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 1.9t
- ▶ Red/Green/Blue

Release Date: 22 February 2025 Version: A1.1

N0M59S09IC

3535 IC-Integrated

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RoHS Compliant

FEATURES:

- **Package:** PLCC4 Top View Package with Integrated IC.
- **Forward Current:** 20/20/20mA*
- **Forward Voltage (typ.):** +3.0~+5.5V
- **Luminous Intensity (typ.):** 800/1400/320mcd
- **Colour:** Red/Green/Blue
- **Dominant Wavelength (typ.):** 622/520/467nm
- **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
- **Pixel:** Each R/G/B chip is 8bit, total of 16M colours can be displayed
- **Soldering methods:** IR Reflow soldering
- **MSL Level:** acc. to JEDEC Level 4
- **Packing:** 12mm tape with Max.500pcs/reel, ø180mm (7'')

* in order of Red/Green/Blue

APPLICATIONS:

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

CHARACTERISTICS:

Absolute Maximum Characteristics (T_a=25°C)

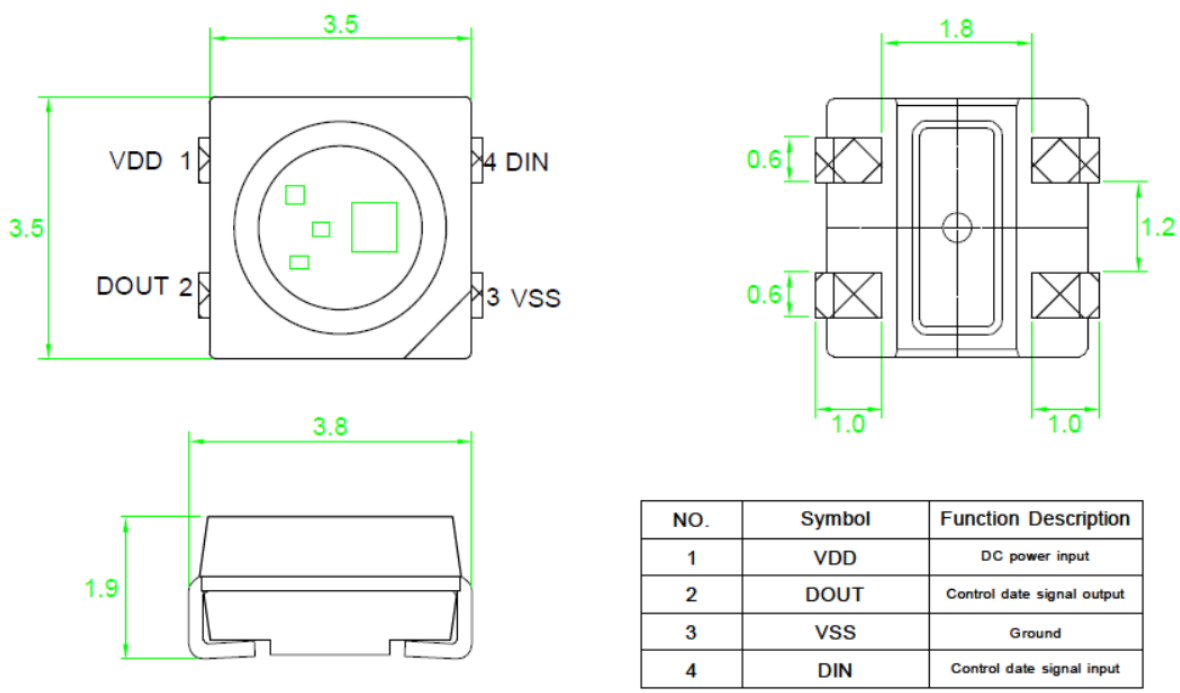
Parameter	Symbol	Ratings	Unit
LED Output Current	I_{OUT}	25	mA
Supply Voltage	V_{DD}	0 ~ +6.0	V
Power Dissipation	P_D	400	mW
Operating Temperature	T_{OPR}	-40~+85	°C
Storage Temperature	T_{STG}	-40~+100	°C

Electrical & Optical Characteristics (T_a=25°C)

Parameter		Symbol	Values			Unit	Test Condition
			Min.	Typ.	Max.		
Forward Voltage		V_F	3.0	5.0	5.5	V	---
Each R/G/B Current		I_{OL}	---	20	---	mA	V_{DD}=5V
Input High Voltage		V_{IH}	3.0	---	V_{DD}	V	DI
Input Low Voltage		V_{IL}	0	---	1.0	V	DI
Output High Voltage		V_{OH}	4.5	---	---	V	I_{OH}=4mA
Output Low Voltage		V_{OL}	---	---	0.4 V_{DD}	V	I_{OL}=4mA
Operation Current		I_{DD}	---	---	1.2	mA	B, G, R no load
Pull Down Resistance		R_{PD}	---	500K	---	Ω	D_{IN}, D_{OUT} (V_{DD}=5V)
Luminous Intensity	R	I_V	500	800	1250	mcd	V_{DD}=5V
	G		1000	1400	2000		
	B		200	320	800		
Dominant Wavelength	R	λ_D	615	622	630	nm	V_{DD}=5V
	G		515	520	530		
	B		460	467	475		
Viewing Angle		$2\theta_{1/2}$	---	120	---	deg	V_{DD}=5V

OUTLINE DIMENSION:

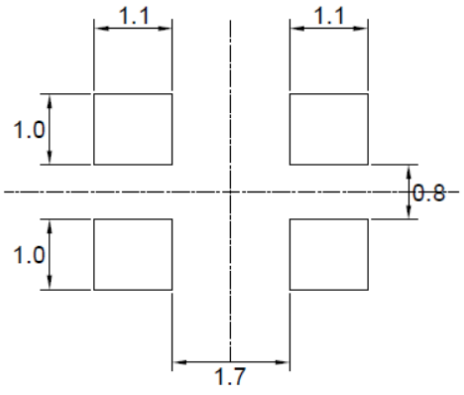
Package Dimension:



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

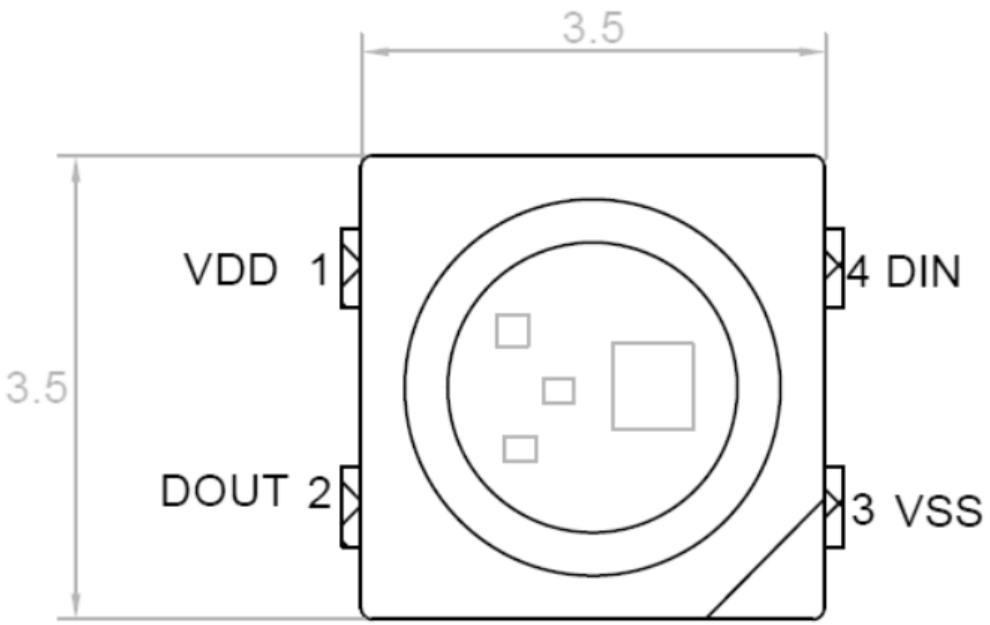
1. All dimensions are in millimetre (mm).
2. Tolerance ±0.2mm, unless otherwise noted.

Recommended Soldering Pad Dimension:



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

PIN CONFIGURATION:



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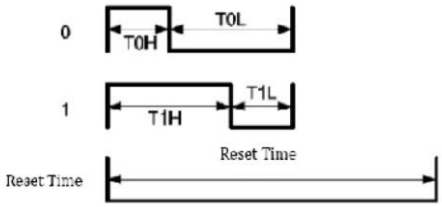
4	DIN	Control Data Signal Input

Function Description:

1. Timing Wave Form:

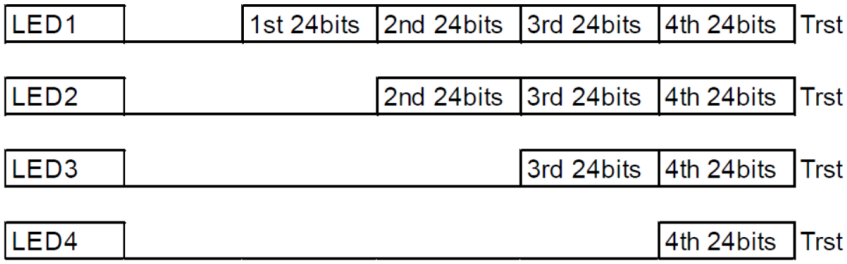


2. High Speed Mode:

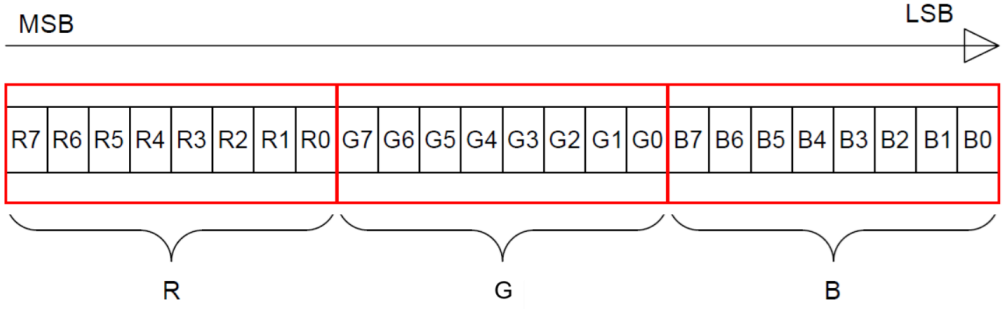
Item	Description	min	max	unit
T0H	0 code, High-level time	0.22	0.38	us
T0L	0 code, Low-level time	0.58	1	us
T1H	1 code, High-level time	0.58	1	us
T1L	1 code, Low-level time	0.22	1	us
Trst	Reset code,Low-level time	280	----	us

Note:TH+TL>1.2us

3. Data Communication:

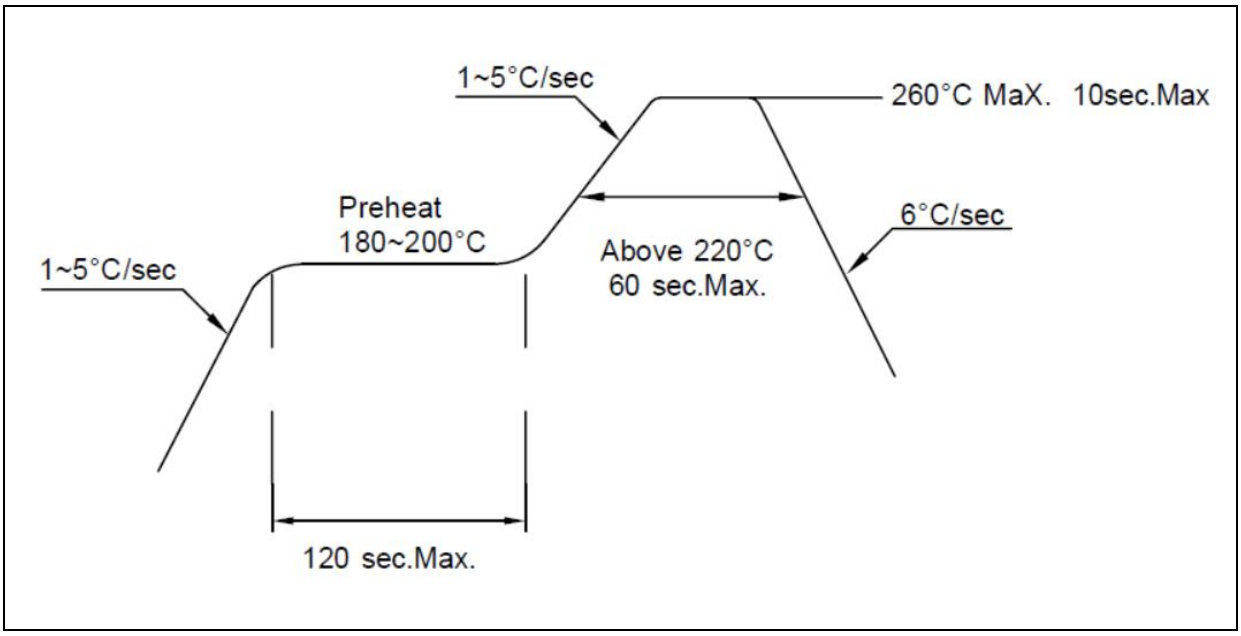


4. Single Data in 24bit for RGB:



RECOMMENDED SOLDERING PROFILE:

Lead-free Solder IR Reflow:



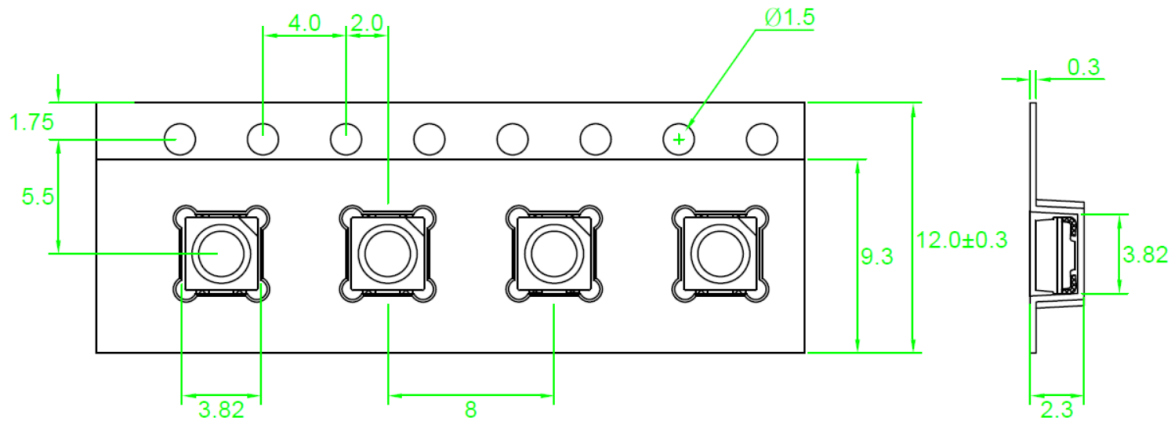
Note:

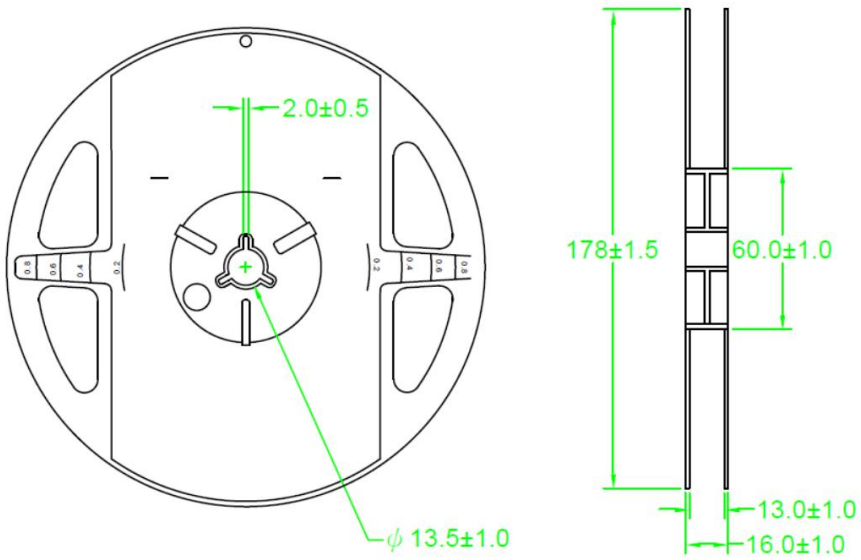
1. We recommend the reflow temperature 240°C (±5°C). The maximum soldering temperature should be limited to 260°C.
2. Maxima reflow soldering: 2 times.
3. Before, during, and after soldering, should not apply stress on the components and PCB board.

PACKING SPECIFICATION:

Reel Dimension:

Max.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.

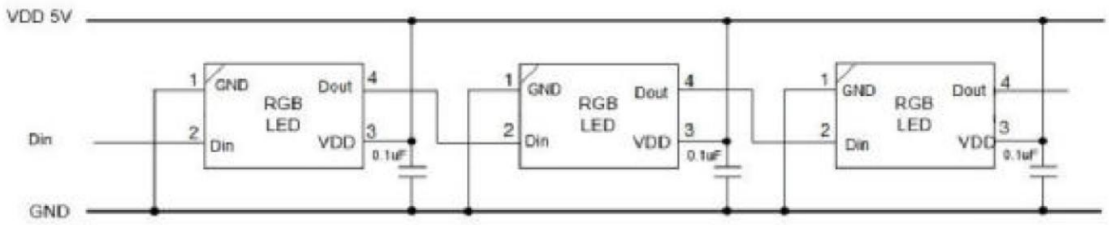
Baking:

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	26/04/2021	Datasheet set-up.
A1.1	22/02/2025	Revise colour sequence and bin table.