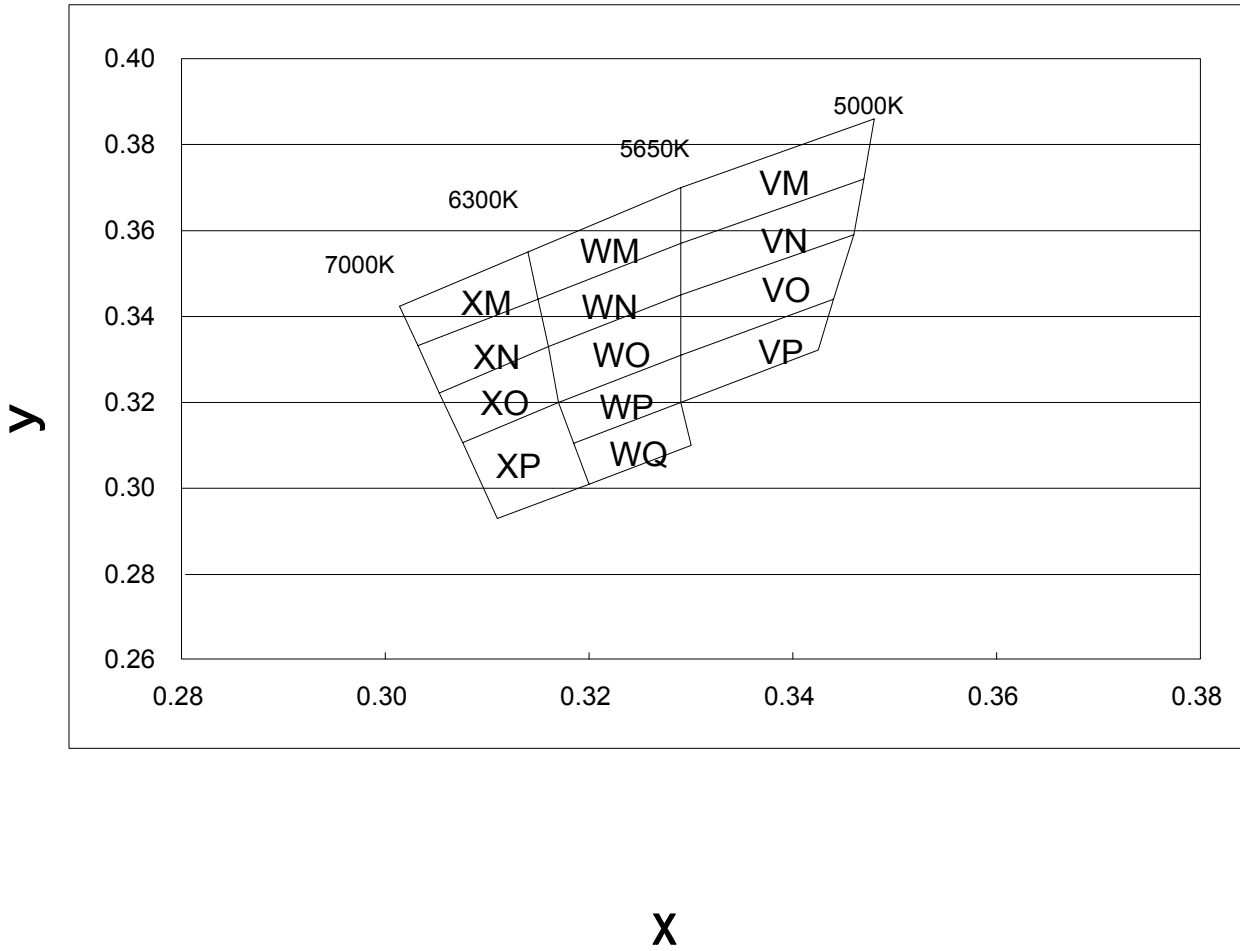
Forward Voltage(V) @IF=350mA
2.8-2.9
2.9-3.0
3.0-3.1
3.1-3.2
3.2-3.3
3.3-3.4
3.4-3.5
3.5-3.6

## Bins Code of chromaticity coordinates

Color Coordiante at350mA									
CCT(K)	BIN CODE	1		2		3		4	
		X	Y	X	Y	X	Y	X	Y
6300~7000	XM	0.3014	0.3424	0.314	0.355	0.315	0.344	0.3032	0.3332
	XN	0.3032	0.3332	0.315	0.344	0.316	0.333	0.3053	0.3222
	XO	0.3053	0.3222	0.316	0.333	0.317	0.32	0.3076	0.3106
	XP	0.3076	0.3106	0.317	0.32	0.32	0.301	0.311	0.293
5650~6300	WM	0.314	0.355	0.329	0.369	0.329	0.357	0.315	0.344
	WN	0.315	0.344	0.329	0.357	0.329	0.345	0.316	0.333
	WO	0.316	0.333	0.329	0.345	0.329	0.331	0.317	0.32
	WP	0.317	0.32	0.329	0.331	0.329	0.32	0.3185	0.3105
	WQ	0.3185	0.3105	0.329	0.32	0.33	0.31	0.32	0.301
5000~5650	VM	0.329	0.369	0.348	0.386	0.347	0.372	0.329	0.357
	VN	0.329	0.357	0.347	0.372	0.346	0.359	0.329	0.345
	VO	0.329	0.345	0.346	0.359	0.344	0.344	0.329	0.331
	VP	0.329	0.331	0.344	0.344	0.3425	0.3322	0.329	0.32

NOTE: Tolerance on each color bin(x,y)is±0.01

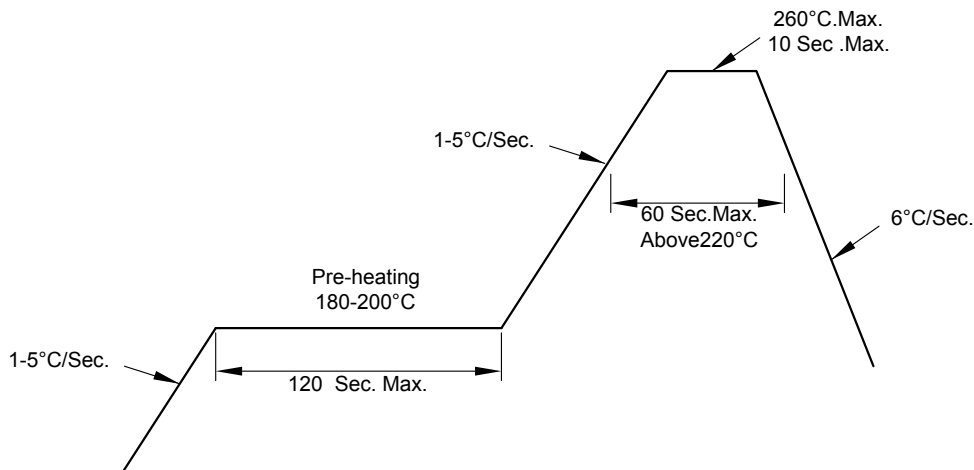
# CIE Chromaticity Diagram



## 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 moulder, 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

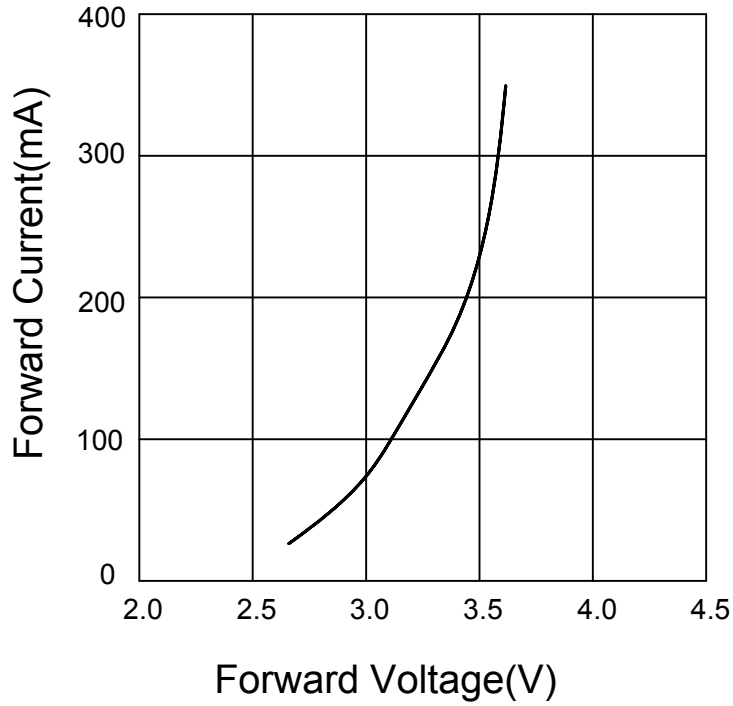


Fig.2 Forward current vs. Luminous Flux

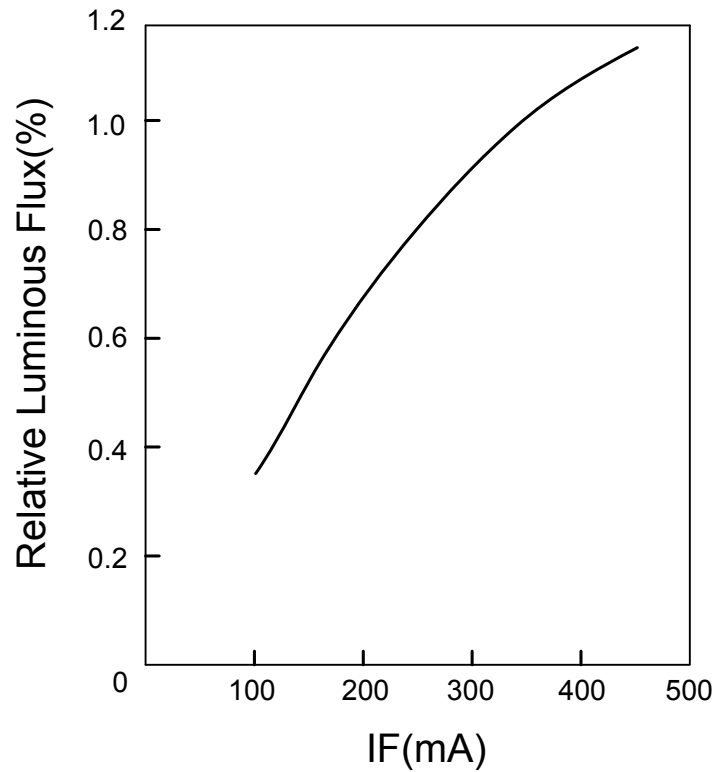


Fig.4 Luminous Spectrum(Ta=25°C)

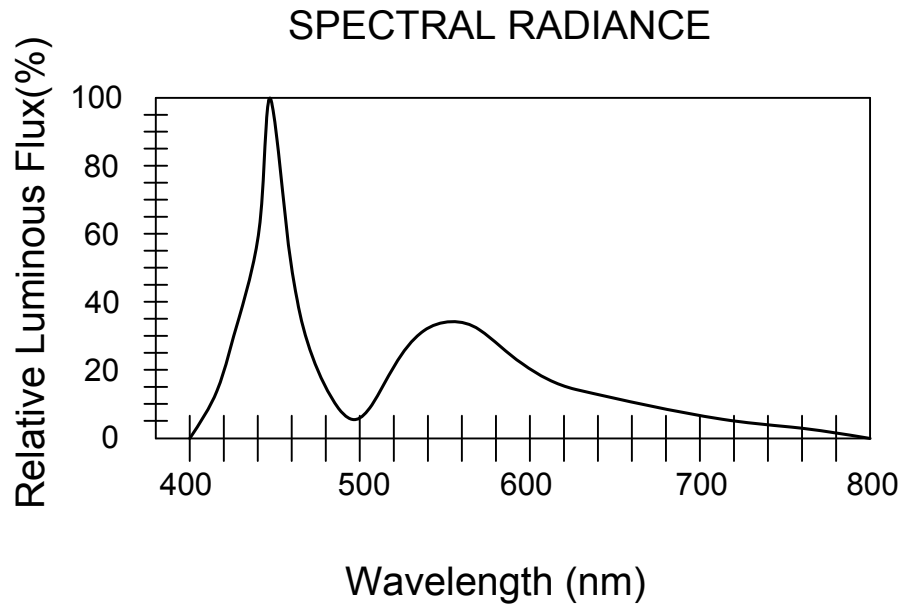
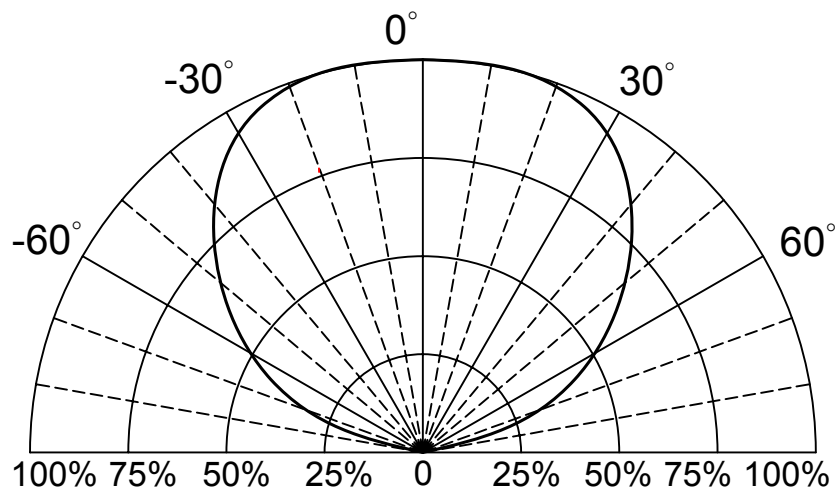
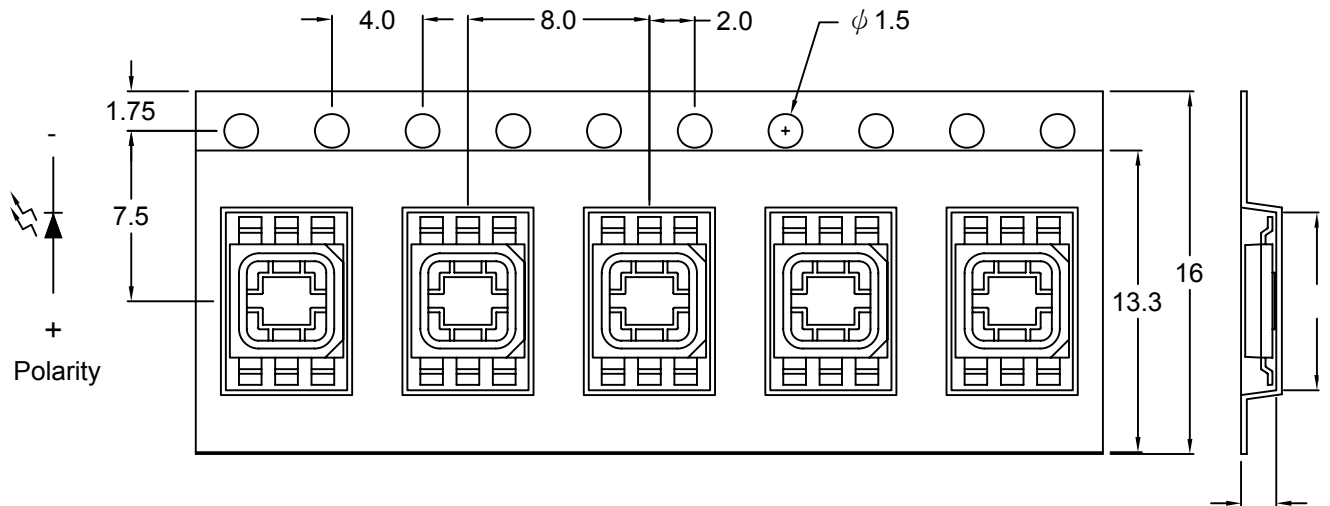


Fig.5 Directivity Radiation

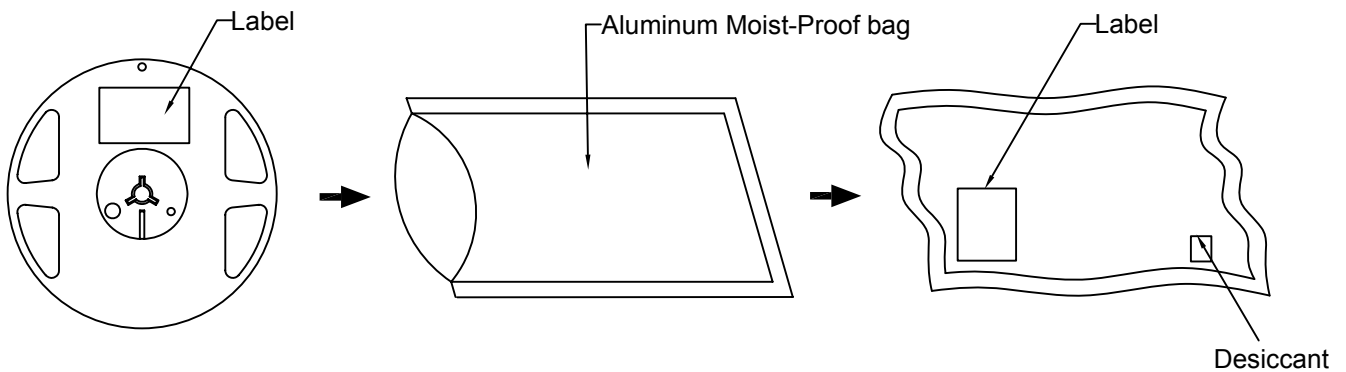


## Carrier Type Dimensions









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

## Packing Specifications



## Label Explanation

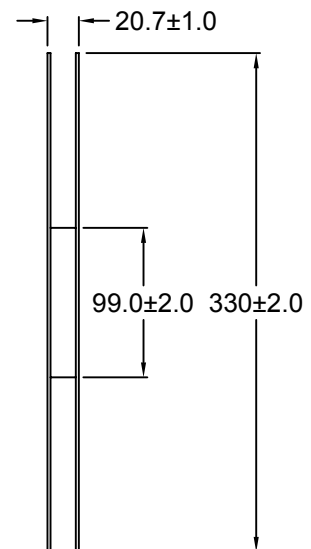
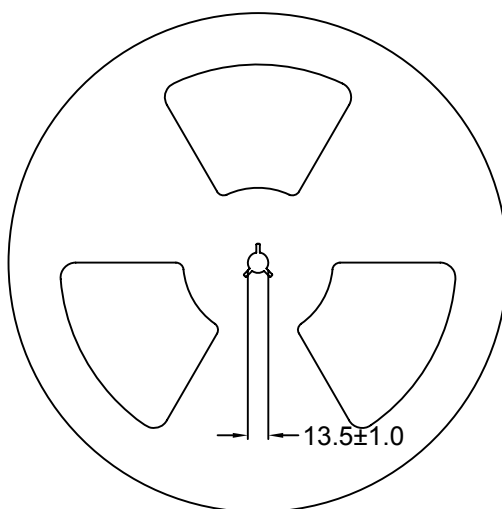
	LIGITEK ELECTRONICS CO., LTD.	
		
	PART :	LGXW-521E/TR1-CW
		
	LOT :	GS1-080168
		
QTY(PCS):	1500	
		
BIN/HUE :	F24-2/X0	VF:3.1-3.2

BIN : Luminous Intensity

HUE : Chromaticity Coordinates  
(CIE\_x , CIE\_y)

3.1 - 3.2 : Forward Voltage

## Reel Dimensions



## Reliability Test

Item	Description	Stress Condition	Test Duration
RTOL	Room Temperature Operation Life	25°C,Max If	1000 hours
WHT	Wet High Temperature	85°C/85%RH	1000 hours
TC	Temperature Cycling	-40/+110°C, 30min dwell,<5min trans.	200 cycles
TS	Thermal Shock	-40/+110°C, 20min dwell,<20min trans.	200 cycles
HTSL	Hight Temperature Storage Life	120°C	1000 hours
LTSL	Low Temperature Storage Life	-40°C	1000 hours
SHR	Solder Heat Resistance	260±5°C,5secs	
MS	Mechanical Shock	1500G,0.5msec pulse, 5 shocks each 6 axis	
ND	Natural Drop	On concrete from 1.2m, 3xtimes	
RV	Random Vibration	6G RMS from 10 to 2KHz, 10mins/axis	
VVF	Variable Vibration Frequency	10-2000-10Hz, 20G 1min, 1.5mm, 3timesx/axis	

Note:

Failuer Criteria:

Electrical failures  
 $V_F$  shift  $\geq 10\%$   
 $I_R < 50 \mu A @ V_r = 5v$   
 Ligitek output Degradation  
 $\%I_v$  shift  $\geq 30\% @ 1000hrs$  or 200cycle  
 Broken or damaged pockage or lead  
 Dimension out of tolerance