BRIGHTEK

BRIGHTEK (EUROPE) LIMITED

Brighten Up The World With LED!

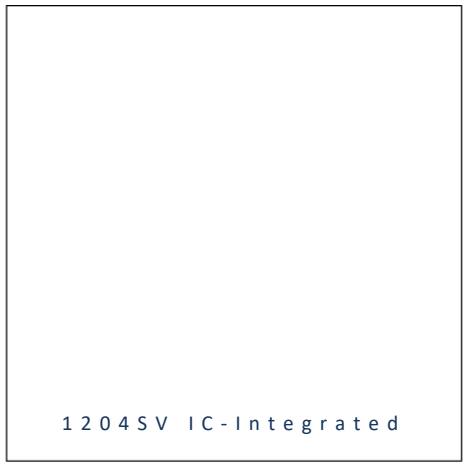
ISO/TS 16949:2009 BS EN ISO 14001:2004 QC 080000 IECQ HSPM

PRODUCT DATASHEET

- Chip Side View with IC
- 1204SV (3215) IC 1.0t
- Red/Green/Blue

Release Date: 17 October 2024 Version: A1.1

N0M59S12ICSV



1204SV IC-LED

RoHS Compliant

FEATURES (Red/Green/Blue*):

- **Package:** CHIP Side View Package with Integrated IC
- **Forward Current:** 5/5/5mA*
- **Forward Voltage (typ.):** +3.3~+5.5V
- **Luminous Intensity (typ.):** 109/190/32mcd
- **Colour:** Red/Green/Blue
- **CCT/Dominant Wavelength (typ.):** 622/530/470nm
- **Viewing Angle:** 120°
- **Materials:**
  - Resin: Epoxy (White Diffused)
- **Operating Temperature:** -40~+85°C
- **Storage Temperature:** -40~+100°C
- **IC Features:** This IC LED product is much smaller than PLCC type components, thus enable smaller board size, higher packing density, reduced storage space and finally smaller equipment to be obtained.
- **Pixel:** Each RGB chip is 8bit control, total of 16M colours can be displayed.
- **Soldering Methods:** IR Reflow soldering
- **MSL Level:** acc. to JEDEC Level 3
- **Packing:** 8mm tape with max.3000pcs/reel, ø180mm (7'')

* in order of Red/Green/Blue

APPLICATIONS:

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

CHARACTERISTICS:

Absolute Maximum Characteristics (Ta=25°C)

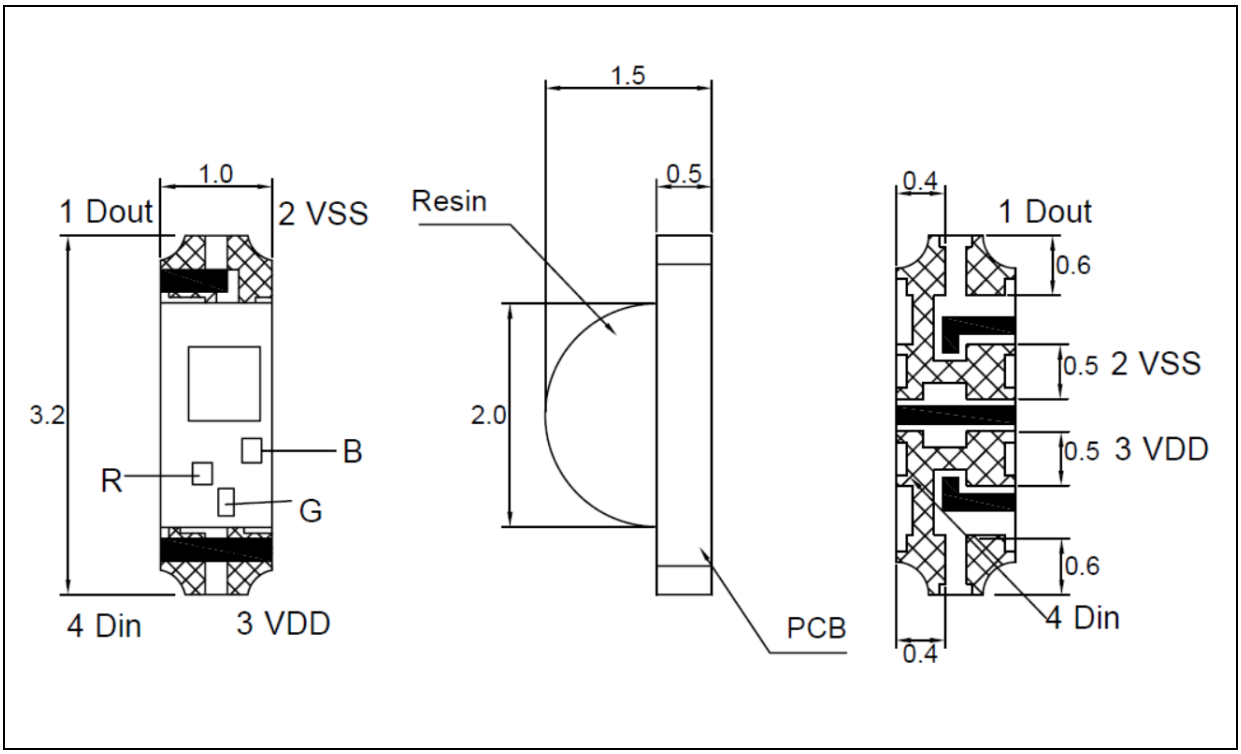
Parameter	Symbol	Ratings	Unit
LED Output Current	I_{OUT}	25	mA
Supply Voltage	V_{DD}	0~+6.0	V
Power Dissipation	P_D	400	mW
Operating Temperature	T_{OPR}	-40~+85	°C
Storage Temperature	T_{STG}	-40~+100	°C

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

Parameter		Symbol	Values			Unit	Test Condition
			Min.	Typ.	Max.		
Forward Voltage		V_F	3.3	5.0	5.5	V	---
Each R/G/B Current		I_{OL}	---	5	---	mA	V_{DD}=5V
Input High Voltage		V_{IH}	2.7	---	V_{DD}	V	DI
Input Low Voltage		V_{IL}	0	---	1.0	V	DI
Output High Voltage		V_{OH}	4.5	---	---	V	I_{OH}=4mA
Output Low Voltage		V_{OL}	---	---	0.4 V_{DD}	V	I_{OL}=4mA
Operation Current		I_{DD}	---	---	2	mA	B, G, R no load
Pull Down Resistance		R_{PD}	---	500K	---	Ω	D_{IN}, D_{OUT} (VDD=5V)
Luminous Intensity	R	I_V	---	109	---	mcd	V_{DD}=5V
	G		---	190	---		
	B		---	32	---		
Dominant Wavelength	R	λ_D	---	622	---	nm	V_{DD}=5V
	G		---	530	---		
	B		---	470	---		
Viewing Angle		$2\theta_{1/2}$	---	120	---	deg	I_F=5mA

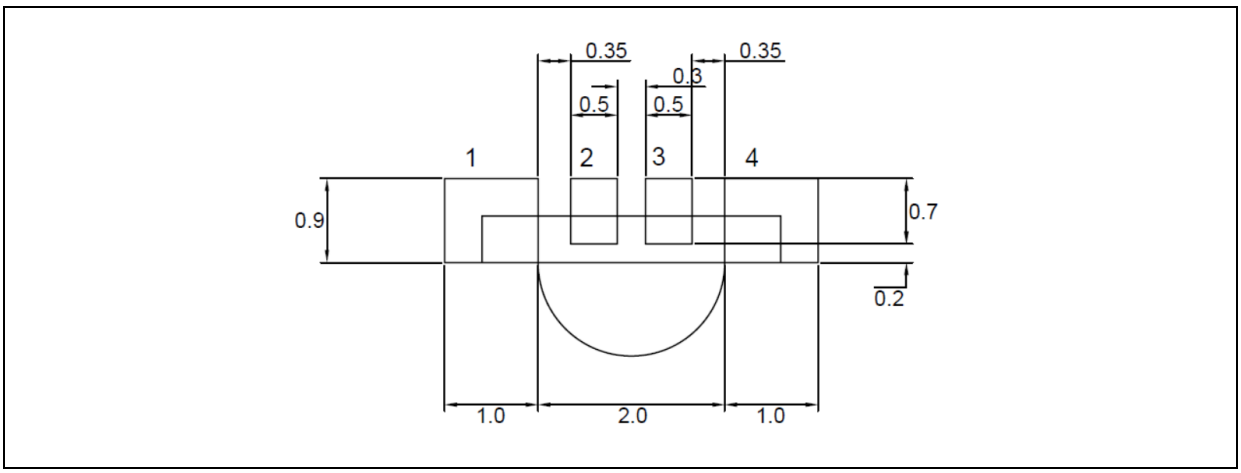
OUTLINE DIMENSION:

Package Dimension:



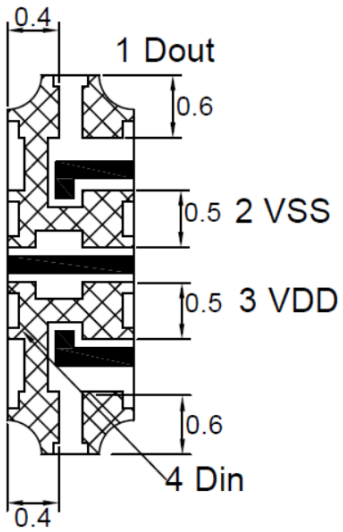
1. All dimensions are in millimetre (mm).
2. Tolerance ±0.2mm, unless otherwise noted.

Recommended Soldering Pad Dimension:



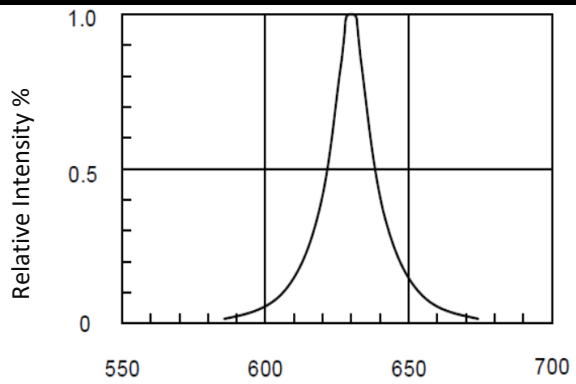
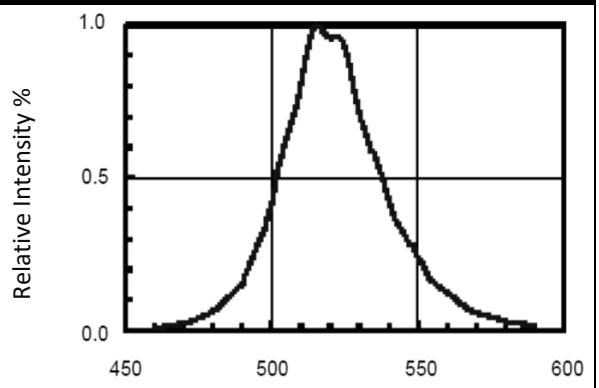
1. Dimensions are in millimetre (mm).
2. Tolerance ±0.1mm with angle tolerance ±0.5°.

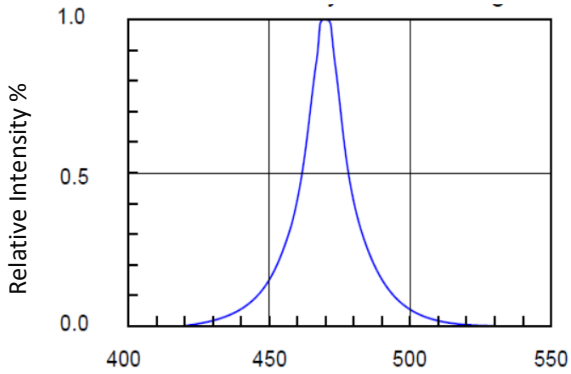
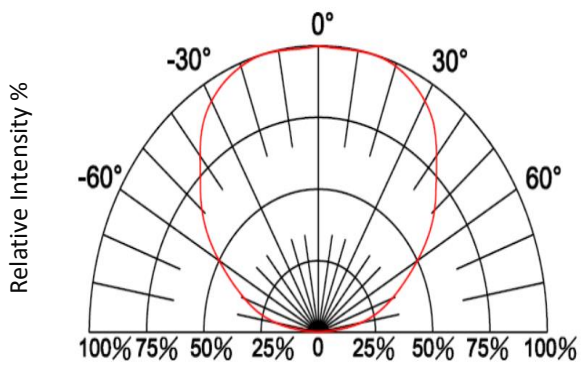
PIN CONFIGURATION:



No.	Symbol	Function Description
1	DOUT	Control Data Signal Output
2	VSS	Ground
3	VDD	DC Power Input
4	DIN	Control Data Signal Input

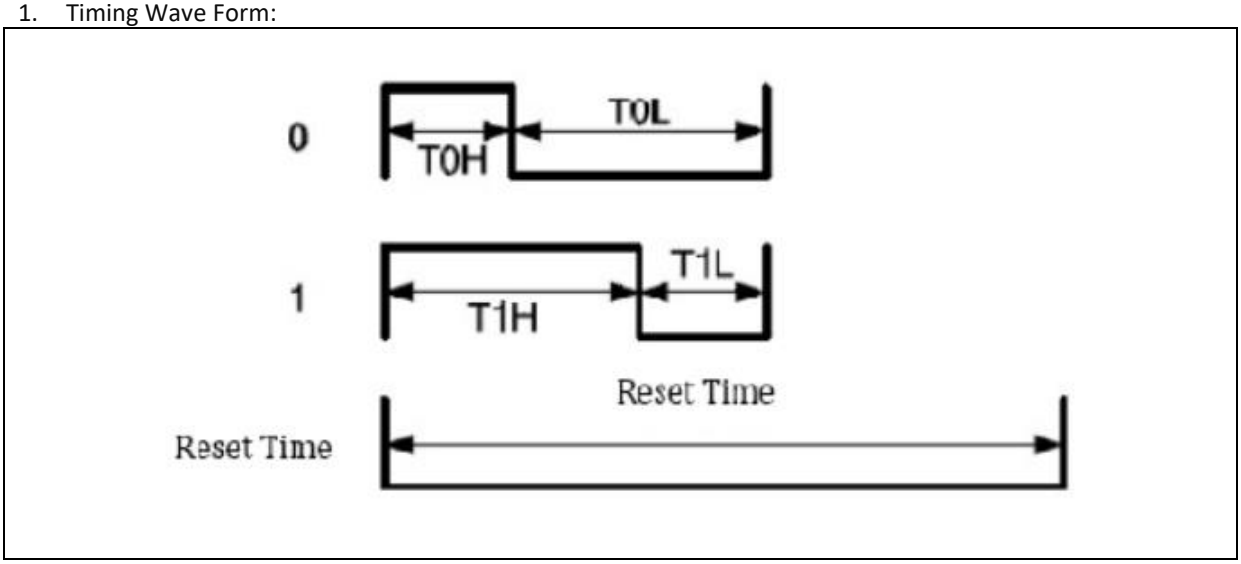
ELECTRO-OPTICAL CHARACTERISTICS:

Relative Intensity v.s. Wavelength (RED)	Relative Intensity v.s. Wavelength (GREEN)
	

Relative Intensity v.s. Wavelength (BLUE)	Relative Intensity v.s. Angular Displacement
	

Function Description:

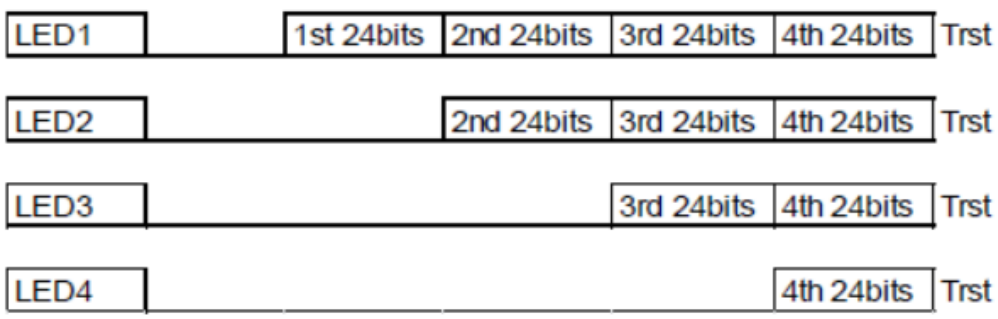
1. Timing Wave Form:



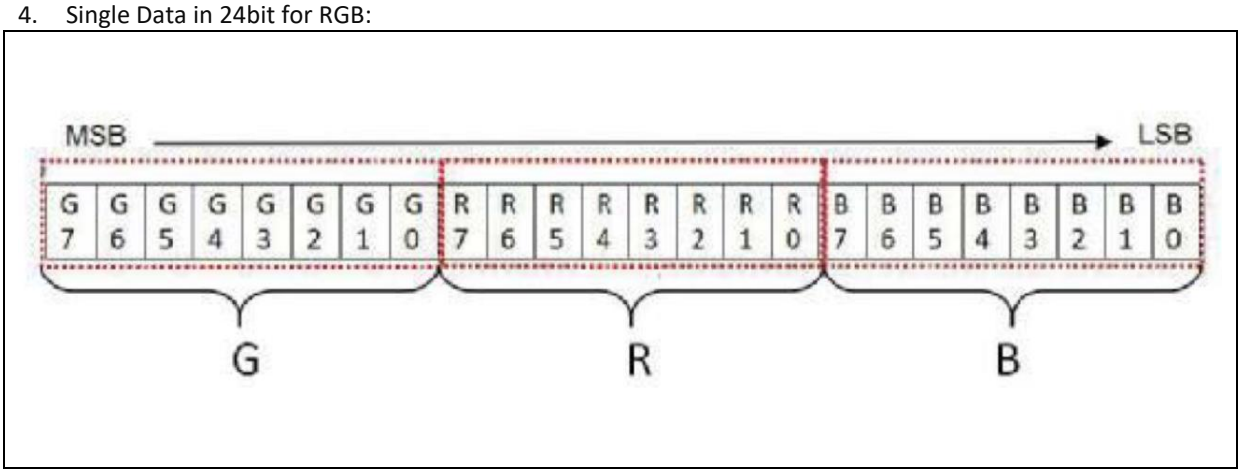
2. High Speed Mode:

Item	Description	min	Typical	Allowance	unit
T0H	0 code, High-level time		0.3	±0.15	us
T0L	0 code, Low-level time		0.9	±0.15	us
T1H	1 code, High-level time		0.9	±0.15	us
T1L	1 code, Low-level time		0.3	±0.15	us
Trst	Reset code,Low-level time	250			

3. Data Communication:



4. Single Data in 24bit for RGB:



5. Advance Function Mode:

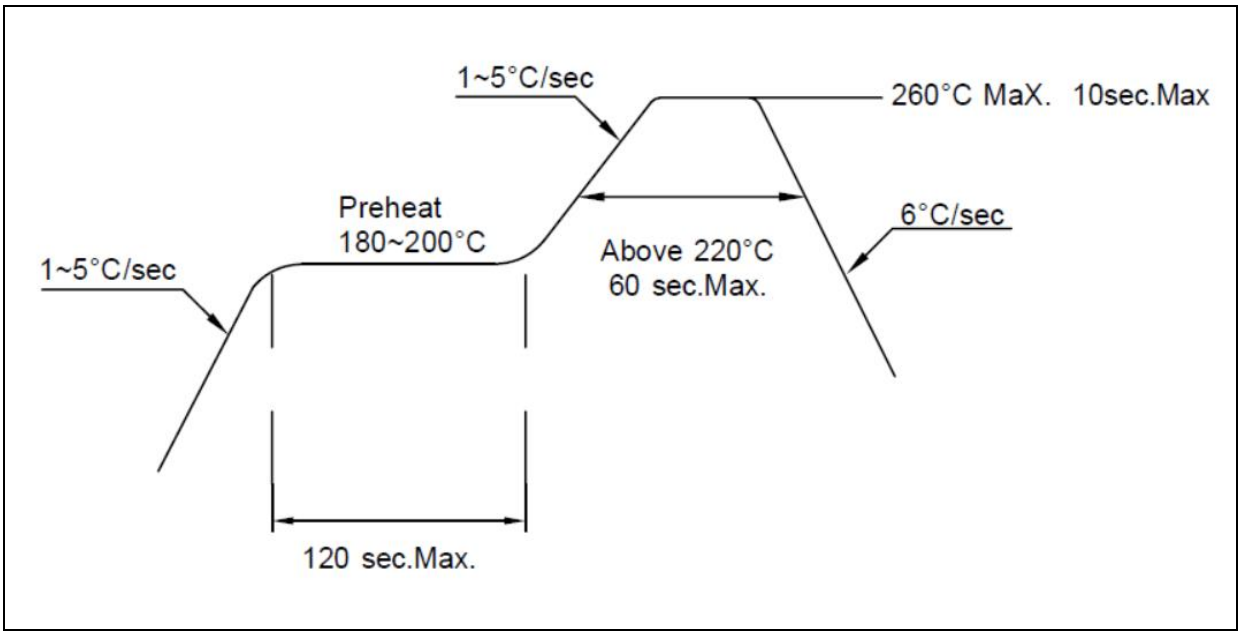
This IC LED has an Advance Function Mode that supports the MCU to start with a specific command setting.

Advance Function Mode includes the following function:

1. Feedback the cascaded number of LEDs and maximum sink current of R/G/B channel.
2. Current Gain control: 32 level (5bits) to adjust maximum sink current of R/G/B channel.
3. Programmable PWM refresh rate (1.25kHz/2.5kJz/5kHz/10kHz).

RECOMMENDED SOLDERING PROFILE:

Lead-free Solder IR Reflow:



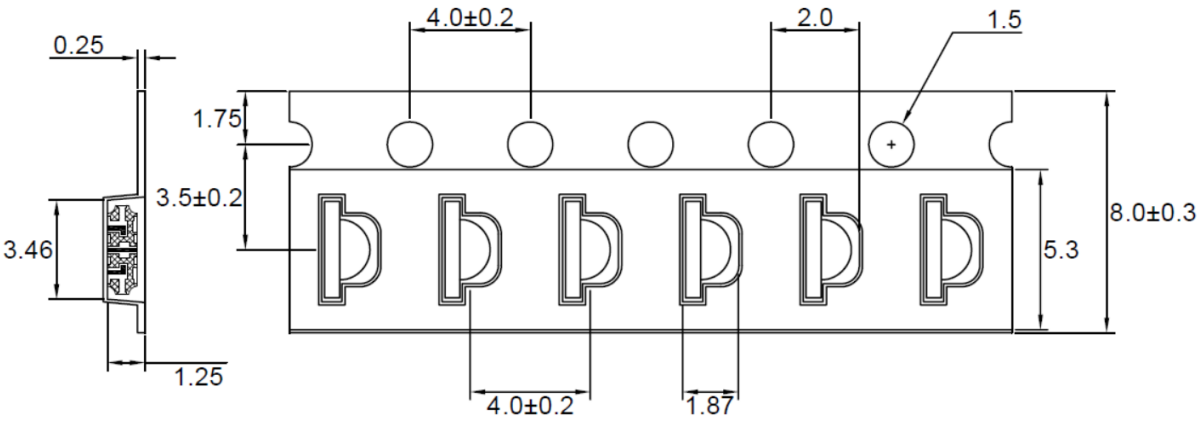
Note:

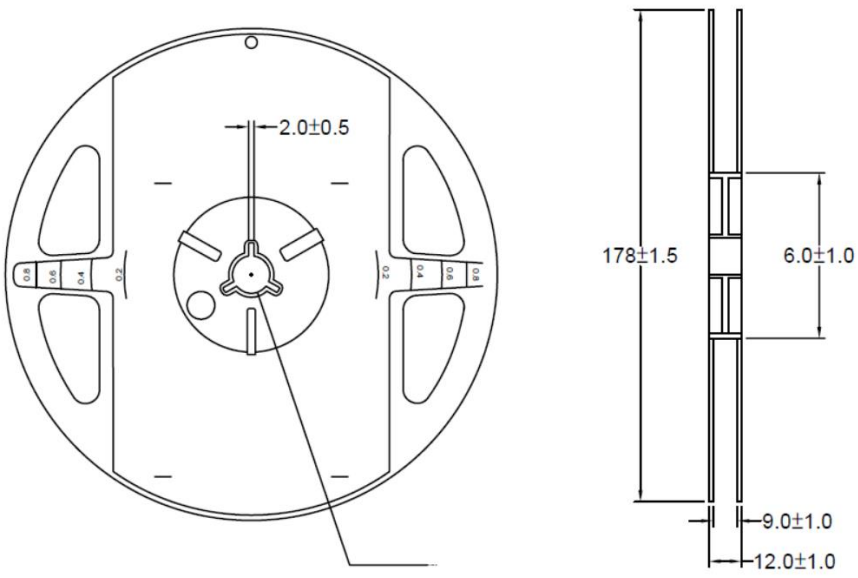
1. We recommend the reflow temperature 240°C (±5°C). The maximum soldering temperature should be limited to 260°C.
2. Maxima reflow soldering: 2 times.
3. Before, during, and after soldering, should not apply stress on the components and PCB board.

PACKING SPECIFICATION:

Reel Dimension:

Max.3000pcs/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 168 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.

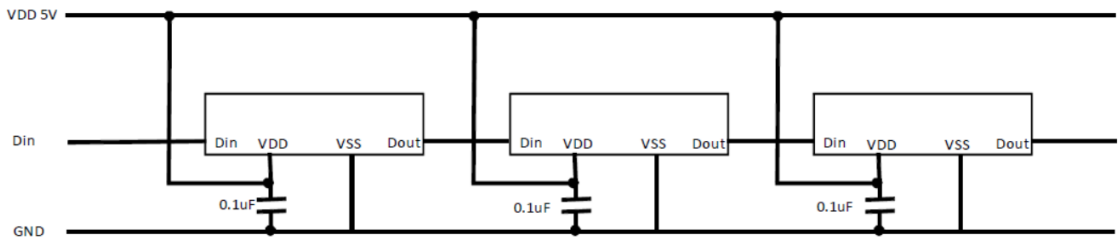
Baking:

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 24hrs and <5%RH, taped / reel package.

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

Recommended Route:



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	05/10/2020	Datasheet set-up.
A1.1	17/10/2024	New datasheet format.