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
- ▶ 3535 IC 1.90t
- ▶ Red/Green/Blue

Release Date: 06 April 2025 Version: A1.2

N0M61S40IC

3535 IC-Integrated

3535 IC-Integrated

RoHS Compliant

FEATURES:

- **Package:** PLCC4 Top View Package with Integrated IC
- **Forward Current:** 12/12/12mA* * in order of Red/Green/Blue
- **Forward Voltage (typ.):** +3.3~+5.5V
- **Mixed White Luminous Intensity (typ.):** 2000mcd
- **Colour:** Red/Green/Blue
- **Dominant Wavelength (typ.):** 622/522/466nm
- **Viewing Angle:** 120°
- **Materials:**
  - Die: AlGaInP/InGaN/InGaN
  - 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.
- **Soldering methods:** Reflow soldering
- **Preconditioning:** acc. to JEDEC Level 4
- **Packing:** 12mm tape with max.500pcs/reel, ø180mm (7'')

APPLICATIONS:

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

CHARACTERISTICS:

Absolute Maximum Characteristics (T_a=25°C, V_{DD}=5V, V_{SS}=0)

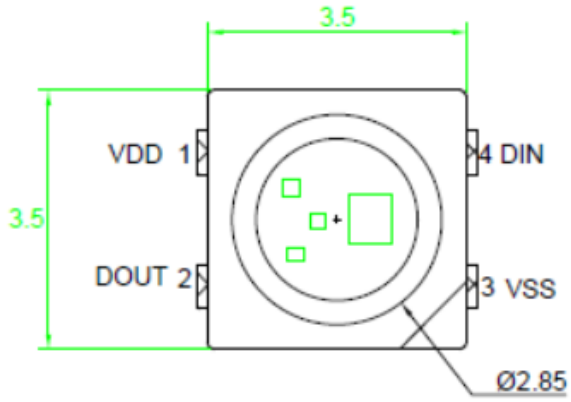
Parameter	Symbol	Ratings	Unit
Supply Voltage	V_{DD}	6.5	V
LED Output Current	I_{OUT}	25	mA
Operating Temperature	T_{OPR}	-40~+85	°C
Storage Temperature	T_{STG}	-40~+100	°C

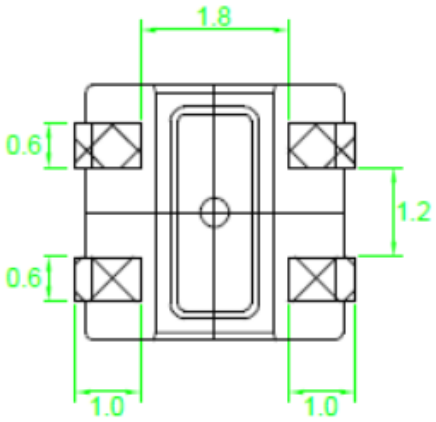
Electrical & Optical Characteristics (T_a=25°C)

Parameter		Symbol	Values			Unit	Test Condition
			Min.	Typ.	Max.		
Supply Voltage		V_{DD}	3.3	5.0	5.5	V	---
Each R/G/B Current		I_{OL}	---	12	---	mA	V_{DD}=5V
Input High Voltage		V_{IH}	2.7	---	V_{DD}	V	---
Input Low Voltage		V_{IL}	0	---	1.0	V	---
Output High Voltage		V_{OH}	3.8	4.0	---	V	I_{OH}=4mA V_{DD}=5V
Output Low Voltage		V_{OL}	---	0.4	0.6	V	I_{OL}=4mA V_{DD}=5V
Operation Current		I_{DD}	---	1.2	1.5	mA	B, G, R no load
Pull Down Resistance		R_{PD}	---	500K	---	Ω	D_{IN}, D_{OUT} (V_{DD}=5V)
Luminous Intensity		I_V	1400	---	2750	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:

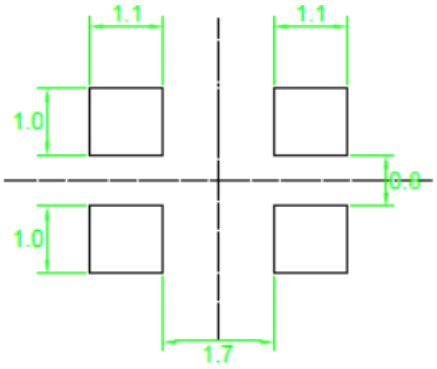




NO.	Symbol	Function Description
1	VDD	DC power input
2	DOUT	Control date signal output
3	VSS	Ground
4	DIN	Control date signal input

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

Recommended Soldering Pad Dimension:



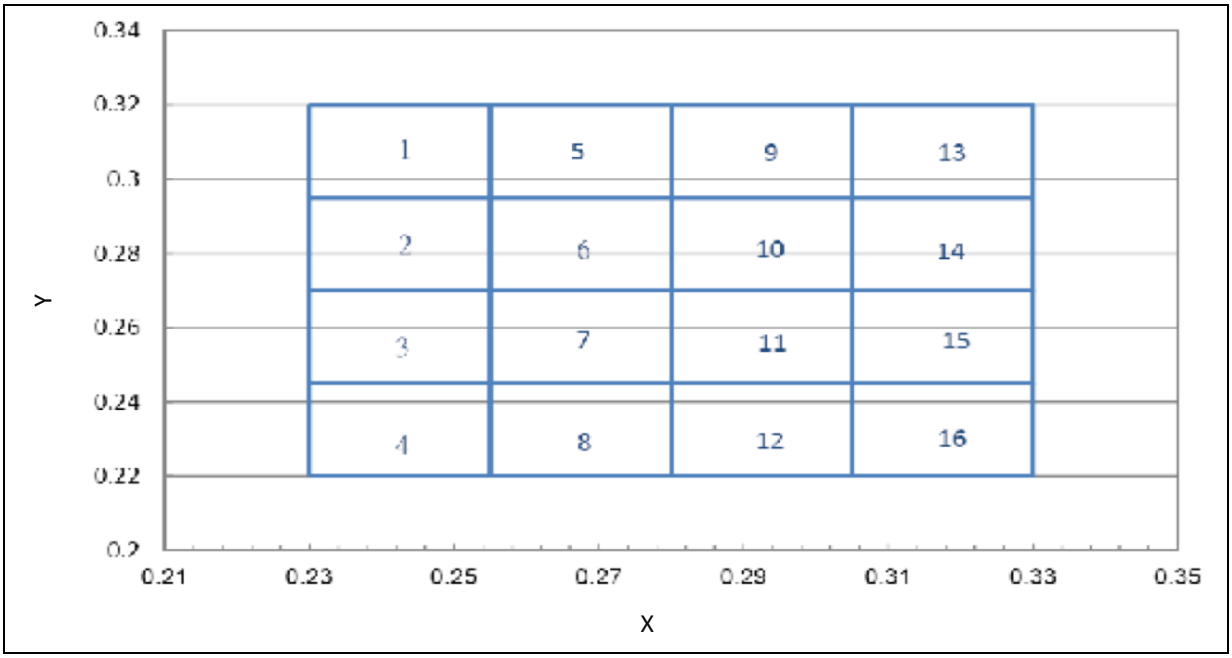
1. Dimensions are in millimetre (mm).
2. Tolerance ±0.1mm with angle tolerance ±0.5°.

BINNING GROUPS:

Luminous Intensity Classifications:

Code	Min.	Max.	Unit
F2	1400	1750	mcd
F3	1750	2200	
F4	2200	2750	

CIE CHROMATICITY DIAGRAM:

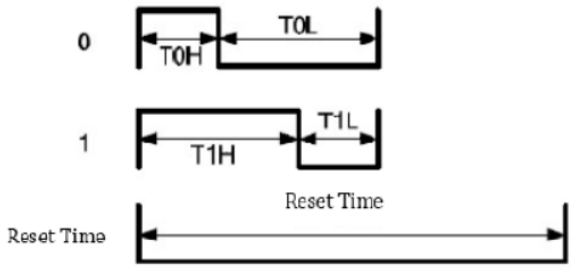


Chromaticity Coordinates Classifications:

	1		2		3		4	
	X	Y	X	Y	X	Y	X	Y
1	0.230	0.295	0.230	0.320	0.255	0.320	0.255	0.295
2	0.230	0.270	0.230	0.295	0.255	0.295	0.255	0.270
3	0.230	0.245	0.230	0.270	02.5	0.270	0.255	0.245
4	0.230	0.220	0.230	0.245	0.255	0.245	0.255	0.220
5	0.255	0.295	0.255	0.320	0.280	0.320	0.280	0.295
6	0.255	0.270	0.255	0.295	0.280	0.295	0.280	0.270
7	0.255	0.245	0.255	0.270	0.280	0.270	0.280	0.245
8	0.255	0.220	0.255	0.245	0.280	0.245	0.280	0.220
9	0.280	0.295	0.280	0.320	0.305	0.320	0.305	0.295
10	0.280	0.270	0.280	0.295	0.305	0.270	0.305	0.245
11	0.280	0.245	0.280	0.270	0.305	0.270	0.305	0.245
12	0.280	0.220	0.280	0.245	0.305	0.245	0.305	0.220
13	0.305	0.295	0.305	0.320	0.330	0.320	0.330	0.295
14	0.305	0.270	0.305	0.295	0.330	0.295	0.330	0.270
15	0.305	0.245	0.305	0.270	0.330	0.270	0.330	0.245
16	0.305	0.220	0.305	0.245	0.330	0.245	0.330	0.220

Function Description:

1. Timing Wave Form:



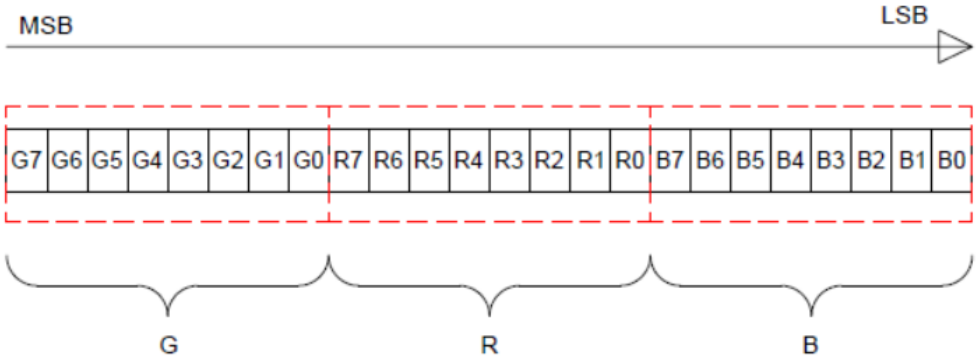
2. High Speed Mode:

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	----	----	us

3. Control Commands for Multiple Strips Connected Parallelly:

N0M61S40IC supports the scenarios of controlling multiple strips with parallel connection (up to 15 strips). With appropriate commands, each of the strips can be identified and assigned a unique strip dynamic ID (by set dynamic ID command). After the commands is completed, MCU host can individually control and send the display data to each strip with the help of "Clean ID", "Check ID", "specify ID" commands.

4. Single Data in 24 Bits for RGB:



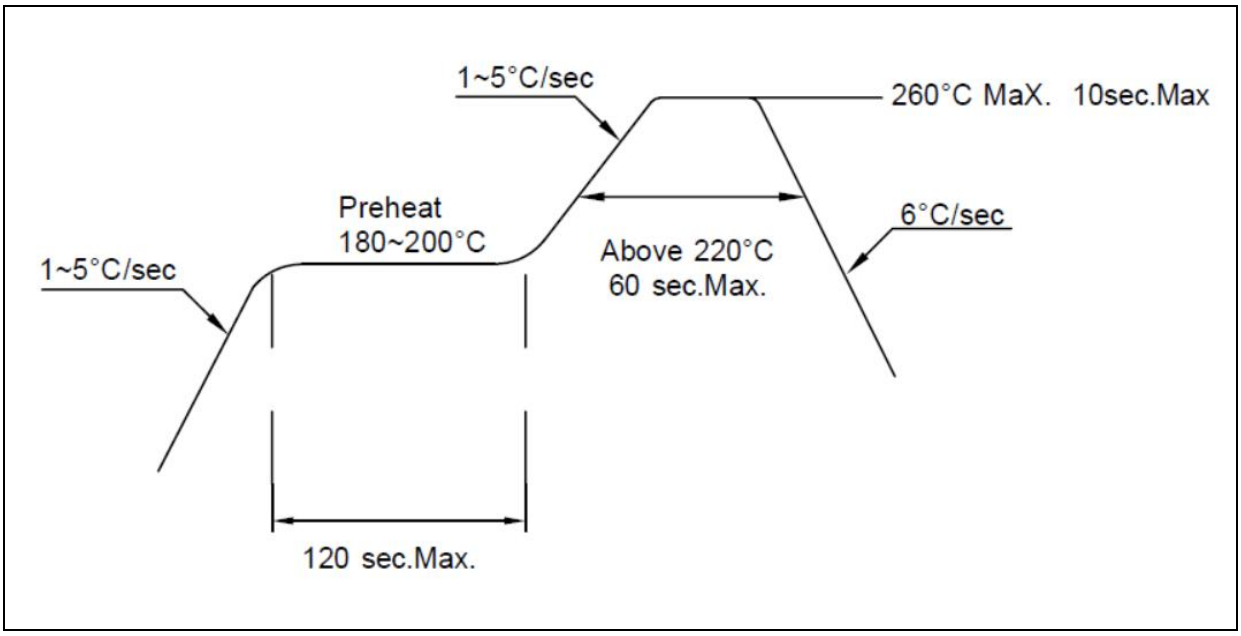
Function Description:

5. Advance Function Mode:

   This product has an Advance Function mode that supports the MCU to start with a specific command setting, includes the following function:
   1. Feedback the cascaded number of LEDs and maximum sink current of R/G/B channel.
   2. Current Gain control:32 level(5bits) to adjust maximum sink current of R/G/B channel.
   3. Programmable PWM refresh rate (1.25kHz/2.5kHz/5kHz/10kHz).

RECOMMENDED SOLDERING PROFILE:

Lead-free Solder IR Reflow:



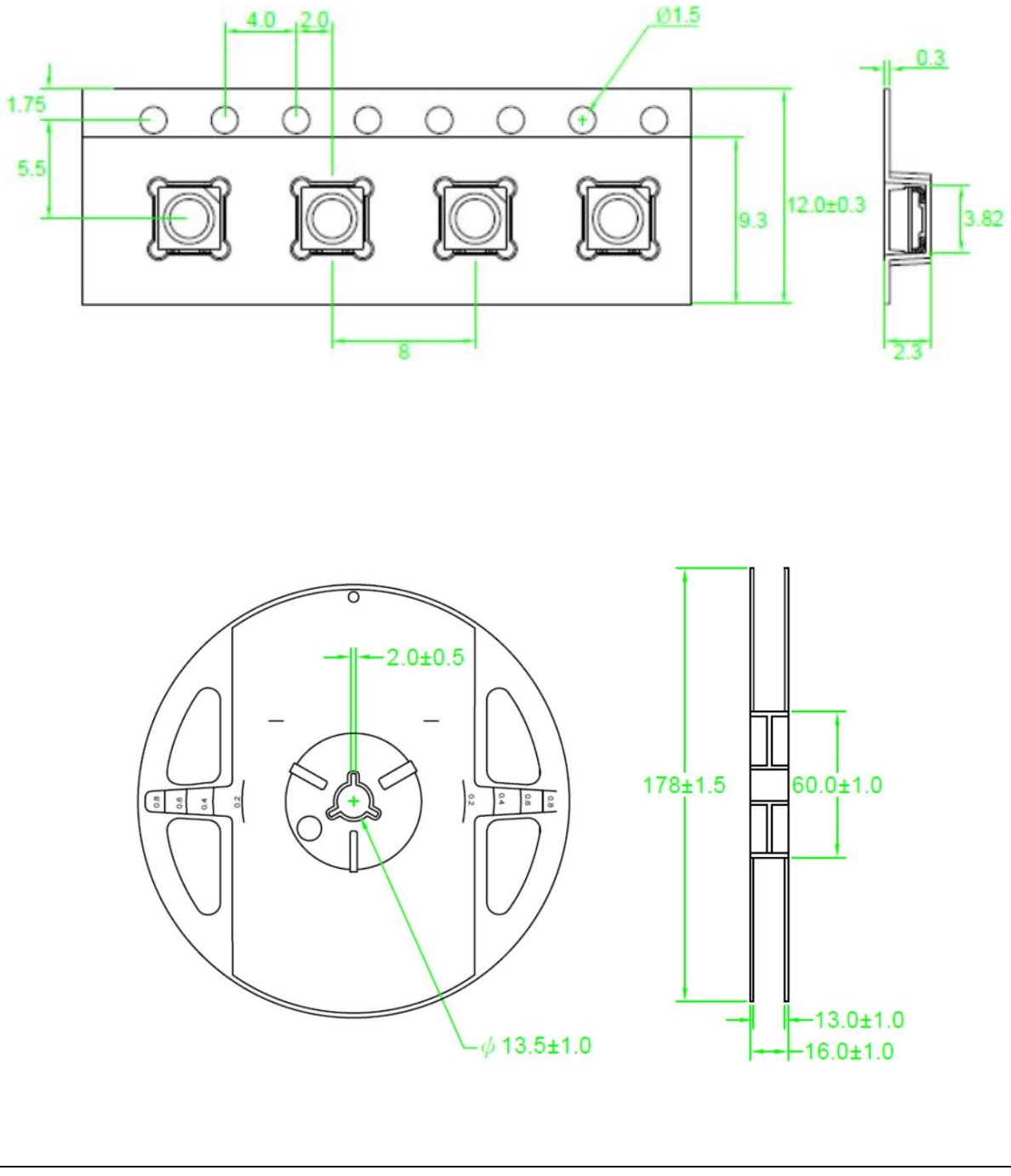
Note:

1. The recommended reflow soldering temperature is 240°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.500pcs/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 72 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.

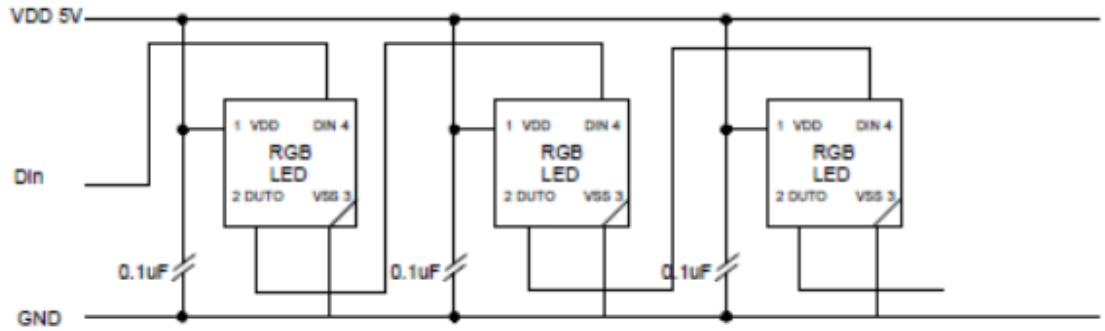
Baking:

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	06/06/2022	Datasheet set-up.
A1.1	24/09/2022	New datasheet format.
A1.2	06/04/2025	Revise intensity bin range.