

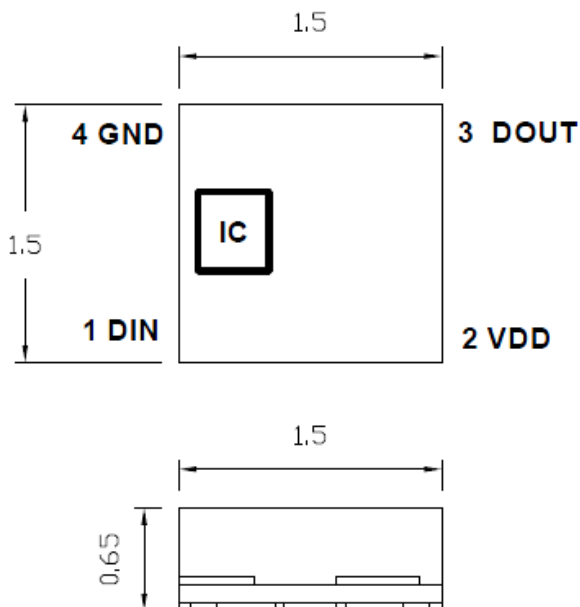
## ■ Features

- PB Free.
- Multi-color type.
- 0605 Package in 8 mm tape on 7" diameter reels.
- Suitable for all SMT assembly methods.
- Compatible with automatic placement equipment.
- Compatible with infrared and vapor phase reflow solder process.

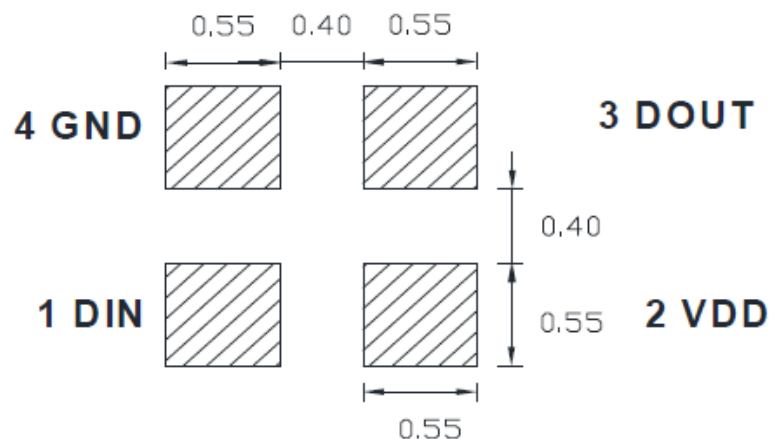
## ■ Typical Applications

- Automotive: Dashboards, stop lamps, turn signals.
- Backlighting: LCDs, Key pads advertising.
- Status indicators: Consumer & industrial electronics.
- General use.

## ■ Package Dimensions



## Recommend Pad Layout



### Notes:

1. All dimensions are in millimeters (inches).
2. Tolerance is  $\pm 0.10\text{mm}$  (0.004") unless otherwise specified.

## ■ PIN configuration

| NO. | Symbol | Pin Name     | function description                 |
|-----|--------|--------------|--------------------------------------|
| 1   | DIN    | Data input   | Control data input                   |
| 2   | VDD    | Power supply | Power Supply Pin                     |
| 3   | DOUT   | Data output  | Control data signal output           |
| 4   | GND    | Ground       | Signal grounding and power grounding |

## ■ Electrical parameters (Ta=25℃,VSS=0V)

| Parameter            | Symbol           | Range        | Unit |
|----------------------|------------------|--------------|------|
| Power supply voltage | VDD              | +3.7~+5.5    | V    |
| Logic input voltage  | V <sub>IN</sub>  | -0.5~VDD+0.5 | V    |
| Working temperature  | T <sub>opt</sub> | -40~+80      | ℃    |
| Storage temperature  | T <sub>stg</sub> | -40~+80      | ℃    |
| ESD pressure(HBM)    | V <sub>ESD</sub> | 2K           | V    |
| ESD pressure(DM)     | V <sub>ESD</sub> | 200          | V    |

## ■ Electrical/Optical Characteristics

| Color | AL-S0605RGB-C-PB-6805 5mA |                |
|-------|---------------------------|----------------|
|       | Dominate Wavelength(nm)   | Luminance(mcd) |
| Red   | 620-625                   | 40-160         |
| Green | 520-530                   | 80-320         |
| Blue  | 460-470                   | 20-80          |

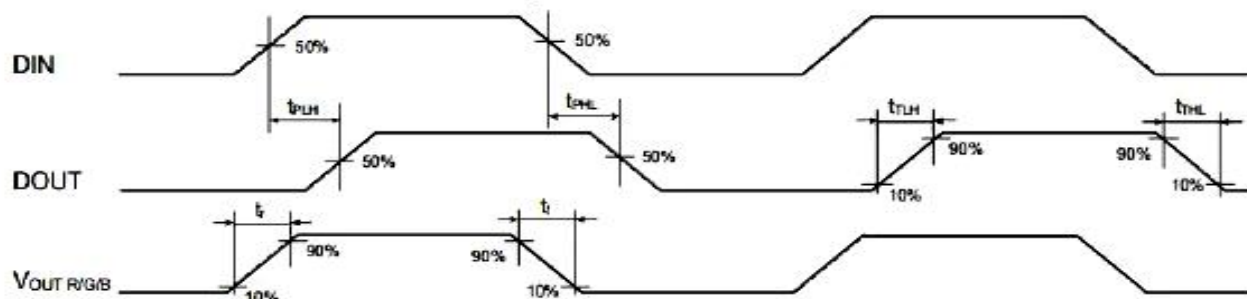
## ■ IC The electrical parameters (unless otherwise specified, TA=-20 ~ +70 ℃, VDD=4.5 ~ 5.5V, VSS=0V)

| Parmeter                        | Symbol          | Min     | Typical | Max     | Unit | Test conditions |
|---------------------------------|-----------------|---------|---------|---------|------|-----------------|
| The chip supply voltage         | VDD             | ---     | 5.2     | ---     | V    | ---             |
| The signal input flip threshold | V <sub>IH</sub> | 0.7*VDD | ---     | ---     | V    | VDD=5.0V        |
|                                 | V <sub>IL</sub> | ---     | ---     | 0.3*VDD | V    |                 |
| The frequency of PWM            | FPWM            | ---     | 1       | ---     | KHZ  | ---             |
| Static power consumption        | IDD             | ---     | 0.3     | ---     | mA   | ---             |

## ■ Switching characteristics (VCC=5V Ta=25 °C)

| Parameter                        | Symbol | Min | Typical | Max | Unit | Test conditions                                                                                                   |
|----------------------------------|--------|-----|---------|-----|------|-------------------------------------------------------------------------------------------------------------------|
| The speed of data transmission   | fDIN   | —   | 800     | —   | KHZ  | The duty ratio of 67% (data 1)                                                                                    |
| DOUT transmission delay (Note 4) | TPLH   | —   | 80      | —   | ns   | The load capacitance of dout port to ground is 30pf,Signal transmission delay from DIN to dout                    |
|                                  | TPHL   | —   | 80      | —   | ns   |                                                                                                                   |
| DOUT Conversion time (Note 5)    | TLH    | —   | 10      | —   |      | The load capacitance of dout port to ground is 30pf                                                               |
|                                  | TTL    | —   | 12      | —   |      |                                                                                                                   |
| IOUT Rise/Drop Tim (Note 6)      | Tr     | —   | 50      | —   | ns   | IOUT = 5mA, out R / g / B port series connection 200 Ω electricResistance to VDD, load capacitance to ground 15pF |
|                                  | Tf     | —   | 100     | —   | ns   |                                                                                                                   |

Note 4 · Note 5 · Note 6 : As shown in the figure below



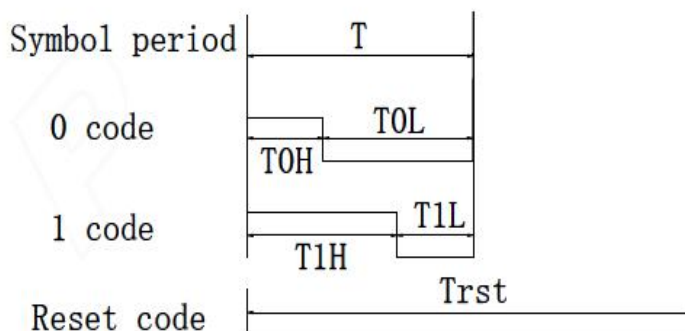
## ■ The data transmission time

| Name |                            | Min. | Standard value | Max. | Unit |
|------|----------------------------|------|----------------|------|------|
| T    | Code period                | 1.20 | --             | --   | μs   |
| T0H  | 0 code, high level time    | 0.2  | 0.32           | 0.4  | μs   |
| T0L  | 0 code, low level time     | 0.8  | --             | --   | μs   |
| T1H  | 1 code, high level time    | 0.58 | 0.64           | 1.0  | μs   |
| T1L  | 1 code, low level time     | 0.2  | --             | --   | μs   |
| Trst | Reset code, low level time | >200 | --             | --   | μs   |

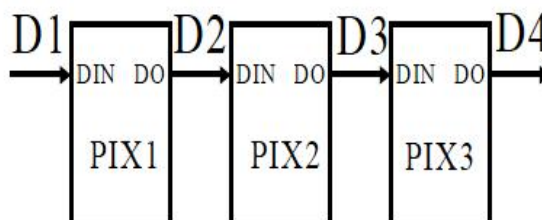
1. The protocol uses a unipolar zeroing code. Each symbol must have a low level. Each symbol in this protocol starts with a high level. The high time width determines the "0" or "1" code. .
2. When writing programs, the minimum symbol period is 1.2 μ s.
3. The high time of "0" code and "1" code should be in accordance with the stipulated range in the above table. The low time requirement of "0" code and "1" code is less than 20 μ s.

## ■ Timing waveform

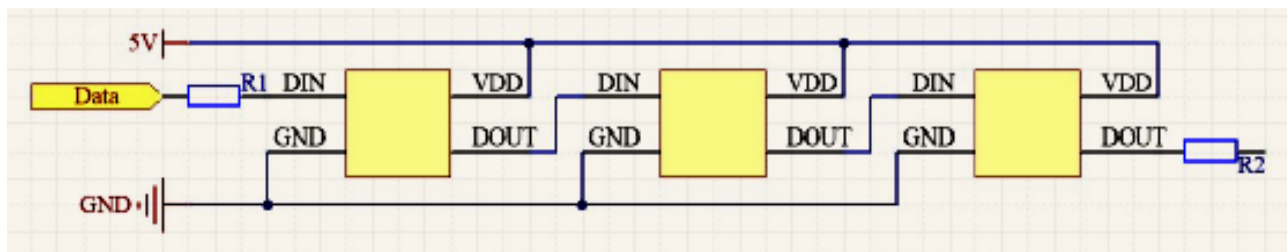
Input code:



Connection mode:



## ■ The typical application circuit

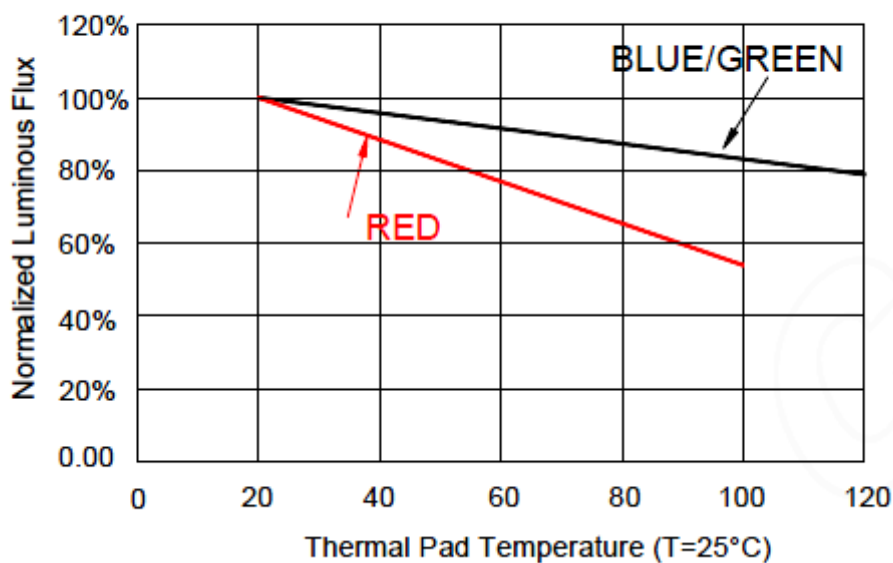


In the practical application circuit, the signal input and output pins of the IC signal input and output pins should be connected to the signal input and output terminals. In addition, in order to make the IC chip is more stable, even the capacitance between beads is essential back;  
Application: used for soft lamp strip or hard light, lamp beads transmission distance is short, suggested in signal in time the clock line input and output end of each connected in series protection resistors,  $R1=R2$  of about 500 ohms.

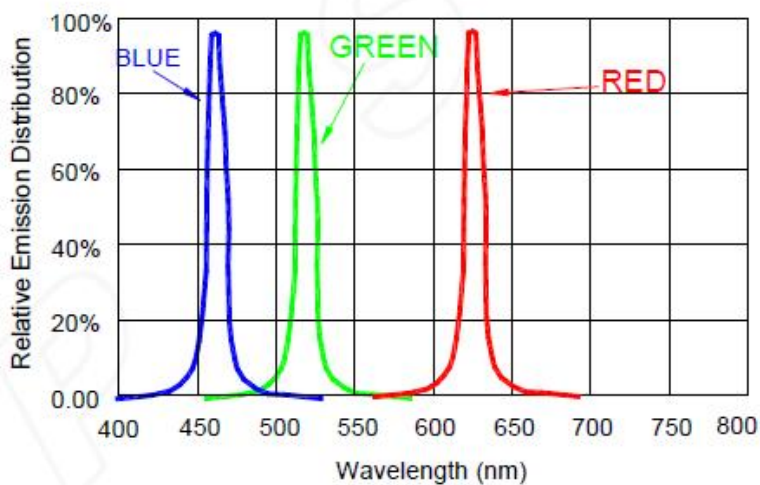
Application: for module or general special-shaped products, lamp beads transmission distance is long, because of different wire and transmission distance, in the signal in time clock at both ends of the line on grounding protection resistance will be slightly different; to the actual use of fixed;

## ■ Standard LED Performance Graph

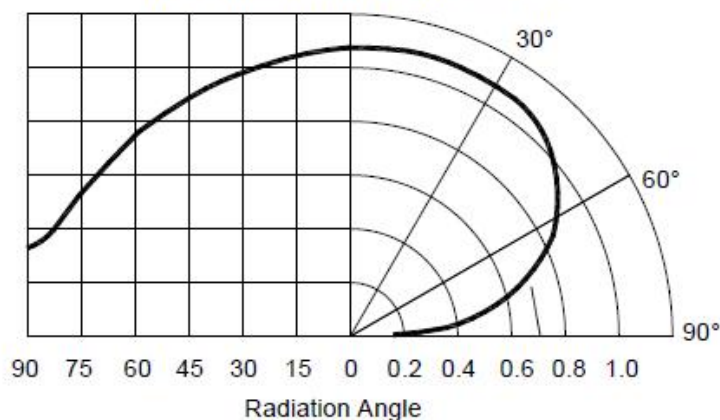
### Thermal Pad Temperature vs. Relative Light Output



### Wavelength Characteristics



### Typical Radiation Pattern 160°



## ■ Precautions

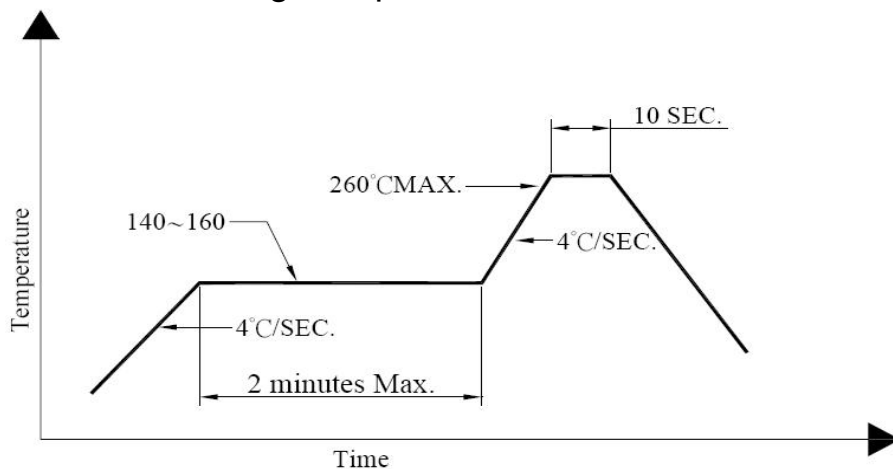
### 1. Storage

- Recommend storage environment  
Temperature:  $5^{\circ}\text{C} \sim 30^{\circ}\text{C}$  ( $41^{\circ}\text{F} \sim 86^{\circ}\text{F}$ ) Relative Humidity: 60% RH Max.
- Product in the original sealed package is recommended to be assembled within 168 hours of opening.
- If the moisture absorbent material (silica gel) has faded away or the LEDs have exceeded the storage time, baking treatment should be performed using the following conditions.
  - a. Baking treatment:  $60 \pm 5^{\circ}\text{C}$  for 24 hours.
  - b. Fold the opened bag firmly and keep in dry environment.

### 2. Cleaning

- Surface condition of this device may change when organic solvents such as trichloroethylene or acetone were applied.
- Avoid using organic solvent.
- Recommend ultrasonic method 300W Max.

## ■ SMT Reflow Soldering Temp/Time



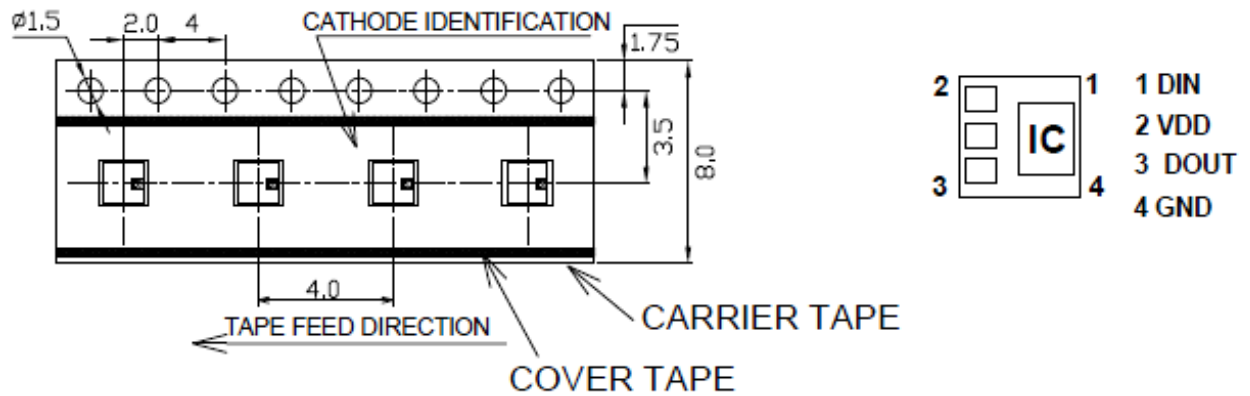
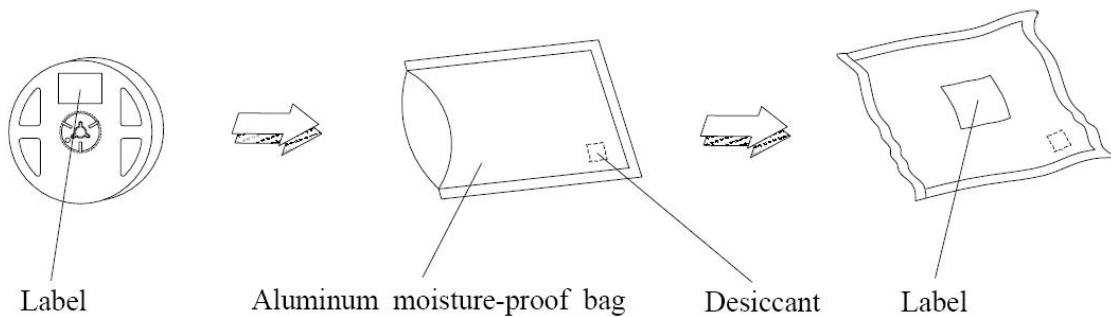
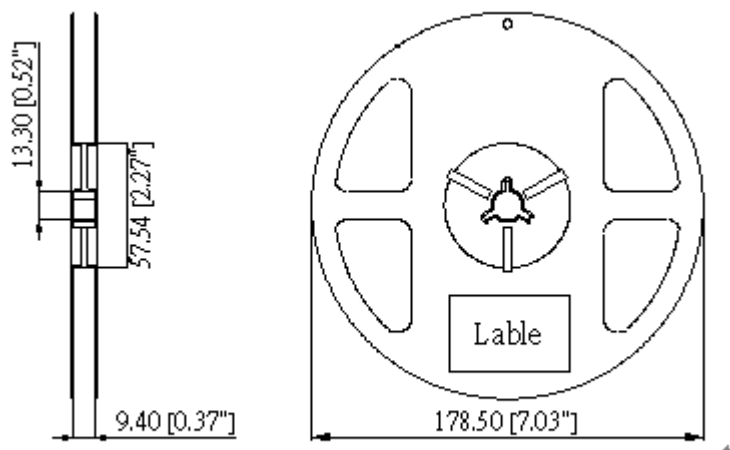
## ■ Reflow soldering

- Recommend use of upper and lower heater type reflow furnace.
- $260^{\circ}\text{C}$  Max for up to 10 seconds, one time only.
- Pre-heat is  $150^{\circ}\text{C}$  Max for up to 2 minutes Max.
- In case of screen-printing, keep metal mask thickness between 0.2mm and 0.3mm.
- When soldering, do not put stress on the LEDs during heating.

## ■ Soldering iron

- When hand soldering, keep the temperature of iron below less  $300^{\circ}\text{C}$  less than 3 seconds.
- The hand solder should be done only one times.



**■ Carrier Tape Dimensions: Loaded quantity 4500 PCS per reel.****■ Moisture Resistant Packaging****■ Reel Dimensions****Notes:**

1. All dimensions are in mm, tolerance is  $\pm 2.0$  mm unless otherwise noted.
2. Specifications are subject to change without notice.