

Features

- PLCC-2 Package.
- Extremely wide viewing angle.
- Suitable for all SMT assembly and solder process.
- Available on tape and reel.
- Moisture sensitivity level: Level 4.
- Package: 4500pcs/reel.
- RoHS compliant.

Description

The RGB+IC source color devices are made with AlGaInP/InGaN/InGaN/IC on Substrate Light Emitting Diode RGB LED: AlGaInP/InGaN/InGaN After the product life cycle for recycling

ATTENTION

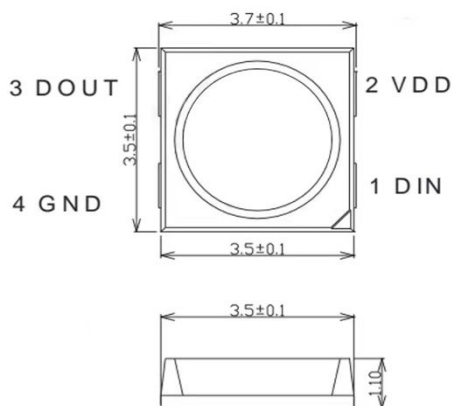
OBSERVE PRECAUTIONS
FOR HANDLING
ELECTROSTATIC
DISCHARGE
SENSITIVE
DEVICES

Applications

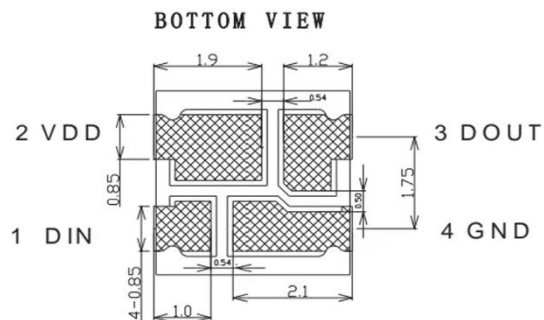
- Optical indicator
- General use



Recommended Soldering Pattern



Package Dimensions



Notes:

1. All dimension units are millimeters.
2. All dimension tolerance is ± 0.15 mm 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
Voltage	VI	-0.5~VDD+0.5	V
Electrostatic discharge	ESD	2000	V
Operation Temperature	Topr	-25~+80	°C
Storage Temperature	Tstg	-30~+85	°C
Lead Soldering Temperature	Tsol	Max. 260°C for 5sec Max.	

Pin Function Description

Pin #	Symbol	Name	Description
1	DIN	Data Input	Control data input signal
2	VDD	Power Supply	Power Supply Pin
3	DOUT	Data Output	Control data signal output
4	GND	Ground Signal	Signal ground and power ground

Typical Optical/ Electrical Characteristics (Ta=25C)

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

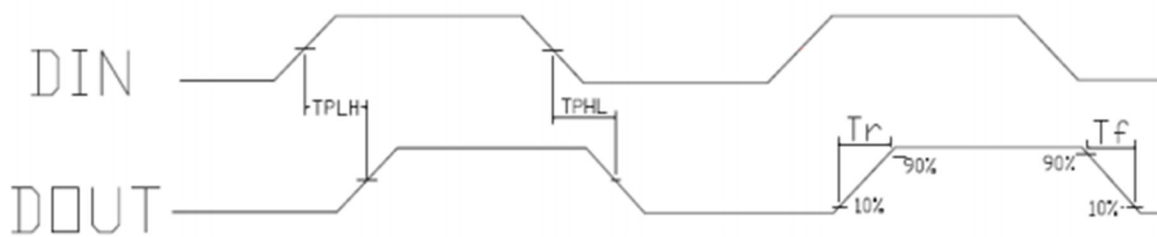
Notes: Tolerance : VF±0.1V, λd±2 nm, IV(φV) ±15%, 2θ 1/2±15%, X/Y±0.005.

IC Electrical Parameters IC (TA=-20~+70°C , VDD=4.5~5.5V,VSS=0V)

Parameter	Symbol	Min.	Typ.	Max.	Unit
Input Voltage	VDD	3.0	5.0	7.5	V
RGB Output Voltage	Vds	8.5	9.0	9.5	V
RGB Output drive current	IO	9.6	12	14.4	mA
High Level input voltage	VIH	0.7VDD	0.9VDD	VDD	V
Low Level input voltage	VIL	0	0.1VDD	0.3VDD	V
DOUT High current	IDOH	--	15	--	mA
DOUT Low current	IDOL	--	30	--	mA
PWM Frequency	FPWM	--	4	--	KHZ
Static power consumption	IDD	--	0.65	--	mA

Switching characteristic (VCC=5V Ta=25°C)

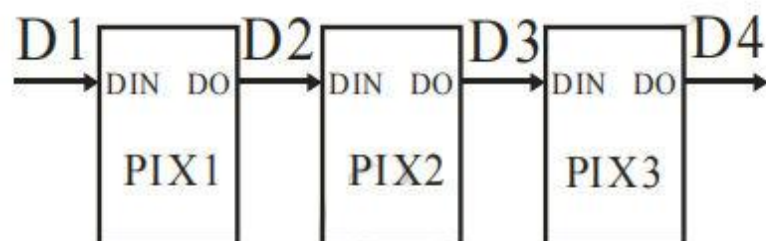
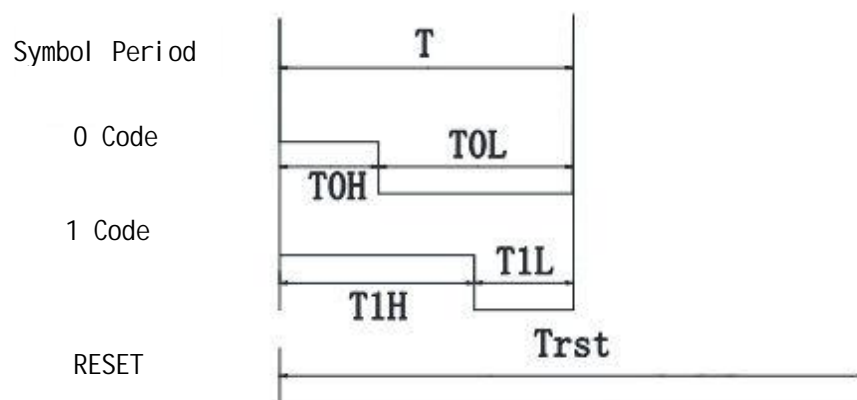
Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Condition
Data Transfer	DIN		800	—	KHZ	Duty Cycle 67%(1)
DOUT Transmission Delay	TPLH	—	—	200	ns	DIN→DOUT
Output current Conversion Time	Tr	—	—	400	ns	VDS=1.5V IOUT=12mA
	Tf	—	—	400	ns	


Data transmission time

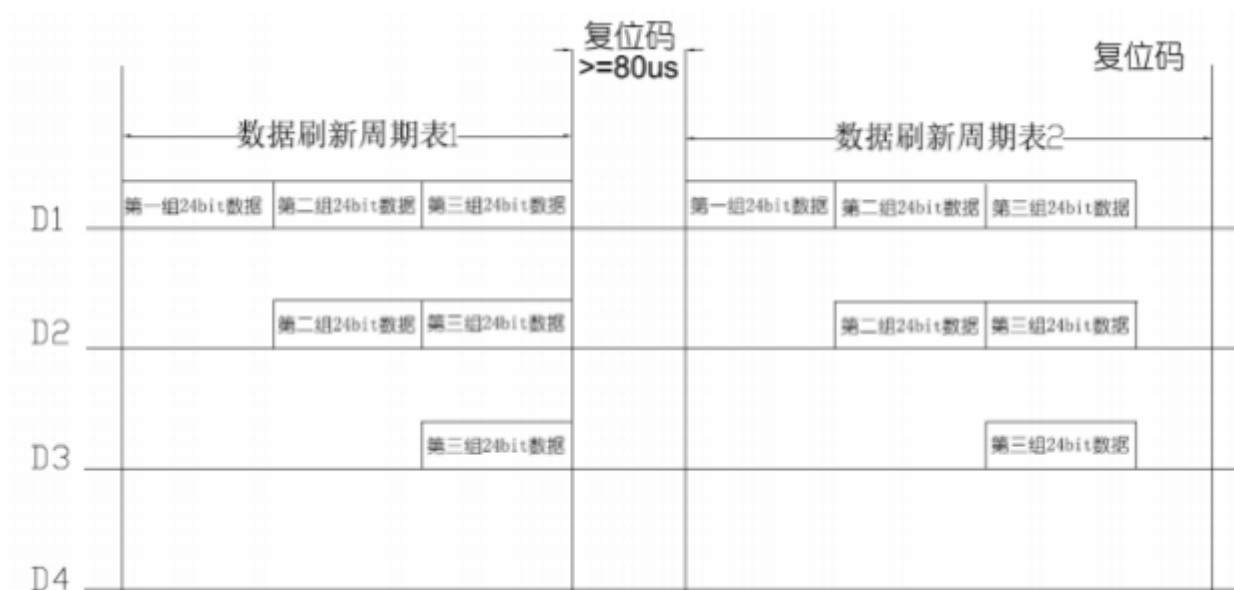
Name		Min.	Typ.	Max.	Unit
T	Symbol Period	1.20	—	—	μs
T0H	0 code, High level time	0.2	0.3	0.4	μs
T0L	0 code, Low level time	0.6	—	—	μs
T1H	1 code, High level time	0.58	0.65	1.0	μs
T1L	1 code, Low level time	0.2	—	—	μs
Reset	Reset code	≥80	—	—	μs

- 1.The protocol uses unipolar return to zero code. each code element must have a low level
Each code element of this protocol starts with a high level. The high level time width determines the "0" code or "1" code.
- 2.The minimum requirement for the symbol period is 1.2μs.
- 3.The high level time of "0" code and "1" code must be within the specified range of the above table, and the low level time of "0" code and "1" code must be less than 20μs.

Temporal Waveform Diagram



Data Transmission Mode

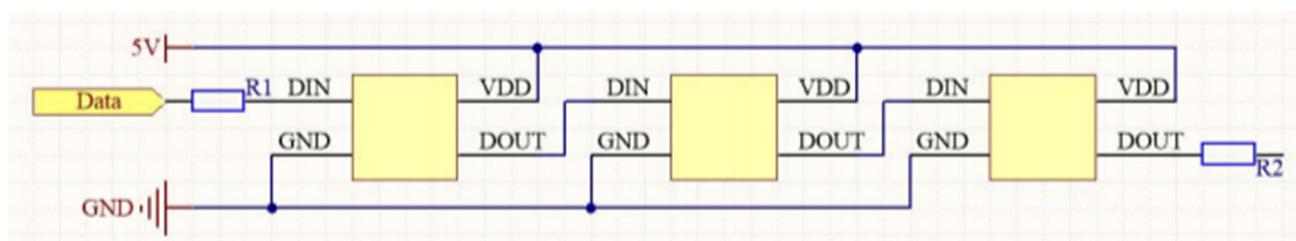


24-bit Data Structure

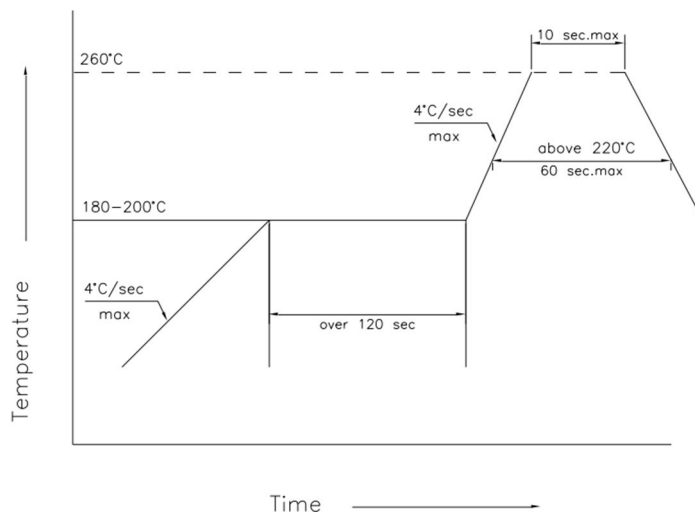
G7	G6	G5	G4	G3	G2	G1	G0	R7	R6	R5	R4
R3	R2	R1	R0	B7	B6	B5	B4	B3	B2	B1	B0

Note: The high bit is sent first, and the data is sent in the order of GRB (G7 G6B0)

Typical Application Circuit



SMT Reflow Soldering Instructions SMT



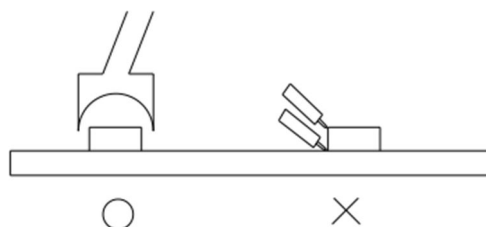
- 1.Reflow soldering should not be done more than three times.
- 2.When soldering , do not put stress on the LEDs during heating

Soldering Iron

1. When hand soldering, keep the temperature of iron below less 350C 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.



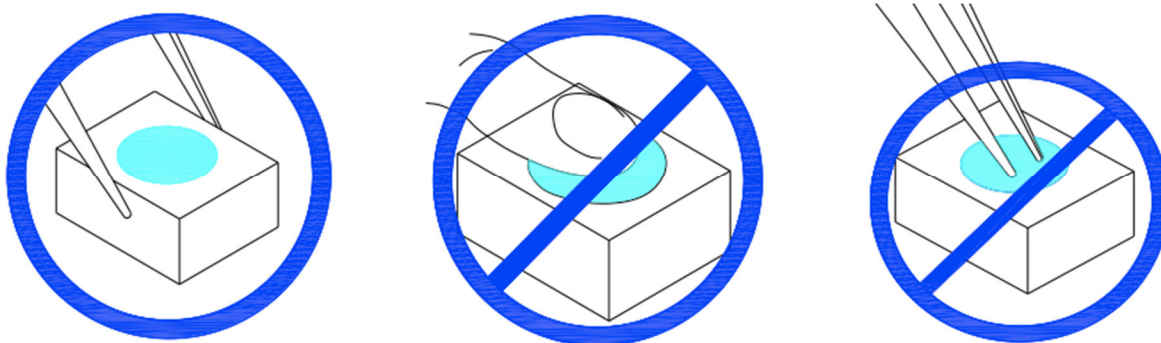
Cautions

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.

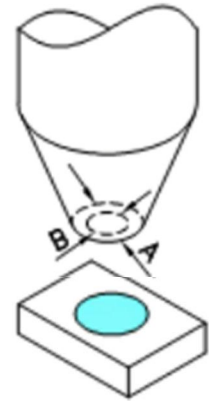
Handling Precautions

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 mechanical force. As a result, Special handling precautions must be observed during assembling using silicone 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.

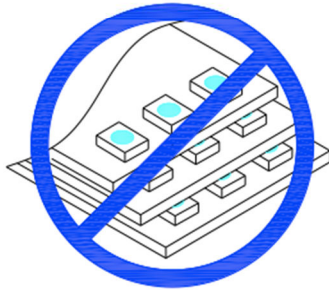


2.The outer diameter of the SMD pickup nozzle should not exceed the size of the LED to prevent air leaks. The inner diameter of the nozzle should be as large as possible. A pliable material is suggested for the nozzle tip to avoid scratching or damaging the LED surface during pickup. The dimensions of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



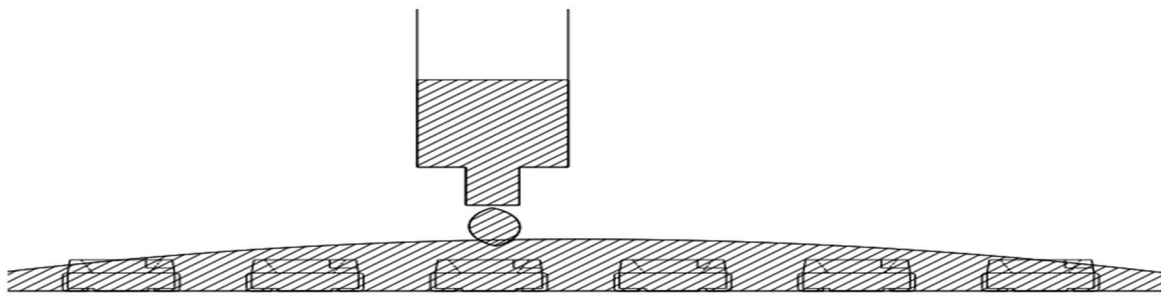
3.Do not stack together assembled PCBs containing LEDs. Impact may scratch the silicone lens or damage the internal circuitry

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



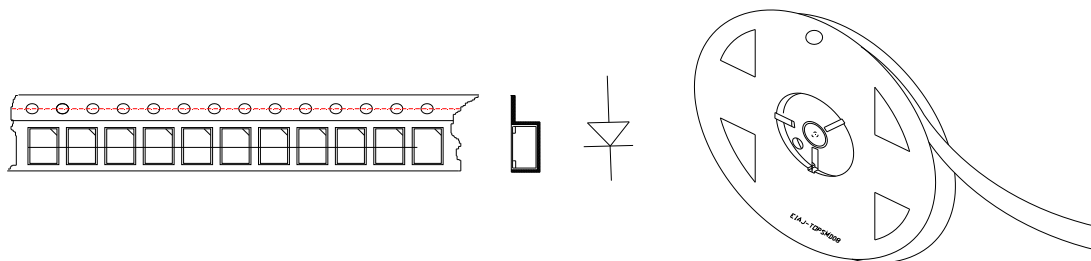
5.LED operating environment and sulfur element composition cannot be over 100PPM in the LED mating usage material.

6.When we need to use external glue for LED application products, please make sure that the external 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 external 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

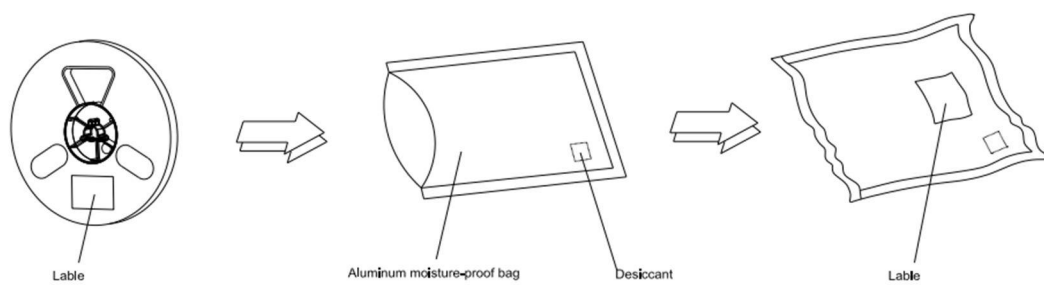


7.Other points for attention, please refer to our LED user manual , In accordance with the user manual, the product shelf life is 24 monthsIf there is a warranty agreement, the warranty agreement shall prevail

Tape Specifications (Units:mm)



Moisture Resistant Packaging



Note: The tolerances unless mentioned is $\pm 0.1\text{mm}$, Unit: mm

Mouser Electronics

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[AB-HL3535C-016](#)