



**BRIGHTTEK**  
**BRIGHTTEK (EUROPE) LIMITED**

*Brighten Up The World With LED!*



ISO/TS 16949:2009



BS EN ISO 14001:2004



QC 080000 IECQ HSPM

## PRODUCT DATASHEET

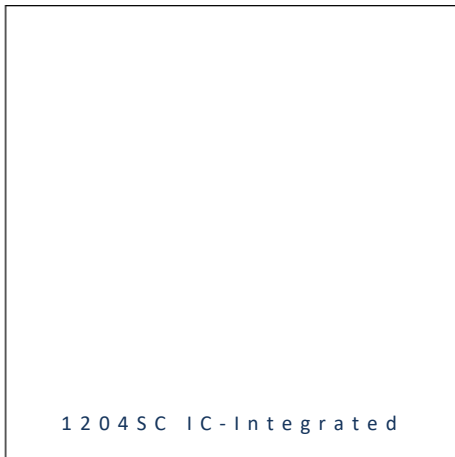


- ▶ Chip Side View with IC
- ▶ 1204SV (3210) IC 1.5t
- ▶ Sky White/Red/Green /Blue

NOM61S43ICSV



Release Date: 18 October 2023 Version: A1.1



1204SV IC-Integrated

### 1204SV IC-LED



#### FEATURES (White/Red/Green/Blue\*):

- **Package:** CHIP Side View Package with Integrated IC
- **Forward Current:** 12/12/12/12mA\*
- **Forward Voltage (typ.):** +3.3~+5.5V
- **Luminous Intensity (typ.):** 270/270/500/90mcd
- **Colour:** Sky White/Red/Green/Blue
- **CCT/Dominant Wavelength (typ.):** 9900K/622/525/470nm
- **Viewing Angle:** 120°
- **Materials:**
  - Resin: Epoxy (White Diffused)
- **Operating Temperature:** -40~+85°C
- **Storage Temperature:** -40~+100°C
- **IC Features:** This IC LED 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.
- **Pixel:** Each RGBW chip is 8 bit control, total of 4294M colour can be displayed.
- **Soldering Methods:** IR Reflow soldering
- **MSL Level:** acc. to JEDEC Level 3
- **Packing:** 8mm tape with max.3000pcs/reel, ø180mm (7")

\* in order of White/White/Red/Green/Blue

#### APPLICATIONS:

- Telecommunication
- Indicator
- Home Appliance
- Decoration Lighting
- Full Colour LED Strip
- Gaming Device
- Guardrail Tube

**CHARACTERISTICS:**

## Absolute Maximum Characteristics (Ta=25°C)

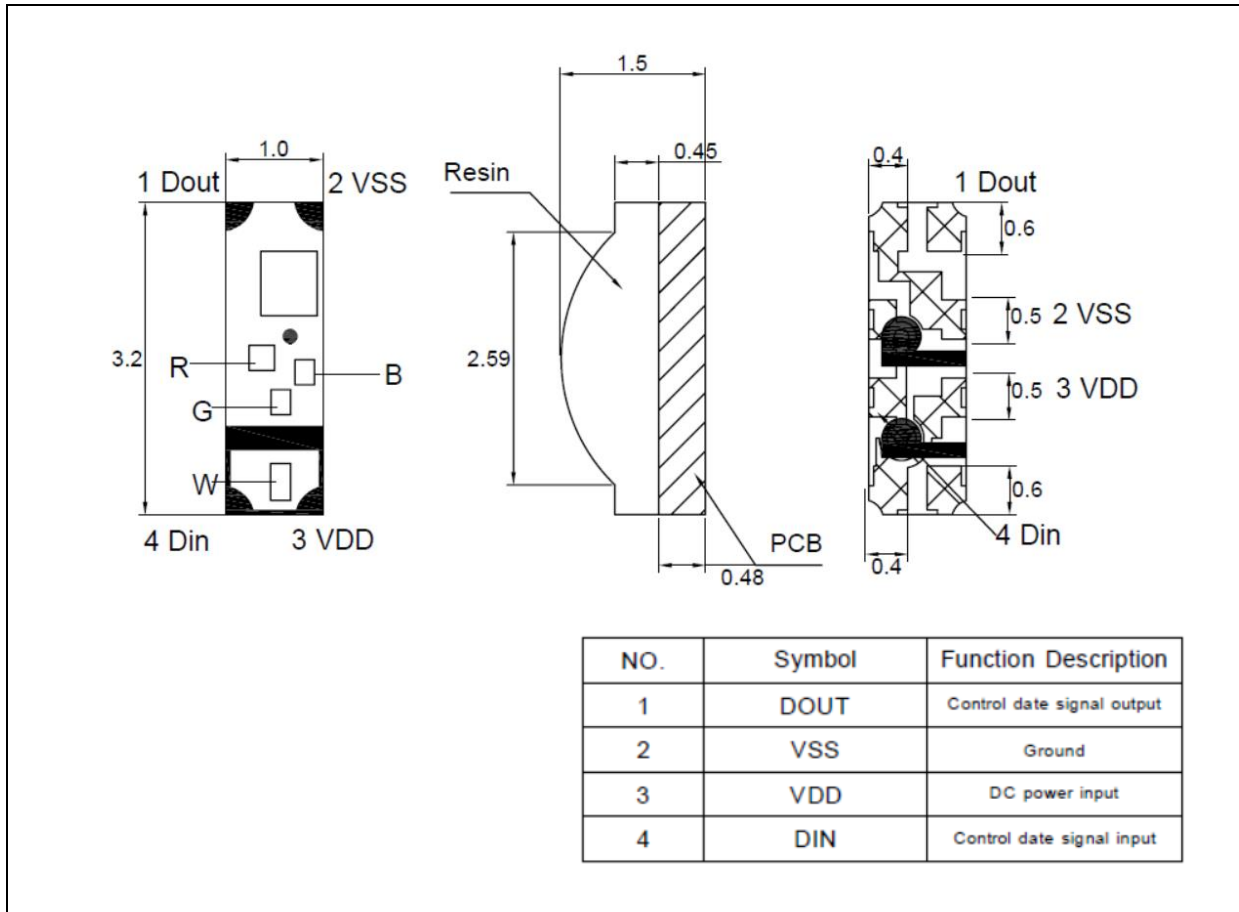
Parameter	Symbol	Ratings	Unit
LED Output Current	I <sub>OUT</sub>	25	mA
Supply Voltage	V <sub>DD</sub>	6	V
Power Dissipation	P <sub>D</sub>	400	mW
Operating Temperature	T <sub>OPR</sub>	-40~+85	°C
Storage Temperature	T <sub>STG</sub>	-40~+100	°C

 Electrical & Optical Characteristics (Ta=25°C, V<sub>DD</sub>=5V)

Parameter	Symbol	Values			Unit	Test Condition	
		Min.	Typ.	Max.			
Forward Voltage	V <sub>F</sub>	3.3	5.0	5.5	V	---	
Each R/G/B Current	I <sub>OL</sub>	---	12	---	mA	V <sub>DD</sub> =5V	
Input High Voltage	V <sub>IH</sub>	2.7	---	V <sub>DD</sub>	V	DI	
Input Low Voltage	V <sub>IL</sub>	0	---	1.0	V	DI	
Output High Voltage	V <sub>OH</sub>	4.5	---	---	V	I <sub>OH</sub> =4mA	
Output Low Voltage	V <sub>OL</sub>	---	---	0.4 V <sub>DD</sub>	V	I <sub>OL</sub> =4mA	
Operation Current	I <sub>DD</sub>	---	---	2	mA	B, G, R no load	
Pull Down Resistance	R <sub>PD</sub>	---	500K	---	Ω	D <sub>IN</sub> , D <sub>OUT</sub> (V <sub>DD</sub> =5V)	
Luminous Intensity	R	I <sub>V</sub>	---	270	---	mcd	V <sub>DD</sub> =5V
	G		---	500	---		
	B		---	90	---		
	W		---	270	---		
Dominant Wavelength	R	λ <sub>D</sub>	---	622	---	nm	V <sub>DD</sub> =5V
	G		---	525	---		
	B		---	467	---		
Viewing Angle	2θ <sub>1/2</sub>	---	120	---	deg	I <sub>F</sub> =12mA	

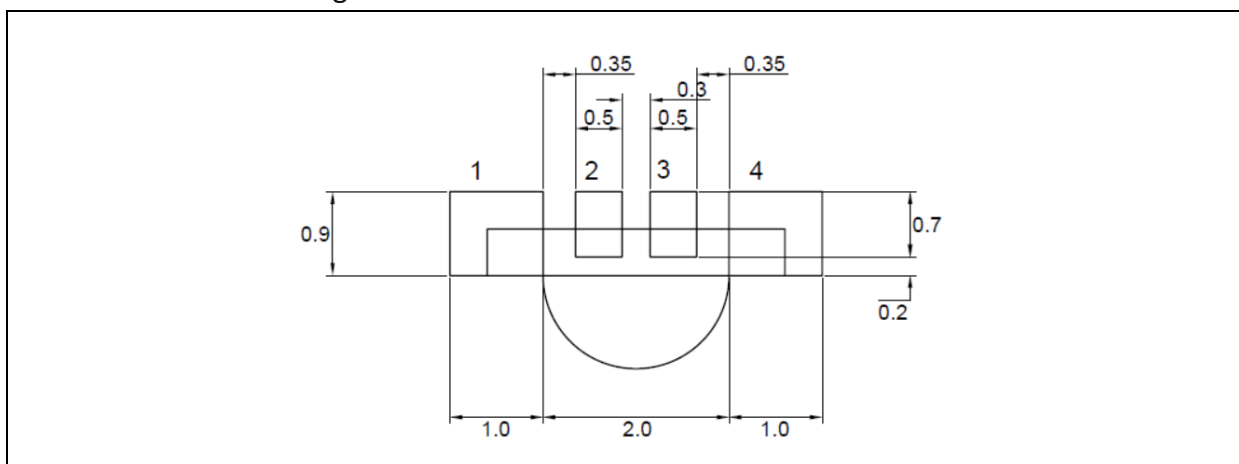
## OUTLINE DIMENSION:

Package Dimension:



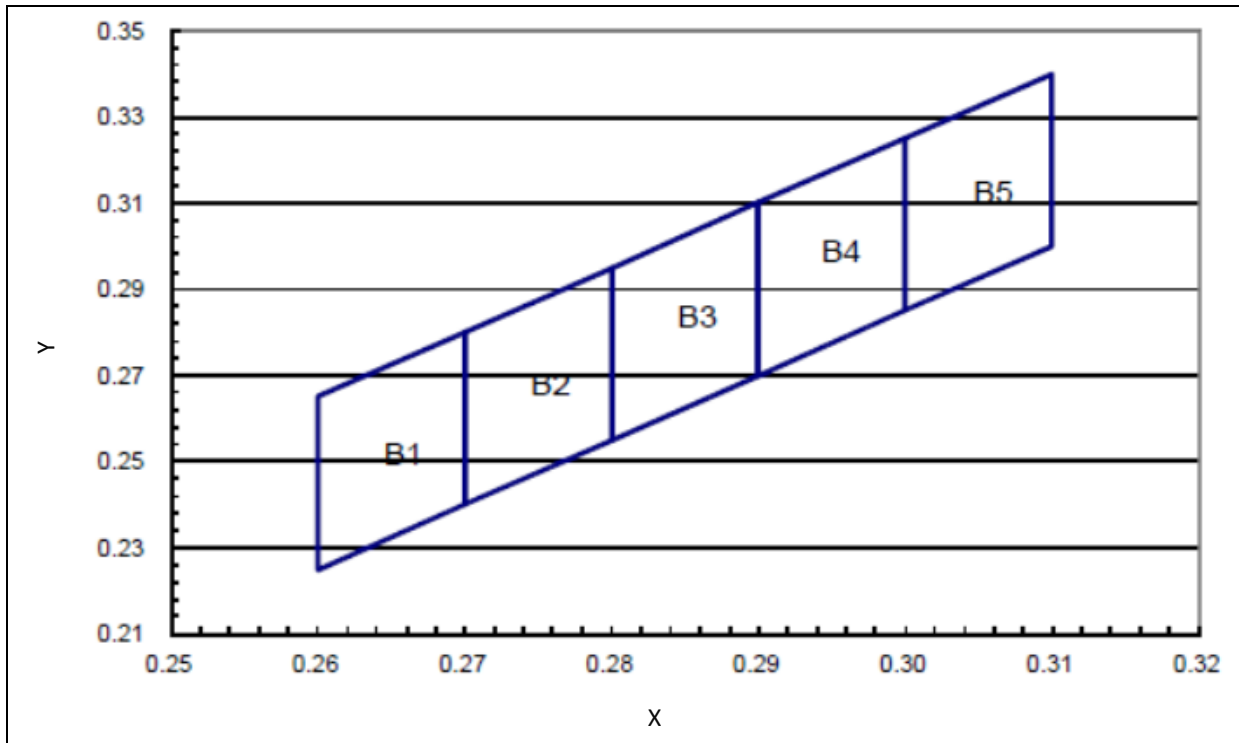
1. All dimensions are in millimetre (mm).
2. Tolerance  $\pm 0.2$ mm, unless otherwise noted.

Recommended Soldering Pad Dimension:



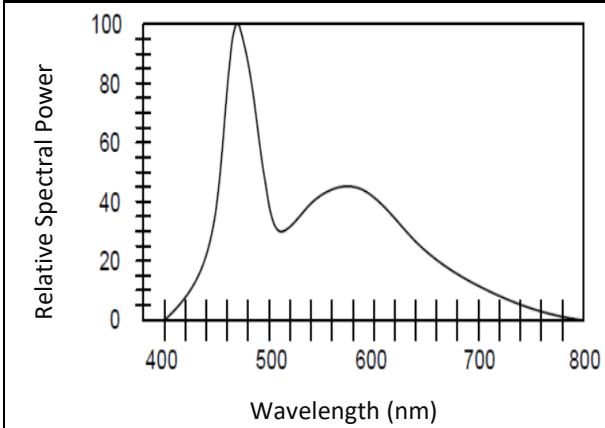
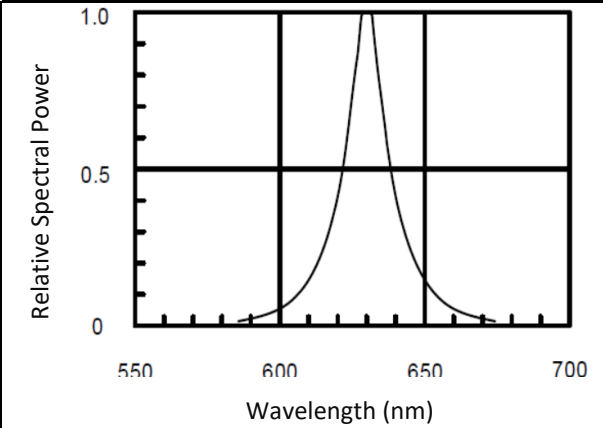
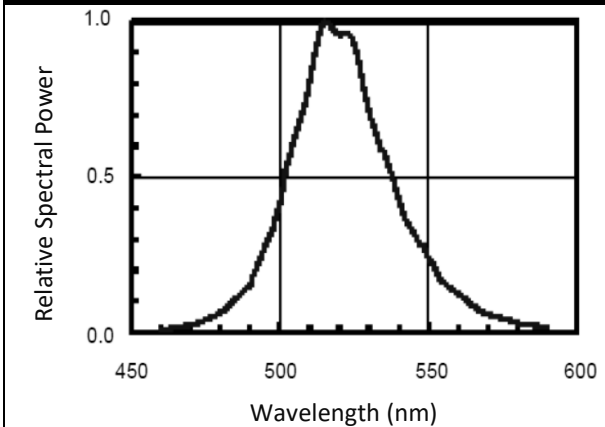
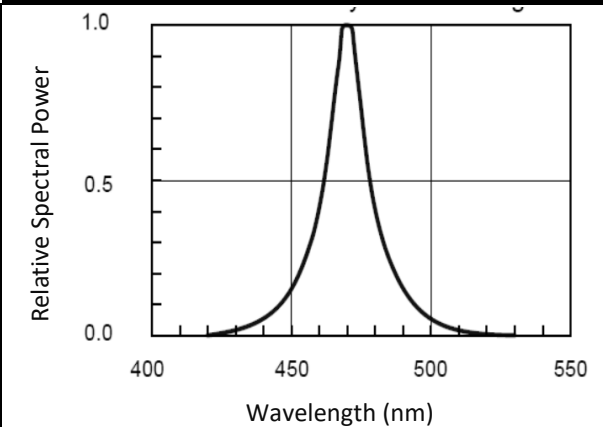
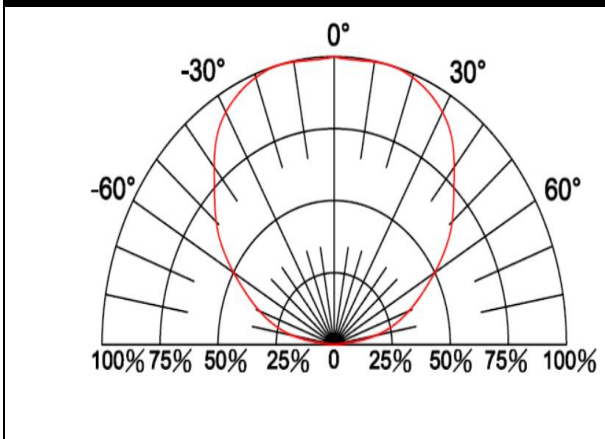
1. Dimensions are in millimetre (mm).
2. Tolerance  $\pm 0.1$ mm with angle tolerance  $\pm 0.5^\circ$ .

## CIE CHROMATICITY DIAGRAM:



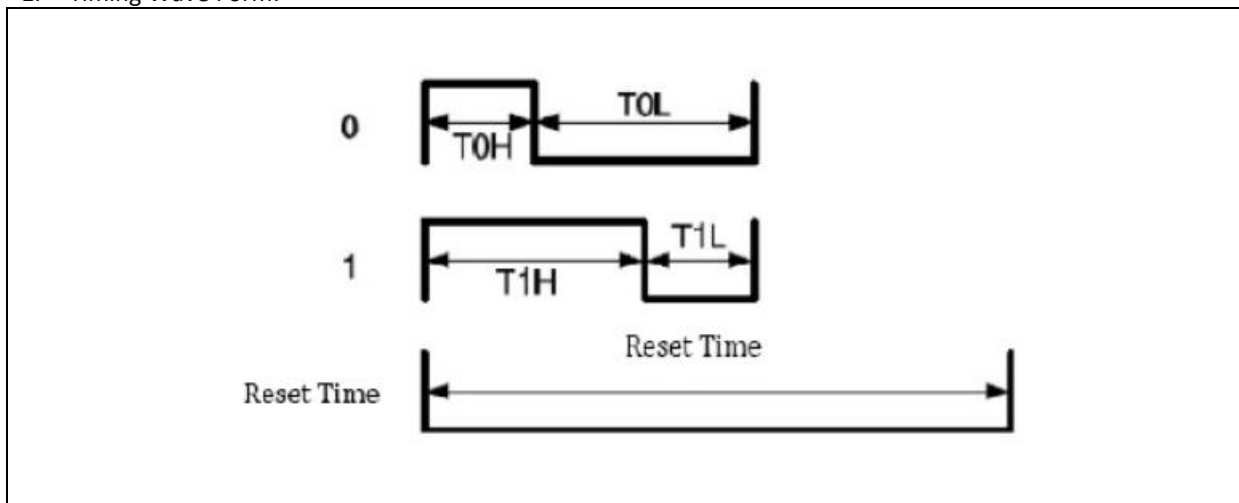
### Chromaticity Coordinates Classifications:

	1		2		3		4	
	X	Y	X	Y	X	Y	X	Y
B1	0.2600	0.2650	0.2600	0.2250	0.2700	0.2400	0.2700	0.2800
B2	0.2700	0.2800	0.2700	0.2400	0.2800	0.2550	0.2800	0.2950
B3	0.2800	0.2950	0.2800	0.2550	0.2900	0.2700	0.2900	0.3100
B4	0.2900	0.3100	0.2900	0.2700	0.3000	0.2850	0.3000	0.3250
B5	0.3000	0.3250	0.3000	0.2850	0.3100	0.3000	0.3100	0.3400

**ELECTRO-OPTICAL CHARACTERISTICS:**
**Luminous Spectrum - White**

**Luminous Spectrum - Red**

**Luminous Spectrum - Green**

**Luminous Spectrum - Blue**

**Directive Radiation**


## Function Description:

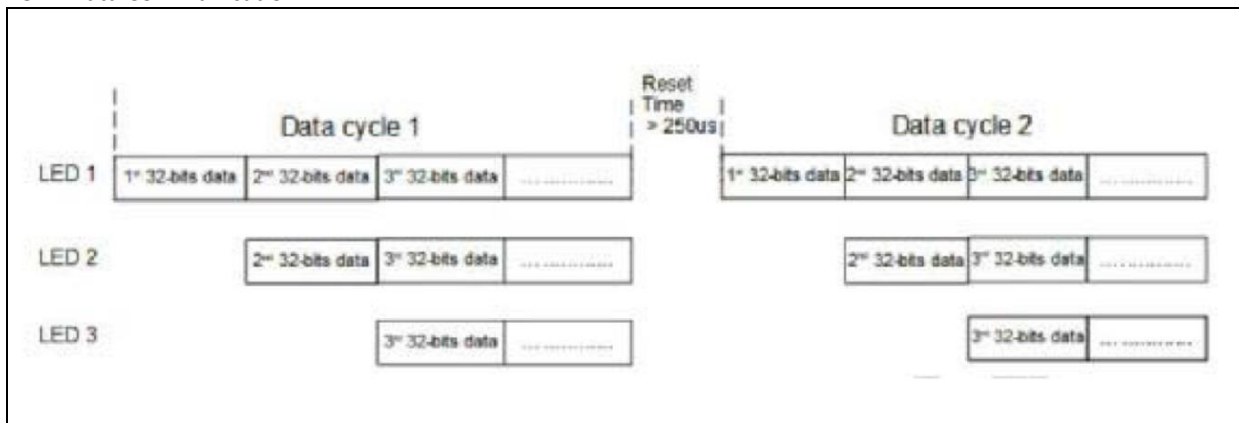
### 1. Timing Wave Form:



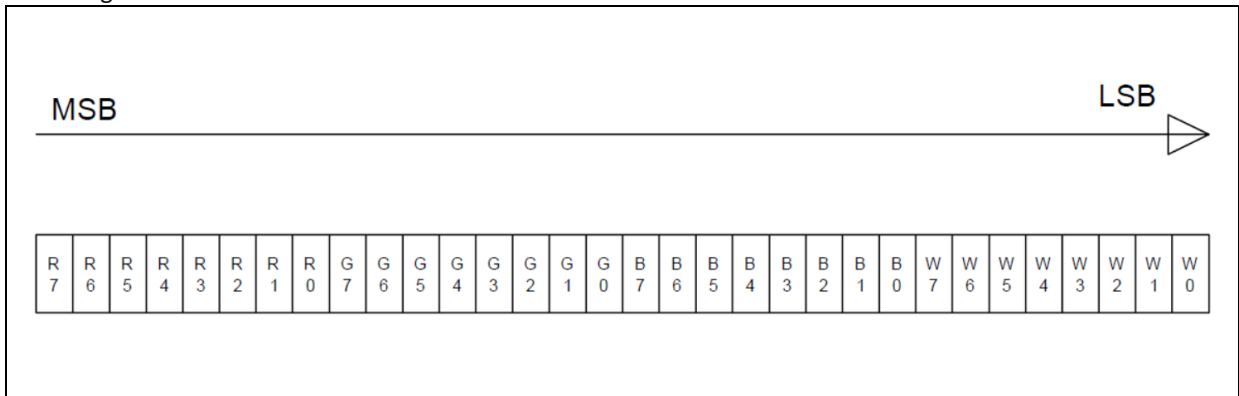
### 2. High Speed Mode:

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			

### 3. Data Communication:



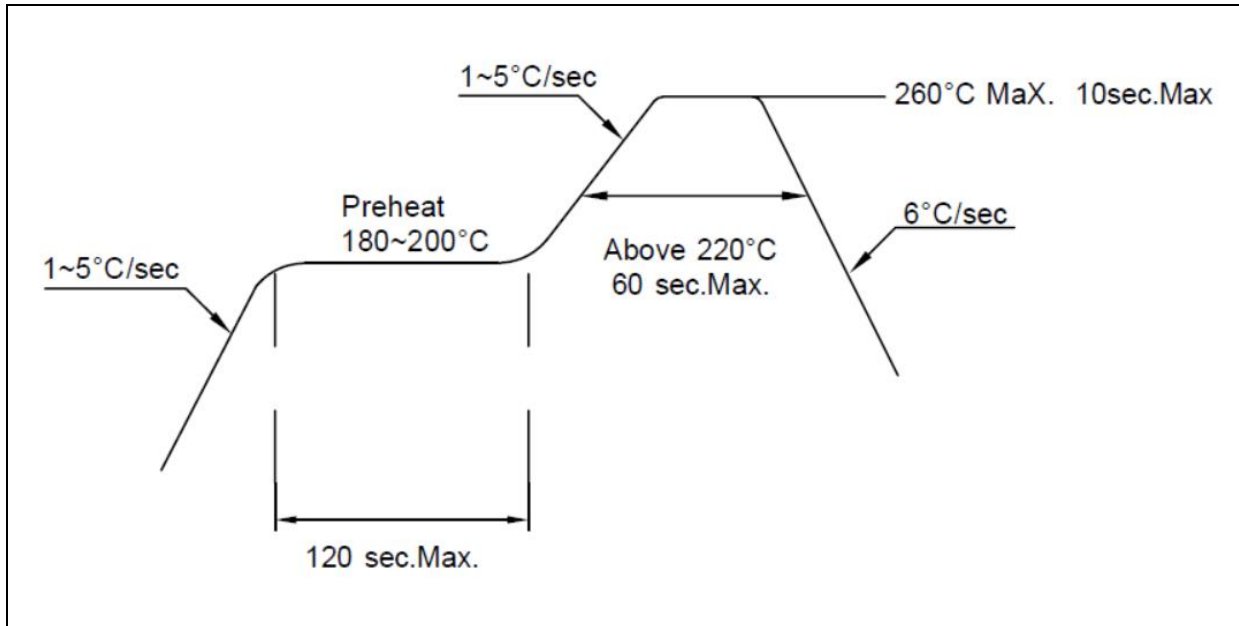
## 4. Single Data in 32bit for RGBW:



## RECOMMENDED SOLDERING PROFILE:

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Lead-free Solder IR Reflow:



Note:

1. We recommend the reflow temperature 240°C ( $\pm 5^\circ\text{C}$ ). The maximum soldering temperature should be limited to 260°C.
2. Maxima reflow soldering: 1 time.
3. Before, during, and after soldering, should not apply stress on the components and PCB board.



## PRECAUTIONS OF USE:

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### Storage:

It is recommended to store the products in the following conditions:

- Humidity: 60% R.H. Max.
- Temperature: 5°C~30°C (41°F ~86°F).

Shelf life in sealed bag: 12 months at 5°C~30°C and <60% R.H.

Once the package is opened, the products should be used within 168 hours. Otherwise, they should be kept in a damp-proof box with desiccating agent stored at R.H.<10% and apply baking before use.

### Over-Current Proof:

Must apply resistors for protection otherwise slight voltage shift will cause big current change and burn-out will happen.

### Baking:

It is recommended to bake the LED before soldering if the pack has been unsealed for longer than 24hrs. The suggested baking conditions are as followings:

- 60±5°C x 24hrs and <5%RH, taped / reel package.

It's normal to see slight color fading of carrier (light yellow) after baking in process.

### Cleaning:

Use alcohol-based cleaning solvents such as isopropyl alcohol to clean the LED carrier / package. Avoid putting any stress force directly on to the LED lens.

### 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 the LED all time. All devices, equipment, machinery, work tables, and storage racks must be properly grounded.

**REVISION RECORD:**

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Version	Date	Summary of Revision
A1.0	15/11/2021	Datasheet set-up.
A1.1	18/10/2023	Update IC Functions.