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LED SMD



PRELIMINARY

This is just a preliminary design
to let you evaluate the concept

LG-112FRGBW-T12

DATA SHEET

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

REV. : A

DATE : 15 - Nov. - 2021

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.
- 4.Each RGBW chip is 8 bit control, total of 4294M color can be displayed.

Descriptions:

1. The LG-110FRGBW 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.

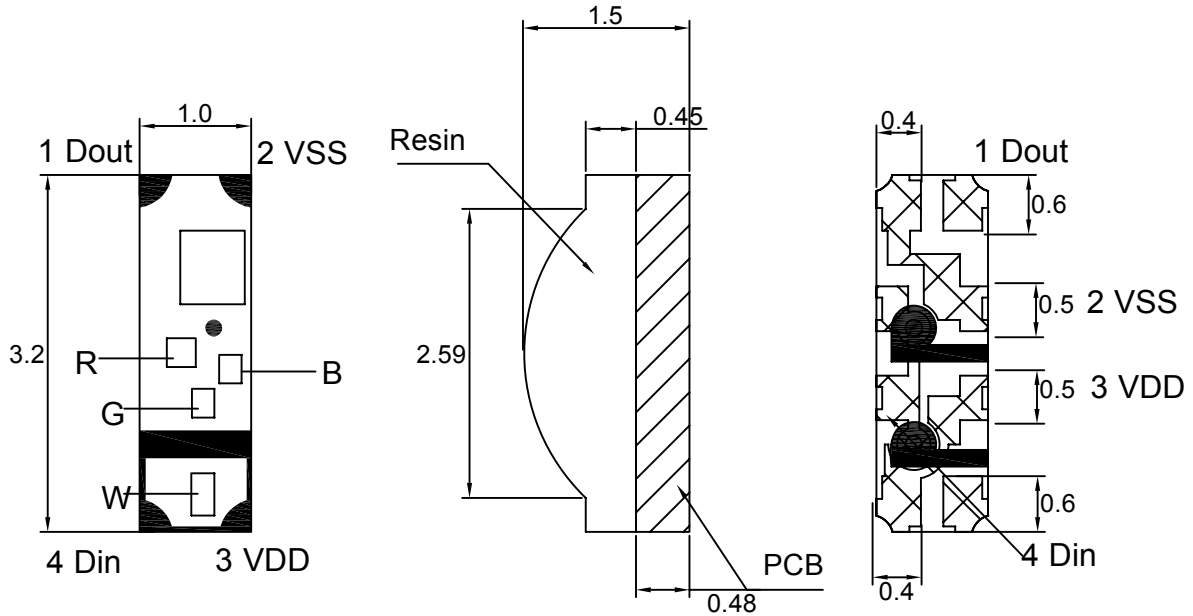
Applications:

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	AlGaInP	Red	White Diffused
	InGaN	Blue	
	InGaN	Green	
	InGaN	White	

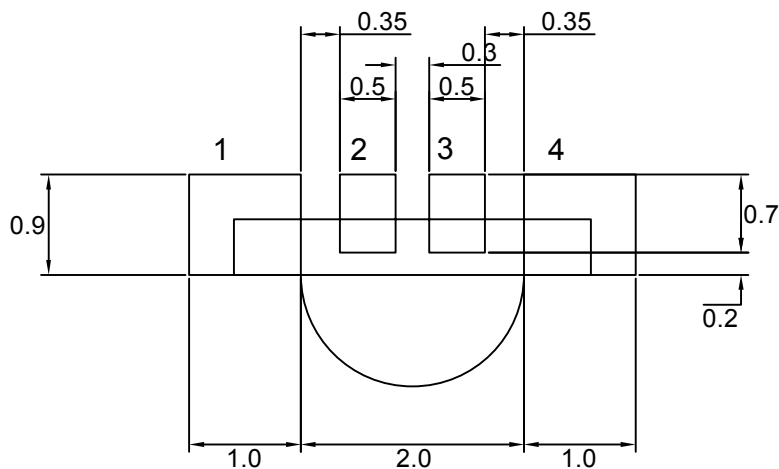
Package Dimensions



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 ± 0.5 . Unit=mm.

Absolute Maximum Ratings

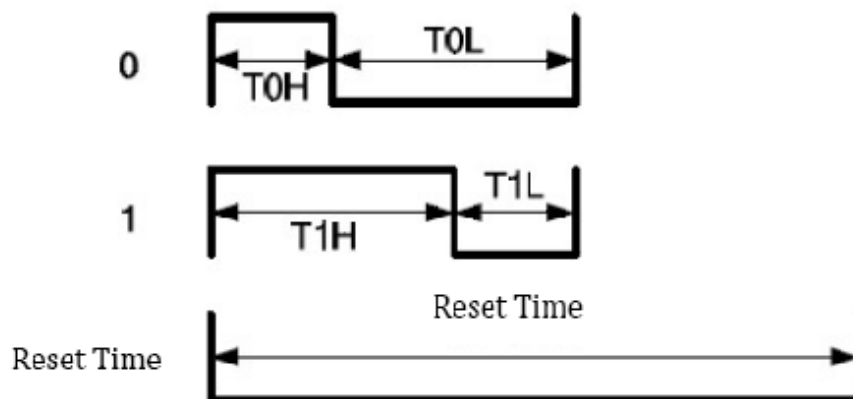
(Ta=25°C, VDD=5V, VSS=0)

Parameter	Symbol	Ratings	UNIT
Supply Voltage	VDD	6	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	3.3	5	5.5	V	
Each R/G/B 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
Operation Current	IDD			2	mA	B、G、R no load
Pull Down Resistance	R _{PD}		500K		Ω	Din, Dout(VDD=5V)

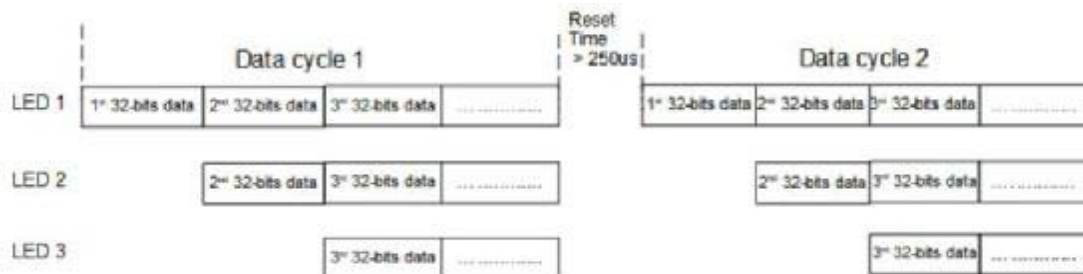
Timing Wave Form



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			

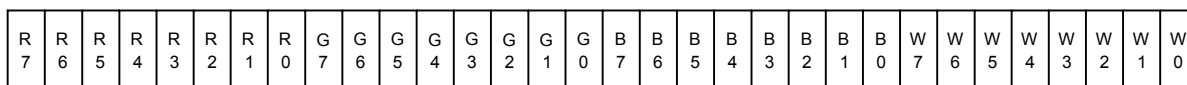
Data Communication



Single Data in 32bit for RGBW

MSB

LSB



Electrical Optical Characteristics at Ta=25°C

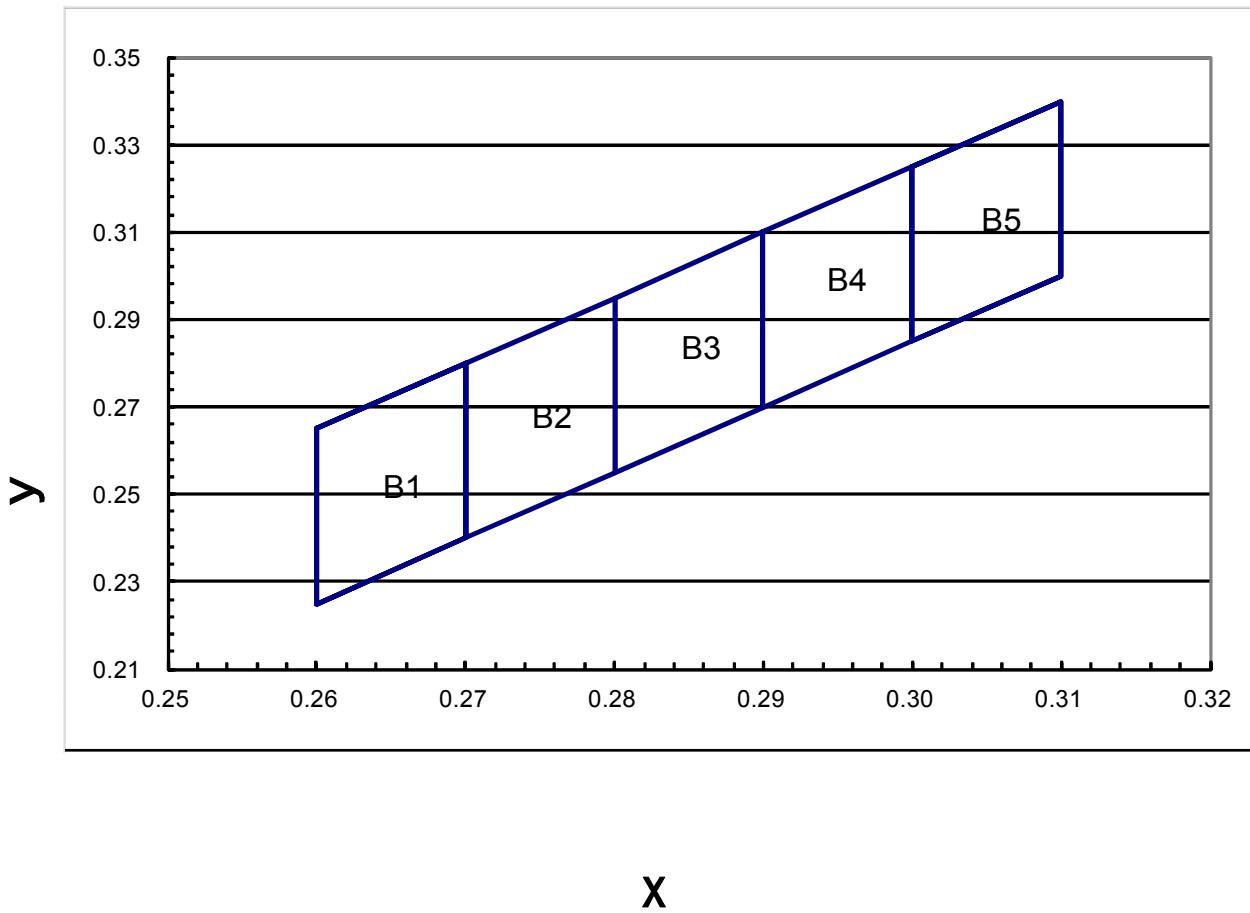
Items	Symbol	Min.	Typ.	Max.	UNIT	CONDITION	
Luminous Intensity	Iv	R	----	270	----	mcd	VDD = 5 V
		G	----	500	----		
		B	----	90	----		
		W	----	270	---		
Dominant Wavelength	λD	R	----	622	----	nm	VDD = 5 V
		G	----	525	----		
		B	----	470	----		
Viewing Angle	2θ 1/2	120		deg	VDD = 5 V		

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

Chromaticity Coordinates Specifications For Bin Grading

Color Coordiante								
BIN CODE	1		2		3		4	
	X	Y	X	Y	X	Y	X	Y
B1	0.26	0.265	0.26	0.225	0.27	0.24	0.27	0.28
B2	0.27	0.28	0.27	0.24	0.28	0.255	0.28	0.295
B3	0.28	0.295	0.28	0.255	0.29	0.27	0.29	0.31
B4	0.29	0.31	0.29	0.27	0.3	0.285	0.3	0.325
B5	0.3	0.325	0.3	0.285	0.31	0.3	0.31	0.34

CIE Chromaticity Diagram



Typical Electro-Optical Characteristics Curve

Fig.1 R CHIP
Relative Intensity vs. Wavelength

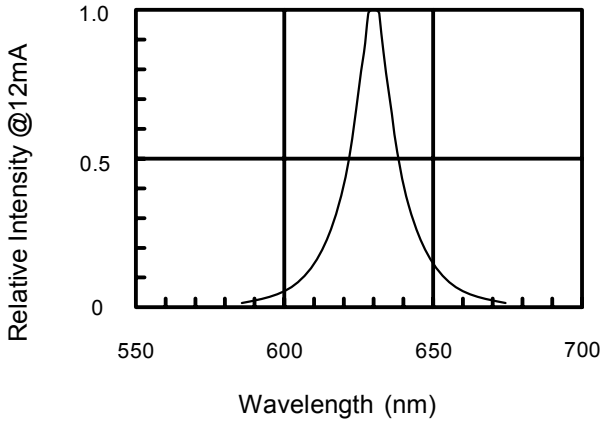


Fig.2 G CHIP
Relative Intensity vs. Wavelength

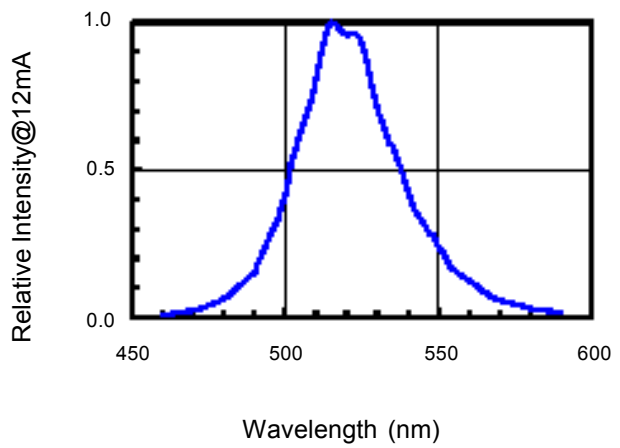


Fig.3 B CHIP
Relative Intensity vs. Wavelength

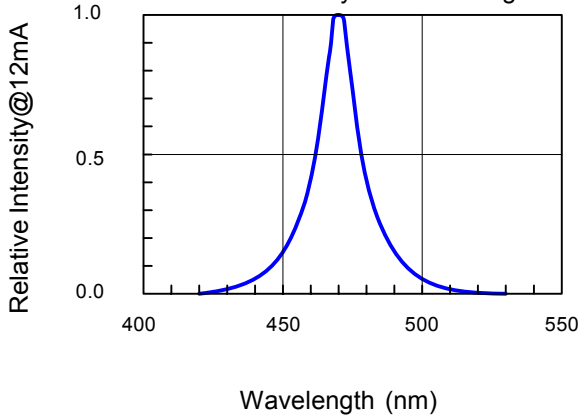


Fig.4 Luminous Spectrum(Ta=25°C)

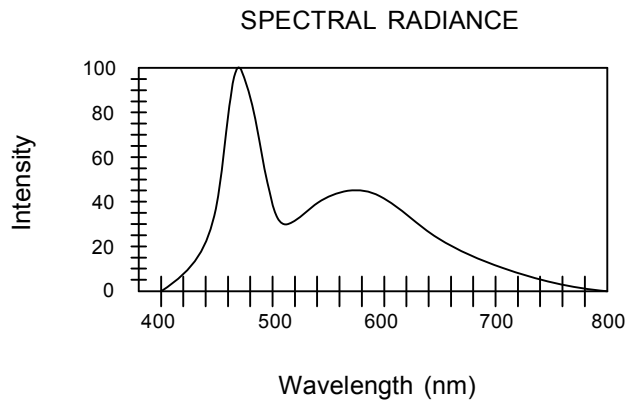


Fig.5 Directive Radiation

