



# 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



- ▶ PCB/CHIP with IC
- ▶ 0807 (2018) IC 0.70t (4 pins)
- ▶ Red/Green/Blue

# NOM70S13IC



Release Date: 27 May 2025 Version: A1.1



0807 (2018) IC Integrated

## 0807 (2018) IC-Integrated



**RoHS  
Compliant**

### FEATURES:

- **Package:** CHIP Top View Package with Integrated IC 6805.
- **R/G/B Output Current (typ.):** 5mA
- **Logical Supply Voltage (typ.):** 5V
- **R/G/B Luminous Intensity (typ.):** 100/370/75mcd
- **Colour:** Red/Green/Blue
- **Lens Colour:** White Diffused
- **IC Feature:** Control IC and RGB LED chip integrated in 0807 (2018) package. Single-line zero code transmission protocol, can be infinite cascade. The data transmission frequency can reach 800Kbps, and when the refresh rate is 30 frames per second, the number of cascades is not less than 1024 points. Grayscale adjustment: 256 levels. Built-in reset circuit, power does not light.
- **Soldering Methods:** Reflow soldering
- **ESD Level:** 2kV
- **MSL Level:** acc. to JEDEC Level 4
- **Packing:** 8mm tape with max.4500pcs/reel, ø180mm (7")

### APPLICATIONS:

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

## CHARACTERISTICS:

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

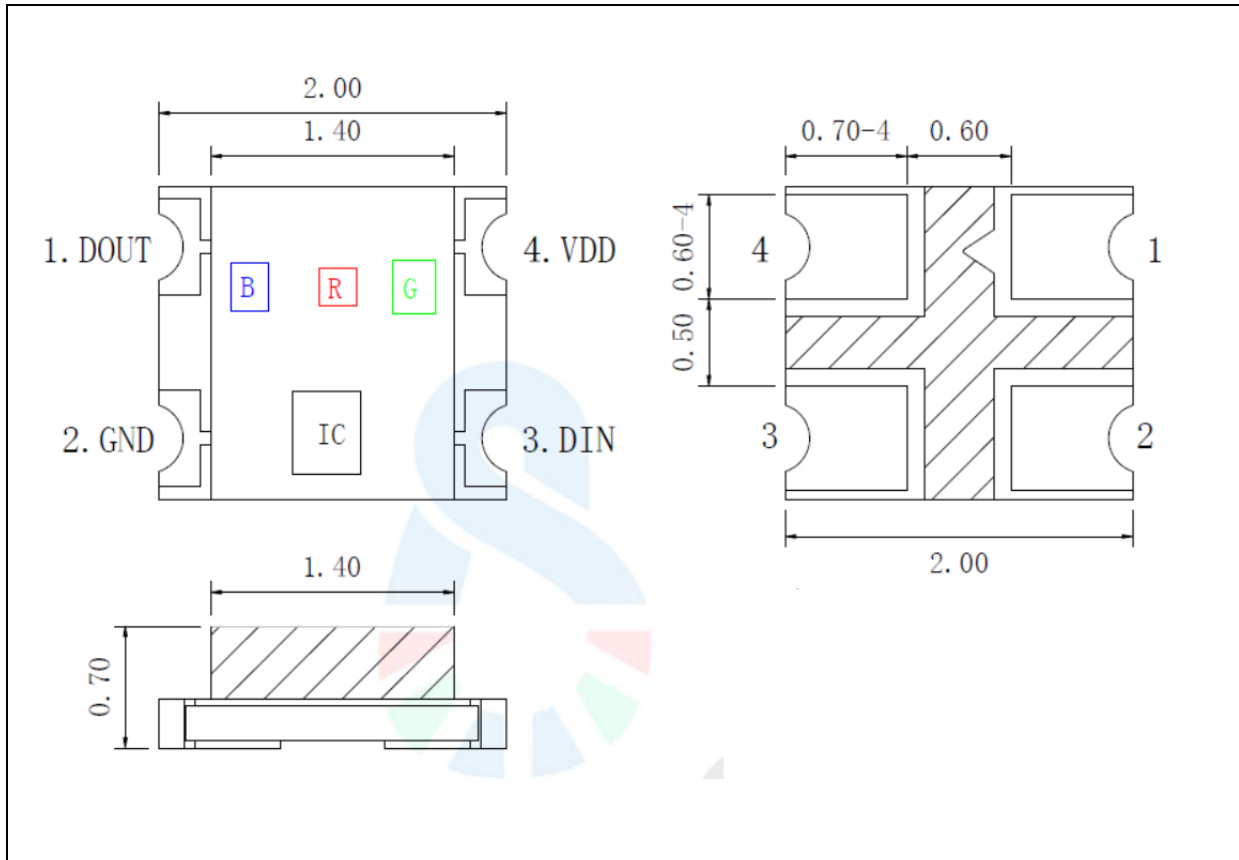
Parameter	Symbol	Ratings	Unit
Working Voltage	$V_{DD}$	3.7~5.5	V
Operation Temperature	$T_{OPT}$	-40~+85	$^{\circ}\text{C}$
Storage Temperature	$T_{STG}$	-40~+85	$^{\circ}\text{C}$
ESD Withstand Voltage (Human Mode)	$V_{ESD}$	2	kV

## Electrical & Optical Characteristics

Parameter		Symbol	Values			Unit	Test Condition
			Min.	Typ.	Max.		
Chip Input Voltage		$V_{DD}$	3.7	5	5.5	V	---
R/G/B Output Drive Current		$I_{DOUT}$	---	5	---	mA	$V_{DS}=1\text{V}$
PWM Frequency		$F_{PWM}$	---	4	---	KHz	---
Static Power Consumption		$I_{DD}$	---	0.25	---	mA	---
High Level Input Voltage		$V_{IH}$	3.1	---	---	V	---
Low Level Input Voltage		$V_{IL}$	---	---	1.5	V	---
Transfer Rat		$F_{DIN}$	---	800	---	Kbps	---
Dominant Wavelength	Red	$\lambda_d$	620	---	630	nm	$I_F=5\text{mA}$
	Green		520	---	535		
	Blue		460	---	475		
Luminous Intensity	Red	$I_v$	40	---	160	mcd	$I_F=5\text{mA}$
	Green		160	---	580		
	Blue		30	---	120		
Viewing Angle		$2\theta_{1/2}$	---	160	---	deg	$I_F=5\text{mA}$

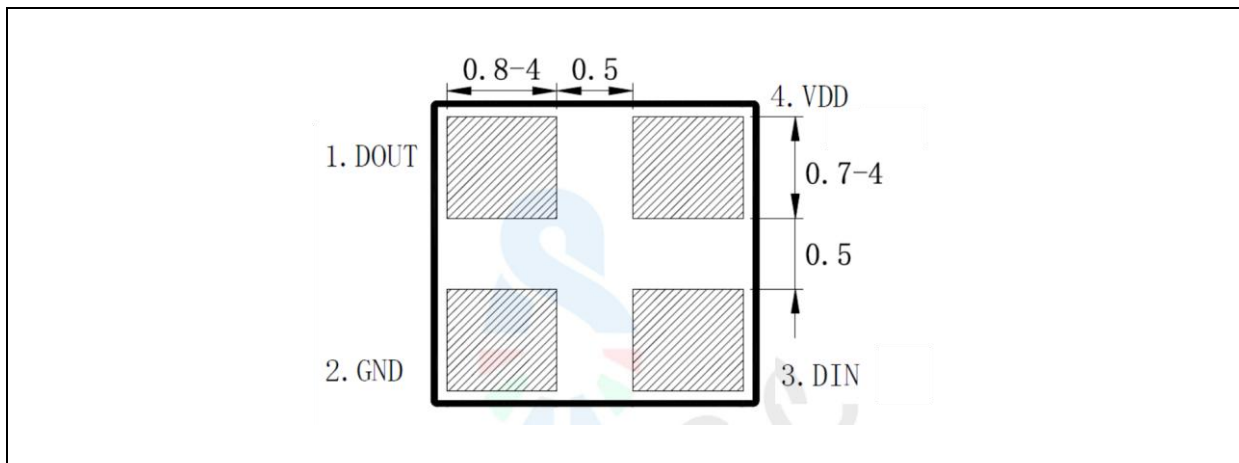
## OUTLINE DIMENSION:

Package Dimension:



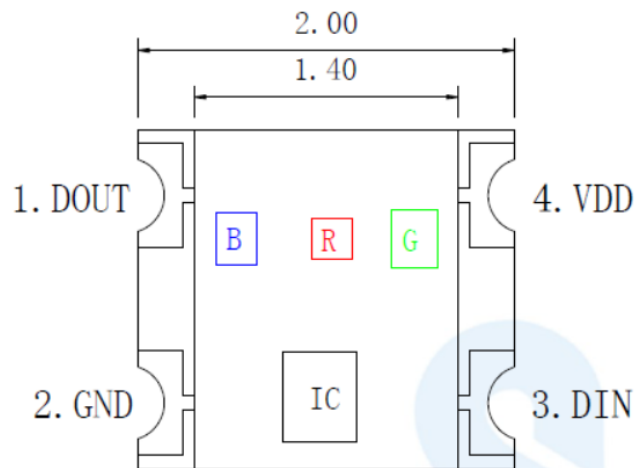
1. All dimensions are in millimetre (mm).
2. Tolerance  $\pm 0.1\text{mm}$ , unless otherwise noted.

Recommended Soldering Pad Dimension:



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

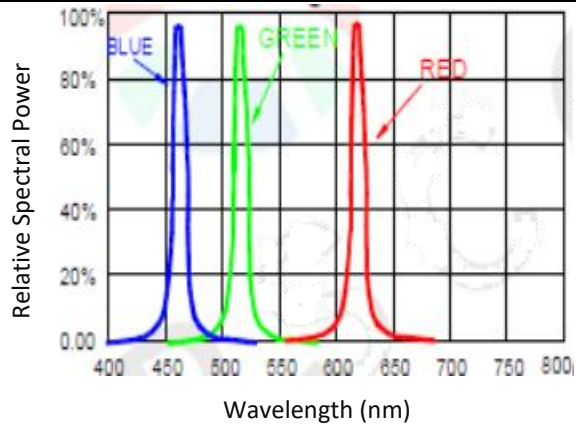
## PIN CONFIGURATION:



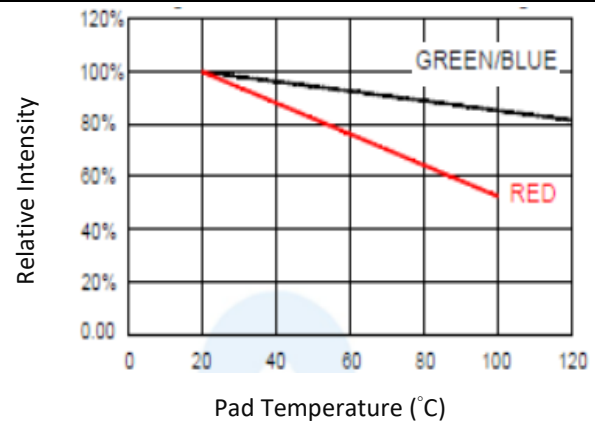
No.	Symbol	Function Description
1	DOUT	Data output: Control data signal output
2	GND	Grounds: Power grounding
3	DIN	Data input: Control data signal input
4	VDD	Power supply: Power supply pins

## ELECTRO-OPTICAL CHARACTERISTICS:

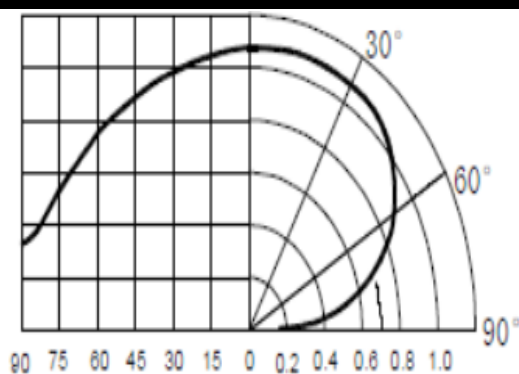
Relative Spectral Power v.s. Wavelength



Relative Intensity v.s. Temperature



Radiation Angle



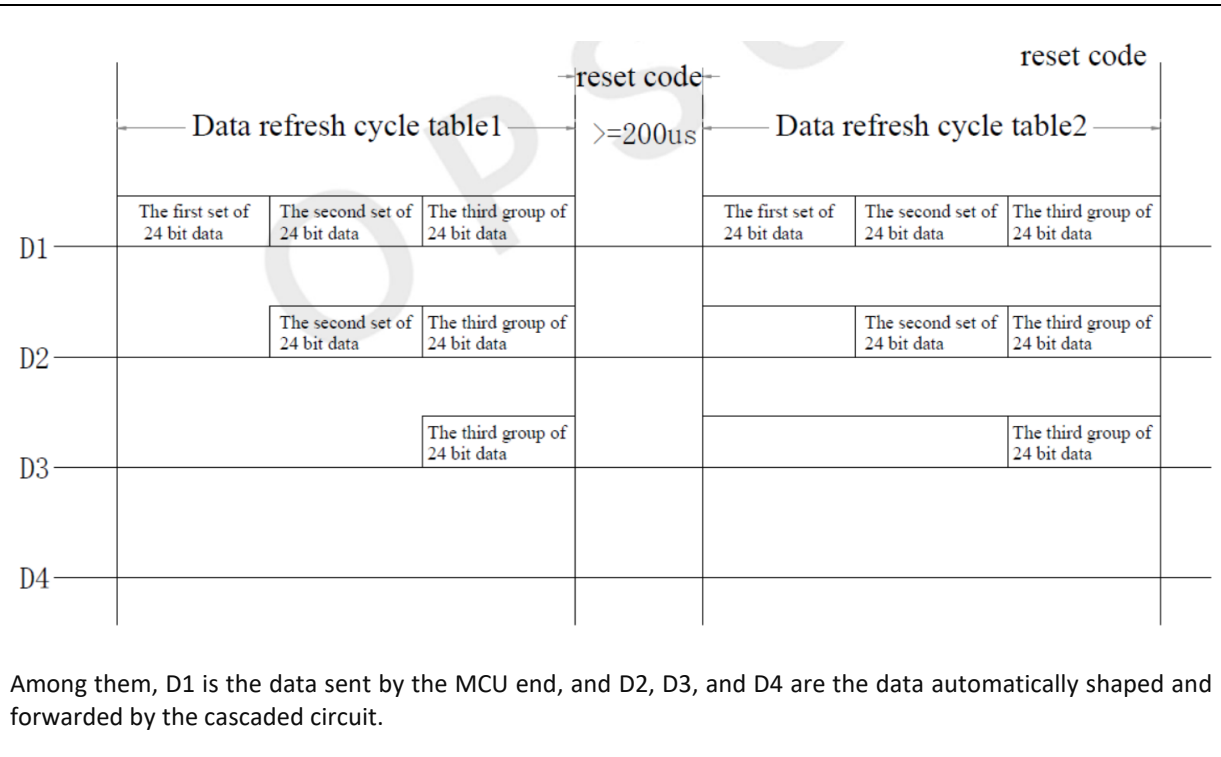
## FUNCTION DESCRIPTION:

### 1. Suggested data transmission time:

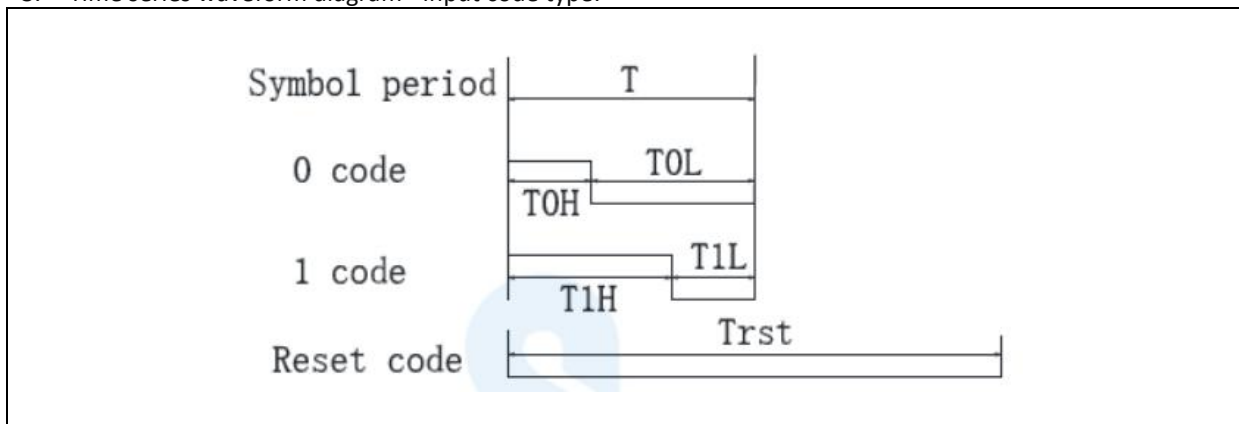
Timeline Name		Min.	Actual value	Max.	Unit
T	Symbol period	1.2	---	---	us
T0H	0 code, high-level time	0.2	0.3	0.4	us
T0L	0 code, low-level time	0.8	---	---	us
T1H	1 code, high-level time	0.6	0.75	1.0	us
T1L	1 code, low-level time	0.2	---	---	us
Reset	Reset code, low-level time	>200	--	--	us

- The protocol adopts unipolar zeroing code, and each symbol must have a low level. Each symbol in this protocol starts with a high level, and the duration of the high level determines the "0" or "1" code.
- When writing a program, the minimum required code period is 1.2μs.
- The high-level time of "0" and "1" codes should be within the specified range in the table above, and the low-level time of "0" and "1" codes should be less than 20μs.

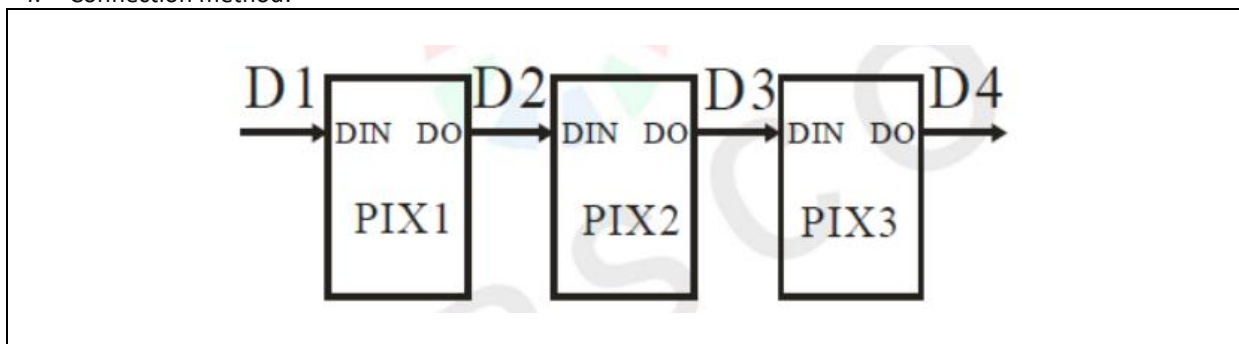
### 2. Data transmission method:



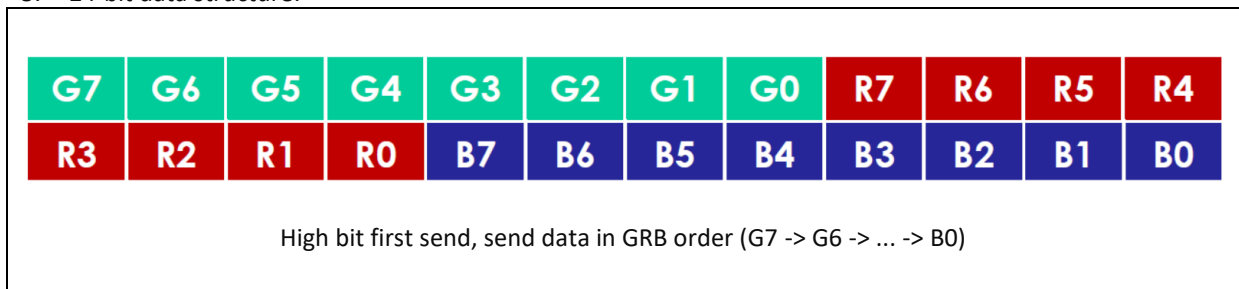
### 3. Time series waveform diagram - Input code type:



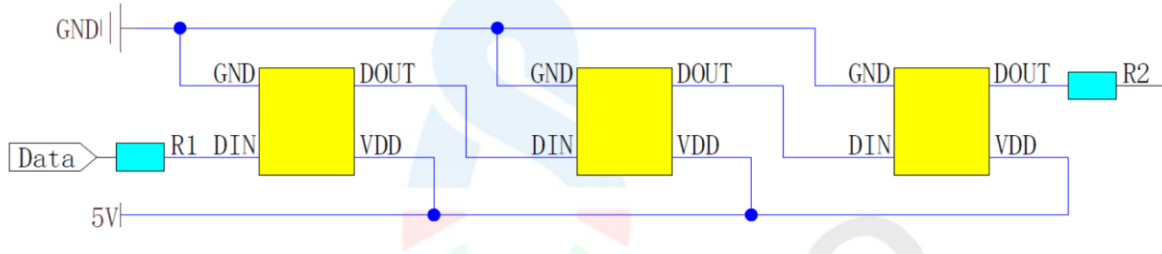
### 4. Connection method:



### 5. 24-bit data structure:



#### 6. Typical Application Circuit:



In practical application circuits, to prevent instantaneous high voltage damage to the internal signal input and output pins of the IC caused by live plugging and unplugging during testing, protective resistors should be connected in series at the signal input and output terminals. In addition, in order to ensure more stable operation between IC chips, the decoupling capacitance between each LED is essential.

1. Application 1: For soft or hard light strips with short transmission distance between lamp beads, it is recommended to connect protective resistors in series at the signal input and output terminals, that is,  $R1=R2$ , about 500 ohms.
2. Application 2: Used for modules or 3. For general shaped products, the transmission distance between lamp beads is long. Due to different wire materials and transmission distances, the protective resistance connected in series at both ends of the signal will be slightly different; Based on actual usage.

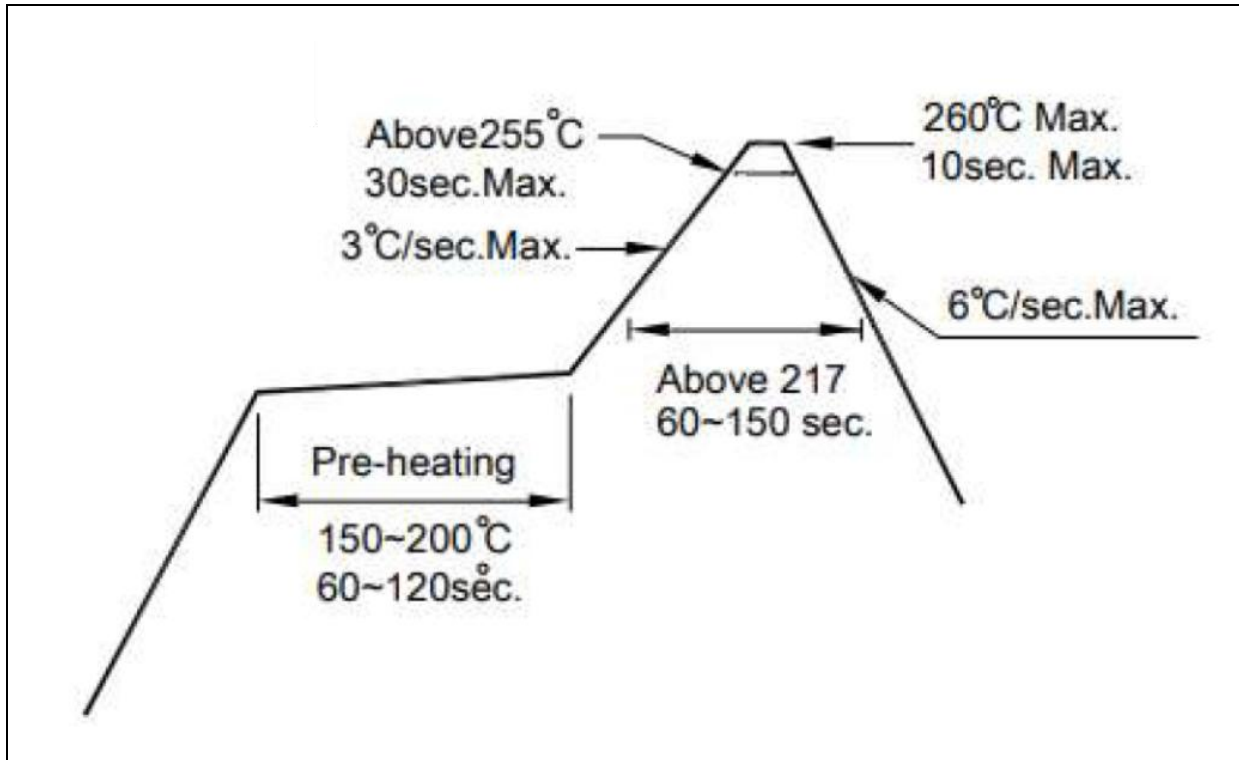




## RECOMMENDED SOLDERING PROFILE:

---

Lead-free Solder IR Reflow:



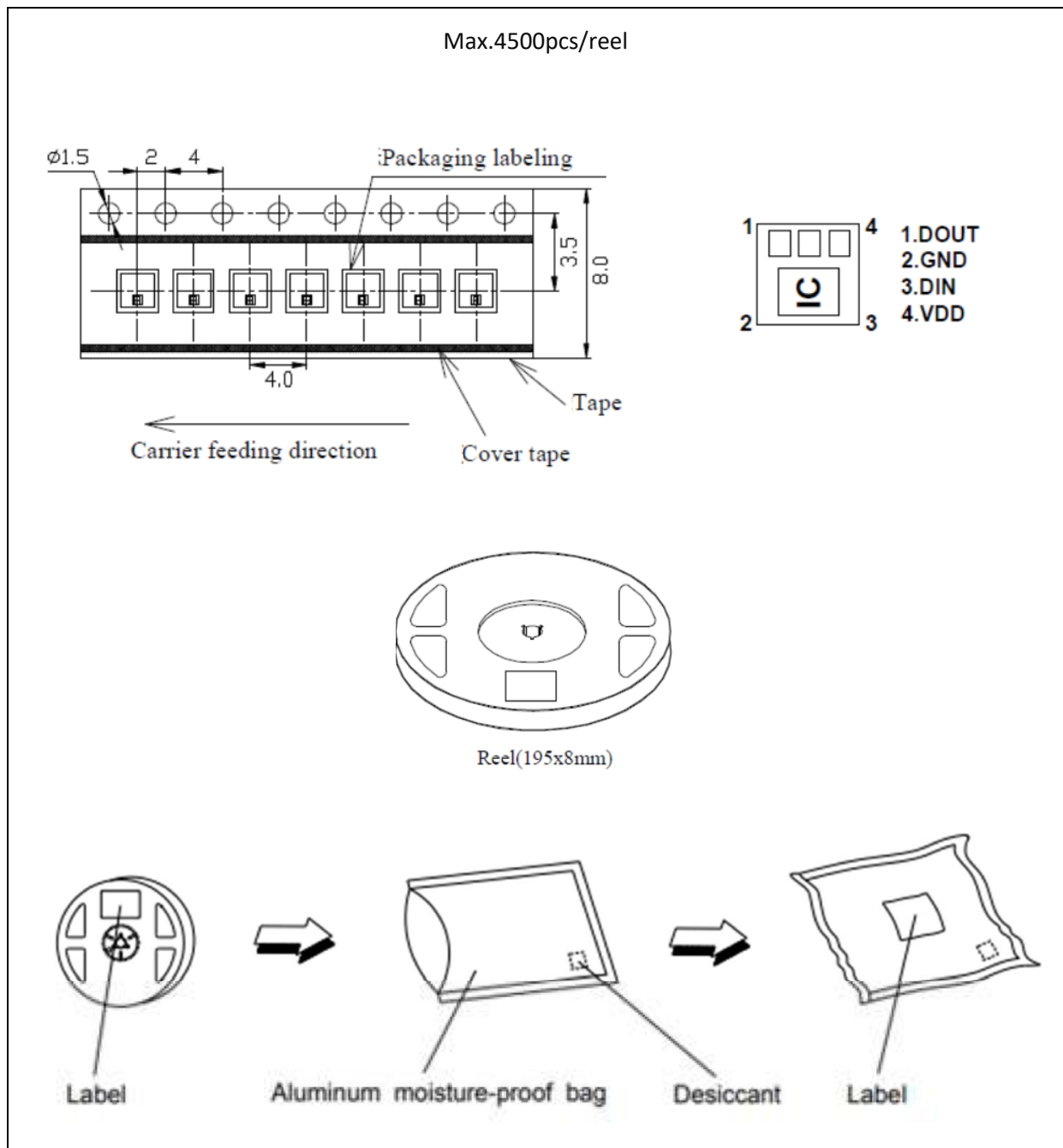
Note:

1. The maximum soldering temperature should be limited to 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:



## 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 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 6hrs 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-electrostatic glove is recommended when handling 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	04/03/2024	Datasheet set-up.
A1.1	27/05/2025	New datasheet format.