Features

- PLCC-4 Package.
- Extremely wide viewing angle.
- Suitable for all SMT assembly and solder process.
- Available on tape and reel.
- Moisture sensitivity level: Level 4.
- Package:1000pcs/reel.
- RoHS compliant.

ATTENTION

OBSERVE PRECAUTIONS
FOR HANDLING
ELECTROSTATIC
DISCHARGE
SENSITIVE
DEVICES

Description

The RGBIC source color devices are made with AlGaInP/InGaN/InGaN/IC on Substrate Light Emitting Diode

After the product life cycle for recycling

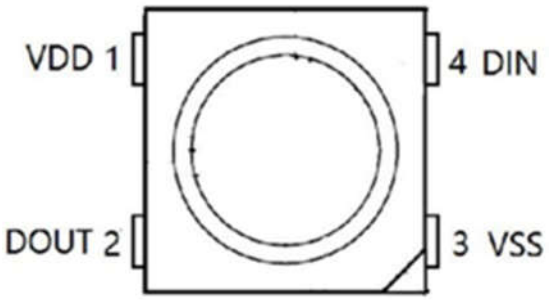
Applications

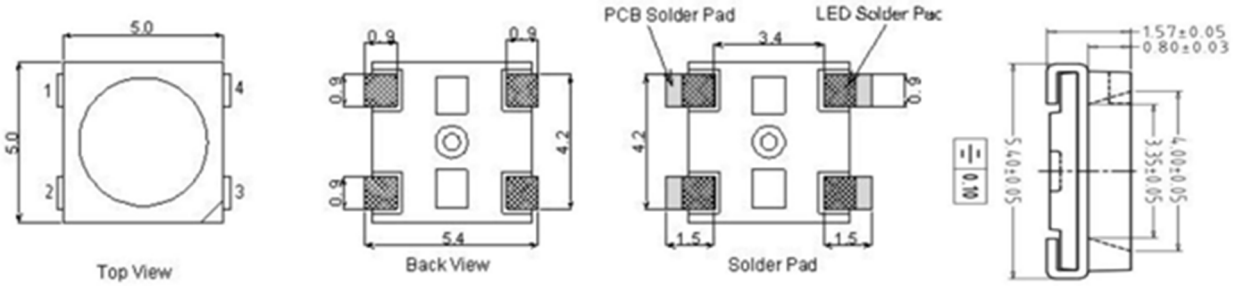
■ Optical indicator

■ General use

Package Dimensions

Recommended Soldering Pattern





Notes:

1. All dimension units are millimeters.

2.All dimension tolerance is ±0.15mm unless otherwise noted.

Selection Guide

Tolerance Grade	Dimension Tolerance (Unit:mm)			
	0.5~3	3~6	6~30	30~120
	±0.1	±0.2	±0.3	±0.5
Chip			Lens Color	
Material	Emitting Color		Water clear	
AlGaInP/InGaN/ InGaN	RGB			

Absolute Maximum Rating

Item	Symbol	Value	Unit
Input Voltage	VDD	+3.7~+5.5	V
Logic Input Voltage	VI	-0.5~VDD+0.5	V
Electrostatic discharge	ESD	2000	V
Operation Temperature	Topr	-25∽+80	℃
Storage Temperature	Tstg	-30∽+85	℃
Lead Soldering Temperature*	Tsol	Max. 260℃ for 5sec Max.	

Pin function description

Pin #	Symbol	Pin Name	Description
1	VDD	Power supply	Power Supply Pin
2	DOUT	Data Output	Control Data Signal Output
3	VSS	GND	Ground for signal & power
4	DIN	Data	Control Data Signal Input

Typical Optical/ Electrical Characteristics Ta=25℃

Color	IC6812 12mA	
	nm	mcd
Red	620-625	320-580
Green	525-535	580- 1050
Blue	465-475	160-320

Notes:

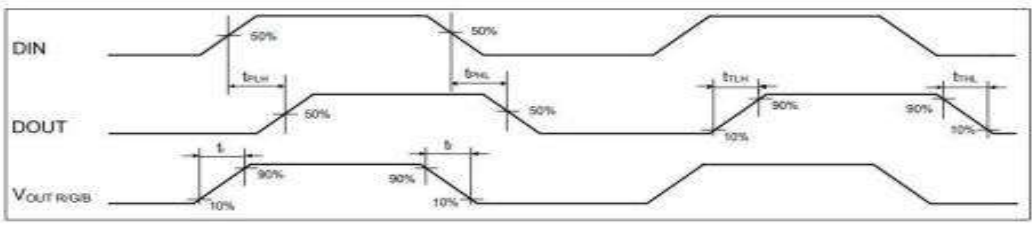
Tolerance ： VF±0.1V，λd±2 nm，IV(φV) ±15%，2θ 1/2±15%，X/Y±0.005.

IC electrical parameters (TA=-20~+70℃ ， VDD=4.5~5.5V,VSS=0V)

Parameter	Symbol	Min.	Typ.	Max.	Units	Test Condition
Chip internal volatge	VDD	---	5.2	---	V	---
Signal Input Flip Threshold	VIH	0.7*VDD	---	---	V	+VDD=5.0V
	VIL	---	---	0.3*VDD	V	
PWM Frequency	FPWM	---	4	---	KHZ	---
Static Power Consuption	IDD	---	0.25	---	mA	---

Switching characteristic (VCC=5V Ta=25℃)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Condition Data
Transfer Speed	f_{DIN}	---	800	---	KHZ	Duty cycle 67% (data 1)
DOUT Transmission Delay	TPLH	---	67	---	ns	The ground load capacitance of the dout port is 30pf, and the signal trans mission delay from DIN to dout
	TPHL	---	82	---	ns	
Output R/B Conversion Time	Tr	---	22	---	ns	IOUT R/B = 5mA, R/B Connect the port to a 200 Ω resistor VDD series, load capacitance to ground
	Tf	---	75	---	ns	
Output G Conversion Time	Tr	---	18	---	ns	IOUT g = 5mA, the g port is connected to a 200Ω resistor VDD series, and the load capacitance is 30pf
	T_f	---	110	---	ns	



Data transmission time

Schedule Name		Min.	Typ.	Max.	Unit
T	Symbol Period	1.20	--	--	μs
T0H	0 code,high level time	0.2	0.3	0.4	μs
T0L	0 code,low level time	0.8	--	--	μs
T1H	1 code,high level time	0.68	0.75	1.0	μs
T1L	1 code,low level time	0.2	--	--	μs
Reset	Reset code,low level time	200	--	--	μs

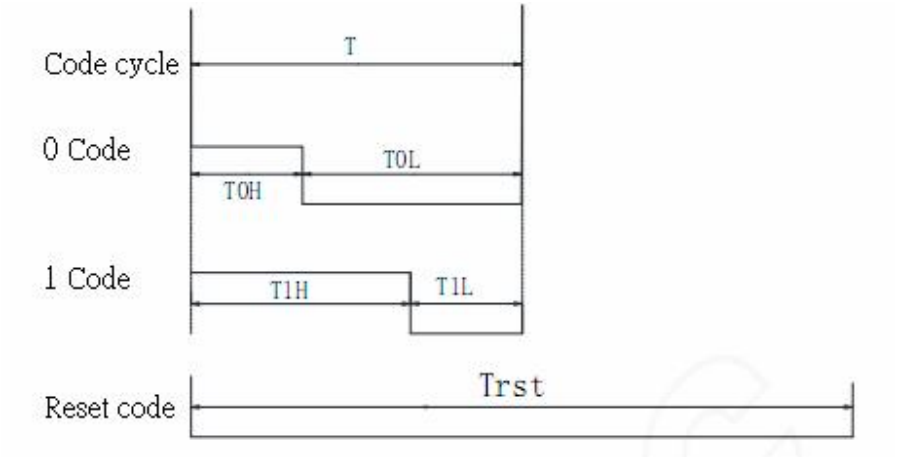
1. The protocol uses unipolar return-to-zero code, and each code element must have a low level. Each code element of this protocol starts with a high level, and the high level time width determines the "0" code or the "1" code.

2. When writing the program, the minimum symbol period requirement is 1.2μs

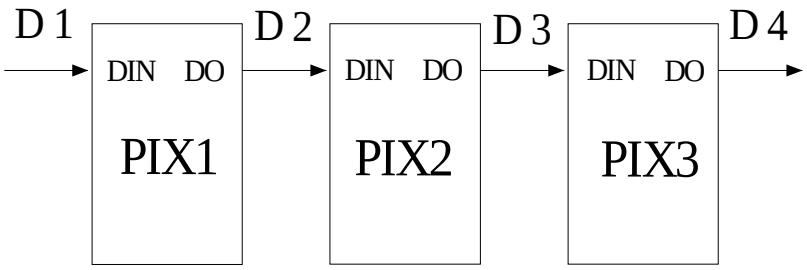
3. The high-level time of "0" code and "1" code must be in accordance with the specified range in the above table, and the low-level time of "0" code and "1" code must be less than 20μs.

Temporal waveform diagram

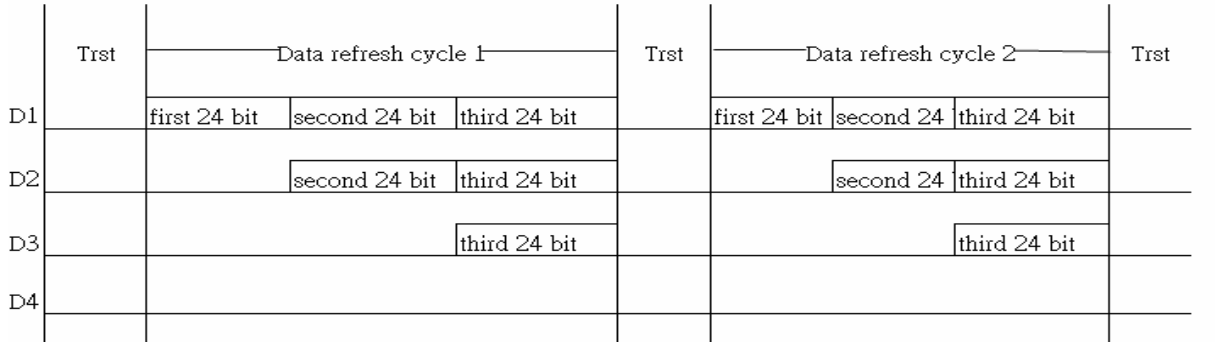
Input Code



Cascade method



Data Transmission Mode



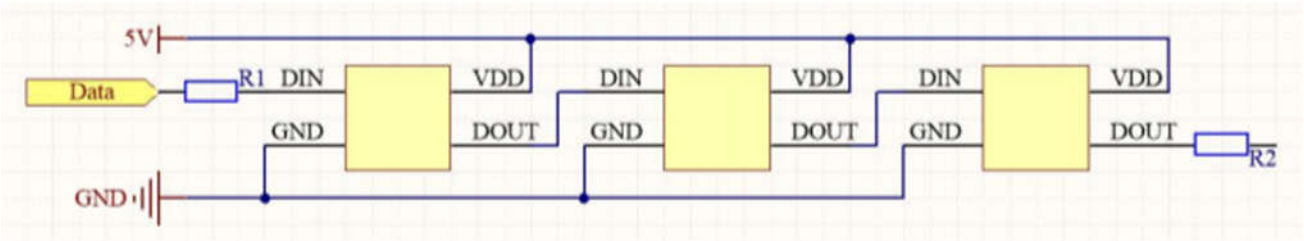
Note: D1 is the data sent by the MCU, and D2, D3, and D4 are the data automatically shaped and forwarded by the cascade circuit.

24bit data structure/24bit

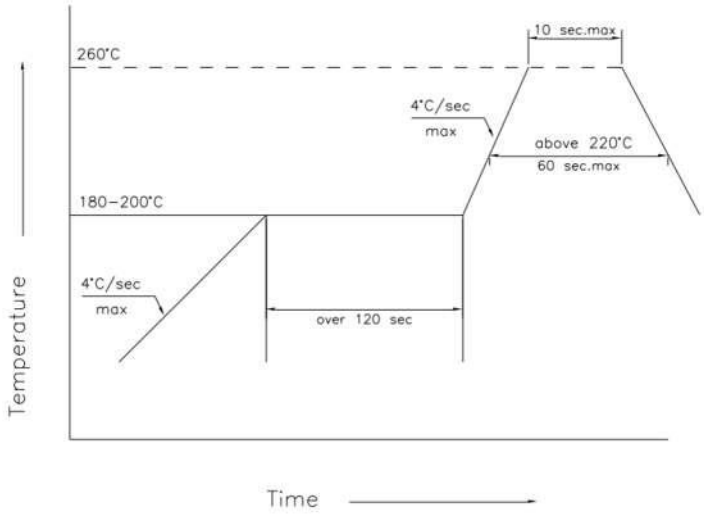
G7	G6	G5	G4	G3	G2	G1	G0	R7	R6	R5	R4
R3	R2	R1	R0	B7	B6	B5	B4	B3	B2	B1	B0

Note: The high bit is sent first, and data is sent in the order of GRB (G7 → G6 → B0

Typical application circuit



SMT Reflow Soldering Instructions SMT



1.Reflow soldering should not be done more than three times.

2.When soldering , do not put stress on the LEDs during heating

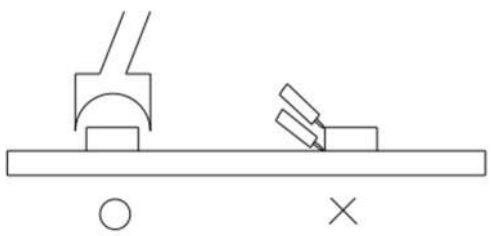
Soldering iron

1.When hand soldering, keep the temperature of iron below less 350℃ less than 5 seconds

2.The hand solder should be done only one times

Repairing

Repair should not be done after the LEDs have been soldered. When repairing is unavoidable, a double-head soldering iron should be used (as below figure). It should be confirmed in advance whether the characteristics of LEDs will or will not be damaged by repairing.



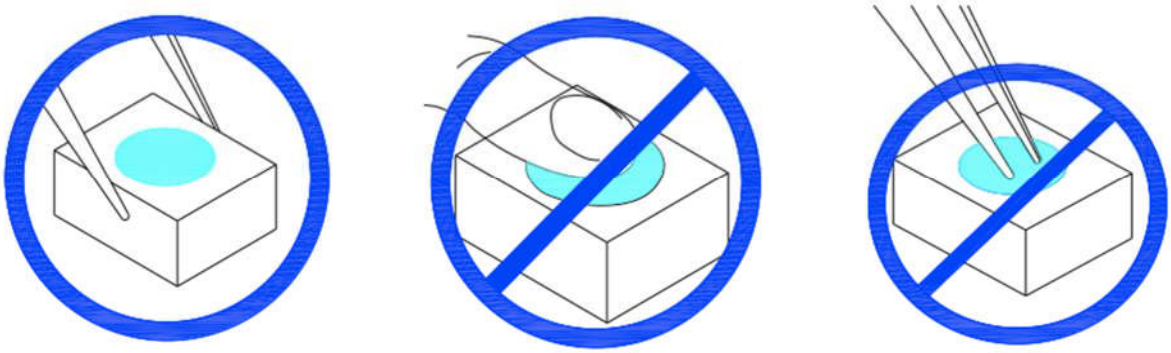
Cautions

The encapsulated material of the LEDs is silicone. Therefore the LEDs have a soft surface on the top of package. The pressure to the top surface will be influence to the reliability of the LEDs. Precautions should be taken to avoid the strong pressure on the encapsulated part. So when use the picking up nozzle, the pressure on the silicone resin should be proper.

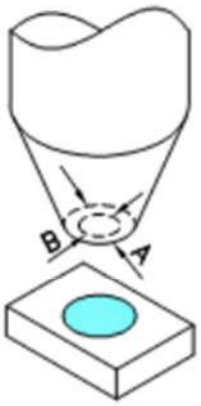
Handling Precautions

Compare to epoxy encapsulant that is hard and brittle, silicone is softer and flexible. Although its characteristic significantly reduces thermal stress, it is more prone to damage by external mechani cal force . As a result, Special handling precautions must be observed during assembling using sili cone encapsulated LED products, Failure to comply might leads to damage and premature failure of the LED.

1.Handle the component along the side surface by using forceps or appropriate tools; do not directly touch or Handle the silicone lens surface, it may damage the internal circuitry.

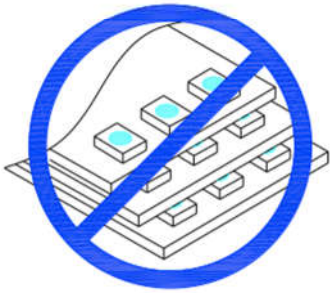


2.The outer diameter of the SMD pickup nozzle should not exceed the size of the LED to prevent air leaks. The inner diameter of the nozzle should be as large as possible. A pliable material is suggested for the nozzle tip to avoid scratching or damaging the LED surface during pickup. The dimensions of the component must be accurately programmed in the pick-and-place machine to insure precise pickup and avoid damage during production.



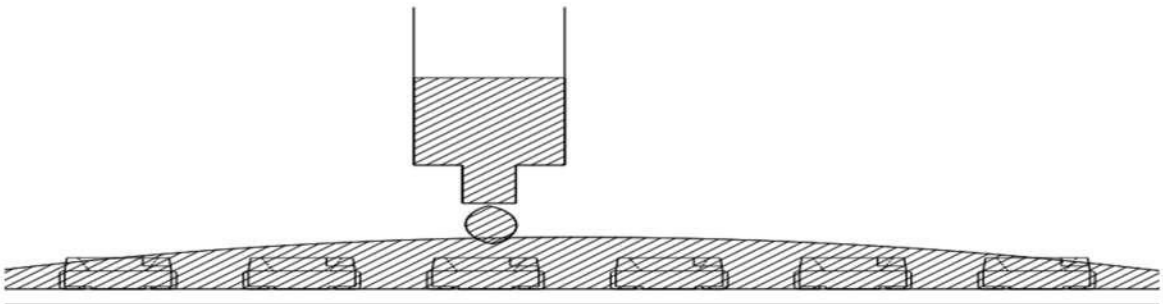
3.Do not stack together assembled PCBs containing LEDs. Impact may scratch the silicone lens or damage the internal circuitry

4.Not suitable to operate in ronment, PH<7



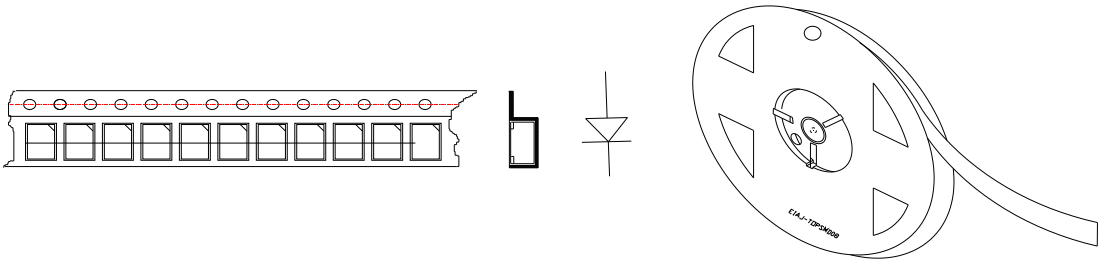
5.LED operating environment and sulfur element composition cannot be over 100PPM in the LED mating usage material.

6.When we need to use external glue for LED application products, please make sure that the exter nal glue matches the LED packaging glue. Additionally ,as most of LED packaging glue is silica gel, and it has strong Oxygen permeability as well as strong moisture permeability; in order to prevent ex ternal material from getting into the inside of LED, which may cause the malfunction of LED, the single content of Bromine element is required to be less than 900PPM,the single content of Chlorine element is required to be less than 900PPM,the total content of Bromine element and Chlorine element in the external glue of the application products is required to be less than 1500PPM

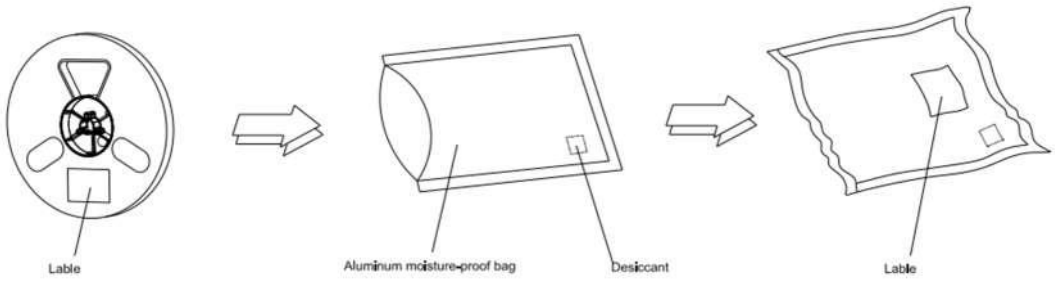


7.Other points for attention, please refer to our LED user manual，In accordance with the user manual, the product shelf life is 24 months，If there is a warranty agreement, the warranty agree ment shall prevail

Tape Specifications (Units : mm)



Moisture Resistant Packaging



Note: The tolerances unless mentioned is ±0.1mm， Unit: mm

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

American Bright LED:

AB-HL5050RGBIC41SA