BRIGHTEK

BRIGHTEK (EUROPE) LIMITED

Brighten Up The World With LED!

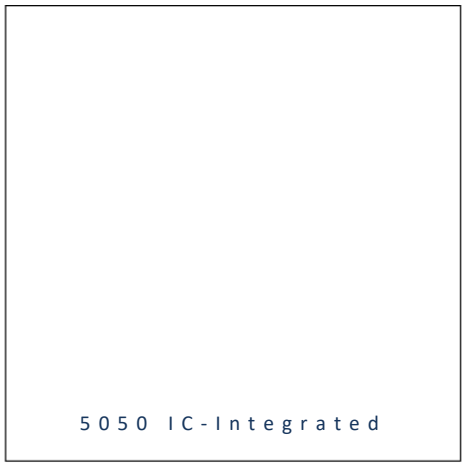
ISO/TS 16949:2009 BS EN ISO 14001:2004 QC 080000 IECQ HSPM

PRODUCT DATASHEET

- PLCC4 SMD with IC
- 5050 IC 1.6t
- Red/Green/Blue

Release Date: 24 September 2022 Version: A1.1

N0M61S42IC



5050 IC-Integrated

RoHS Compliant

FEATURES:

- **Package:** Top View Package with RGB Integrated IC Control
- **Forward Current:** 12/12/12mA* * in order of Red/Green/Blue
- **Forward Voltage (typ.):** +3.7~+5.3V
- **Mixed White Luminous Intensity (typ.):** 2000mcd
- **Colour:** Red/Green/Blue
- **Wavelength:** 622/522/466nm
- **Viewing angle:** 120°
- **Materials:**
  - Resin: Silicone (Water Clear)
  - L/F Finish: Ag Plated
- **Operating Temperature:** -40~+85°C
- **Storage Temperature:** -40~+100°C
- **Features:** 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 premium.
- **Pixel:** R/G/B 8-bit colour for each chip, total 16M colour can be displayed.
- **Soldering methods:** IR Reflow soldering
- **Preconditioning:** acc. to JEDEC Level 4
- **Packing:** 12mm tape with max.1000pcs/reel, ø180mm (7'')

APPLICATIONS:

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

CHARACTERISTICS:

Absolute Maximum Characteristics (Ta=25°C)

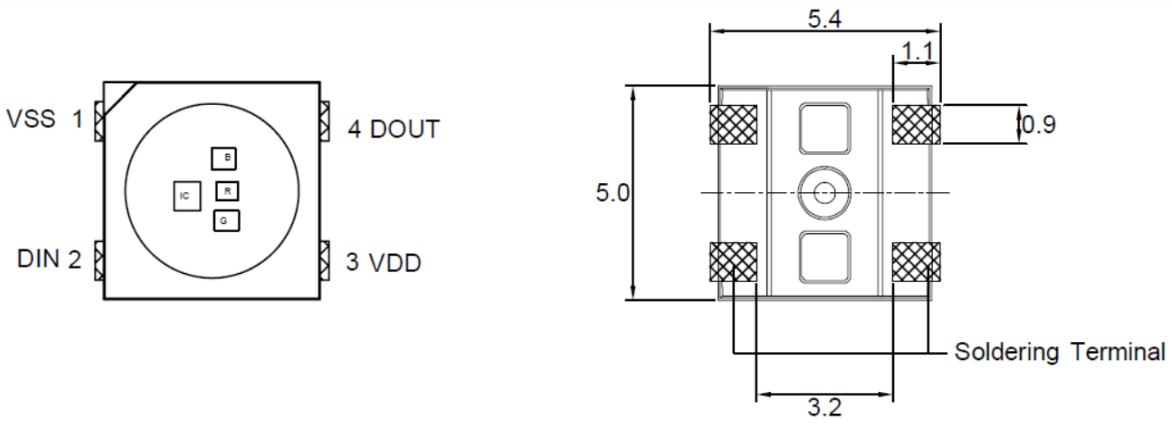
Parameter	Symbol	Ratings	Unit
Supply Voltage	V_{DD}	-0 ~ +6.0	V
LED Output Current	I_{OUT}	20	mA
Operating Temperature	T_{OPR}	-40~+85	°C
Storage Temperature	T_{STG}	-40~+100	°C

Electrical & Optical Characteristics (Ta=25°C, V_{DD}=5V)

Parameter		Symbol	Values			Unit	Test Condition
			Min.	Typ.	Max.		
Supply Voltage		V_{DD}	3.7	5.0	5.3	V	---
Each R/G/B Current		IOL	---	12	---	mA	V_{DD}=5V
Input High Voltage		VIH	2.7	---	V_{DD}	V	DI
Input Low Voltage		VIL	0	---	0.7	V	DI
Luminous Intensity		I_V	1320	---	3100	mcd	V_{DD}=5V
Dominant Wavelength	R	λ_D	---	622	---	nm	V_{DD}=5V
	G		---	522	---		
	B		---	466	---		
Viewing Angle		$2\theta_{1/2}$	---	120	---	deg	V_{DD}=5V

OUTLINE DIMENSION:

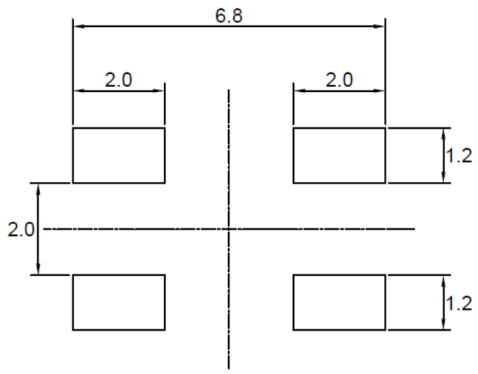
Package Dimension:



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

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

Recommended Soldering Pad Dimension:



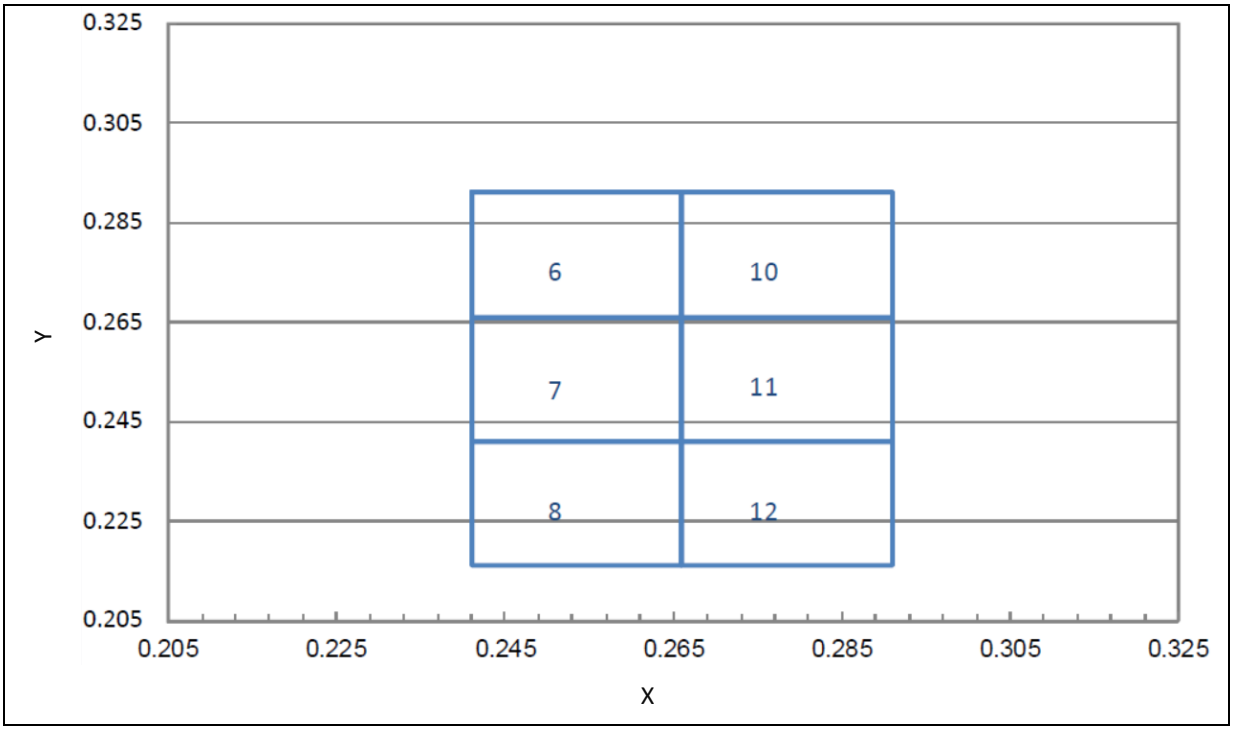
1. Dimensions are in millimetre (mm).
2. Tolerance ±0.1mm with angle tolerance ±0.5°.

BINNING GROUPS:

Luminous Intensity Classifications:

Code	Min.	Max.	Unit
H1	1320	1600	mcd
H2	1600	2000	
H3	2000	2500	
H4	2500	3100	

CIE CHROMATICITY DIAGRAM:

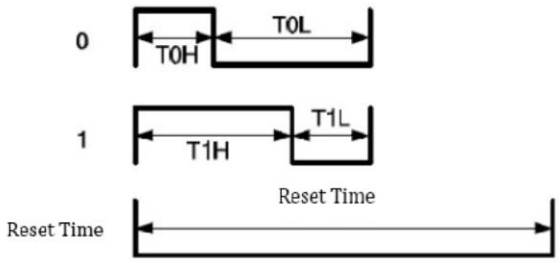


Chromaticity Coordinates Classifications:

	1		2		3		4	
	X	Y	X	Y	X	Y	X	Y
6	0.2410	0.2660	0.2410	0.2910	0.2660	0.2910	0.2660	0.2660
7	0.2410	0.2410	0.2410	0.2660	0.2660	0.2660	0.2660	0.2410
8	0.2410	0.2160	0.2410	0.2410	0.2660	0.2410	0.2660	0.2160
10	0.2660	0.2660	0.2660	0.2910	0.2910	0.2910	0.2910	0.2660
11	0.2660	0.2410	0.2660	0.2660	0.2910	0.2660	0.2910	0.2410
12	0.2660	0.2160	0.2660	0.2410	0.2910	0.2410	0.2910	0.2160

Function Description:

1. Timing Wave Form:

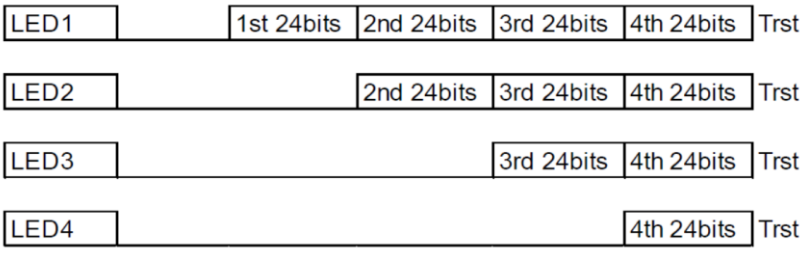


2. High Speed Mode:

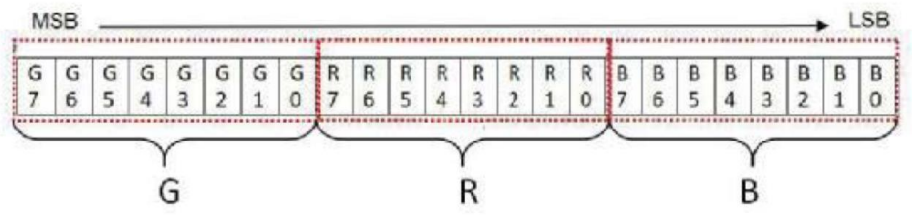
Item	Description	min	max	unit
T0H	0 code, High-level time	0.22	0.38	us
T0L	0 code, Low-level time	0.58	1	us
T1H	1 code, High-level time	0.58	1	us
T1L	1 code, Low-level time	0.22	1	us
Trst	Reset code,Low-level time	280	----	us

Note:TH+TL>1.2us

3. Data Communication:

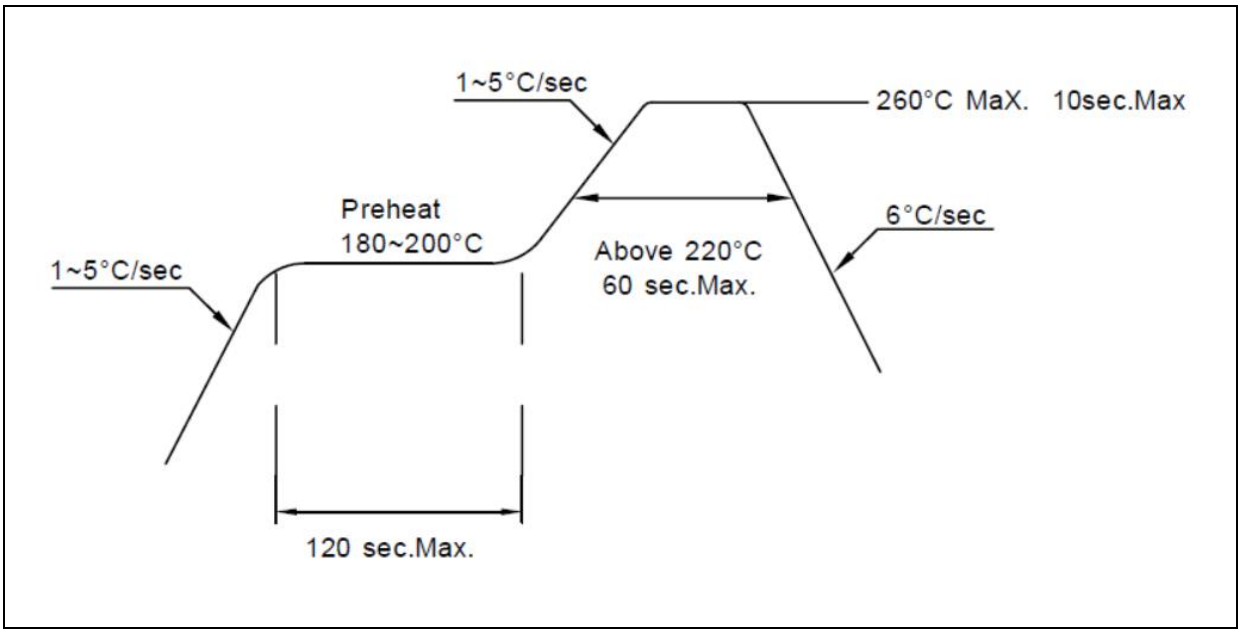


4. Single Data in 24 bits for RGB:



RECOMMENDED SOLDERING PROFILE:

Lead-free Solder IR Reflow:



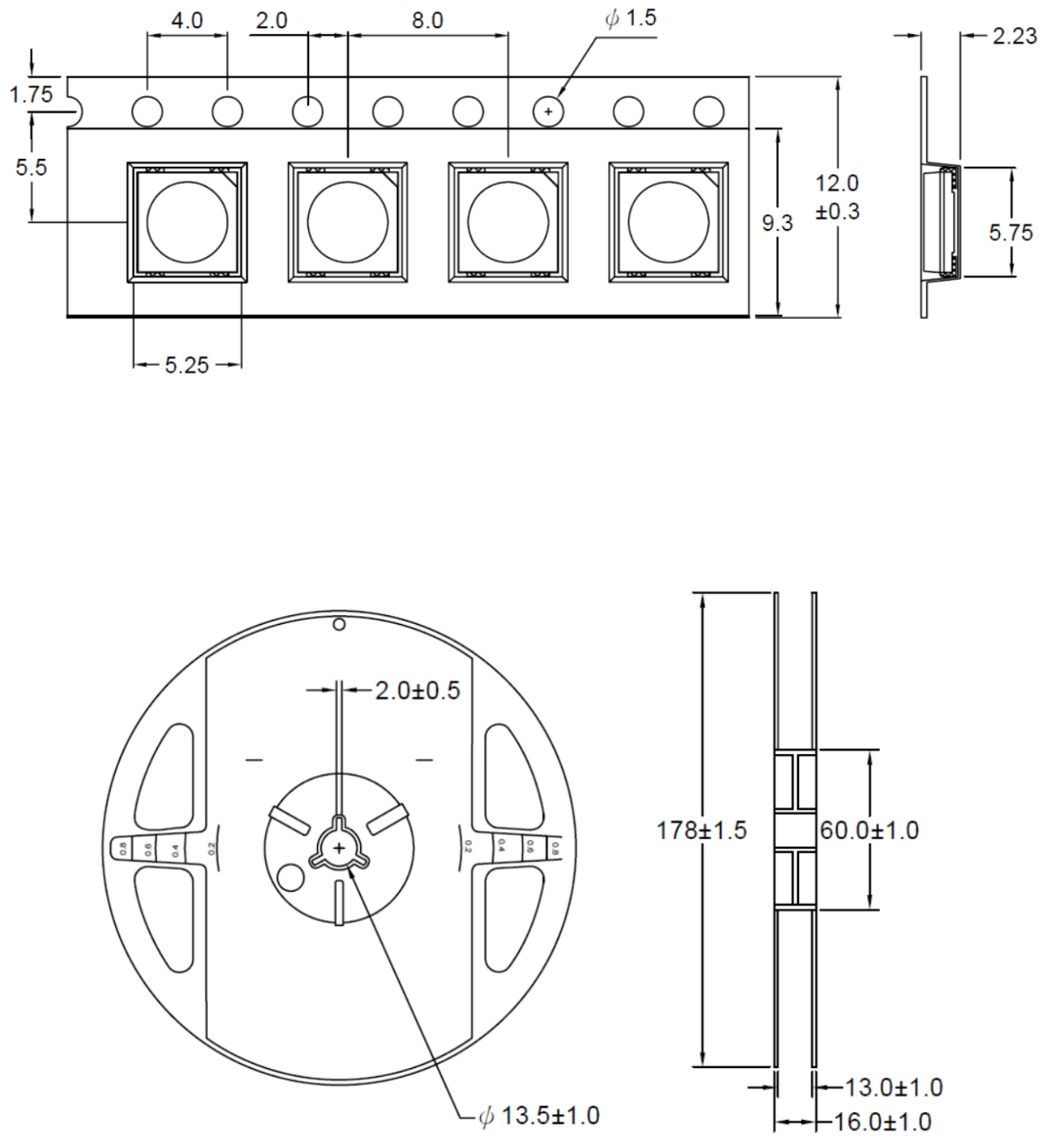
Note:

1. We recommend the reflow temperature 240°C (±5°C). The maximum soldering temperature should be limited to 260°C.
2. Maxima reflow soldering: 2 times.
3. Before, during, and after soldering, should not apply stress on the components and PCB board.

PACKING SPECIFICATION:

Reel Dimension:

Max.1000pcs/reel



PRECAUTIONS OF USE:

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 24 hours. Otherwise, they should be kept in a damp-proof box with descanting 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.

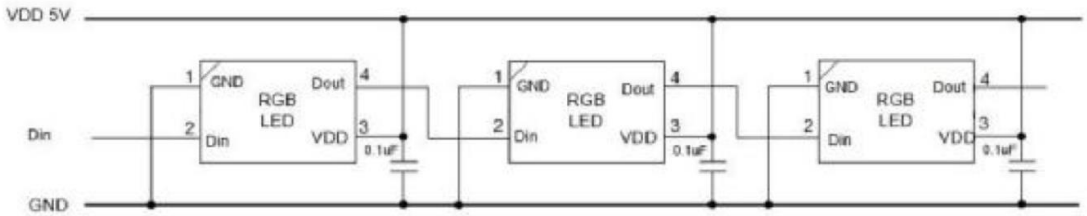
Baking:

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.

Recommended Route:



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

REVISION RECORD:

Version	Date	Summary of Revision
A1.0	01/11/2021	Datasheet set-up.
A.1.1	24/09/2022	New datasheet format.