



**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

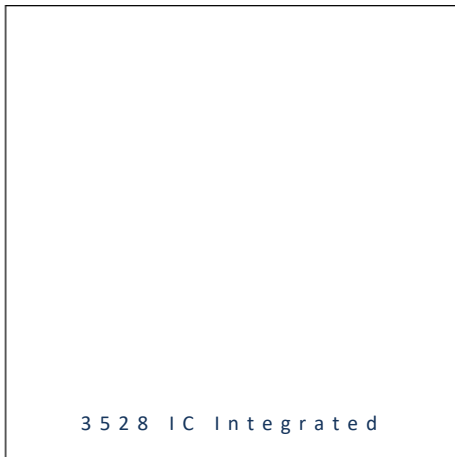


- ▶ PLCC4 SMD with IC
- ▶ 3528 IC 1.75t
- ▶ Red/Green/Blue

NOM67S17IC



Release Date: 17 September 2024 Version: A1.1



3 5 2 8 I C I n t e g r a t e d

### 3528 IC-Integrated

**RoHS**  
Compliant



#### 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.):** +3.5~+5.5V
- **Luminous Intensity (typ.):** 300/1000/225mcd
- **Colour:** Red/Green/Blue
- **Materials:**
  - Die: AlGaInP/InGaN/InGaN
  - Resin: Silicone (Water Clear)
- **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. 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 5a
- **Packing:** 12mm tape with max.2000pcs/reel, ø180mm (7")

#### APPLICATIONS:

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

**CHARACTERISTICS:**

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

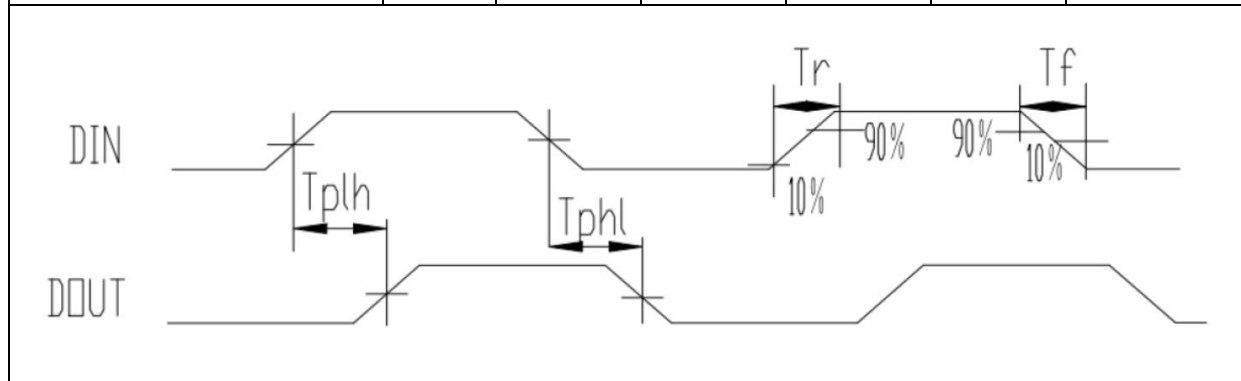
Parameter	Symbol	Ratings	Unit
Logical Supply Voltage	$V_{DD}$	+3.5~+5.5	V
Logic Input Voltage	$V_I$	-0.5~+5.5	V
Operating Temperature	$T_{OPR}$	-40~+85	$^{\circ}\text{C}$
Storage Temperature	$T_{STG}$	-40~+120	$^{\circ}\text{C}$

 Electrical & Optical Characteristics ( $T_a=25^{\circ}\text{C}$ ,  $V_{DD}=5\text{V}$ ,  $V_{SS}=0\text{V}$ )

Parameter	Symbol	Values			Unit	Test Condition	
		Min.	Typ.	Max.			
R/G/B Output Port Voltage	$V_{ds}$	8.5	9	9.5	V	---	
R/G/B Output Current	$I_o$	9.6	12	14.4	mA	---	
High Level Input Voltage	$V_{IH}$	$0.7 V_{DD}$	$0.9 V_{DD}$	$V_{DD}$	V	---	
Low Level Input Voltage	$V_{IL}$	0	$0.1 V_{DD}$	$0.3 V_{DD}$	V	---	
D0 Pull-Current Capacity	$I_{DOH}$	---	15	---	mA	---	
	$I_{DOL}$	---	30	---			
PWM Frequency	$F_{PWM}$	3	4	5	KHz	---	
Static Power Consumption	$I_{DD}$	0.6	0.8	1	mA	---	
Luminous Intensity	R	$I_v$	200	---	400	mcd	$I_f=12\text{mA}$
	G		800	---	1200		
	B		150	---	300		
Dominant Wavelength	R	$\lambda_D$	620	---	625	nm	$I_f=12\text{mA}$
	G		520	---	525		
	B		465	---	470		
Viewing Angle	$2\theta_{1/2}$	---	120	---	deg	---	

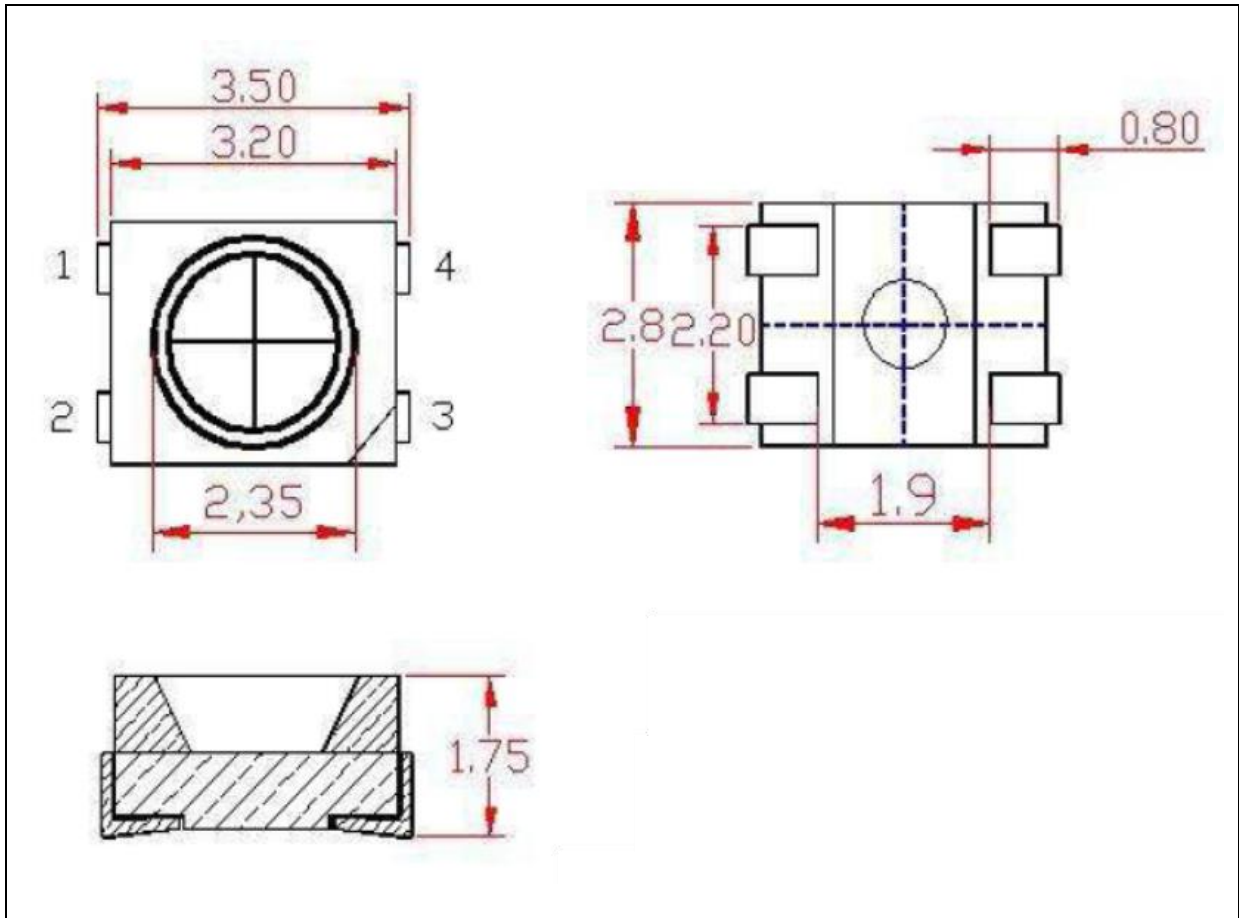
Dynamic Characteristics ( $T_a=25^\circ\text{C}$ )

Parameter	Symbol	Values			Unit	Test Condition
		Min.	Typ.	Max.		
Speed of Data Transmission	$F_{DIN}$	---	800	1100	KHz	---
Transmission Delay Time	$T_{PLZ}$	---	---	200	ns	DIN-DO
Output Current Conversion Time	$T_r$	---	---	400	ns	$V_{ds}=1.5V$ $I_o=12mA$
	$T_f$	---	---	400	ns	



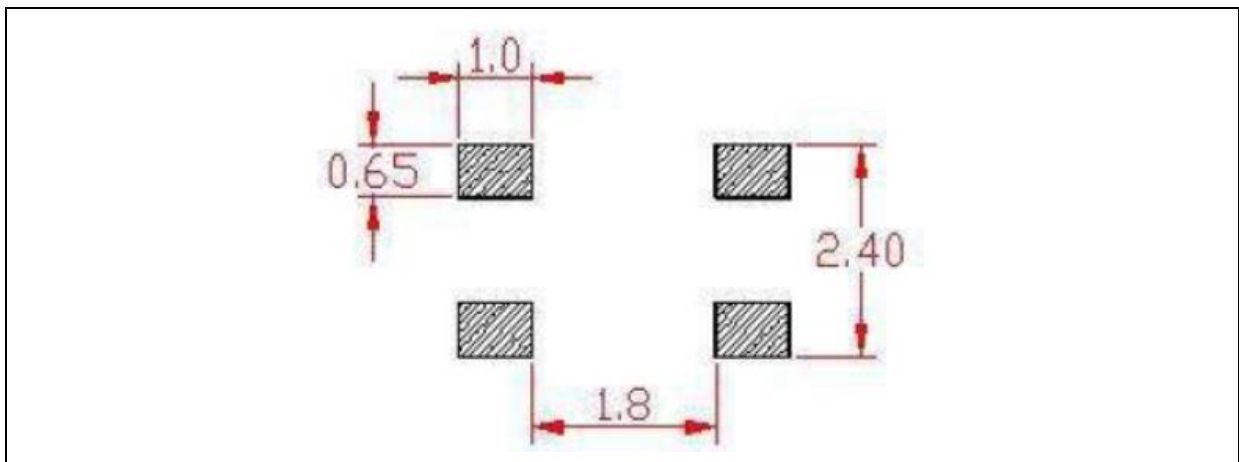
## OUTLINE DIMENSION:

Package Dimension:



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

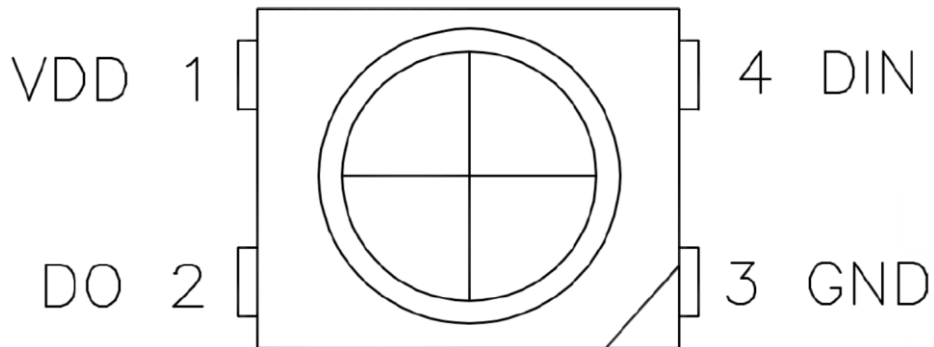
Recommended Soldering Pad Dimension:



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

**PIN CONFIGURATION:**

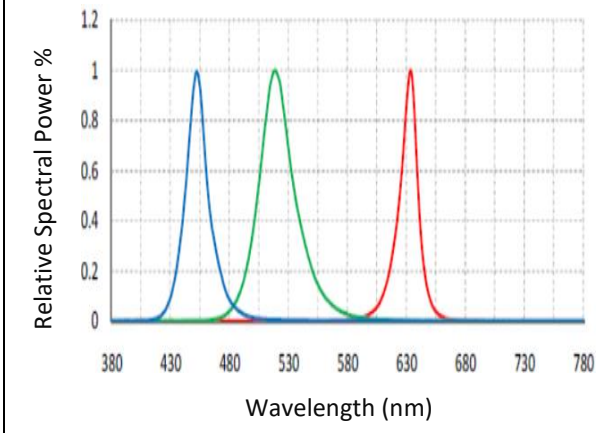

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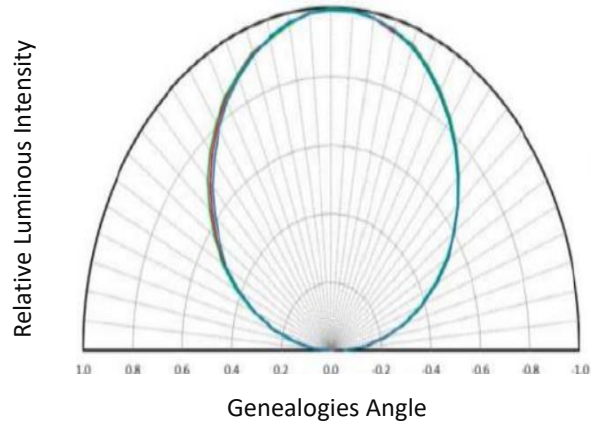
No.	Symbol	Function Description
1	VDD	Power supply pin
2	DO	Control data signal output
3	GND	Signal ground and power ground
4	DIN	Control data signal input

**ELECTRO-OPTICAL CHARACTERISTICS:**

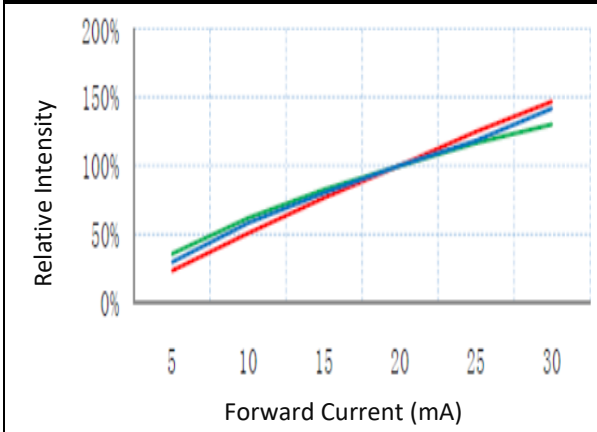
Relative Spectral Power v.s. Wavelength



Directive Radiation

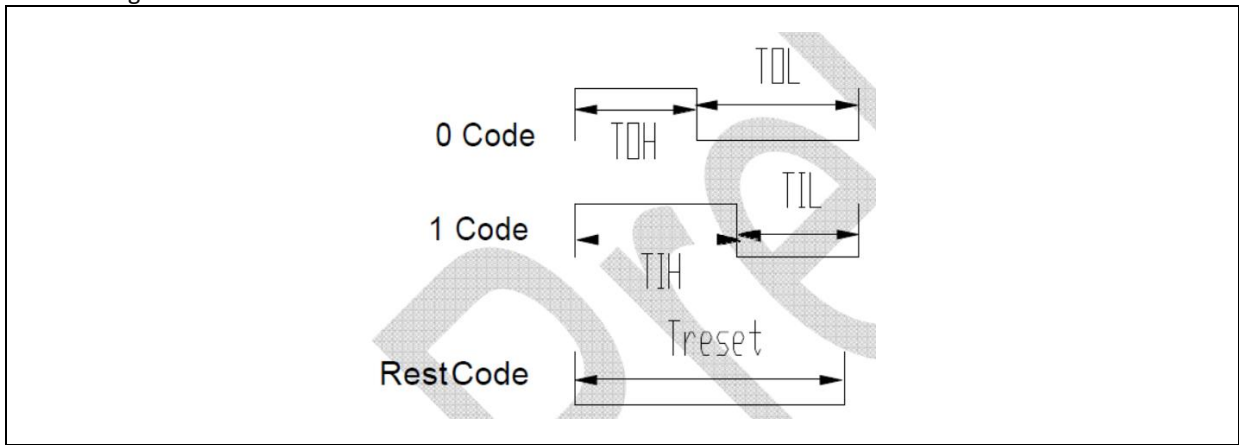


Relative Intensity v.s. Forward Current

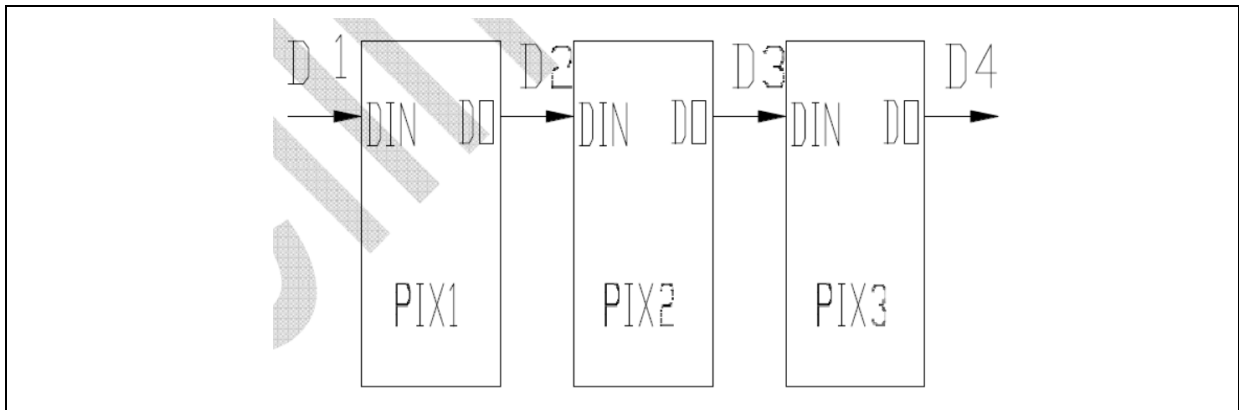


## FUNCTION DESCRIPTION:

### 1. Timing Wave Form:



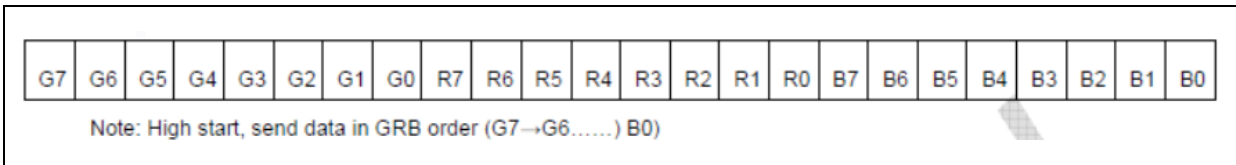
### 2. Connection Mode:



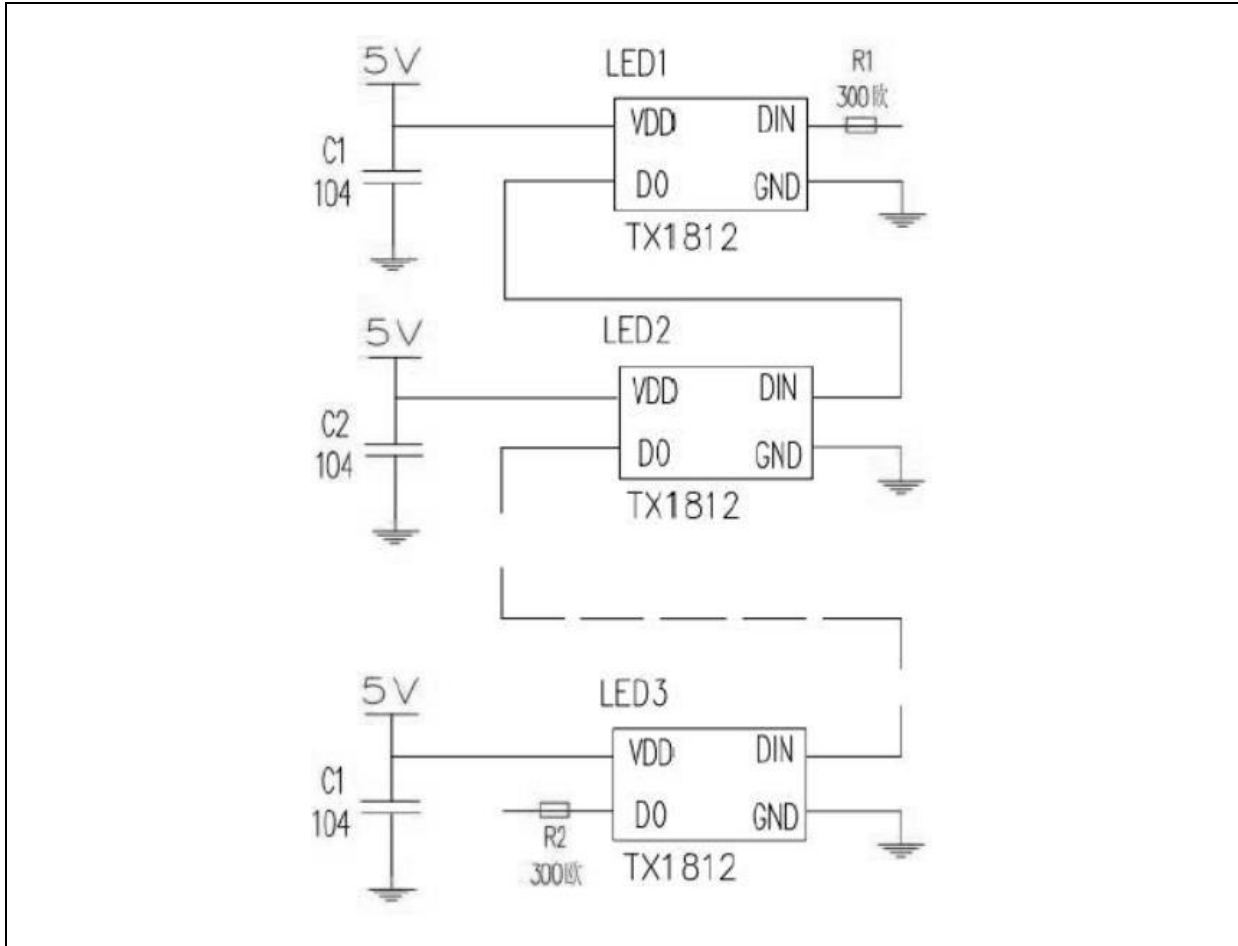
### 3. Data Transmission Time:

Symbol	Description	Min	Avg	Max	Unit
T0H	Input 0 code, high level time	245	295	345	ns
T1H	Input 1 code, high level time	545	595	645	ns
T0L	Output 0, low level time	545	595	645	ns
T1L	Output 1 code, low level time	245	295	345	ns
Trst	Rest code, low level time	80	--	--	us

#### 4. Mode of Data Transmission:



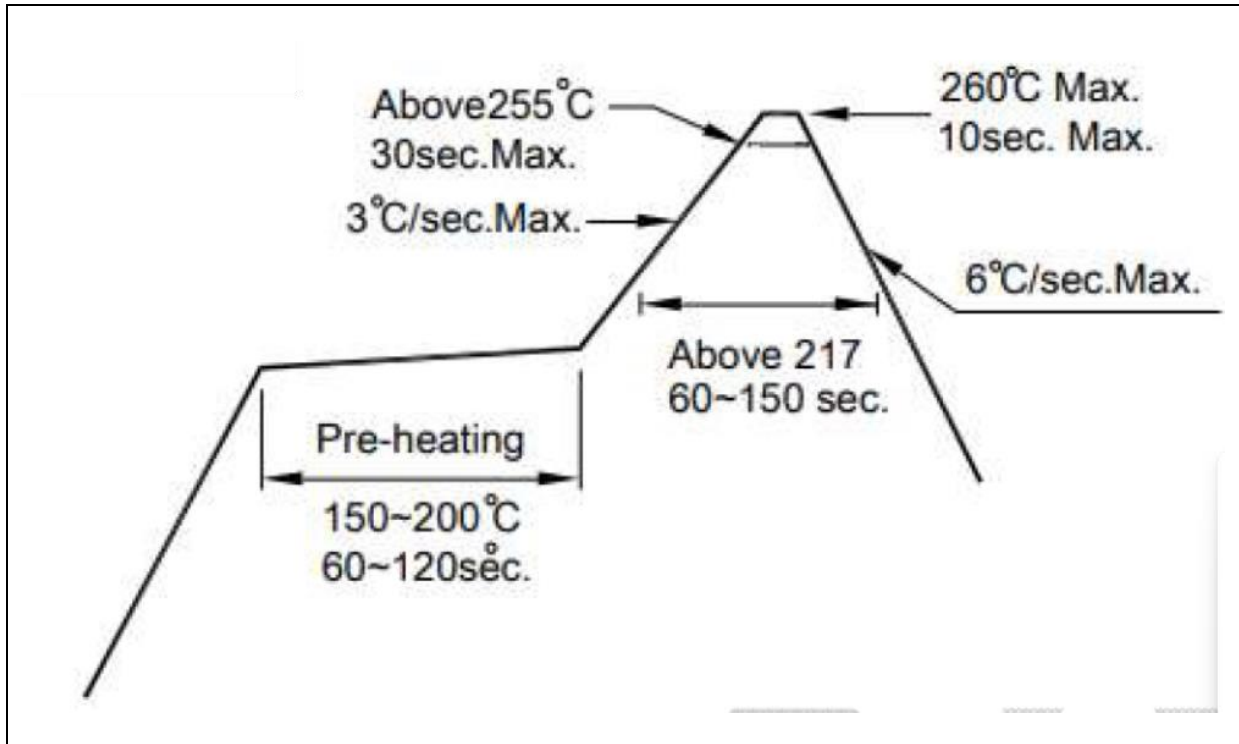
#### 5. Typical Application Circuit:





## RECOMMENDED SOLDERING PROFILE:

Lead-free Solder IR Reflow:

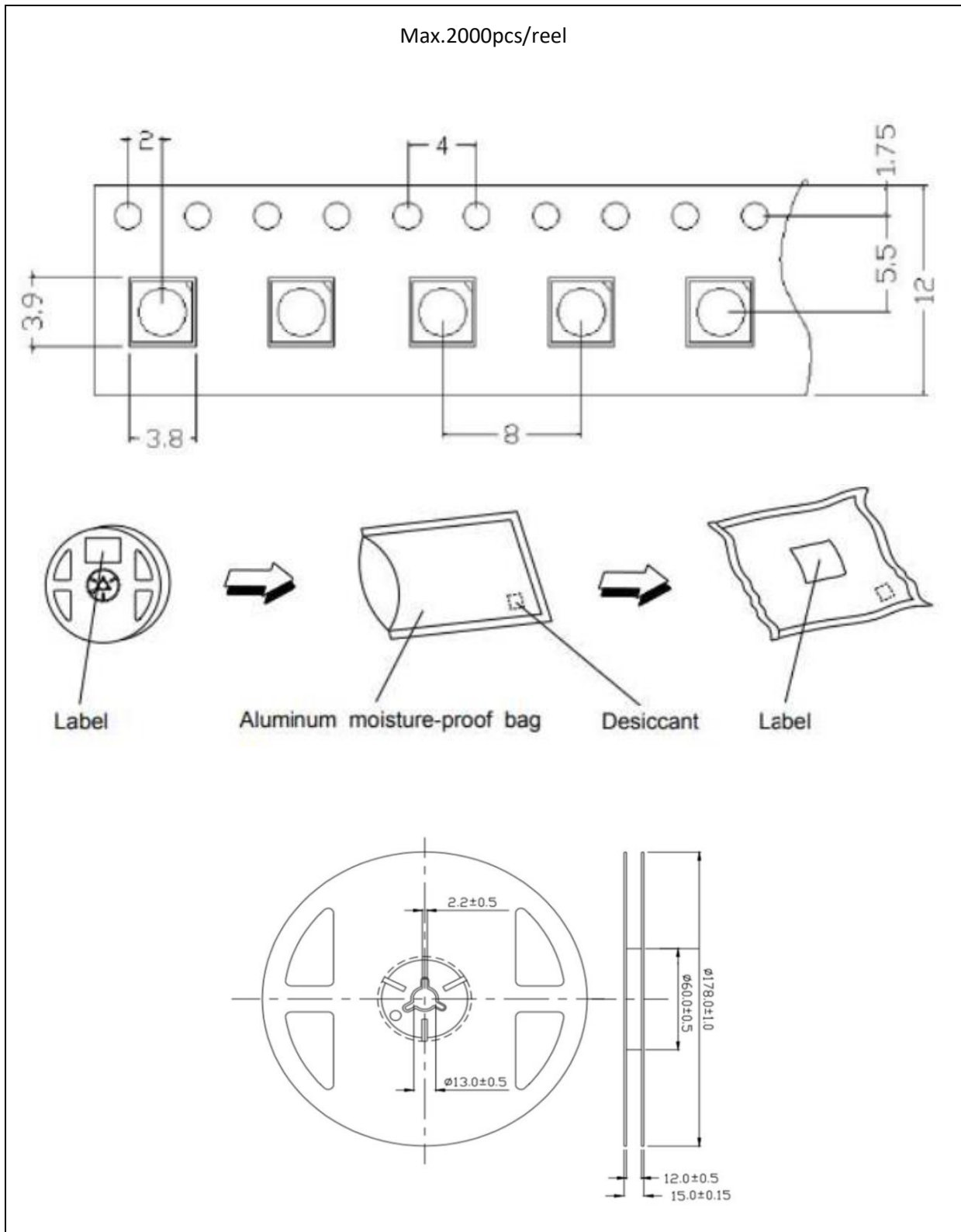


Note:

1. The recommended soldering temperature is 245°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:

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### 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.<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 48hrs 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 handling the LED all time. All devices, equipment, machinery, work tables, and storage racks must be properly grounded.

**REVISION RECORD:**

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Version	Date	Summary of Revision
A1.0	04/08/2023	Datasheet set-up.
A1.1	17/09/2024	Update MSL Level