

Data Sheet

Customer: _____

Part No: _____ CL-SFC3535RGB-02 _____

Sample No: _____

Description: _____

Item No: _____

Customer			
Check	Inspection	Approval	Date



CL-SFC3535RGB-02

Product description

This product uses the PLCC-6 package, it has an IPX6 grade of waterproof with a wide viewing angle, light type consistency, high reliability. it also be widely application for automobile dashboard, full-Color video screen, decorative lighting and other electronic devices.

Features

- Size(mm):3.5x3.5x2.8
- Surface not reflective
- High luminous Intensity, Low power dissipation, Good reliability and Long life
- Water-resistant (IPX6)
- Moisture sensitivity level: 5a
- Pb-free reflow soldering application
- RoHS compliant
- Matte surface

Applications

- Outdoor full-color video screen
- The automobile dashboard
- Indoor and outdoor decorative lighting
- Amusement

Absolute Maximum Ratings (Ts = 25°C)

Parameter	Symbol	Absolute Maximum Rating			Unit
		R	G	B	
Forward Current	I _F	25	25	25	mA
Pulse Forward Current*	I _{FP}	80	80	80	mA
Reverse Voltage	V _R	5	5	5	V
Operating Temperature	T _{OPR}	-30 ~ +85			°C
Storage Temperature	T _{stg}	-40 ~ +100			°C
Power Dissipation	P _D	60	85	85	mW
Electrostatic Discharge (HBM)	ESD	1000V			

*Note: Pulse width ≤ 0.1msec, duty ≤ 1/10.

Typical I Electrical & Optical Characteristics (Ts = 25°C)

Parameter	Symbol	Condition	Value			Unit
			R	G	B	
Reverse Current(max.)	I _R	V _R = 5V	6	6	6	μA
Forward Voltage	V _F (min)	R I _F = 20mA G I _F = 20mA B I _F = 20mA	1.8	2.7	2.7	V
	V _F (max)		2.4	3.4	3.4	V
Dominant Wavelength	λ _D		618~ 628	518~528	464~474	nm
Radiation Spectrum Bandwidth	Δ λ		24	38	30	nm
Luminous Intensity	I _{V(min)}		520	1200	280	mcd
	I _{V(avg)}		680	1500	380	mcd
50% Power Angle	2θ _½		110			deg

Tolerance of measurement of luminous intensity : ±10%.

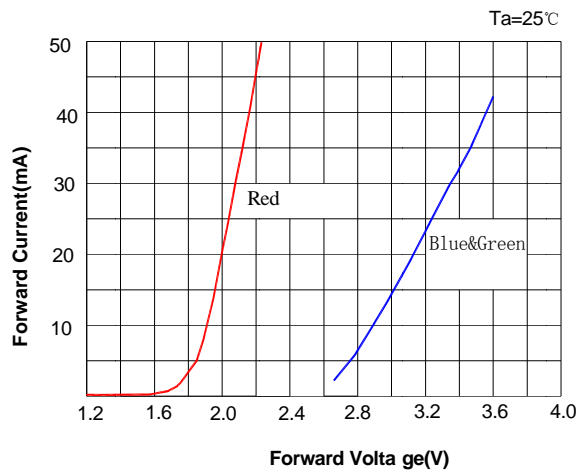
Tolerance of measurement of dominant wavelength: ±1nm.

Tolerance of measurement of forward voltage±0.05V.

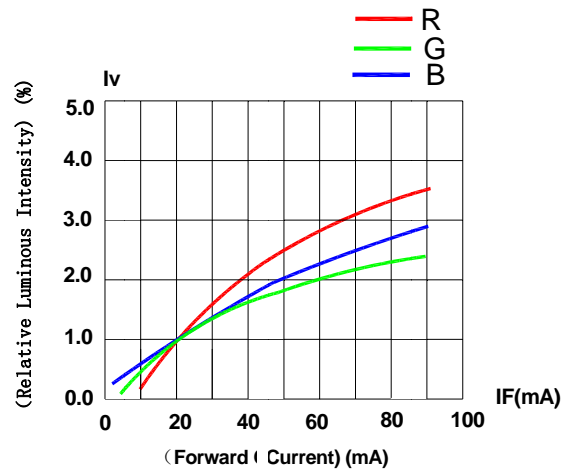
All the datas are just for reference, specific parameters please refer to the label.

Typical Characteristics Curves

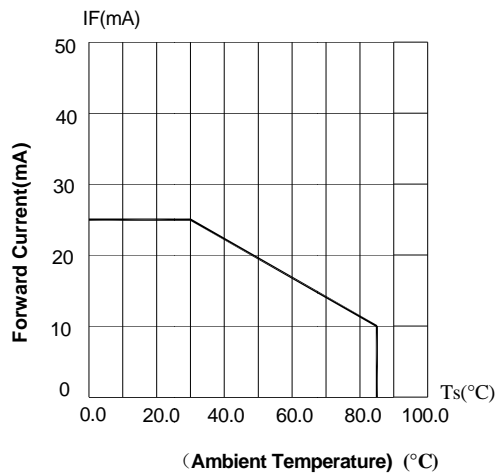
Volt Ampere Characteristics



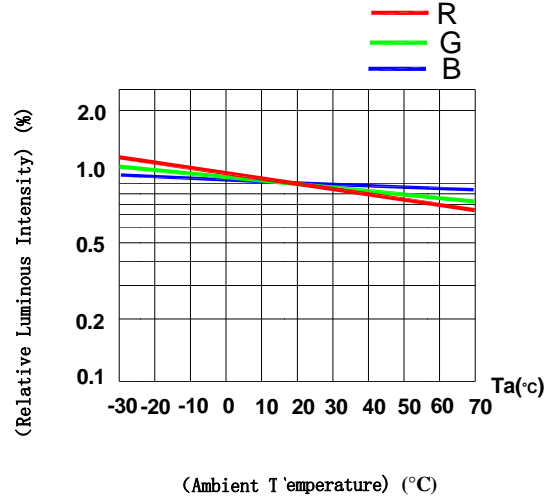
Relative Luminous Intensity VS Forward Current



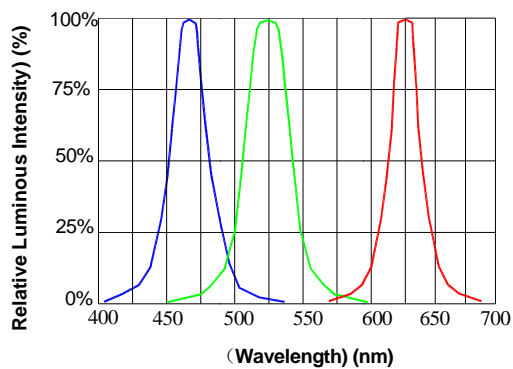
Forward Current Derating Curve



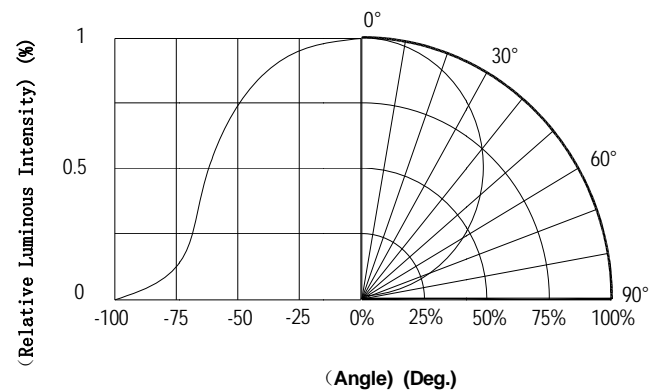
Luminous Intensity VS Ambient Temperature



Relative Spatial Distribution



Typical Spatial Distribution



Reliability Test Items Conditions

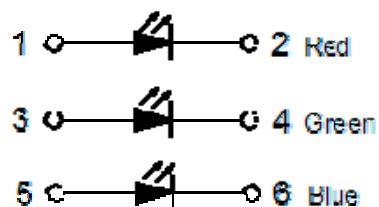
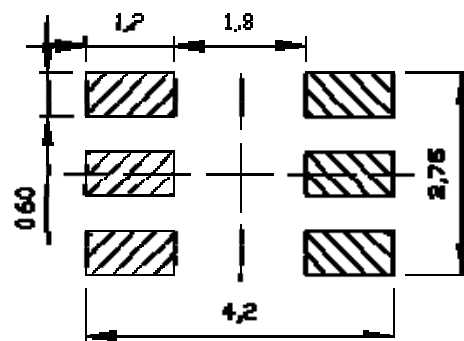
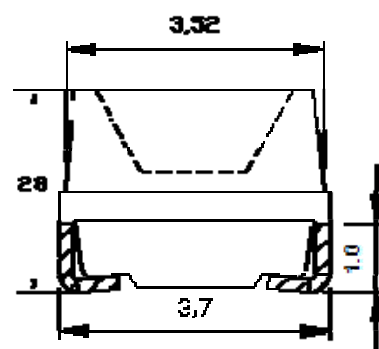
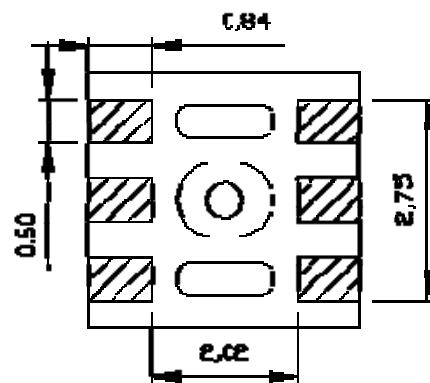
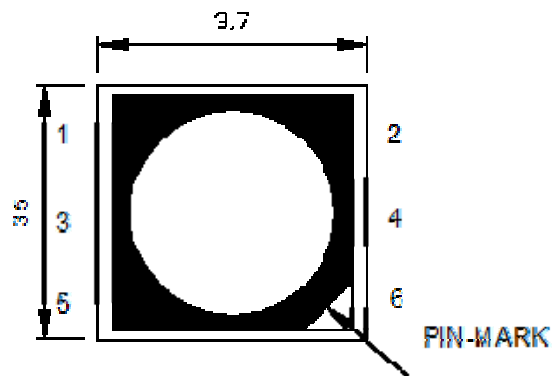
Test Items	reference Criterion	Test Conditions	Time	Quantity	Criterion
High Temperature Storage	JEITA ED-4701 200 201	Ta=100°C	1000H	22	0/22
Low Temperature Storage	JEITA ED-4701 200 202	Ta=-40°C	1000H	22	0/22
Room Temperature Operating Life	JESD22-A108	Ta=25°C, IF=20mA	1000H	22	0/22
High Temperature High Humidity Life Test	JESD22-A101	Ta=85°C, RH=85% IF=15mA	500H	22	0/22
Thermal Shock	JEITA ED-4701 300 307	40°C(15min)←→100°C(15min)	500 cycles	22	0/22
Low Temperature Life Test	JESD22-A108D	Ta=-40°C, IF=20mA	1000H	22	0/22
High Temperature High Humidity Storage	JEITA ED-4701 100 103	Ta=85°C, RH=85%	1000H	22	0/22
Resistance to Soldering Heat	JESD22-B106	Tsld=260°C, 10sec	3 times	22	0/22

Criteria for Judging Damage

Test Items	Symbol	Test Conditions	Criteria for Judgment
Forward Voltage	V _F	IF =20mA	Initial Data ± 10%
Reverse Current	I _R	VR=5V	IR≤10μA
Luminous Intensity	I _V	IF=20mA	Average Iv degradation rate≤30%
Resistance to Soldering Heat			No internal cracks, no material between stripped, no dead light

Note:

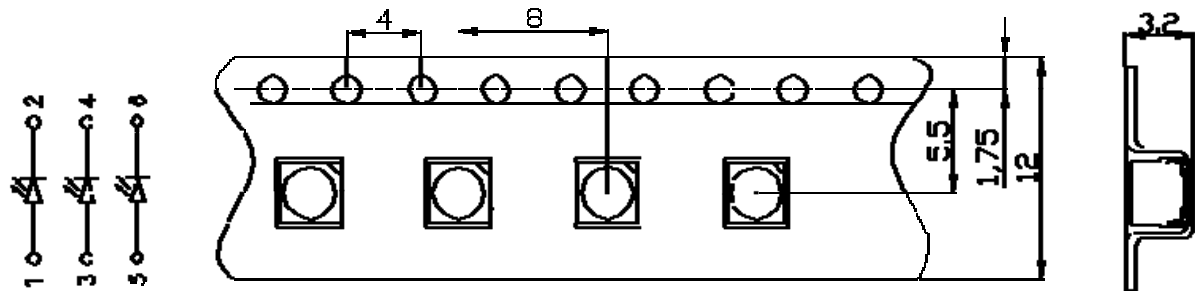
- The technical information shown in the data sheets are limited to the typical characteristics and circuit examples of the referenced products. It does not constitute the warranting of industrial property nor the granting of any license.



Note: All dimensions in mm ,tolerance is $\pm 0.1\text{mm}$ unless otherwise noted.

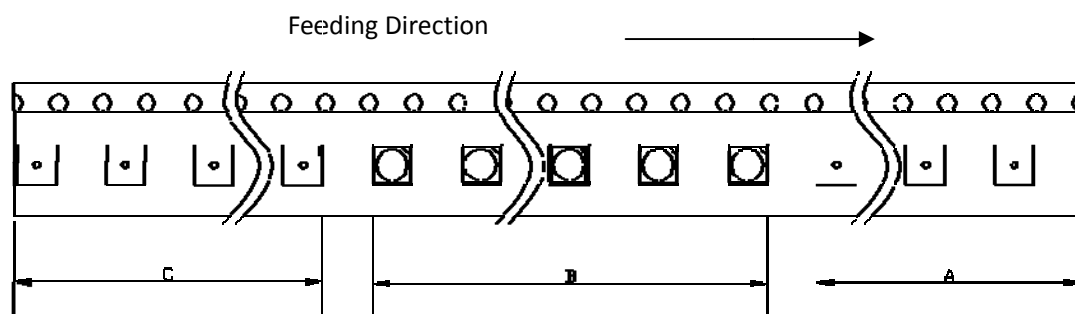
Packaging

Carrier Tape

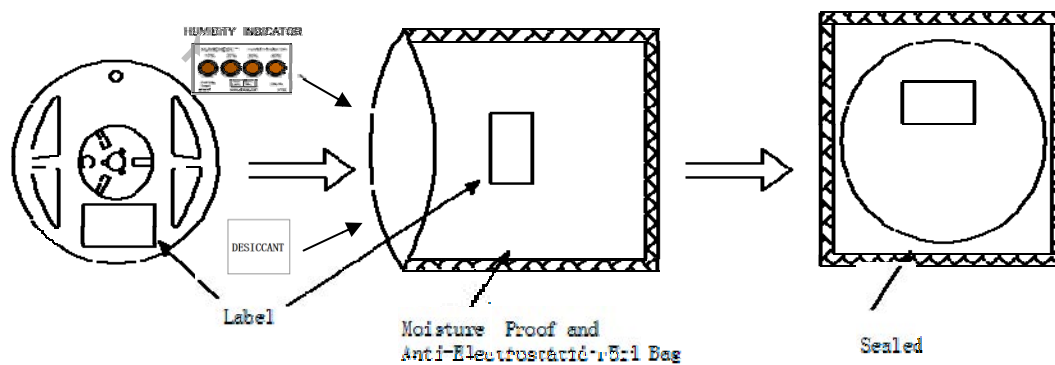


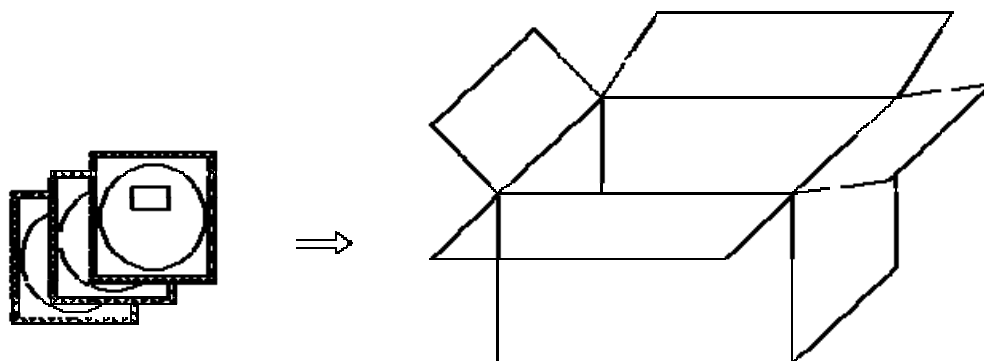
Note: All dimensions in mm, tolerances unless mentioned is ± 0.1 mm.

Details Of Carrier Tape



A:Leader, Empty, 200mm; B:3000 Lamps Loaded; C:Trailer, Empty,200mm



Cardboard Box

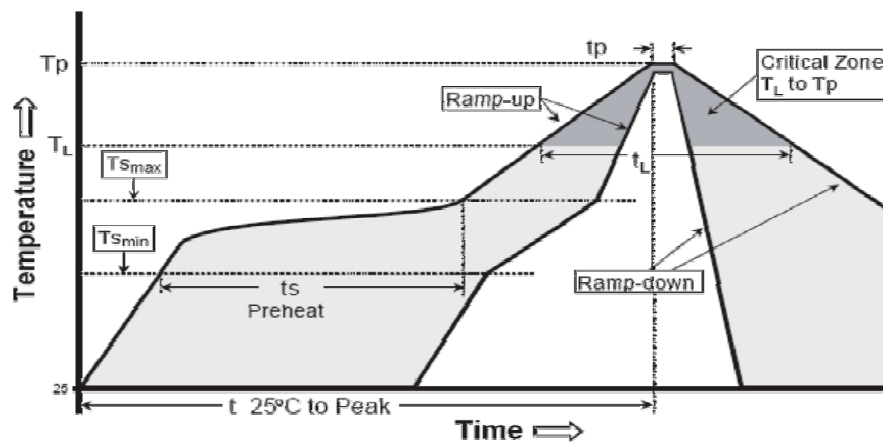
Note: The boxes are not water resistant and they must be kept away from water and moisture.

Guideline for Soldering

1. Hand Soldering

A soldering iron with Constant temperature of less than 20W is recommended to be used in Hand Soldering .Please keep the temperature of the soldering iron under 300°C while soldering. Each terminal of the LED is to go for less than 3 second and for one time only Be careful because the damage of the product is often started at the time of the hand soldering.

2. **Reflow Soldering:** Use the conditions shown in the under Figure of Pb-Free Reflow Soldering.



Average ramp-up rate = 4°C/s max

Preheat temperature = 150°C -200°C

Preheat time = 120s max

Ramp-down rate = 6°C/s max

Peak temperature = 260°C max

Soldering time = 10s max

Dwell time above 17°C is 60s max

Reflow soldering should not be done more than one times.

It is recommended that use the middle temperature solder paste.

Stress on the LEDS should be avoided during heating in soldering process.

After soldering ,do not deal with the product before its temperature drop down to room temperature.

3. Cleaning

Try to use "no clean solder paste type", so, after reflow need not cleaning. If you need to clean the PCB, after the completion of welding recommended the use of isopropyl alcohol (IPA) cleaning. When using other solvents, it should be confirmed beforehand the solvents do not damage the LED.

Do not use ultrasonic cleaning.

1. Using Guide

Moisture proof and anti-electrostatic package with moisture absorbent material is used, Packaged products have one year to save time.

Before opening the package, the product should be kept at 30°C or less and humidity less than 60%RH.

Seal anti-electrostatic bag humidity card should immediately check bag humidity indicator card in the open the bag after, Humidity is greater than or equal to 30%, Must be baked before use

After opening the package, the product should be soldered within 24 hours. If not, please store at 30°C or less and humidity less than 10%RH. It is recommended that the product be operated at the workshop condition of 30°C or less and humidity less than 60%RH.

If the moisture absorbent material has fade away or the LEDs have exceeded the storage time, baking treatment should be performed based on the following condition : 65±5°C for 24 hours.

2. Static Electricity

The following procedures may decrease the possibility of ESD damage.

Minimize friction between the product and surroundings to avoid static buildup.

All production machinery and test instruments must be electrically grounded.

Operators must wear anti-static bracelets.

Wear anti-static suit when entering work areas with conductive machinery.

All workstations that handle IC and ESD-sensitive components must maintain an electrostatic potential of 150V or less.

3. Reverse voltage protection

In generally the reverse current of LED is very small, it can't effect using the component normally, but when it often suffered the reverse voltage which exceed the limits of the component than it will be damaged, the reverse current increases rapidly causing the string light display gray scale so when designing, please pay attention to control the reverse voltage we suggest the reverse voltage less than 10V.

4. The safe temperature for LEDs working

The high temperature will make the LED's Luminous Intensity deceased radically, if LEDs worked in hot environment for a long time, they will be disabled easily. When LEDs are working in a closed array, we suggest that the LED's surface temperature should be lower than 55°C and the leg's temperature should be lower than 75°C.

5. Others

Do not directly touch or handle the epoxy surface. It may damage the internal circuitry. Handle the component along the side surfaces by using forceps or appropriate tools.

Declare

This specification is written both in English and in Chinese and the latter is formal.

Both the customers and Refond will agree on official specifications of supplied products before a customer's volume production. The specification is valid only after be signed. And Refond reserves the right to further modify the specification for technical reference and sample without noticing the customers.