



LIGITEK ELECTRONICS CO.,LTD.
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LED SMD



LG-2020FRGB-D-T05-ML

DATA SHEET

DOC. NO : QW0905-LG-2020FRGB-D-T05-ML

REV. : A

DATE : 30 - Nov. - 2023



Features:

1. Meet RoHS.
- 2.Full Color SMD Chip LED With IC Control.
- 3.Top view Package in 8.0mm carrier tape on 7" diameter reel.
- 4.Each RGB chip is 8 bit control, total of 16M color can be displayed.

Descriptions:

The LG-2020 SMD has wide viewing angle and optimized light coupling by inter reflector, The low current requirement makes this device ideal for portable equipment or any other application where power is at a premium.

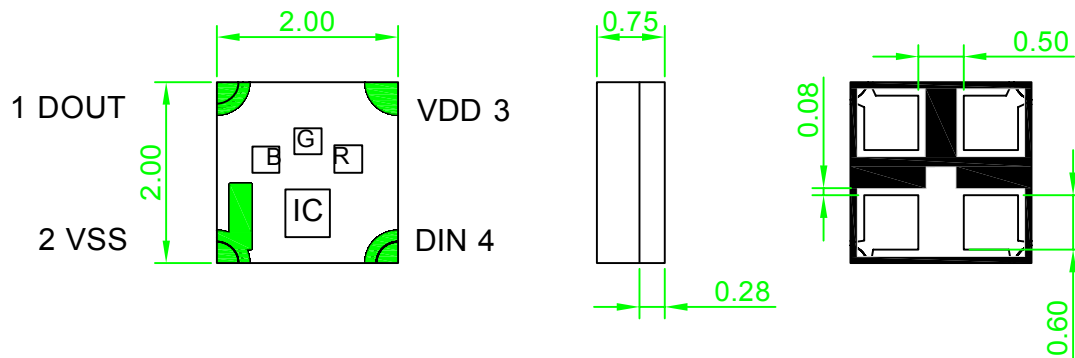
Applications:

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-P2020FRGB-D-T05-ML	AlGaInP	Red	Water Clear
	InGaN	Blue	
	InGaN	Green	

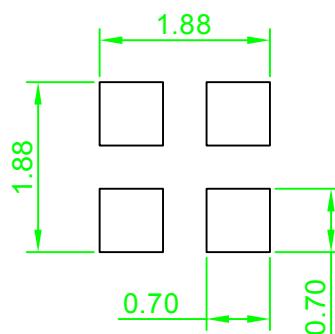
Package Dimensions



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 $\pm 0.2\text{mm}$ 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

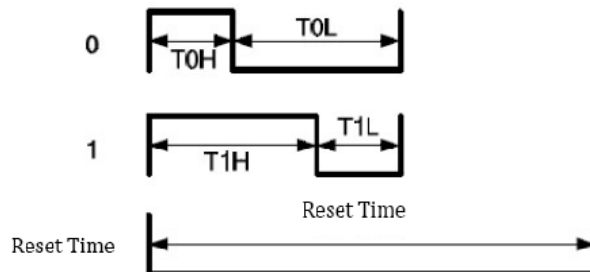
(Ta=25°C, VDD=5V, VSS=0)

Parameter	Symbol	Ratings	UNIT
Supply Voltage	VDD	3.5 ~ 5.5	V
LED Output Current	I _{OUT}	6	mA
Operating Temperature	T _{opr}	-40~ +85	°C
Storage Temperature	T _{stg}	-40 ~ +100	°C

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

Items	Symbol	Min.	Typ.	Max.	UNIT	CONDITION
Supply Voltage	VDD	3.5	5	5.5	V	
Each R/G/B Current	IOL		5		mA	VDD=5V
Input High Voltage	VIH	0.7XVDD			V	DI,
Input Low Voltage	VIL			0.3XVDD	V	DI,
Operation Current	IDD		0.3	----	mA	B、G、R no load

Timing Wave Form



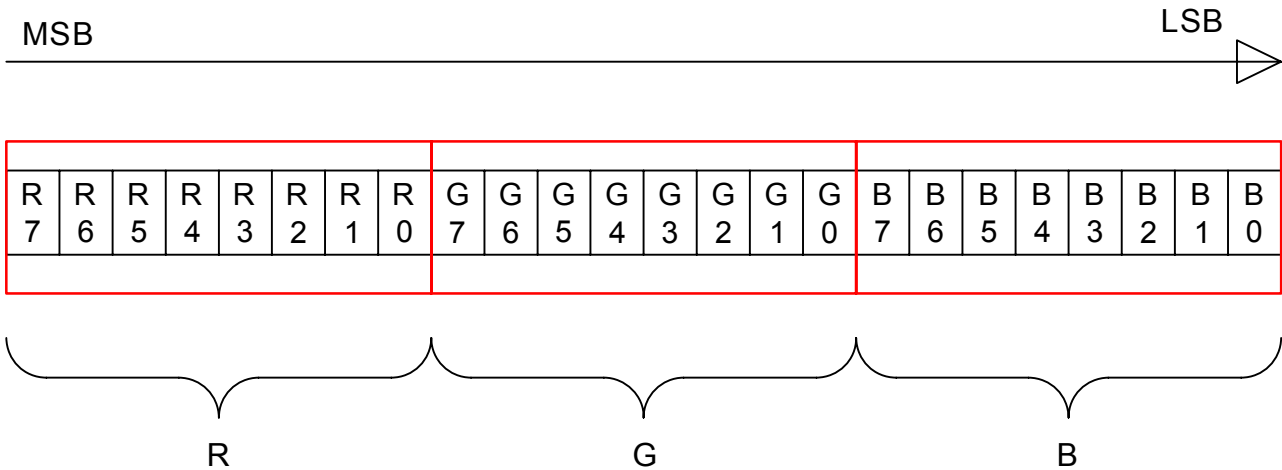
High Speed mode

Item	Description	Min	Typical	Max	unit
T0H	0 code, High-level time	200	300	400	ns
T0L	0 code, Low-level time	800	900	-	ns
T1H	1 code, High-level time	800	900	1000	ns
T1L	1 code, Low-level time	200	300	-	ns
Trst	Reset code, Low-level time	200	-	-	us

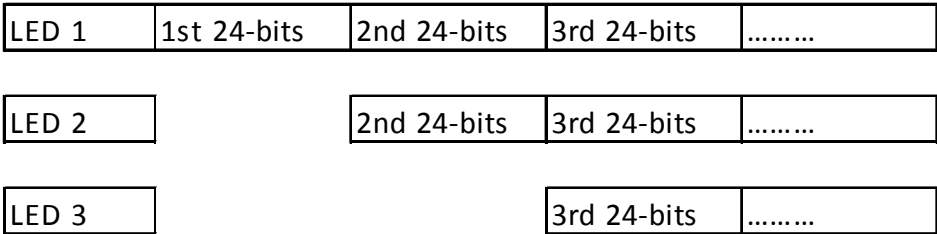
Note: $T_H + T_L > 1.2\mu s$



Single Data in 24bit for RGB



Data Communication



Electrical Optical Characteristics at Ta=25°C

Items	Symbol		Min.	Typ.	Max.	UNIT	CONDITION
Luminous Intensity	Iv		320	----	770	mcd	VDD = 5V
Dominant Wavelength	λD	R	----	622	----	nm	
		G	----	530	----		
		B	----	468	----		
Viewing Angle	2θ 1/2		----	120	----	deg	

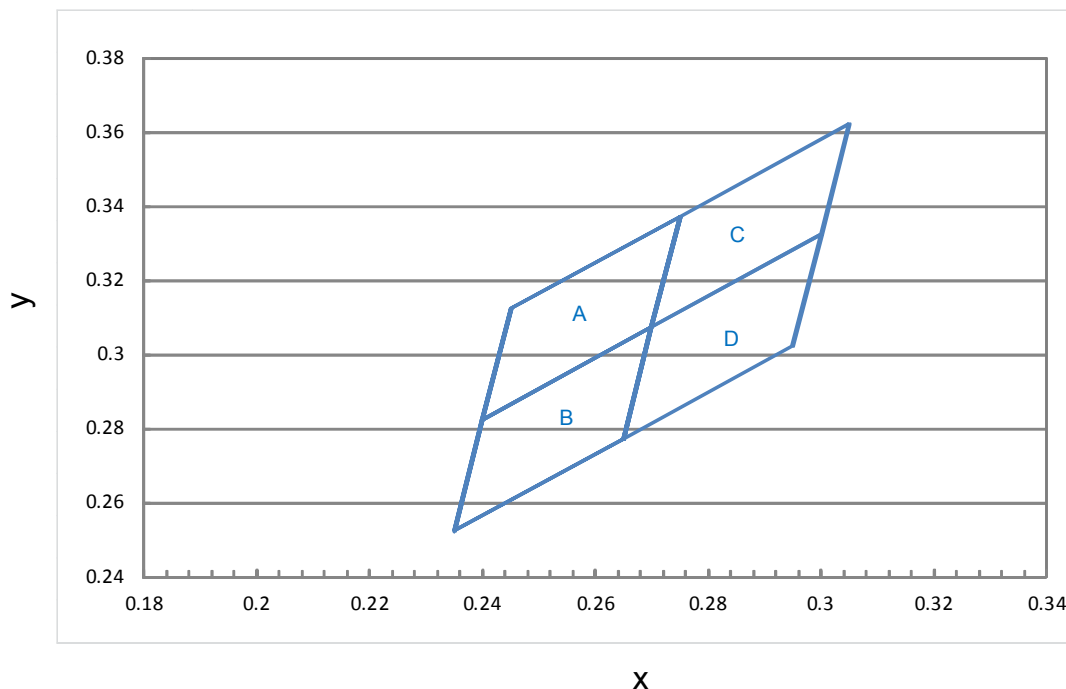
1.The luminous intensity data did not including $\pm 15\%$ testing tolerance.

2.The dominant wavelength data did not including $\pm 1\text{nm}$ testing tolerance

Luminous Intensity Classification

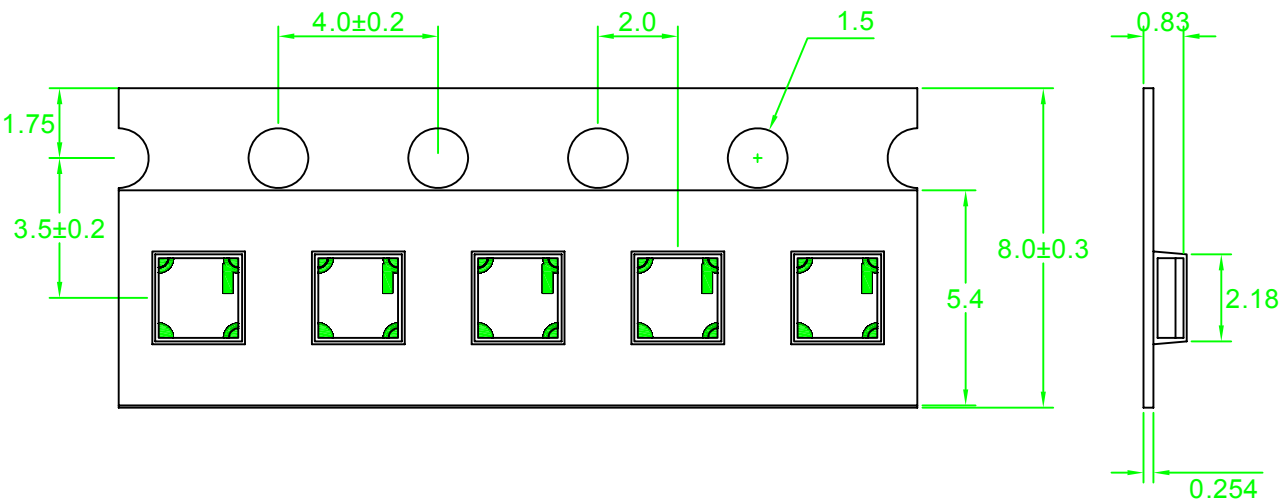
BIN CODE	Iv(mcd)	
	Min.	Max.
3	320	400
4	400	500
5	500	620
6	620	770

Chromaticity Coordinates Specifications For Bin Grading



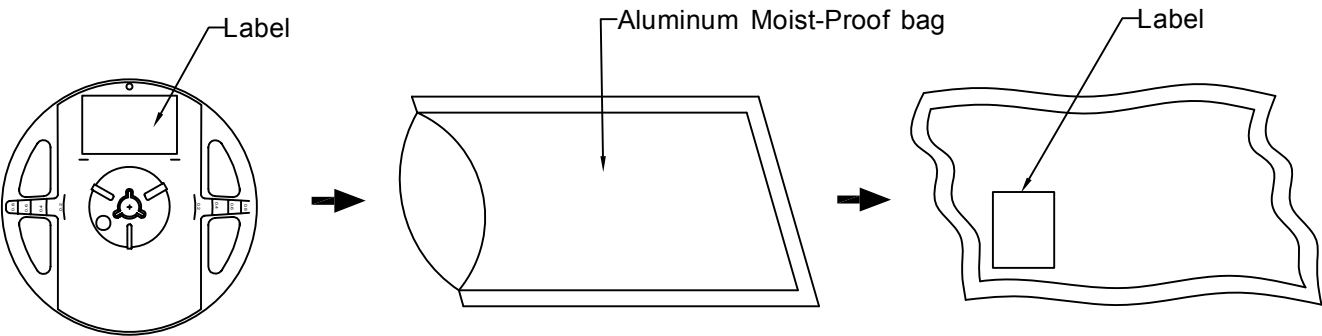
Color Coordinantes								
BIN CODE	1		2		3		4	
	X	Y	X	Y	X	Y	X	Y
A	0.240	0.282	0.245	0.312	0.275	0.337	0.270	0.307
B	0.235	0.252	0.240	0.282	0.270	0.307	0.265	0.277
C	0.270	0.307	0.275	0.337	0.305	0.362	0.300	0.332
D	0.265	0.277	0.270	0.307	0.300	0.332	0.295	0.302

Carrier Type Dimensions



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

Packing Specifications



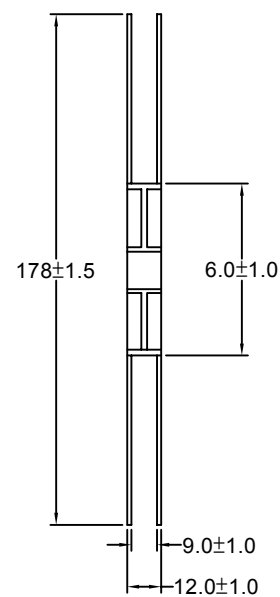
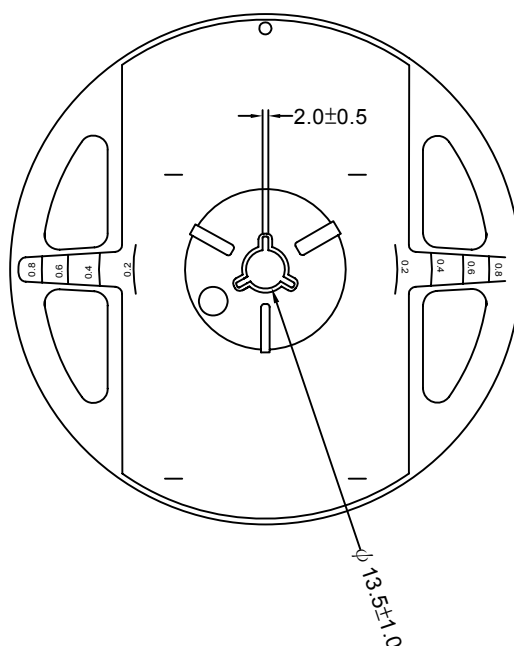
Part No.	Description	Quantity/Reel
LG-2020FRGB-D-T05-ML	8.0mm tape,7"reel	3000 PCS

Label Explanation

	LIGITEK ELECTRONICS CO., LTD.
PART :	 LG-2020FRGB-D-T05-ML
LOT :	 GS11730168
QTY(PCS):	 3000
BIN/HUE :	 3/A

BIN : Luminous Intensity

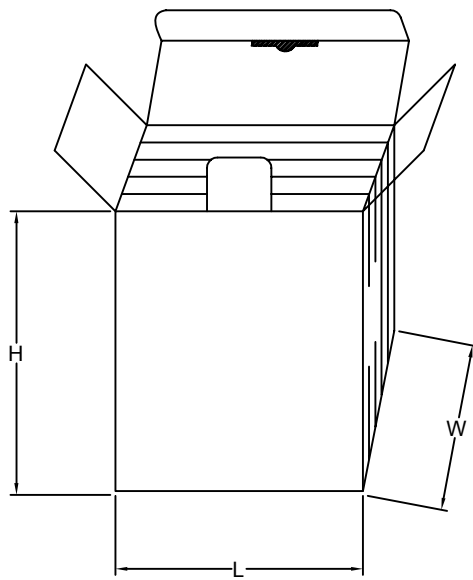
Reel Dimensions



Box Explanation

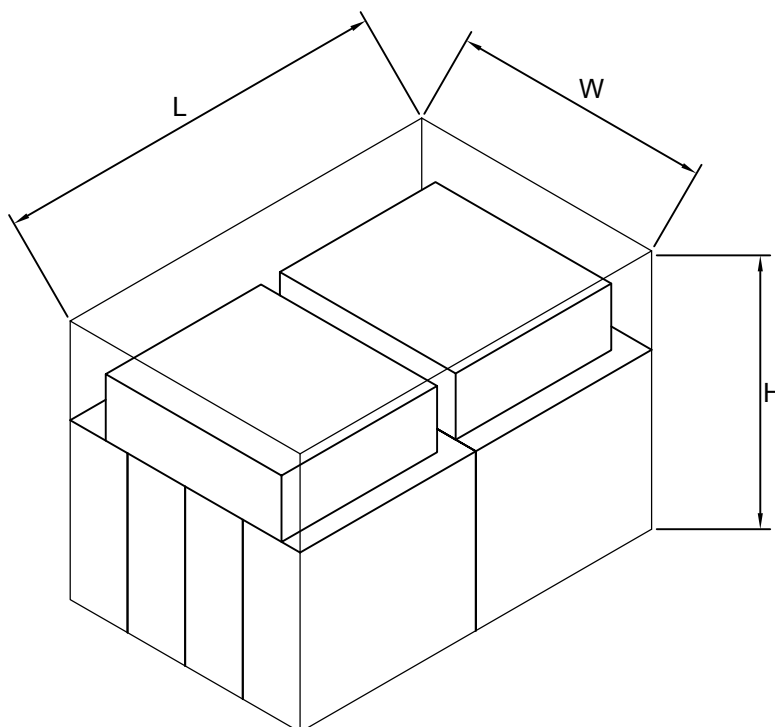
1. 5 BAG / INNER BOX

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



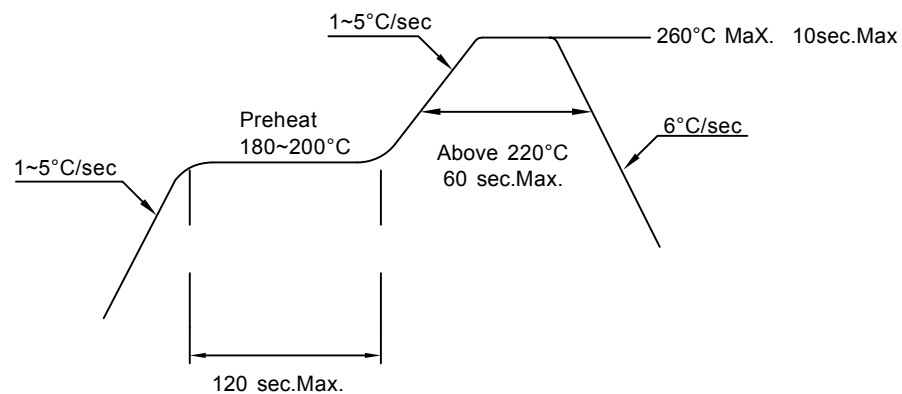
3. 10 INNER BOXES / CARTON

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



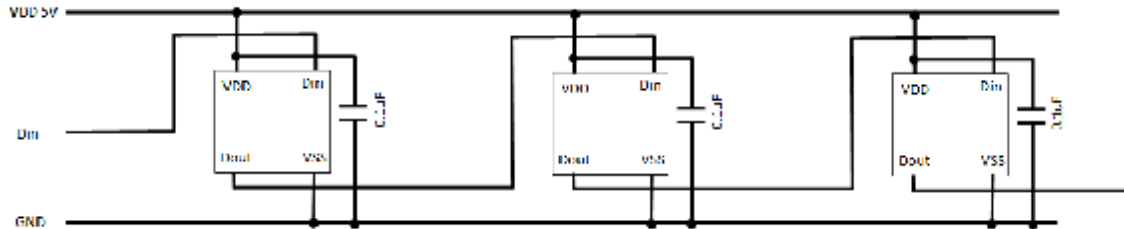
Recommended Soldering Conditions**1. Hand Solder**

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.

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 handing these LED. All devices, equipment and machinery must be properly grounded.