Data Sheet

Customer: _____

Part No: **CL-SP192RBG-02(H)**

Sample No: _____

Description: 1608 RBG 고휘도

Item No: _____

Customer			
Check	Inspection	Approval	Date

Features

_1.6mmX0.8mm SMT LED, 0.60mm THICKNESS.

_LOW POWER CONSUMPTION.

_WIDE VIEWING ANGLE.

_IDEAL FOR BACKLIGHT AND INDICATOR.

_VARIOUS COLORS AND LENS TYPES AVAILABLE.

_PACKAGE: 4000PCS / REEL.

_RoHS COMPLIANT.

Description

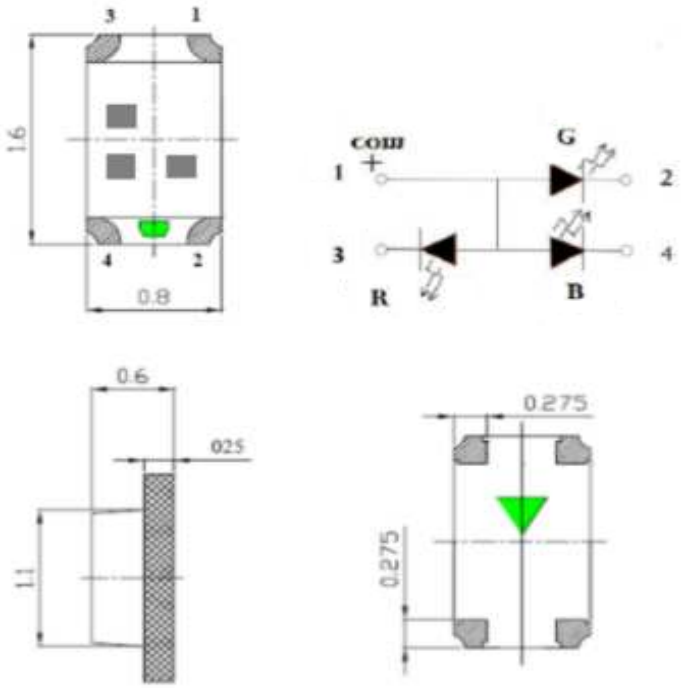
The Yellow source color devices are made with

Gallium

Arsenide Phosphide on Gallium Phosphide

Yellow Light

Package Dimensions



Notes:

1. All dimensions are in millimeters (inches).

2. Tolerance is ±0.1(0.004") unless otherwise noted.

3.Specifications are subject to change without notice.

Selection Guide

Part No.	Dice	Lens Type	Iv (mcd) @ 20mA		Viewing Angle
			Min.	Typ.	2 θ 1/2
CL-SP192RBG-02(H)	Brilliant Red(InGaAIP)	WATER CLEAR	300	400	120
	Brilliant Green(AlGaInP)	WATER CLEAR	500	600	120
	Brilliant Blue(AlGaInP)	WATER CLEAR	200	250	120

Note:

1. θ1/2 is the angle from optical centerline where the luminous intensity is 1/2 the optical centerline value.

Electrical / Optical Characteristics at T_A=25°C

Symbol	Parameter	Device	Min	Max.	Units	Test Conditions
λpeak	Peak Wavelength	Brilliant Red	615	630	nm	IF=20mA
		Brilliant Green	515	530		
		Brilliant Blue	460	475		
λD	Dominant Wavelength	Brilliant Red			nm	IF=20mA
		Brilliant Green				
		Brilliant Blue				
Δλ1/2	Spectral Line Half-width	Brilliant Red	29		nm	IF=20mA
		Brilliant Green	29			
		Brilliant Blue	29			
C	Capacitance	Brilliant Red	30		pF	VF=0V;f=1MHz
		Brilliant Green	30			
		Brilliant Blue	30			
VF	Forward Voltage	Brilliant Red	1.8	2.1	V	IF=20mA
		Brilliant Green	2.8	3.1		
		Brilliant Blue	2.8	3.1		
IR	Reverse Curren	Brilliant Red		2	uA	VR = 7V
		Brilliant Green		2		
		Brilliant Blue		2		

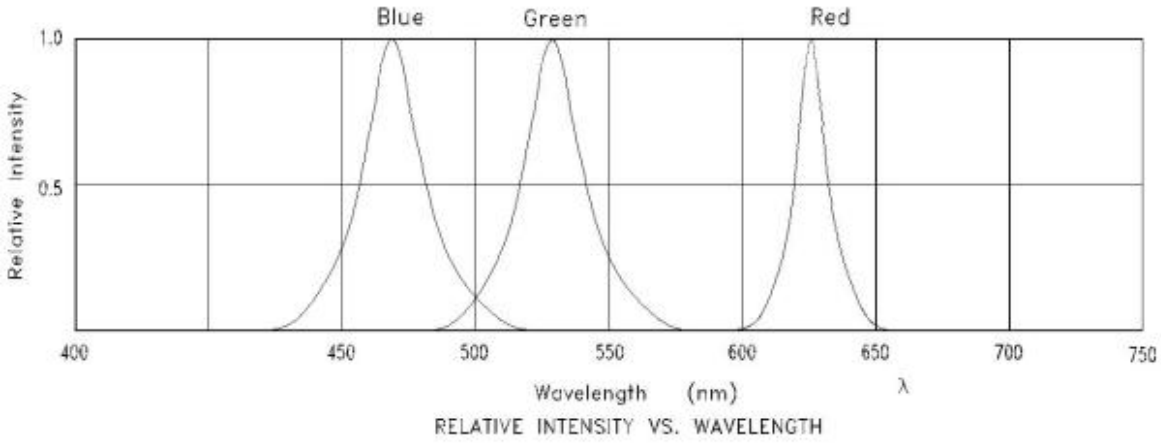
1. Wavelength: +/-1nm Luminous Intensity: +/-15% Forward Voltage: +/-0.1V

Note: Accuracy may depend on the sorting parameter

Absolute Maximum Ratings at T_A=25°C

Parameter	Brilliant Red	Brilliant Blue	Brilliant Green	Units
Power dissipation	75	135	100	mW
DC Forward Current	30	30	30	mA
Peak Forward Current [1]	100	100	100	mA
Reverse Voltage	5	5	5	V
Operating/Storage Temperature	-40°C To +85°C			

Note:1/10 Duty Cycle, 0.1ms Pulse Width.



RELATIVE INTENSITY VS. WAVELENGTH

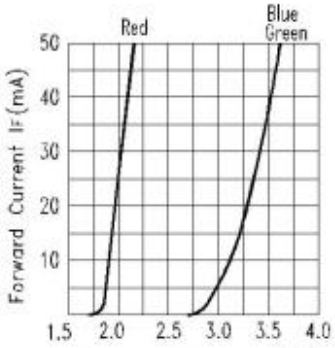


Fig.2 Forward Current vs. Forward Voltage

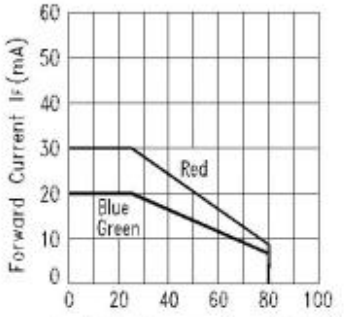


Fig.3 Forward Current Derating Curve

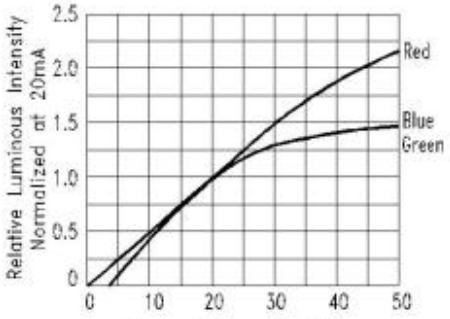


Fig.4 Relative Luminous Intensity vs. Forward Current

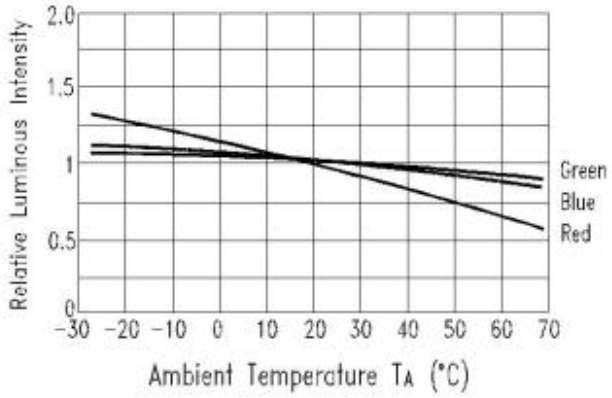


Fig.5 Luminous Intensity vs.Ambient Temperature

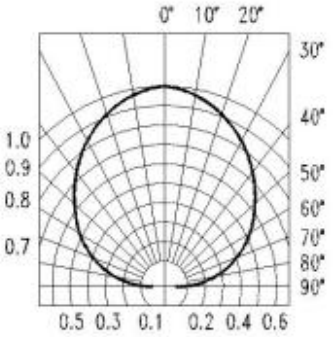


Fig.6 Spatial Distribution

RELIABILITY

(1) Test Items and Results

NO.	Test Item	Reference Standard	Test Conditions	(Hours/ Cycles)	Sample	Number of Damaged
1	Temperature Cycle	JEITA ED-4701	-40 °C - 25 °C - 100 °C - 25 °C 30min 5min 30min 5min	100 Cycles	20	0/20
2	Thermal shock	MIL-STD-202G	-40℃～100℃ 15min 15min	500 Cycles	20	0/20
3	High Temperature Storage	JEITA ED-4701 200 201	Ta=100℃	1000 Hours	20	0/20
4	Low Temperature Storage	JEITA ED-4701 200 201	Ta=-40℃	1000 Hours	20	0/20
5	Room Temperature Life Test		Ta=25±5℃ IF=20mA	1000 Hours	20	0/20
6	High Temperature High Humidity Life Test		Ta=60℃ RH=85% IF=20mA	1000 Hours	20	0/20
7	Solderability (Reflow Soldering)	JEITA ED-4701 300 303	Tsol=235℃±5℃, 5sec (Using Flux, Lead Solder)	1 time, 5sec	10	0/10
8	Resistance to Soldering Heat (Reflow Soldering)	JEITA ED-4701 300 301	Tsol=250℃, 10 sec Pre Treatment: 35 °C 95% RH96 Hrs	2 time, 10sec	10	0/10

The above test items such as differences or special customer specific requirements according to the actual situation in accordance with the requirements of customers to try the requirements with the customer, the customer is not required by our test standard test. Different products using different current test

5. Cautions

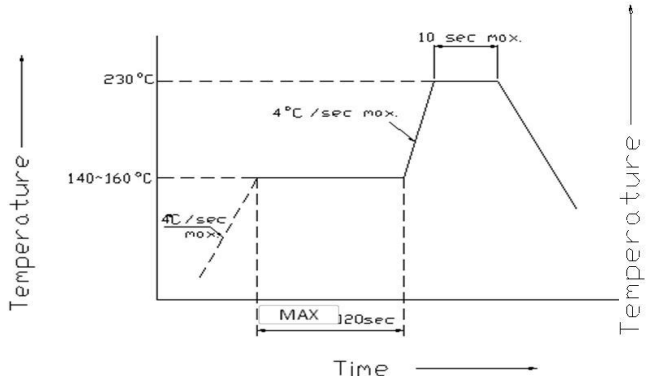
(1) Soldering Conditions

Number of reflow process shall be less than 2 times and cooling process to normal temperature is required between first and Second soldering process.

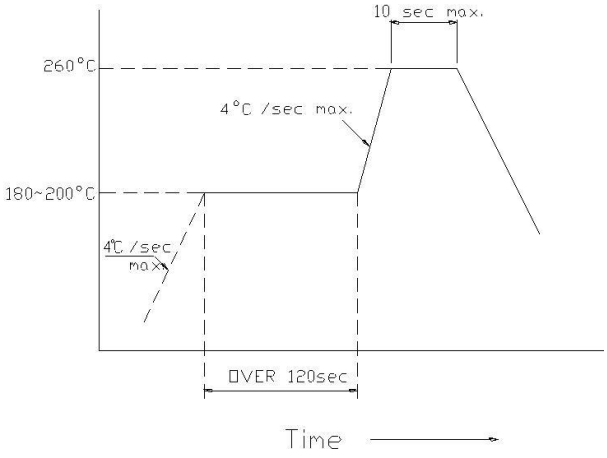
(Recommended soldering conditions)

	Reflow Soldering		Manual Soldering	
	Lead Solder	Lead-free Solder		
Pre-heat	140 ~ 160° C	180 ~ 200° C	Temperature	350° C Max.
Pre-heat time	120 sec. Max.	120 sec. Max.	Soldering time	3 sec. Max. (one time only)
Peak temperature	230° C Max.	240° C Max.		
Soldering time	10 sec. Max.	10 sec. Max.		
Condition				

(Lead Solder)

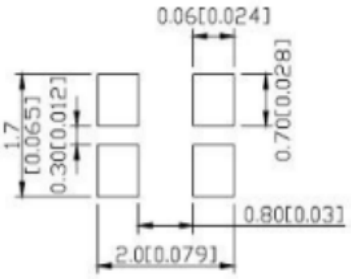


(Lead-Free Solder)



Recommended Soldering Pattern

(Units : mm)



(2) Static Electricity

It is recommended that a wrist band or an anti-electrostatic glove be used when handling the LEDs.

All devices, equipment and machinery must be properly grounded.

Damaged LEDs will show some unusual characteristics such as the forward voltage becomes lower, or the LEDs do not light at the low current. Criteria : (VF > 2.0V at IF=0.5mA)

(3)Moisture Proof Package

It is recommended that moisture proof package be used .

(4)Cautions:

4.1.Please check if there is air leak before opening the package, if so, please return the goods back to take drying process for later using.

4.2 Products can be used within 15days after packaging, after that, they must be:

4.2.1 Soldered within 24 hrs

4.2.2 Used in the condition: 30℃ within and 60%RH below

4.2.3 Stored in 30%RH for moisture below.

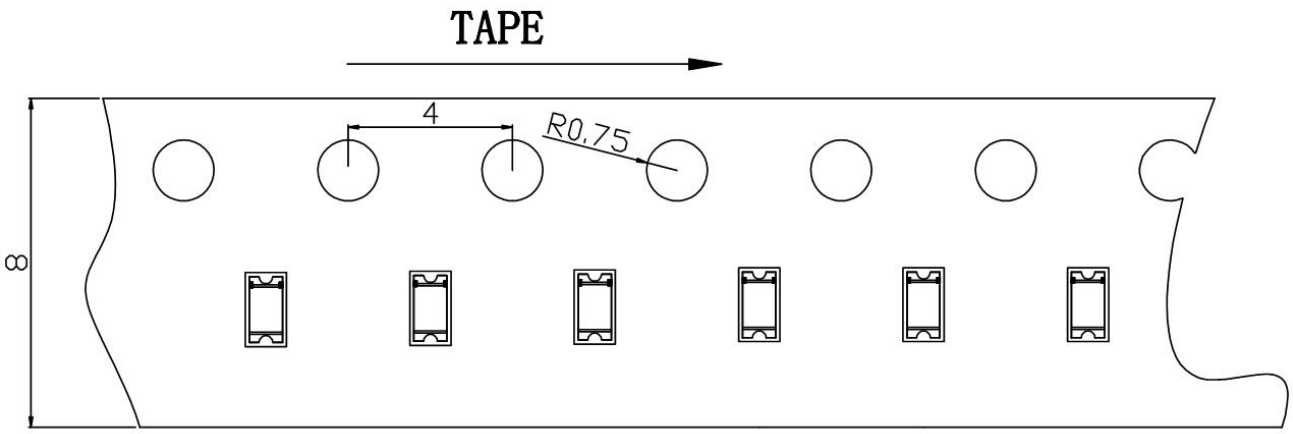
4.3.Products cannot be used for and over 15days after being packaged unless opening the package and take drying our process in 85℃/6H.

4.4Products not be used for or over 60days after being packaged please return back to take drying out and packaging process for forward using.

4.5.Products not be used after opening the package need to be dried out for 85℃/6H

PACKAGING

The LEDs are packed in cardboard boxes after taping.



Package: 3000 pcs/reel

Reel Dimensions

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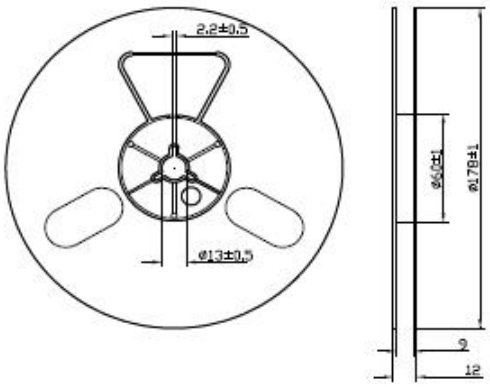
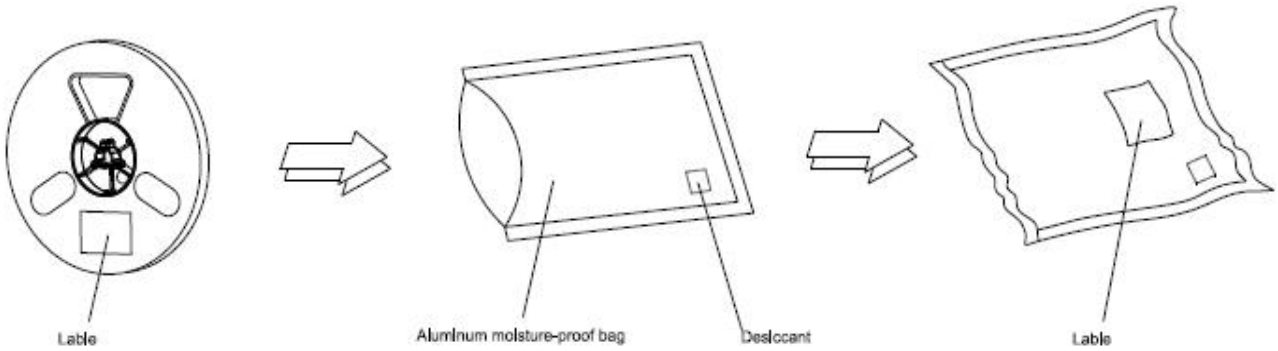


Moisture Resistant Packaging



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

Test condition： @20mA			
BIN Code		V_{Fmin} (v)	V_{Fmax} (v)
UHR:	1	1.8	1.9
	2	1.9	2.0
	3	2.0	2.1
DLG:	1	2.8	2.9
	2	2.9	3.0
	3	3.0	3.1
DNB:	1	2.8	2.9
	2	2.9	3.0
	3	3.0	3.1
Test condition： @20mA			
BIN Code		λ_{Dmin} (nm)	λ_{Dmax} (nm)
UHR:	1	615	620
	2	620	625
	3	625	630
DLG:	1	515	520
	2	520	5 5
	3	525	530
DNB:	1	460	465
	2	465	470
	3	470	475
Test condition： @20mA			
BIN Code		I_{Vmin} (mcd)	I_{Vmax} (mcd)
R1		300	400
G1		500	600
B1		200	250