BRIGHTEK
BRIGHTEK (EUROPE) LIMITED
Brighten Up The World With LED !

PRODUCT DATASHEET

ATTENTION OBSERVE PRECAUTIONS FOR HANDLING ELECTROSTATIC SENSITIVE DEVICES

► PLCC4 SMD with IC

► 3535 IC 1.95t

► Red/Green/Blue

N0M59S08IC

3535 IC Integrated

APPLICATIONS:

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

3535 IC-Integrated

RoHS Compliant — Pb

FEATURES:

- **Package:** PLCC4 Top View LED Package with Integrated IC
- **Forward Current:** 12/12/12mA*   * in order of Red/Green/Blue
- **Power Supply Voltage (typ.):** +3.7~+5.5V
- **Luminous Intensity (typ.):** 550/1250/300mcd
- **Colour:** Red/Green/Blue
- **Materials:**
  - Resin: Silicone (Water Clear)
  - L/F Finish: Ag Plated
- **IC Feature:** Cascading port transmission signal by single line. Built-in signal reshaping circuit, after wave reshaping to the next driver, ensure wave-form distortion not accumulate. Built-in electric reset circuit and power lost reset circuit. Any two point the distance does not exceed 3m transmission signal without any increase circuit. Send data at speeds of 800Kbps. When the refresh rate is 30fps, cascade number are not less than 1024 points.
- **Pixel:** Each pixel of the three primary colour can achieve 256 brightness display, full colour display, and scan frequency not less than 400Hz/s.
- **Soldering methods:** Reflow soldering
- **Preconditioning:** acc. to JEDEC Level 3
- **Packing:** 12mm tape with Max.1000pcs/reel, ø180mm (7'')

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CHARACTERISTICS:

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

Parameter	Symbol	Ratings	Unit
Power Supply Voltage	V_{DD}	+3.7~+5.5	V
Logic Input Voltage	V_I	-0.5~V_{DD}+5.5	V
Operating Temperature	T_{OPR}	-40~+85	°C
Storage Temperature	T_{STG}	-40~+105	°C
Electrostatic discharge (HBM)	ESD	4000	V

Electrical & Optical Characteristics (Ta=25°C, V_{DD}=5V, V_{SS}=0V)

Parameter		Symbol	Values			Unit	Test Condition
			Min.	Typ.	Max.		
Chip Supply Voltage		V_{DD}	---	5.2	---	V	---
Signal Input Flip Threshold		V_{IH}	0.7 V_{DD}	---	---	V	V_{DD}=5V
		V_{IL}	---	---	0.3 V_{DD}	V	
The Frequency of PWM		F_{PWM}	---	1.2	---	KHz	---
Static Power Consumption		I_{DD}	---	1	---	mA	---
Luminous Intensity	R	I_V	400	---	700	mcd	I_F=12mA
	G		1000	---	1500		
	B		200	---	400		
Dominant Wavelength	R	λ_D	620	---	625	nm	I_F=12mA
	G		520	---	525		
	B		465	---	470		
Forward Voltage	R	V_F	2.0	---	2.4	V	I_F=12mA
	G		3.0	---	3.4		
	B		3.0	---	3.4		
Viewing Angle		$2\theta_{1/2}$	---	120	---	deg	I_F=39mA

Dynamic Characteristics (Ta=25°C)

Parameter	Symbol	Values			Unit	Test Condition
		Min.	Typ.	Max.		
Speed of Data Transmission	F_{DIN}	---	800	---	KHz	Duty Ration of 67%
DOUT Transmission Delay	TPLH	---	---	500	ns	DIN→DOUT
	TPHL	---	---	500	ns	
IOUT Rise/Drop Time	T_r	---	100	---	ns	VDS=1.5V IOUT=13mA Iout=5mA
	T_f	---	100	---	ns	

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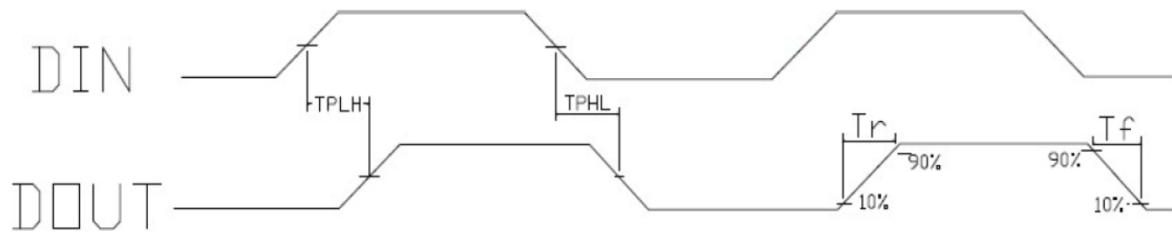
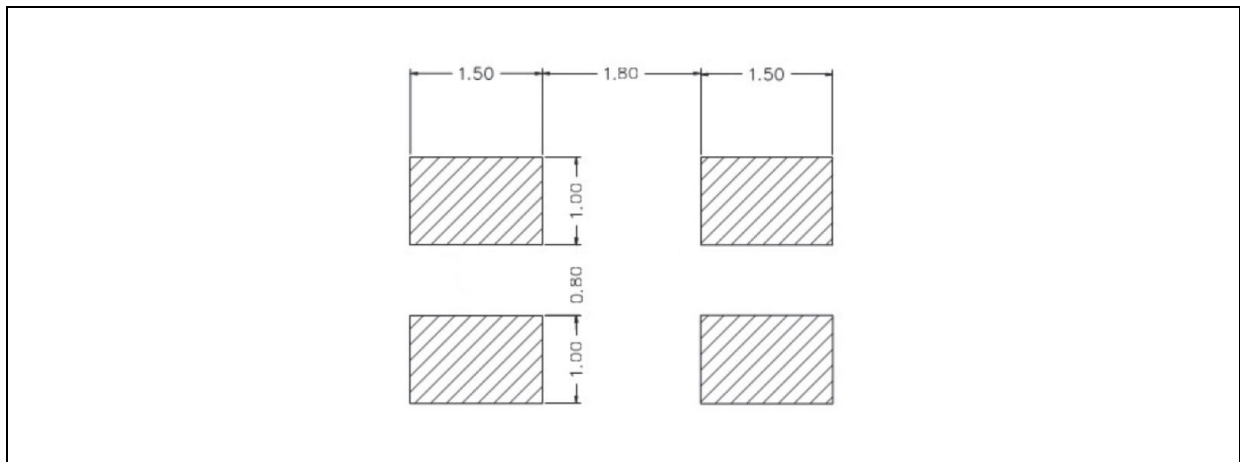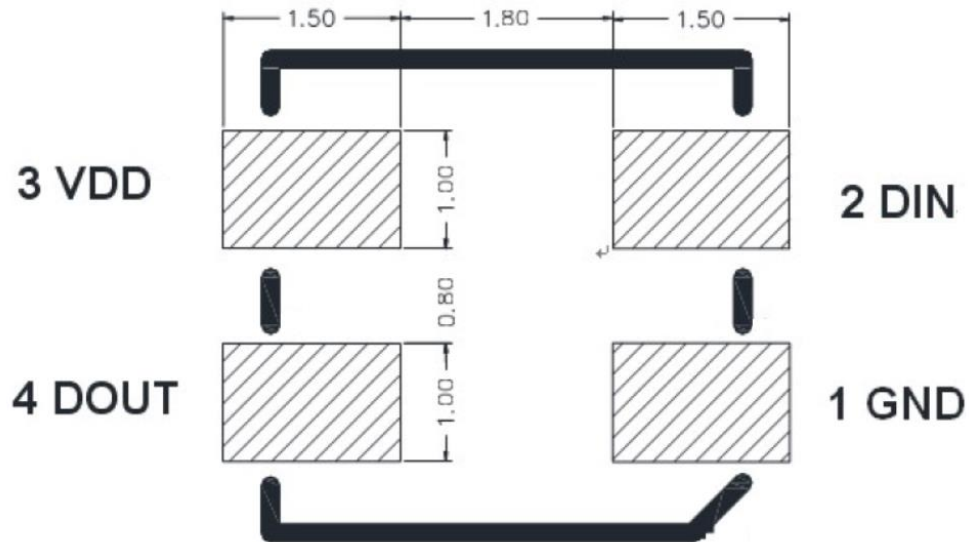## OUTLINE DIMENSION:

Package Dimension:
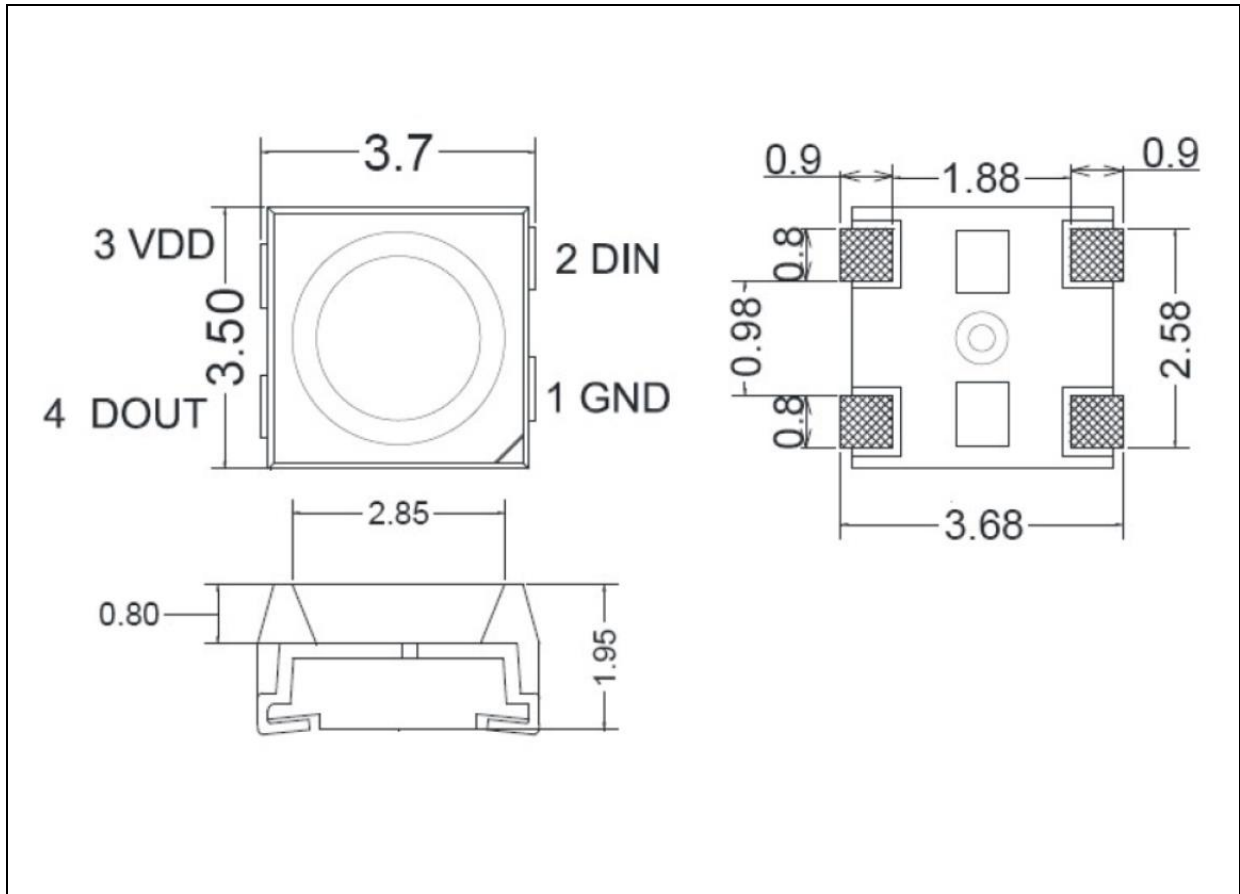
1. All dimensions are in millimetre (mm).
2. Tolerance ±0.2mm, unless otherwise noted.
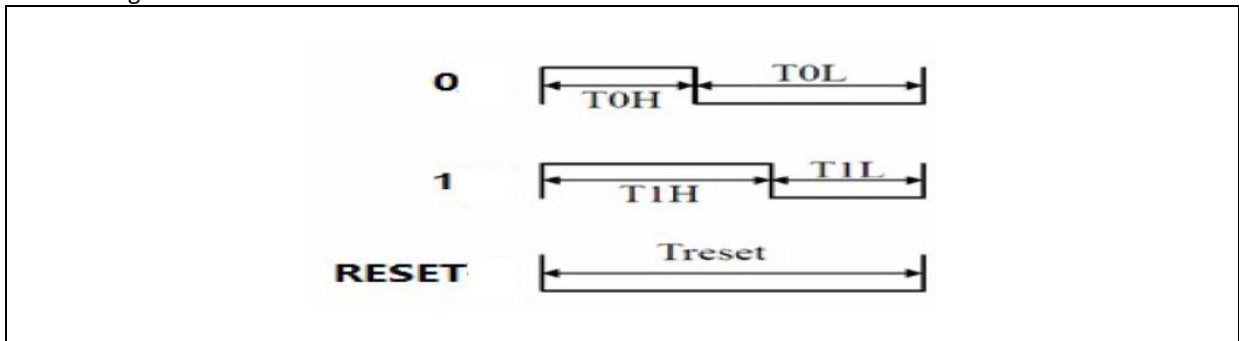
Recommended Soldering Pad Dimension:

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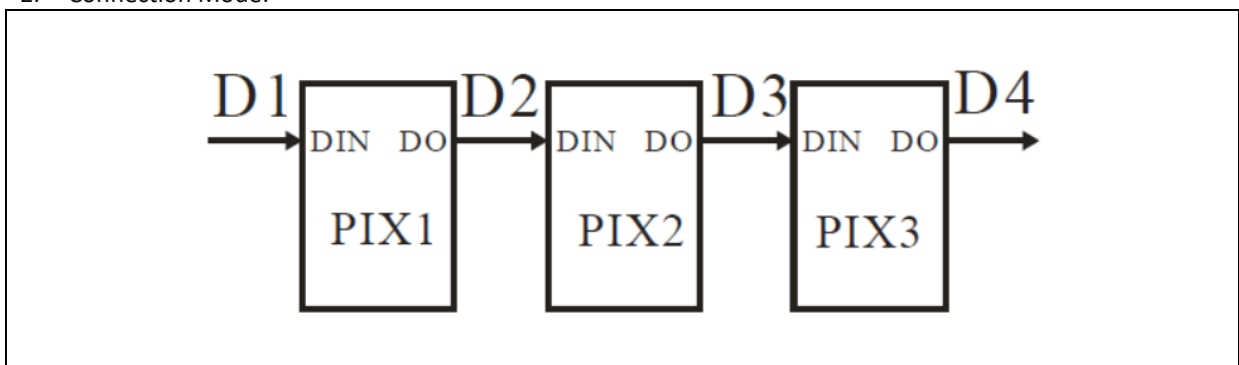2. Tolerance ±0.1mm with angle tolerance ±0.5°.

PIN CONFIGURATION:

No.	Symbol	Function Description
1	GND	Signal Ground and Power Ground
2	DIN	Control Data Signal Input
3	VDD	Power Supply LED
4	DOU	Control Data Signal Output

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Function Description:

1. Timing Wave Form:

2. Connection Mode:

3. Data Structure of 24 Bits:

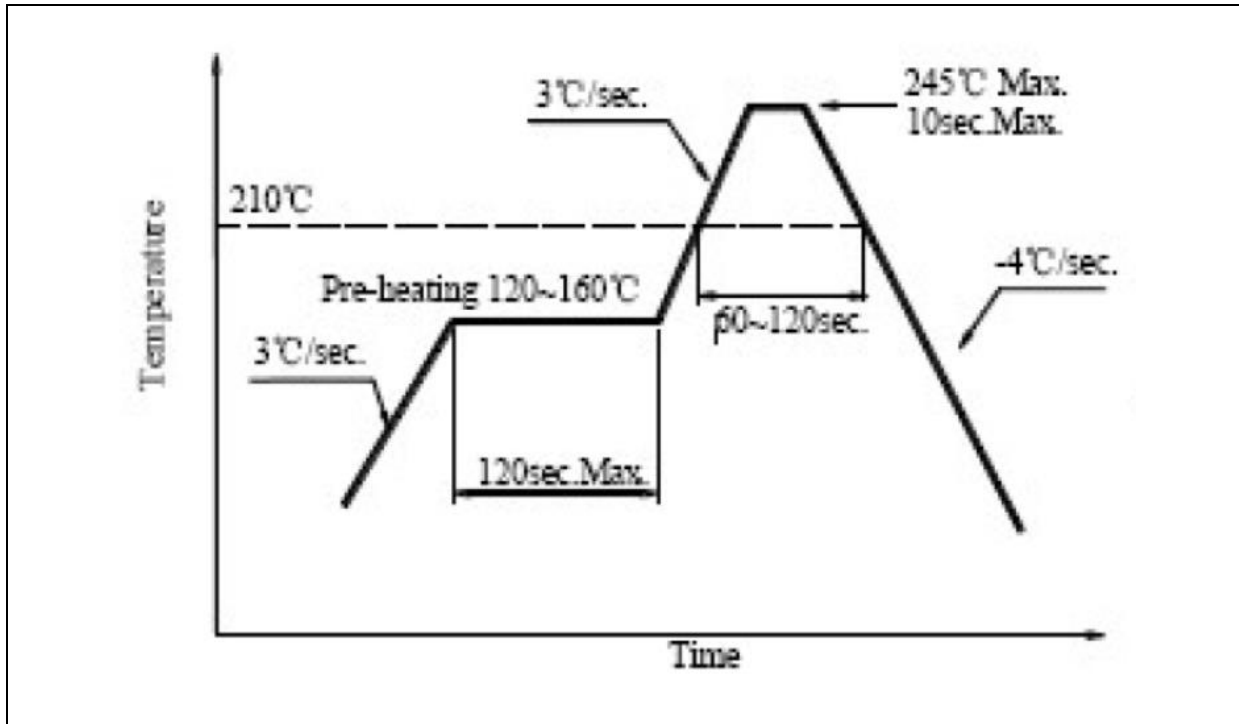| G7	G6	G5	G4	G3	G2	G1	G0	R7	R6	R5	R4
R3	R2	R1	R0	B7	B6	B5	B4	B3	B2	B1	B0

Note: high starting, in order to send data(G7 → G6 →… .... B0)
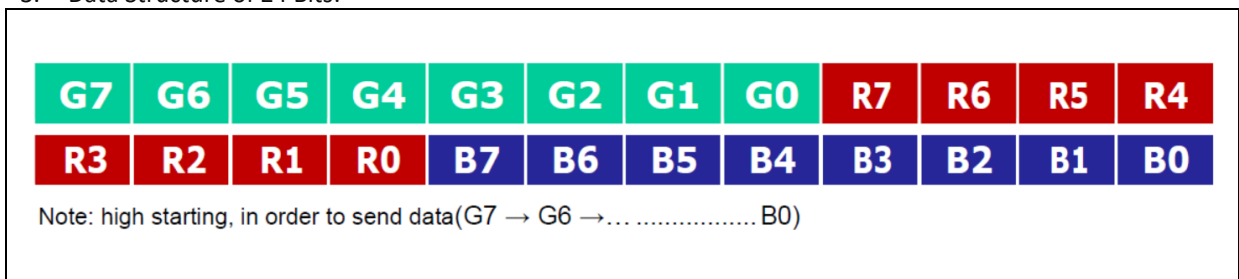
RECOMMENDED SOLDERING PROFILE:
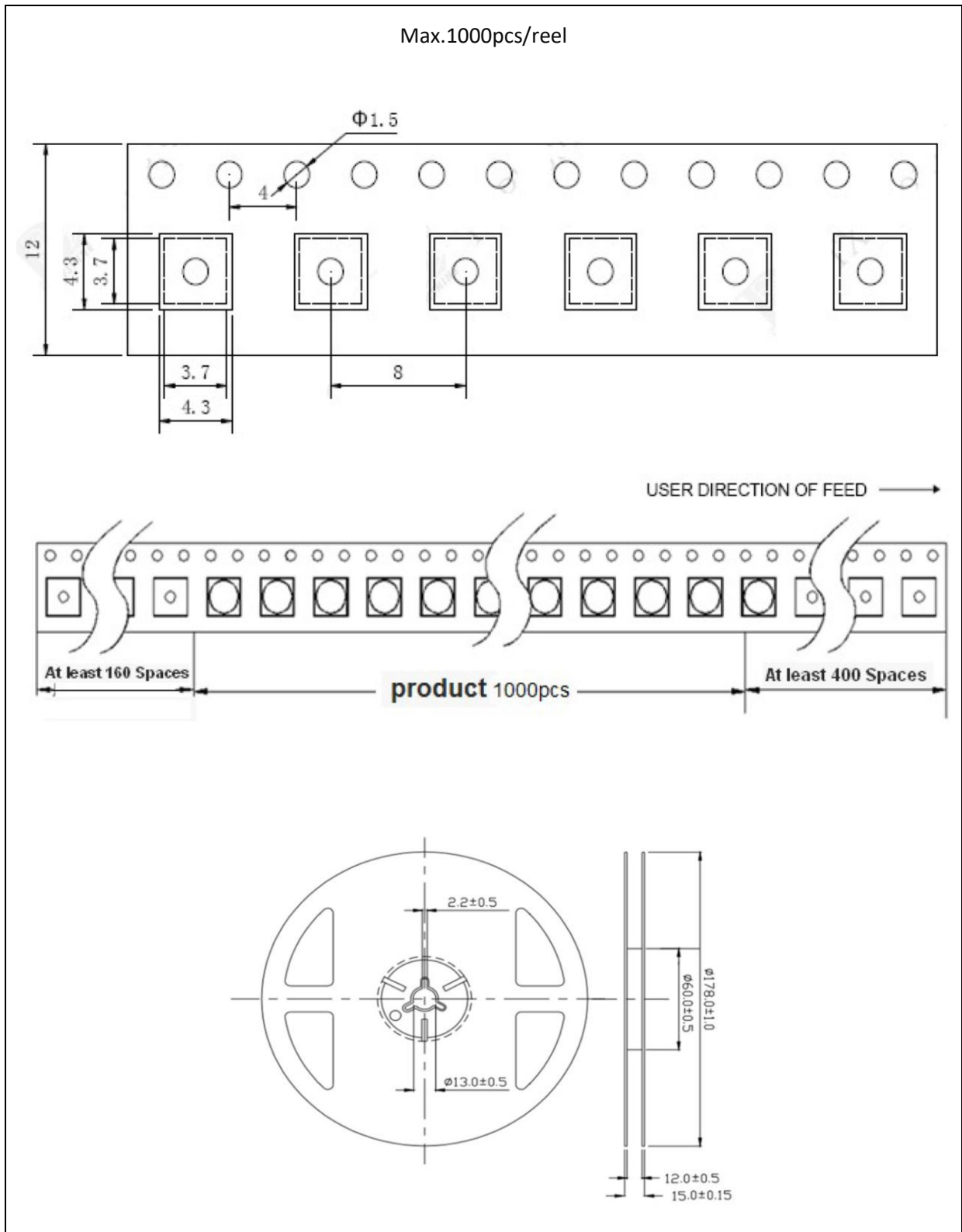
Lead-free Solder IR Reflow:

Note:
1. The maximum soldering temperature should be limited to 245°C.
2. Maxima reflow soldering: 2 times.
3. Before, during, and after soldering, should not apply stress on the components and PCB board.

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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 48 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±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.

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.

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REVISION RECORD:

Version	Date	Summary of Revision
A1.0	18/05/2021	Datasheet set-up.