BRIGHTEK

BRIGHTEK (EUROPE) LIMITED

Brighten Up The World With LED !

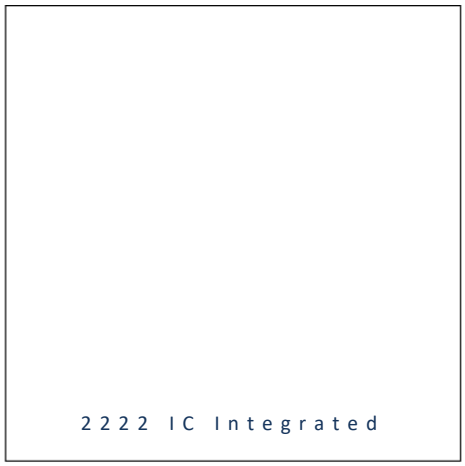
ISO/TS 16949:2009 BS EN ISO 14001:2004 QC 080000 IECQ HSPM

PRODUCT DATASHEET

- PLCC6 SMD with IC
- 2222 IC 1.05t
- Red/Green/Blue

Release Date: 17 September 2024 Version: A1.1

N0M67S16IC



2222 IC-Integrated

RoHS Compliant

FEATURES:

- **Package:** PLCC6 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. Any two point the distance does not exceed 3m transmission signal without any increase circuit.
- **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:** 8mm tape with max.4000pcs/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°C)

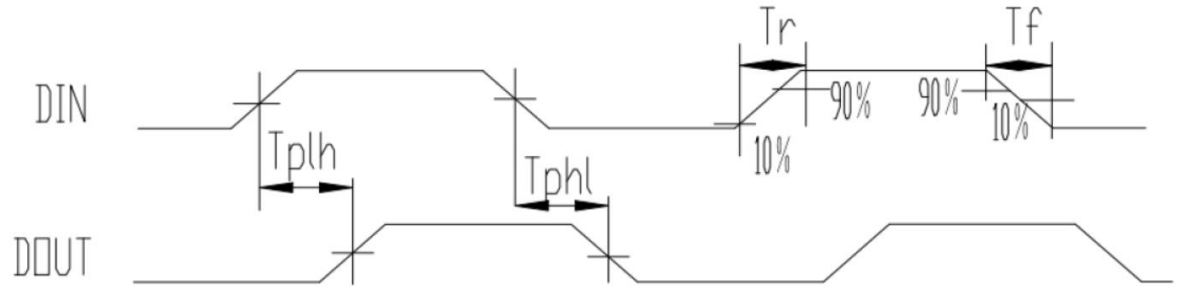
Parameter	Symbol	Ratings	Unit
Logical Supply Voltage	V_{DD}	+3.5~+5.5	V
Logic Input Voltage	V_I	-0.5~+5.5	V
Operating Temperature	T_{OPR}	-40~+85	°C
Storage Temperature	T_{STG}	-40~+120	°C

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

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=12mA
	G		800	---	1200		
	B		150	---	300		
Dominant Wavelength	R	λ_D	620	---	625	nm	I_F=12mA
	G		520	---	525		
	B		465	---	470		
Viewing Angle		$2\theta_{1/2}$	---	120	---	deg	---

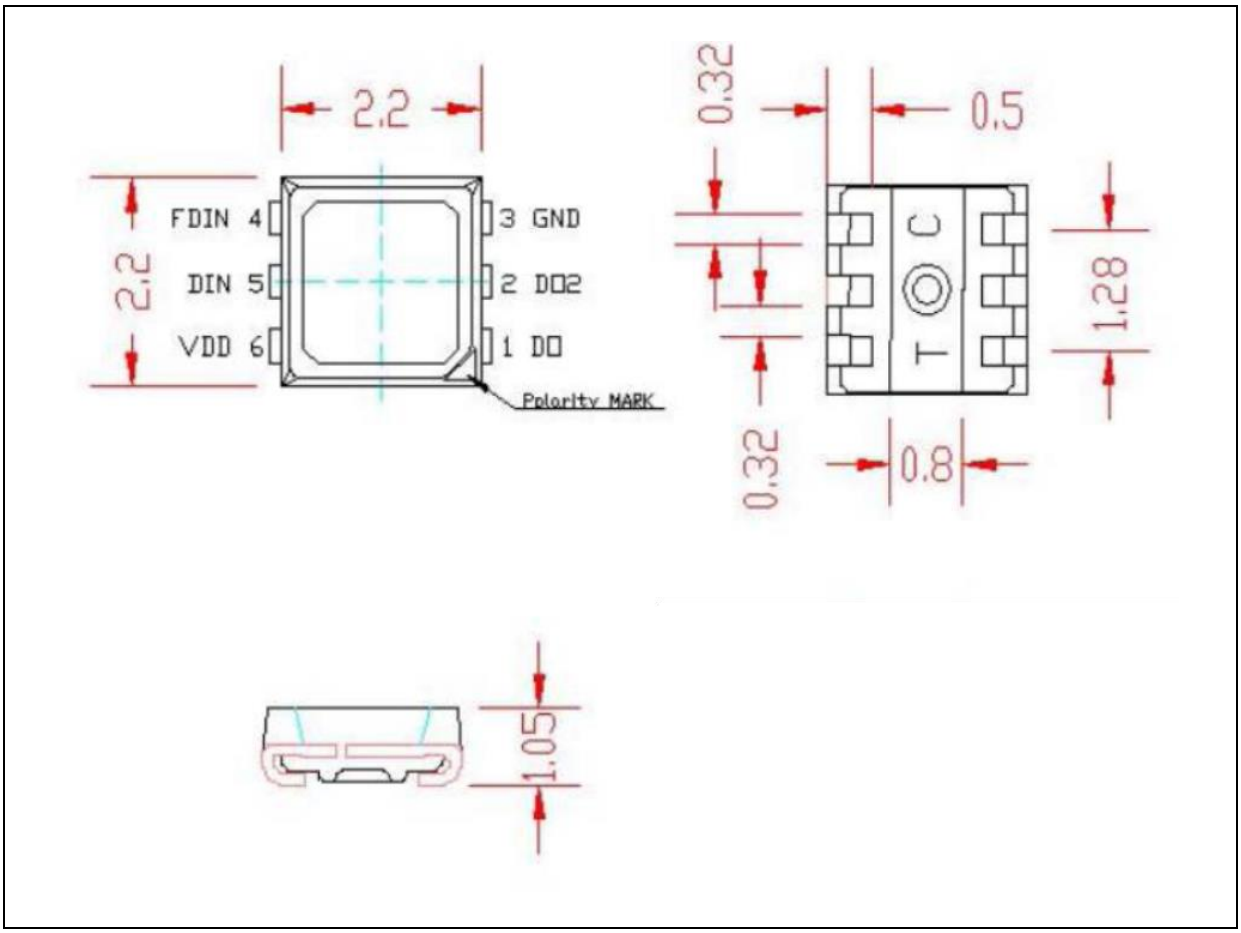
Dynamic Characteristics (T_a=25°C)

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	



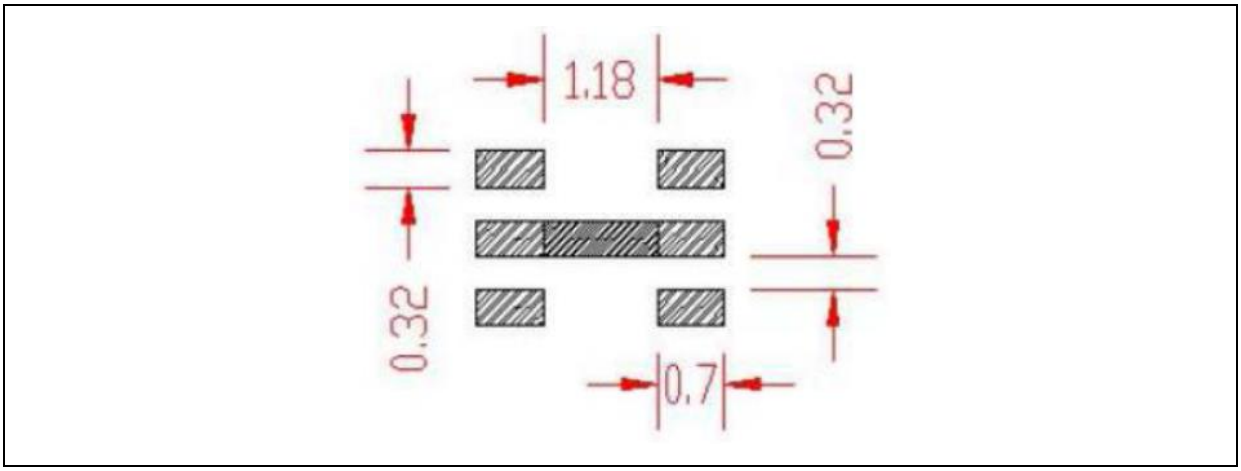
OUTLINE DIMENSION:

Package Dimension:



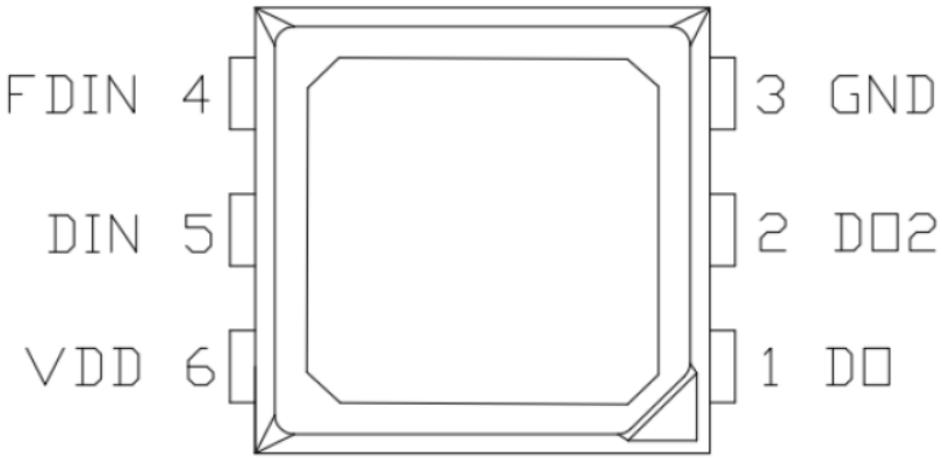
1. All dimensions are in millimetre (mm).
2. Tolerance ±0.2mm, unless otherwise noted.

Recommended Soldering Pad Dimension:



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

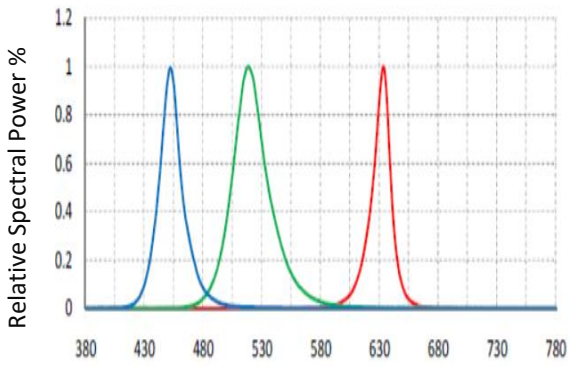
PIN CONFIGURATION:



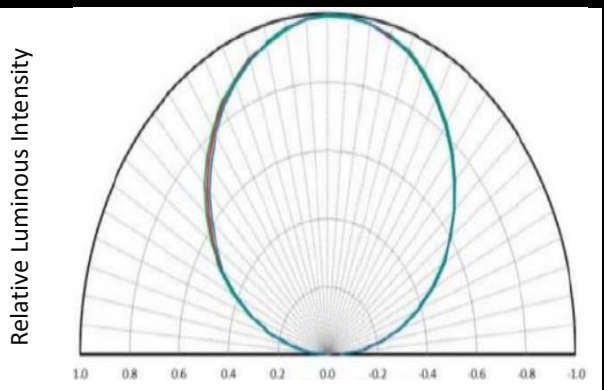
No.	Symbol	Function Description
1	DO	Control data signal output
2	DO2	Standby Data Output, Spare Data Cascade Output (PCB should be connect to pin 5 DIN)
3	GND	Signal Ground and Power Ground
4	FDIN	Standby data input
5	DIN	Control data signal input
6	VDD	Power supply pin, connected to +5V

ELECTRO-OPTICAL CHARACTERISTICS:

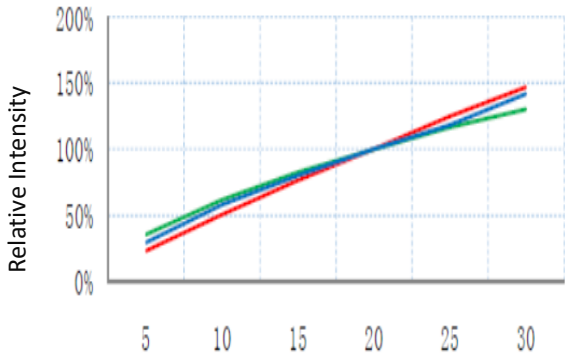
Relative Spectral Power v.s. Wavelength



Directive Radiation

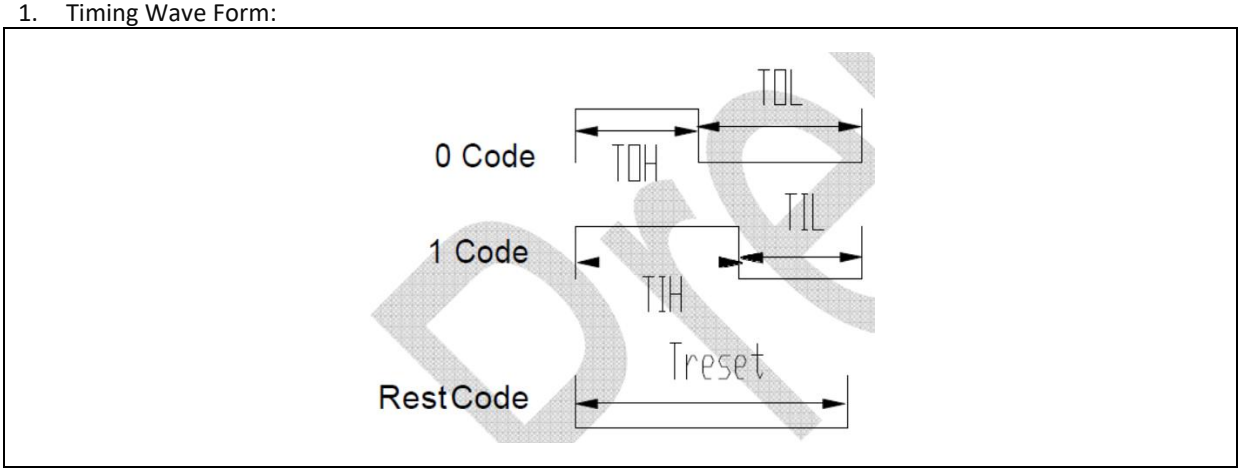


Relative Intensity v.s. Forward Current

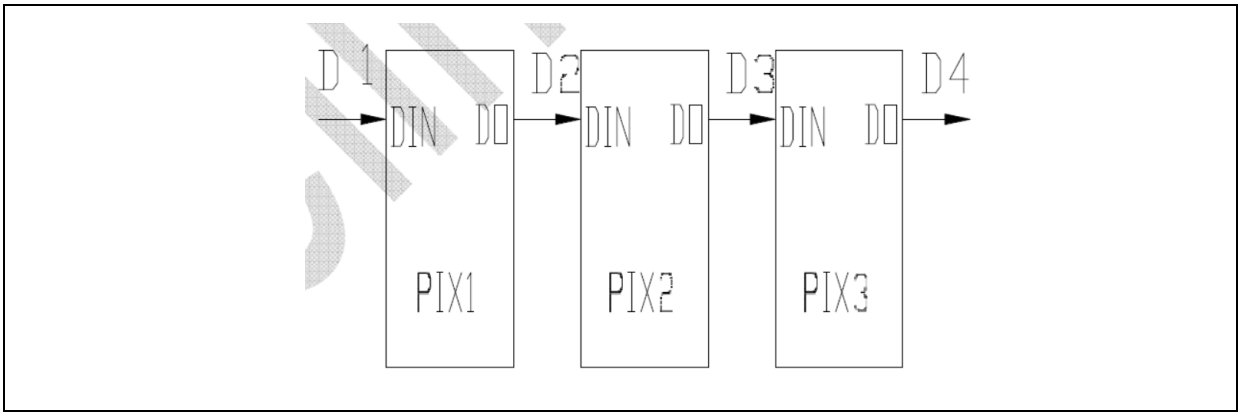


FUNCTION DESCRIPTION:

1. Timing Wave Form:



2. Connection Mode:



3. Data Transmission Time:

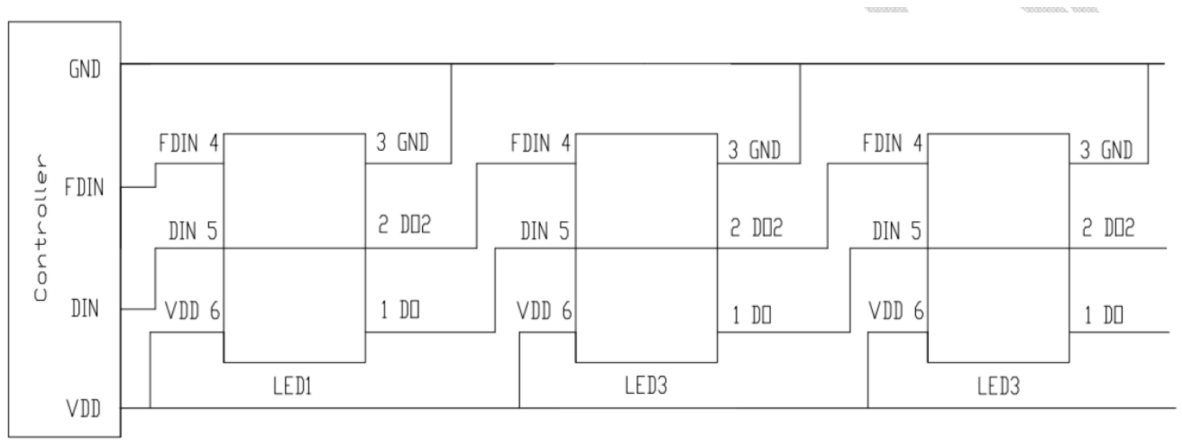
Symbol	Description	Min	Avg	Max	Unit
T0H	Input 0 code, high level time	245	295	345	ns
T1H	Input 1 code, high level time	545	595	645	ns
T0L	Output 0, low level time	545	595	645	ns
T1L	Output 1 code, low level time	245	295	345	ns
Trst	Rest code, low level time	80	--	--	us

4. Mode of Data Transmission:

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 start, send data in GRB order (G7→G6……) B0)

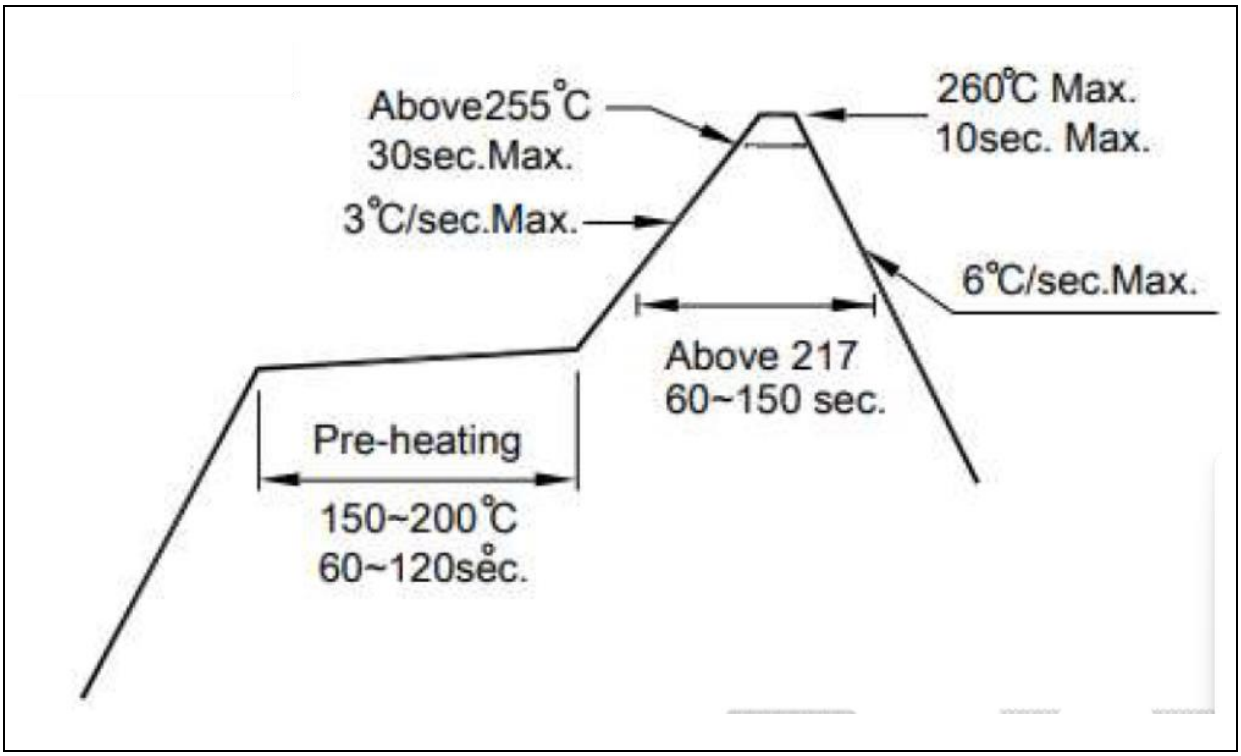
5. Typical Application Circuit:



Note: It is recommended to add a 300ohm resistor to DIN input and a 104 capacitor between GND and VDD.

RECOMMENDED SOLDERING PROFILE:

Lead-free Solder IR Reflow:



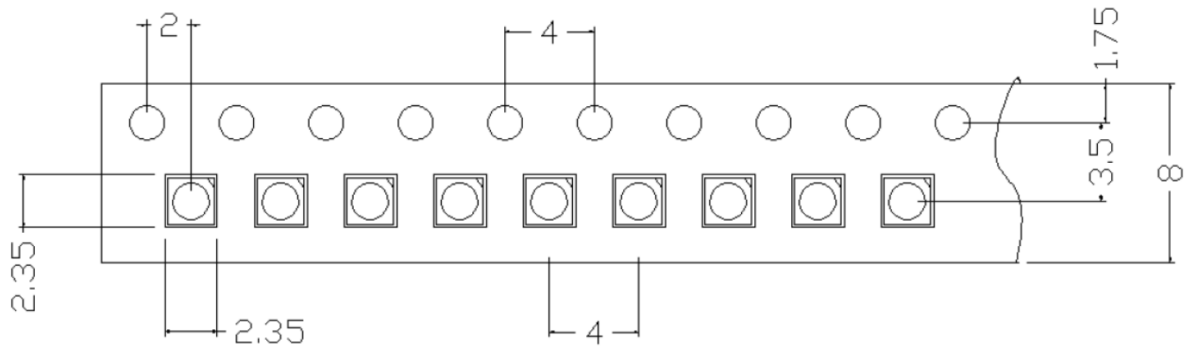
Note:

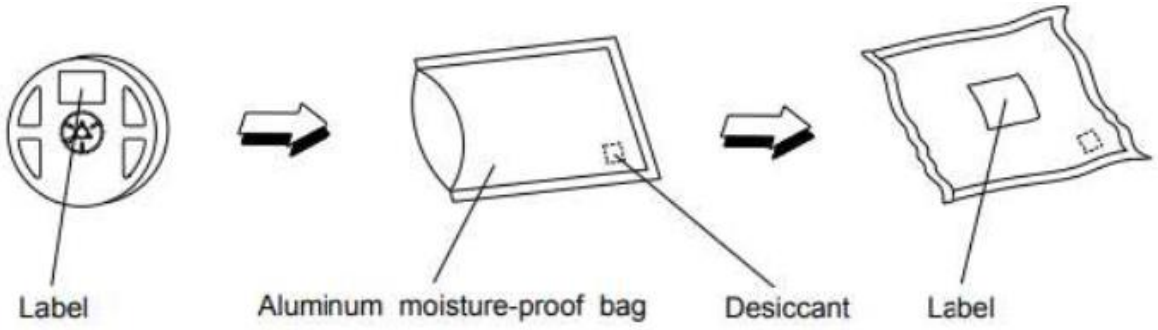
1. The recommended soldering temperature is 245°C. The maximum soldering temperature should be limited to 260°C.
2. Maxima reflow soldering: 2 times.
3. Before, during, and after soldering, should not apply stress on the components and PCB board.

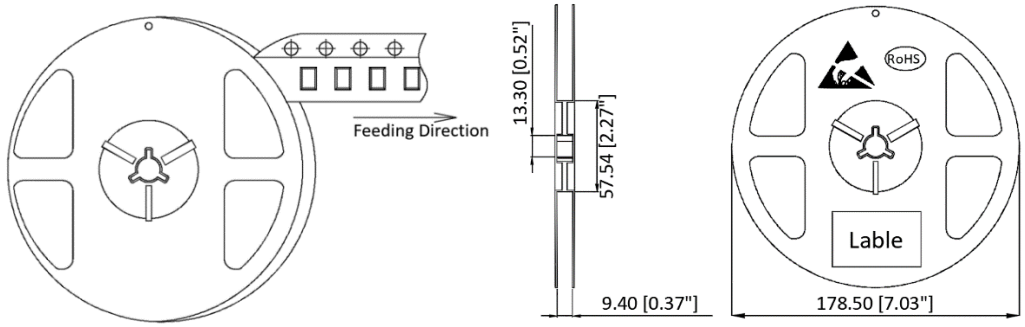
PACKING SPECIFICATION:

Reel Dimension:

Max.4000pcs/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 24 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 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 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	10/02/2023	Datasheet set-up.
A1.1	17/09/2024	Update MSL Level