



LIGITEK ELECTRONICS CO.,LTD.
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LED SMD



LG-112FRGBW-T12-24

DATA SHEET

DOC. NO : QW0905-LG-112FRGBW-T12-24

REV. : A

DATE : 04 - Jan. - 2024



Features:

1. Meet RoHS.
- 2.Full Color SMD Chip LED With IC Control.
- 3.Sideview Package in 8.0mm carrier tape on 7" diameter reel.

Descriptions:

1. The LG-112FRGBW SMD product is much smaller than PLCC type components, thus enable smaller board size, higher packing density, reduced storage space and finally smaller equipment to be obtained.
2. Besides, lightweight makes them ideal for miniature applications. etc.

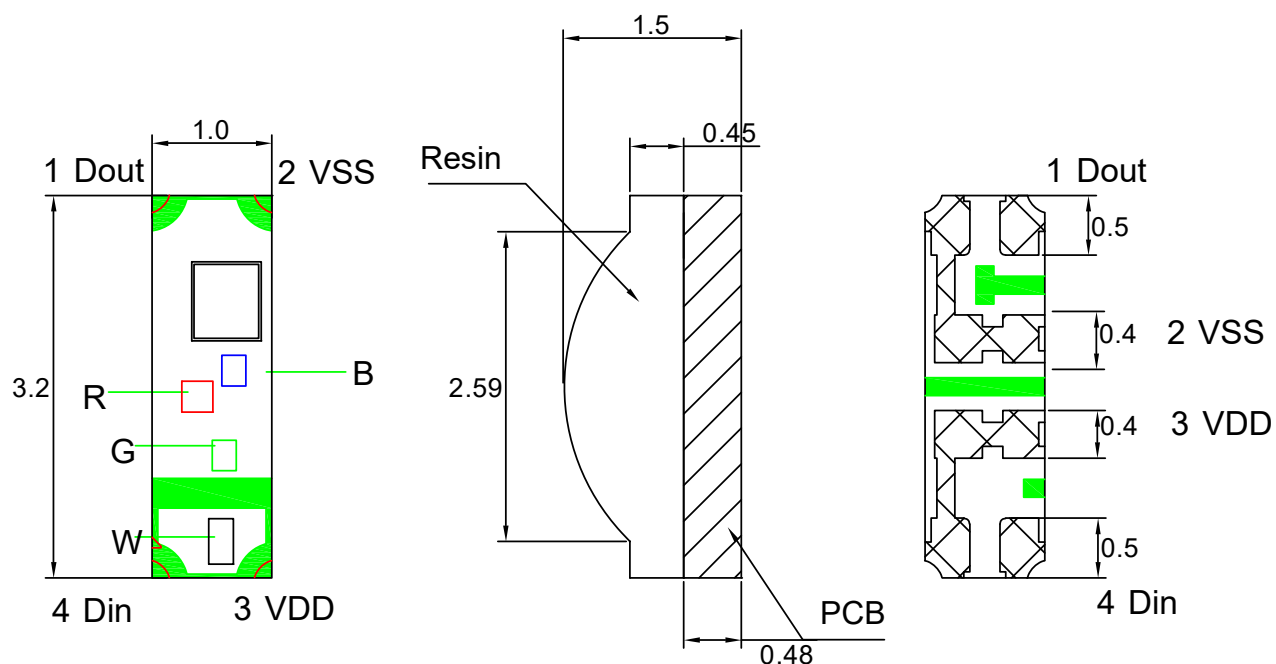
Applications:

1. Consumer product, Home appliances, Telecommunication, light bar.
2. Toy lights, Christmas lights, Decorative lights.

Device Selection Guide:

PART NO	MATERIAL	COLOR	
		Emitted	Lens
LG-112FRGBW-T12-24	AlGaInP	Red	White Diffused
	InGaN	Blue	
	InGaN	Green	
	InGaN	White	

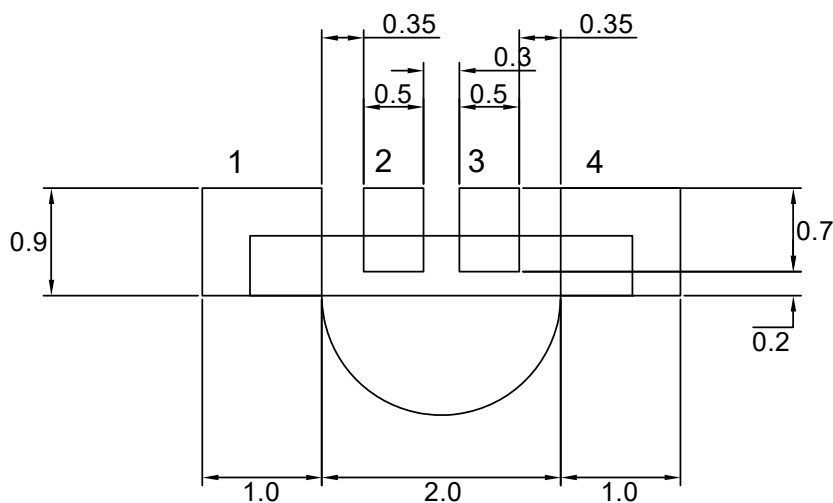
Package Dimensions



NO.	Symbol	Function Description
1	DOUT	Control date signal output
2	VSS	Ground
3	VDD	DC power input
4	DIN	Control date signal input

Note : 1.All dimension are in millimeter tolerance is $\pm 0.1\text{mm}$ unless otherwise noted.
2.Specifications are subject to change without notice.

Recommended Soldering Pad Dimensions



Note : The tolerances unless mentioned is $\pm 0.1\text{mm}$, Angle $\pm 0.5^\circ$. Unit=mm.

Absolute Maximum Ratings

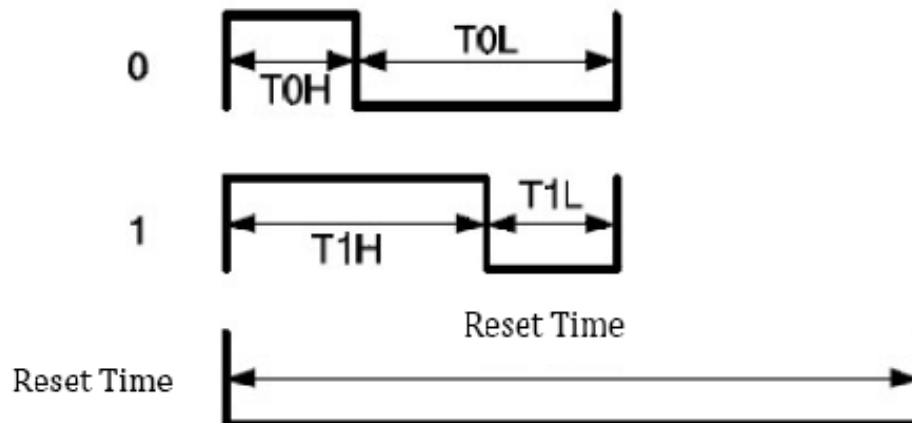
(Ta=25°C, VDD=5V, VSS=0)

Parameter	Symbol	Ratings	UNIT
Supply Voltage	VDD	6.5	V
LED Output Current	I _{OUT}	25	mA
Operating Temperature	T _{opr}	-40~ +85	°C
Storage Temperature	T _{stg}	-40 ~ +100	°C
Power Dissipation	Pd	400	mW

Typical Electrical & Optical Characteristics (Ta=25°C)

Items	Symbol	Min.	Typ.	Max.	UNIT	CONDITION
Supply Voltage	VDD	3.0	5	5.5	V	
Each R/G/B/W Current	IOL		12		mA	VDD=5V
Input High Voltage	VIH	2.7		VDD	V	DI,
Input Low Voltage	VIL	0		1.0	V	DI,
Output High Voltage	VOH	4.5				I _{OH} =4mA
Output Low Voltage	VOL			0.4 VDD	V	I _{OL} =4mA
Pull Down Resistance	R _{PD}		500K		Ω	Din, Dout(VDD=5V)

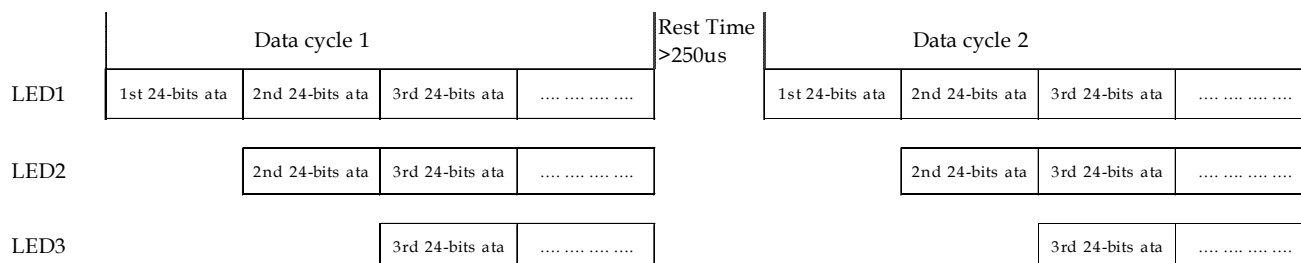
Timing Wave Form



High Speed mode

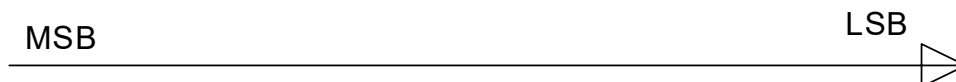
Item	Description	min	Typical	Allowance	unit
T0H	0 code, High-level time		0.3	± 0.15	us
T0L	0 code, Low-level time		0.9	± 0.15	us
T1H	1 code, High-level time		0.9	± 0.15	us
T1L	1 code, Low-level time		0.3	± 0.15	us
Trst	Reset code, Low-level time	250			

Data Communication



While the PWM data of green 、red and blue is exactly the same, 112FRGBW Component will turn-on W channel only(turn-off GRB channels in the same time) and the PWM duty for W channel will be the same with the one of G 、R or B channel. For example, If the PWM data of G 、R 、B is 0x1F 、0x1F 、0x1F, then 112FRGBW Component will turn-on W channel with PWM=0x1F but turn off for all GRB channels.

Single Data in 24 bit for GRB



G	G	G	G	G	G	G	G	R	R	R	R	R	R	R	R	B	B	B	B	B	B	B	B
7	6	5	4	3	2	1	0	7	6	5	4	3	2	1	0	7	6	5	4	3	2	1	0

Electrical Optical Characteristics at Ta=25°C

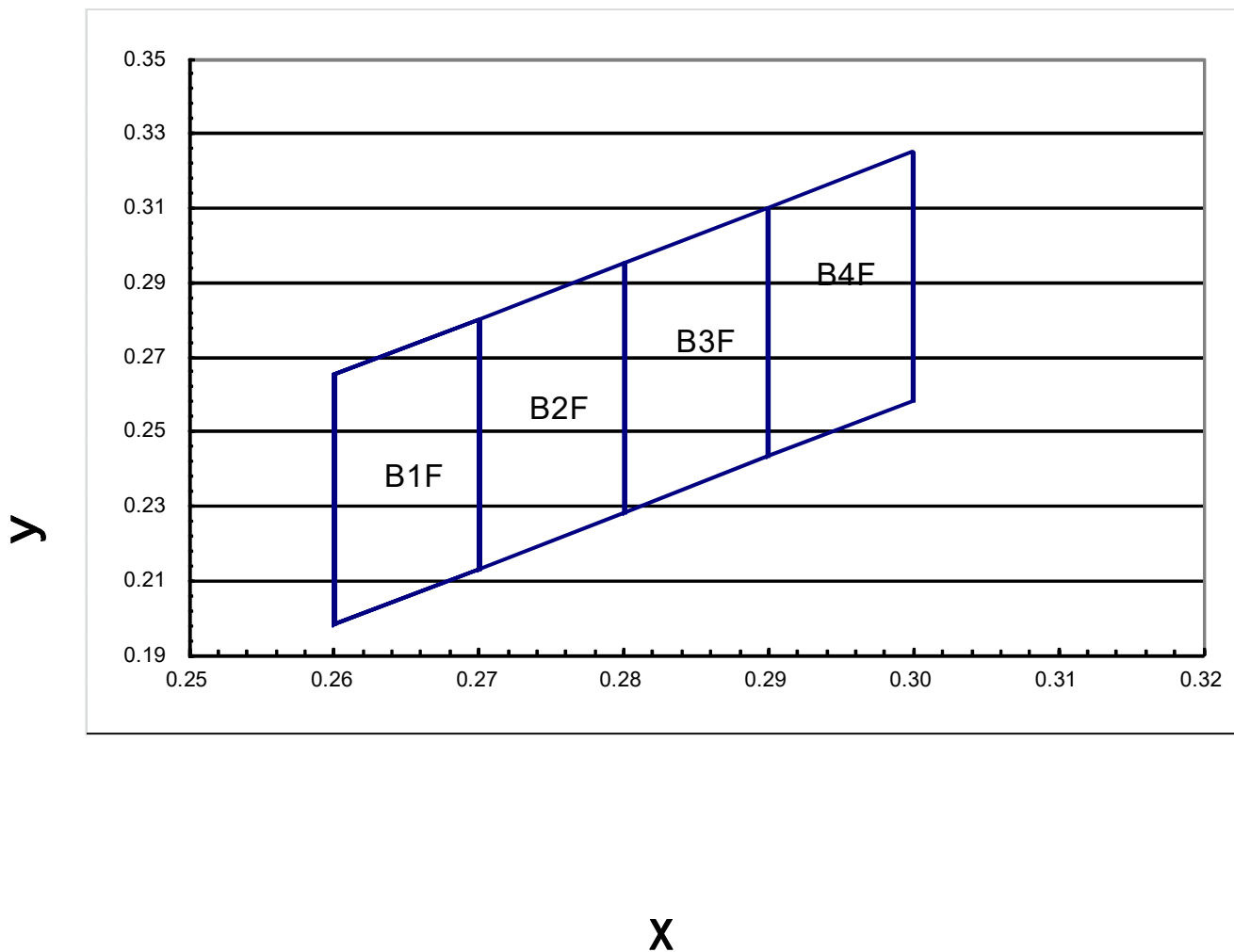
Items	Symbol	Min.	Typ.	Max.	UNIT	CONDITION
Luminous Intensity	I _v	R	125	280	500	VDD = 5 V
		G	200	490	800	
		B	50	100	200	
		W	200	430	800	
Dominant Wavelength	λ _D	R	615	----	630	
		G	515	----	530	
		B	460	----	475	
Viewing Angle	2θ 1/2	----	120	----	deg	

- 1.The luminous intensity data did not including ±15% testing tolerance.
- 2.The dominant wavelength data did not including ±1nm testing tolerance

WK Chromaticity Coordinates Specifications For Bin Grading

Color Coordiante								
BIN CODE	1		2		3		4	
	X	Y	X	Y	X	Y	X	Y
B1F	0.2600	0.2650	0.2600	0.1980	0.2700	0.2130	0.2700	0.2800
B2F	0.2700	0.2800	0.2700	0.2130	0.2800	0.2280	0.2800	0.2950
B3F	0.2800	0.2950	0.2800	0.2280	0.2900	0.2430	0.2900	0.3100
B4F	0.2900	0.3100	0.2900	0.2430	0.3000	0.2580	0.3000	0.3250

CIE Chromaticity Diagram



Typical Electro-Optical Characteristics Curve

Fig.1 R CHIP

Relative Intensity vs. Wavelength

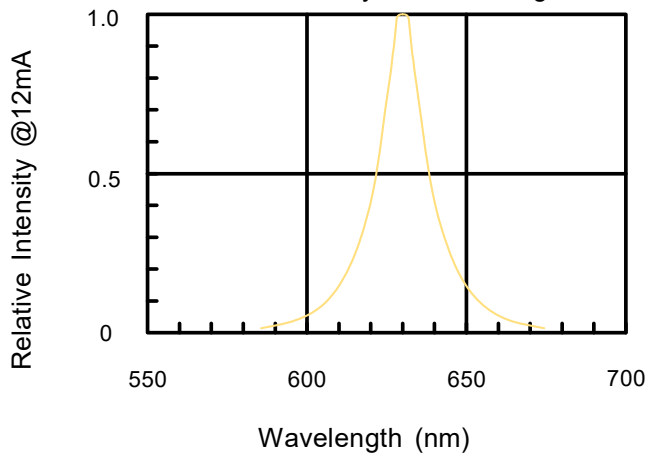


Fig.2 G CHIP

Relative Intensity vs. Wavelength

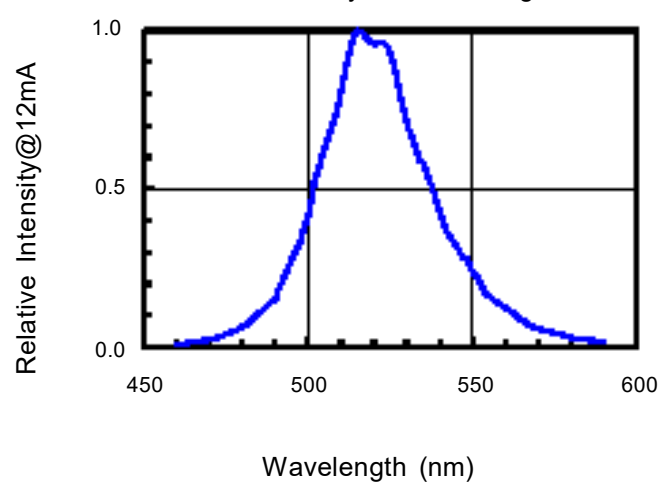


Fig.3 B CHIP

Relative Intensity vs. Wavelength

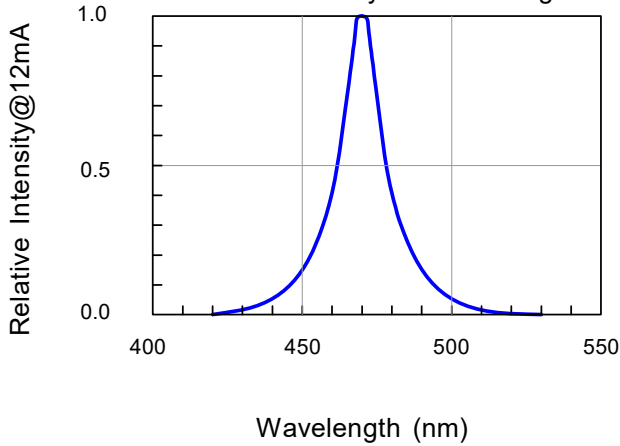


Fig.4 Luminous Spectrum(Ta=25°C)

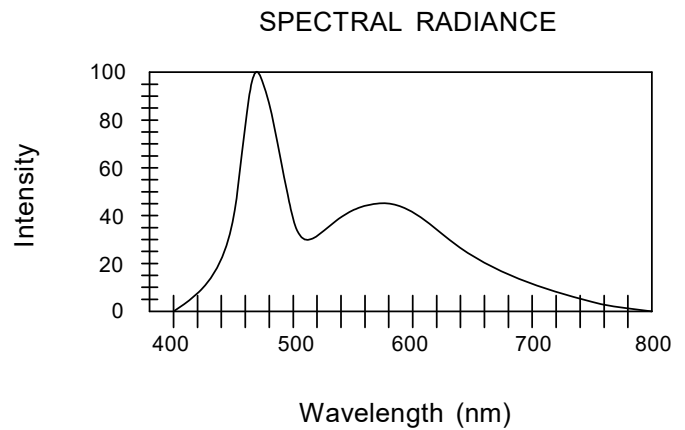
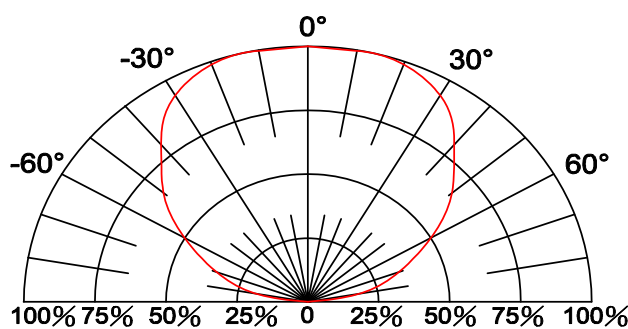
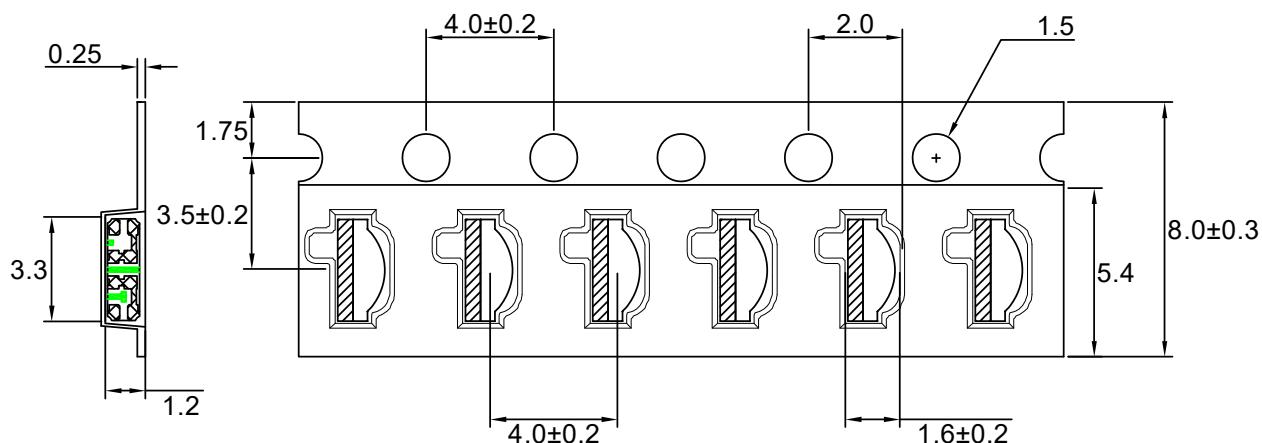


Fig.5 Directive Radiation

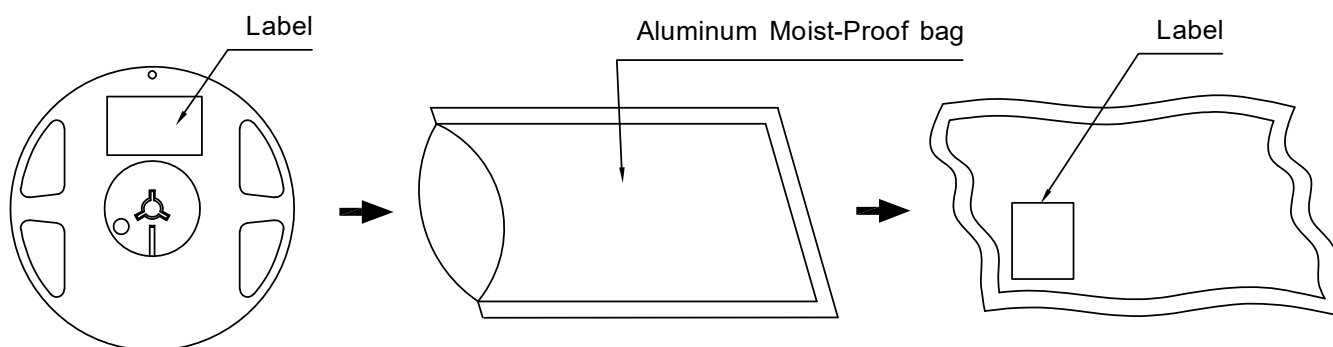


Carrier Type Dimensions



Note : The tolerances unless mentioned is ± 0.1 mm, Angle ± 0.5 . Unit=mm.

• Packing Specifications



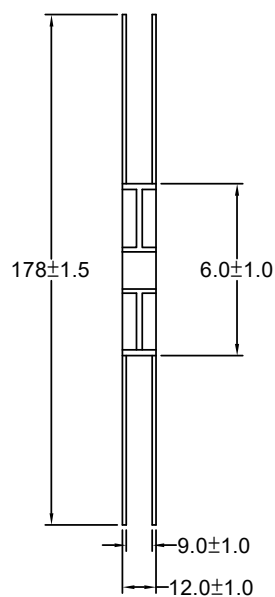
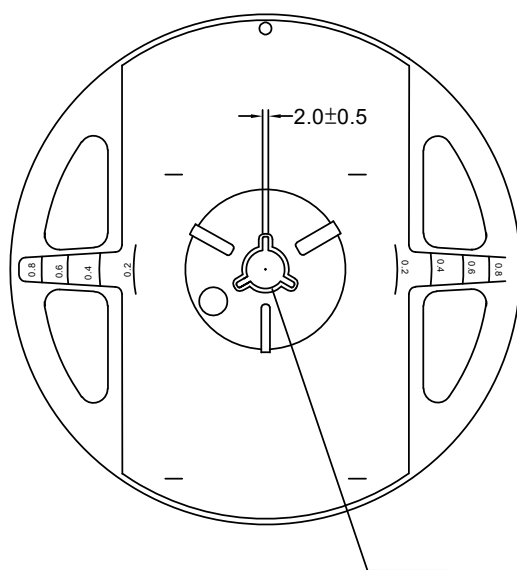
Part No.	Description	Quantity/Reel
LG-112FRGBW-T12-24	8.0mm tape, 7" reel	3000 devices

Label Explanation

	LIGITEK ELECTRONICS CO., LTD.
PART :	LG-112FRGBW-T12-24
LOT :	GS11730168
QTY(PCS):	3000
BIN/HUE :	B4

HUE : Chromaticity Coordinates

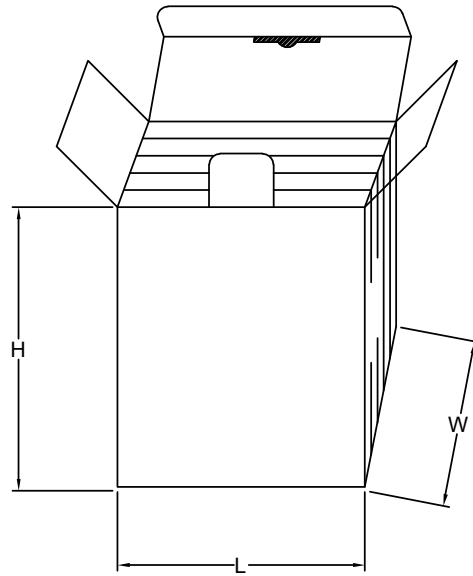
Reel Dimensions



Box Explanation

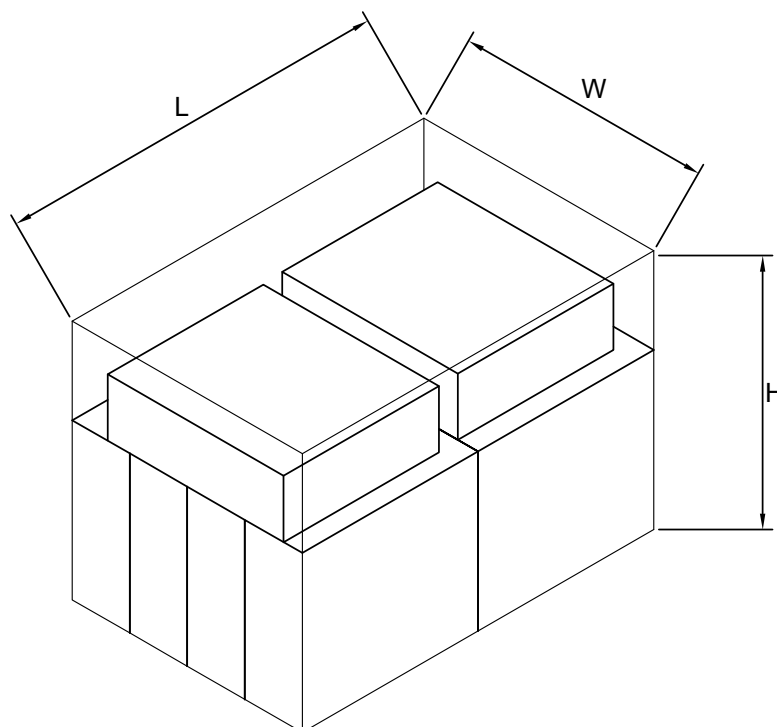
1. 5 BAG / INNER BOX

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



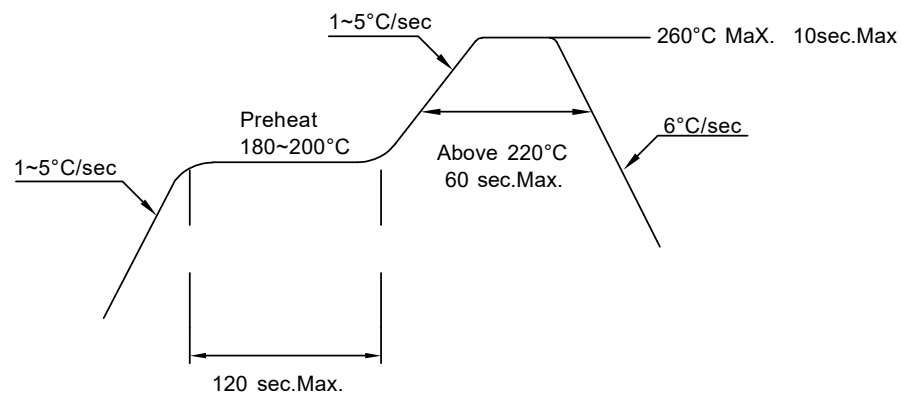
3. 10 INNER BOXES / CARTON

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



Recommended Soldering Conditions**1. Hand Solder**

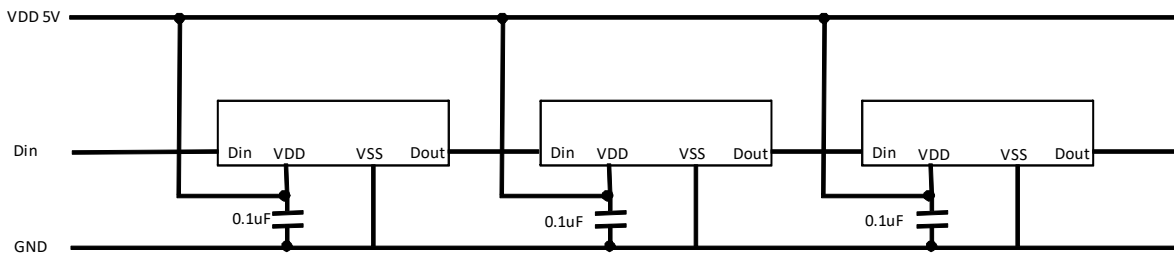
Basic spec is $\leq 280^{\circ}\text{C}$ 3 sec one time only.

2. PB-Free Reflow Solder**Note:**

- 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.

Precautions For Use:**Storage time:**

1. Calculated shelf life before opening is 12 months at $< 30^{\circ}\text{C}$ and $< 90\%$ relative humidity (RH)
2. After bag is opened, devices which will be subjected to reflow soldering or other high temperature processes must be
 - a) Assembled within 168 hours in an environment of $\leq 30^{\circ}\text{C} / 60\%$ RH, or
 - b) Stored at ambient of 10% RH or less
3. Devices are required baking before assembly if:
 - a) Humidity Indicator Card reads $>10\%$ (for level 2a -5a)
or $>60\%$ (for level 2) at ambient temperature $23\pm 5^{\circ}\text{C}$
 - b) 2.a) or 2.b) doesn't meet
4. If baking is required, devices should be baked for >24 hours at $60\pm 5^{\circ}\text{C} / 5\%$ RH. Performing baking only once, and using the baked devices within 8 hours.

Recommended route**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-electrosatic glove is recommended when handling these LED. All devices, equipment and machinery must be properly grounded.