



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 SMD with IC
- ▶ 0808 (2020) IC 0.75t
- ▶ Red/Green/Blue

NOM48S83IC



Release Date: 06 September 2024 Version: A1.0



0808 IC-Integrated

RoHS
Compliant



FEATURES:

- **Package:** CHIP EIA STD 6 Pins Package with Integrated IC
- **Forward Current:** 18mA
- **Forward Voltage (typ.):** 5.0V
- **Luminous Intensity (typ.):** 360/510/100mcd; mixed white: 800mcd
- **Colour:** Red/Green/Blue
- **Dominant Wavelength (typ.):** 622/527/467nm
- **Viewing Angle:** 120°
- **Materials:**
 - Resin: Epoxy (Water Diffused)
- **Operating Temperature:** -40~+85°C
- **Storage Temperature:** -40~+105°C
- **IC Feature:** Serial data transmission signal by DATA & CLK two lines.
- **Soldering methods:** IR Reflow soldering
- **Preconditioning:** acc. to JEDEC Level 3
- **Packing:** 8mm tape with Max.4000pcs/reel, ø180mm (7")

APPLICATIONS:

- Telecommunication
- Indicator
- Home Appliance
- Decoration Lighting
- Full Colour LED Strip
- Gaming Device
- Curtain Display

CHARACTERISTICS:

 Absolute Maximum Characteristics ($T_a=25^{\circ}\text{C}$)

Parameter	Symbol	Ratings	Unit
The Max LED Output Current	I_{OMAX}	18	mA
IC Power Supply Voltage	V_{DD}	+0.4~+5.5	V
Logic Input Voltage	V_i	-0.4~ $V_{\text{DD}}+0.4$	V
Rate of Data Signal	F_{CLK}	15	MHz
Operating Temperature	T_{OPR}	-40~+85	$^{\circ}\text{C}$
Storage Temperature	T_{STG}	-40~+105	$^{\circ}\text{C}$
Electrostatic Discharge	ESD	2000	V
Soldering Temperature	T_{SD}	260 for 5s	$^{\circ}\text{C}$

 Electrical & Optical Characteristics ($T_a=25^{\circ}\text{C}$, $V_{\text{DD}}=5\text{V}$)

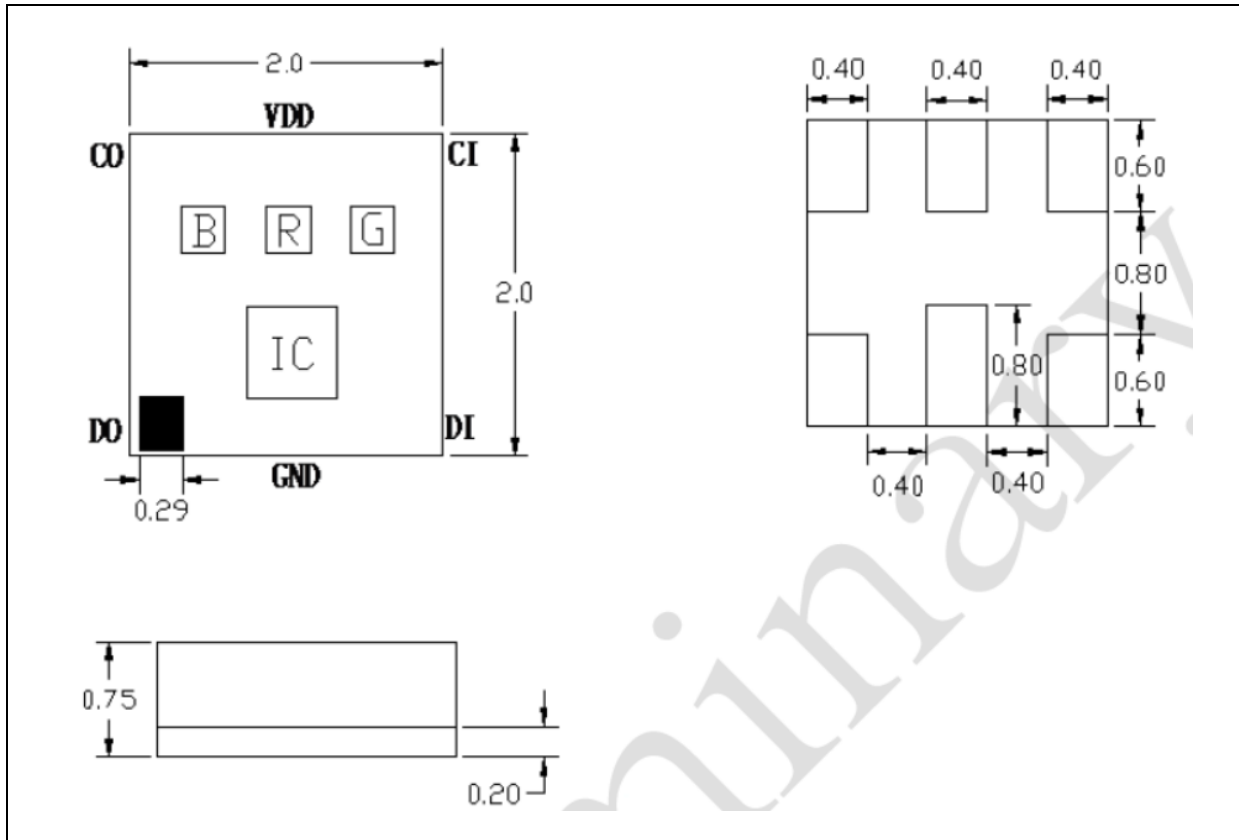
Parameter	Symbol	Values			Unit	Test Condition	
		Min.	Typ.	Max.			
Supply Voltage	V_{DD}	---	5.0	5.5	V	---	
Luminous Intensity	R	I_v	---	360	---	mcd	$I_f=18\text{mA}$
	G		---	510	---		
	B		---	100	---		
	W	I_v	400	800	---	mcd	---
Dominant Wavelength	R	λ_D	615	---	630	nm	$I_f=18\text{mA}$
	G		520	---	535		
	B		460	---	475		
Colour Coordinate	X	---	---	0.2752	---	---	---
	Y		---	0.2705	---		
Viewing Angle	$2\theta_{1/2}$	---	120	---	deg	$I_f=18\text{mA}$	

Electrical & Optical Characteristics (Ta=25°C)

Parameter	Symbol	Values			Unit	Test Condition
		Min.	Typ.	Max.		
Rate of Data Signal	F _{CLK}	---	5	---	MHz	---
Input High Voltage	V _{IH}	0.7 V _{DD}	---	---	V	---
Input Low Voltage	V _{IL}	---	---	0.3 V _{DD}	V	---
Clock High Level Width	T _{CLKH}	30	---	---	ns	---
Clock Low Level Width	T _{CLKL}	30	---	---	ns	---
Data Set Up Time	T _{SETUP}	10	---	---	ns	---
Data Hold Time	T _{HOLD}	5	---	---	ns	---
Frequency of PWM	F _{PWM}	---	20	---	KHz	---
Static Power Consumption	I _{DD}	---	0.7	---	mA	---

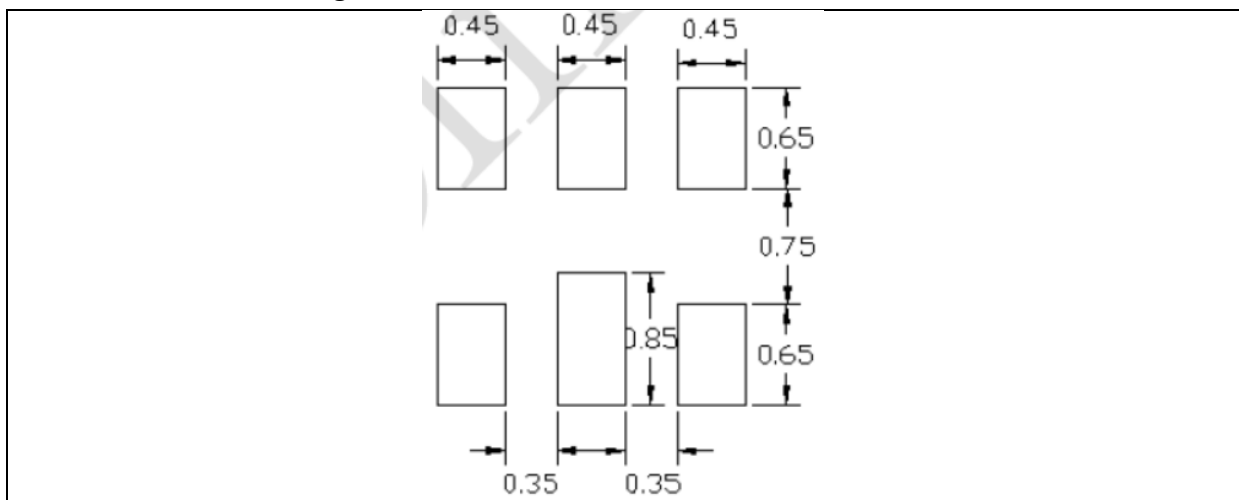
OUTLINE DIMENSION:

Package Dimension:

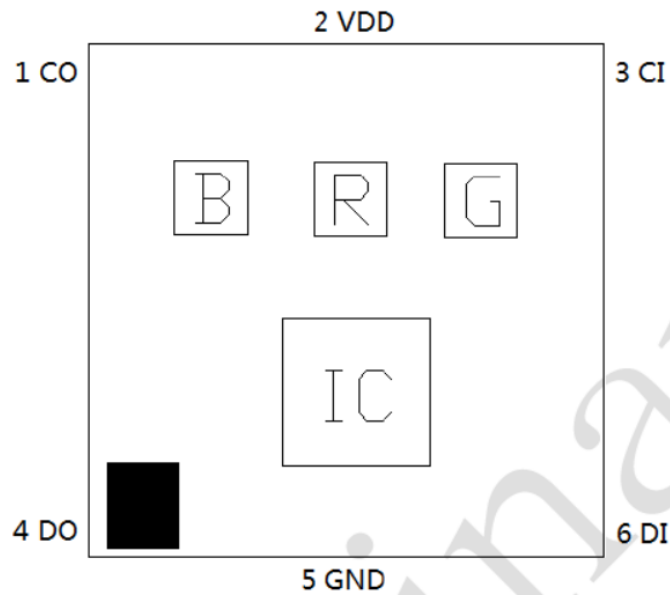


1. All dimensions are in millimetre (mm).
2. Tolerance $\pm 0.2\text{mm}$, unless otherwise noted.

Recommended Soldering Pad Dimension:



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

PIN CONFIGURATION:


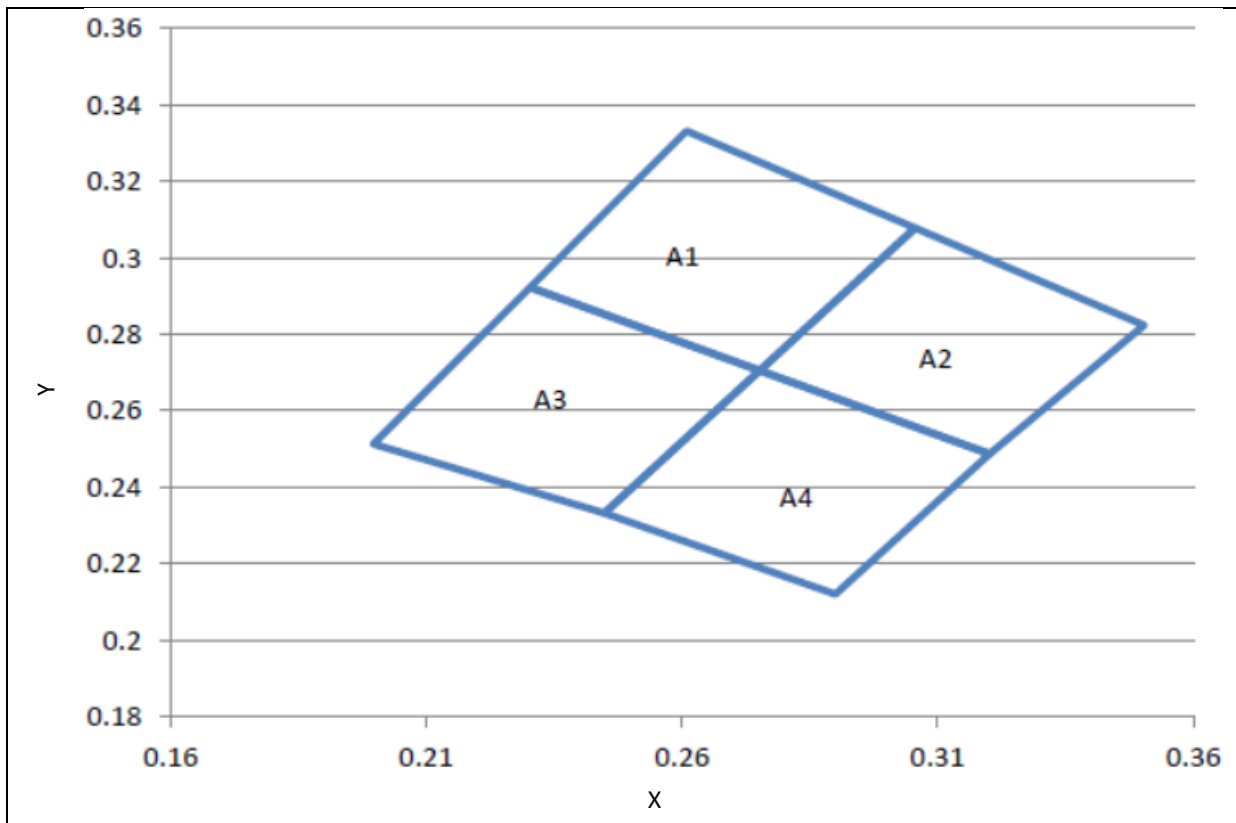
No.	Symbol	Function Description
1	CO	Clock Output
2	VDD	Supply Voltage
3	CI	Clock Input
4	DO	Data Output
5	GND	Ground
6	DI	Data Input

BINNING GROUPS:

Luminous Intensity Classifications (Mixed White) ($I_F=18mA*3$):

Code	Min.	Max.	Unit
P	400	500	mcd
Q	500	630	
R	630	800	
S	800	1000	

Chromaticity Coordinates Classifications:

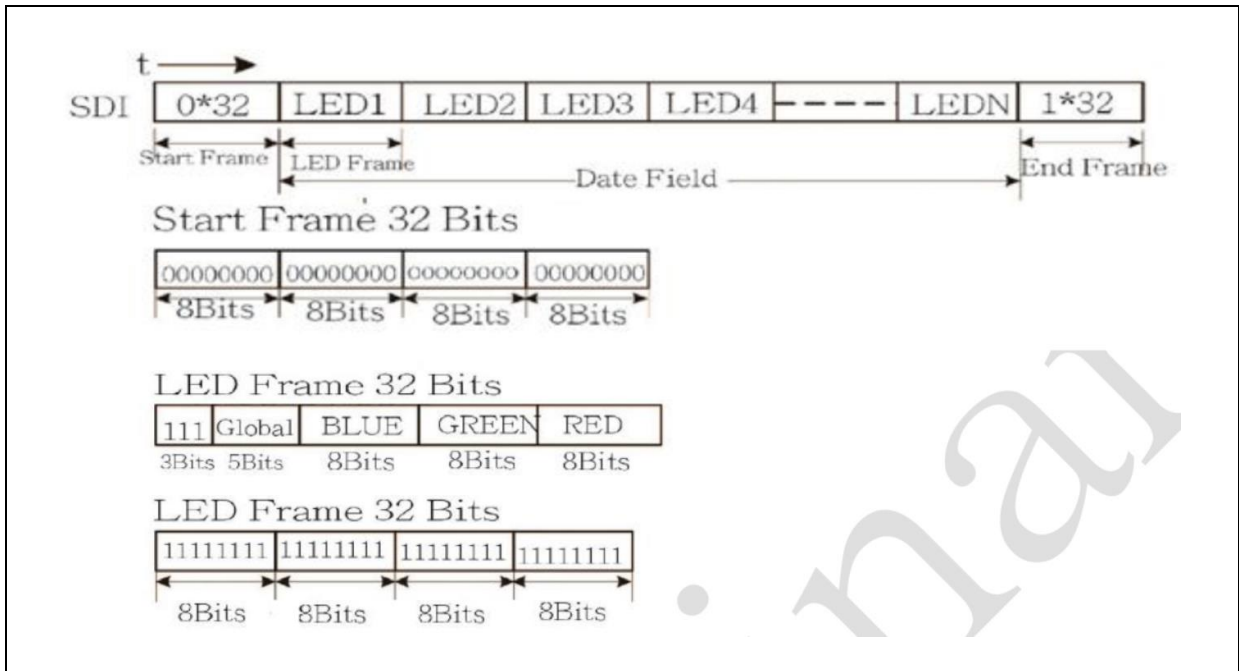


Chromaticity Coordinates Classifications:

	1		2		3		4	
	X	Y	X	Y	X	Y	X	Y
A1	0.2609	0.3332	0.3056	0.3078	0.2752	0.2705	0.2303	0.2923
A2	0.3056	0.3078	0.3504	0.2824	0.3202	0.2487	0.2752	0.2705
A3	0.2303	0.2923	0.2752	0.2705	0.2448	0.2332	0.1996	0.2513
A4	0.2752	0.2705	0.3202	0.2487	0.2900	0.2120	0.2448	0.2332

FUNCTION DESCRIPTION:

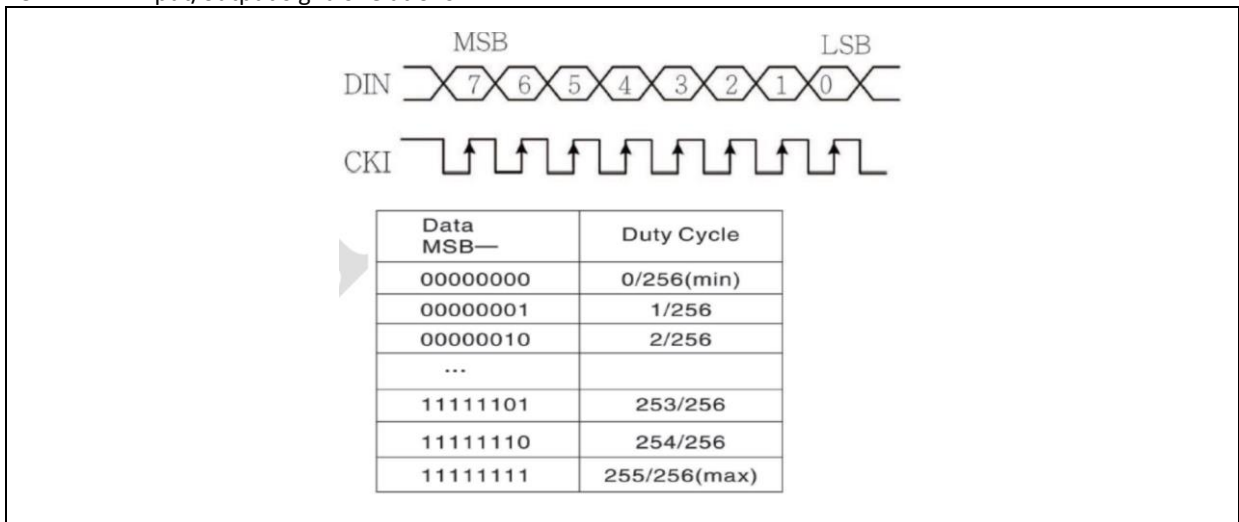
1. Series data structure - Tandem N-LED:



2. 5-Bit (level 32) brightness adjustment (simultaneous control of OUTR/OUTG/OUTB three port current):

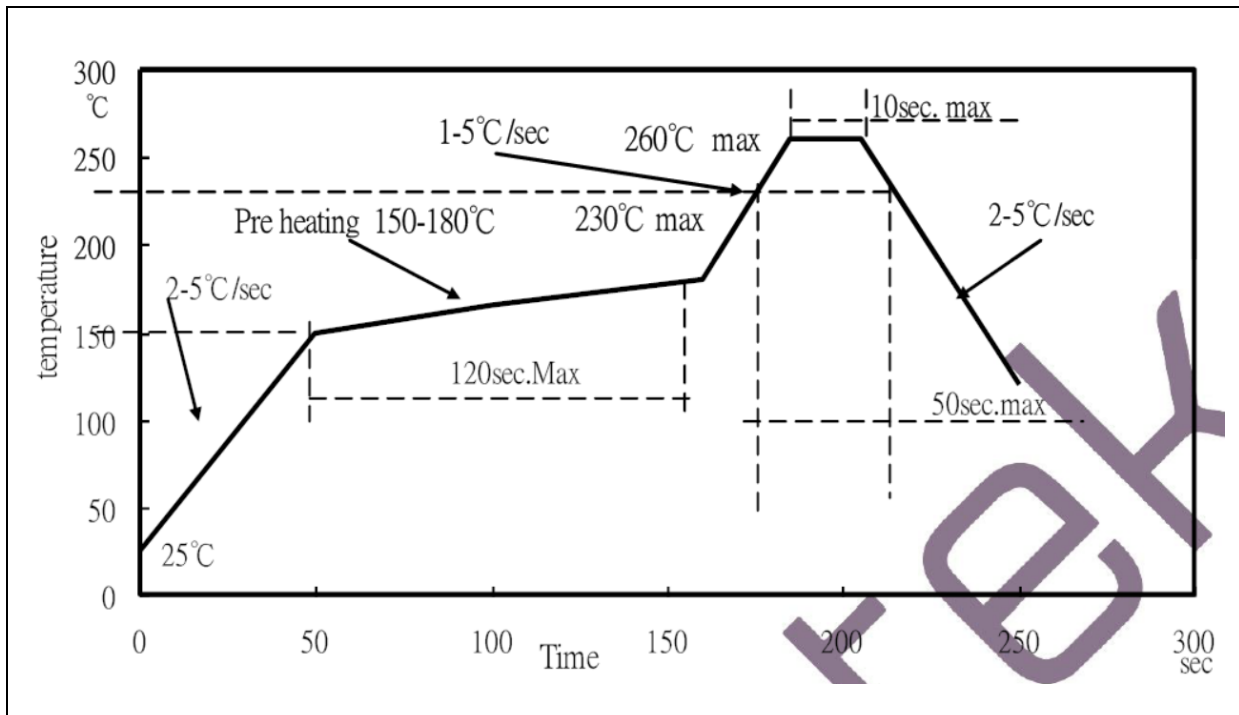
DATA MSB ↔ LSB	Driving Current
00000	0/31
00001	1/31
00010	2/31
...	
11110	30/31
11111	31/31(max)

3. PWM input/output signals relations:



RECOMMENDED SOLDERING PROFILE:

Lead-free Solder IR Reflow:

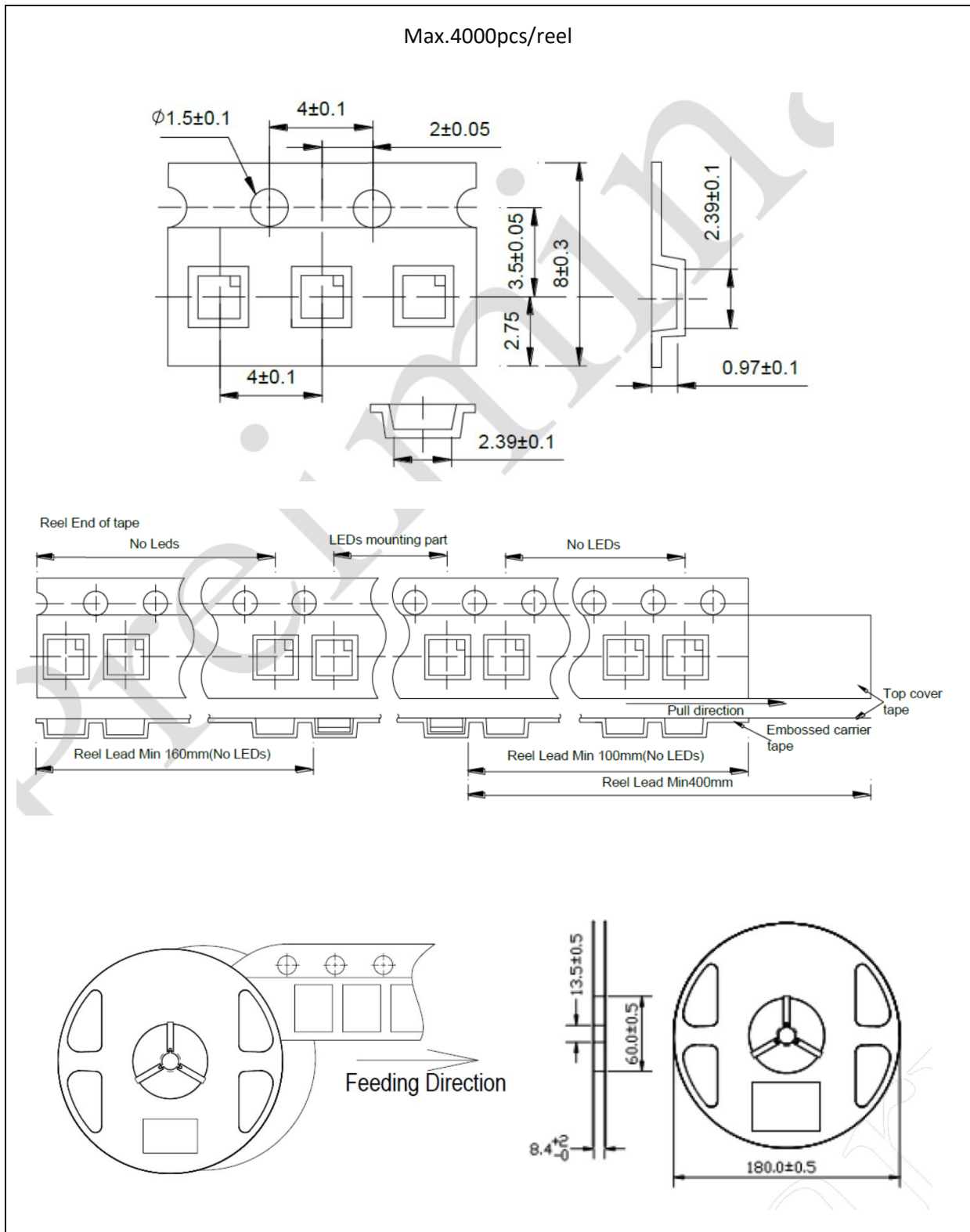


Note:

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.

PACKING SPECIFICATION:

Reel Dimension:



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 desiccating agent stored at R.H.<20% 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.

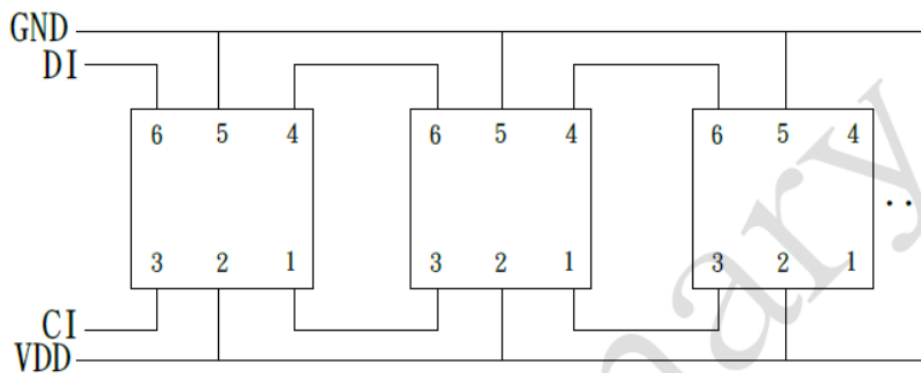
Baking:

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±3°C x 6hrs and <5%RH, taped / reel package.

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

Typical Application Circuit:



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	22/04/2021	Datasheet set-up.