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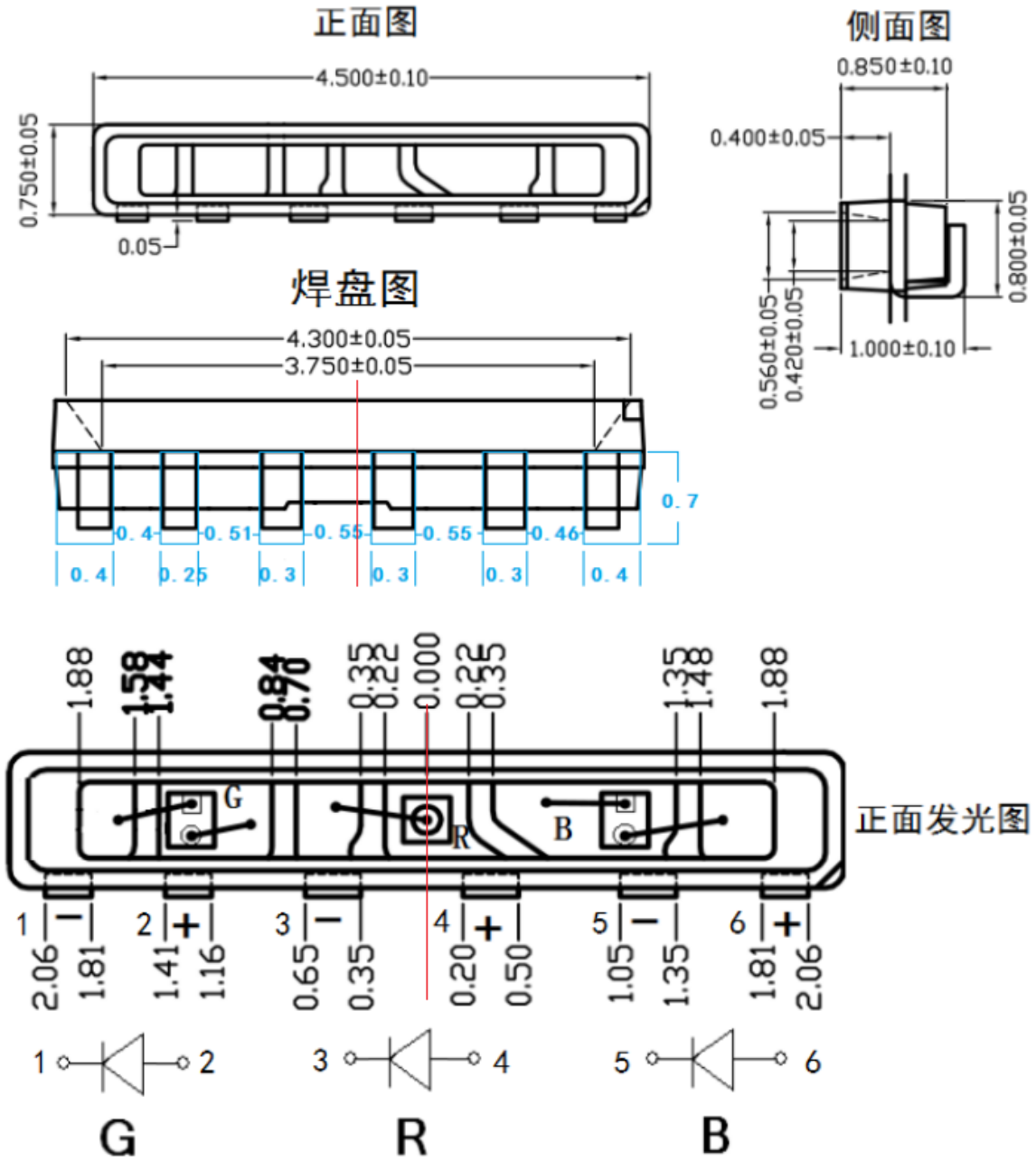
DATA SHEET

PART NO.: L-S020GRBCT-HH-U1

REV: A / 3

CUSTOMER'S APPROVAL : _____ DCC : _____

- Package Outline Dimensions



Notes:

1. All dimensions are in millimeters.
2. Tolerance is ± 0.25mm unless otherwise noted.

Chip Materials

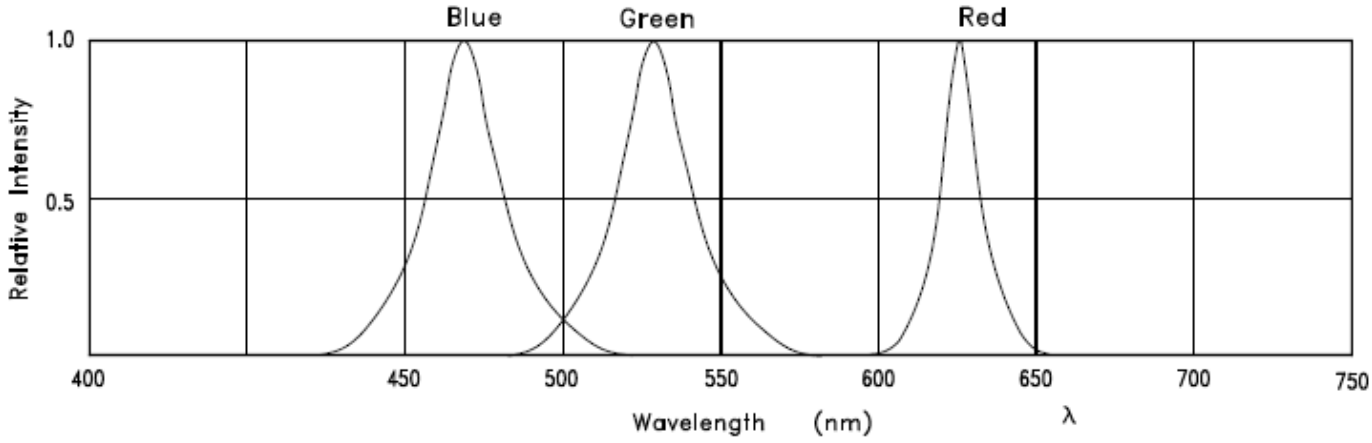
- ＊ Dice Material : GaAlInP/GaInN
- ＊ Light Color : Red / Green/Blue
- ＊ Lens Color : Water clear

Absolute Maximum Ratings(Ta=25℃)

SYMBOL	DESCRIPTION	RED	GREEN	BLUE	UNIT
PD	Power Dissipation	72	108	108	mW
VR	Reverse Voltage(Min)	5	5	5	V
IR	Reverse Current (VR＝5V) (Max)	100	100	100	μA
IPF	Peak Forward Current (Duty=0.1,1KHZ)	30	30	30	mA
-	Derating Linear From 25°C	0.4	0.4	0.4	mA/°C
Topr	Operating Temperature Range	-30°C to 80°C			
Tstg	Storage Temperature Range	-20°C to 85°C			

Electro-Optical Characteristics (Ta=25℃)

SYMBOL	PARAMETER	TEST CONDITION		MIN.	TYP.	MAX.	UNIT
VF	Forward Voltage	IF=20mA	RED		2.0	2.6	V
			GREEN		3.0	3.6	V
			BLUE		3.0	3.6	V
λD	Dominant Wavelength	IF=20mA	RED		622	625	nm
			GREEN		520	525	nm
			BLUE		469	475	nm
Δλ	Spectral Line Half-Width	IF=20mA	RED		20		nm
			GREEN		38		nm
			BLUE		25		nm
2θ1/2	Half Intensity Angle	IF=20mA	RED		120		deg
			GREEN				
			BLUE				
IV	Luminous Intensity	IF=20mA	RED	300	600	1000	mcd
			GREEN	900	1300	1800	mcd
			BLUE	300	500	800	mcd



RELATIVE INTENSITY VS. WAVELENGTH

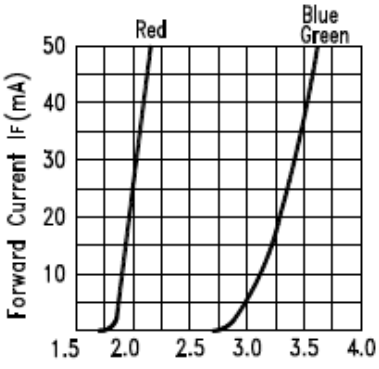


Fig.2 Forward Current vs. Forward Voltage

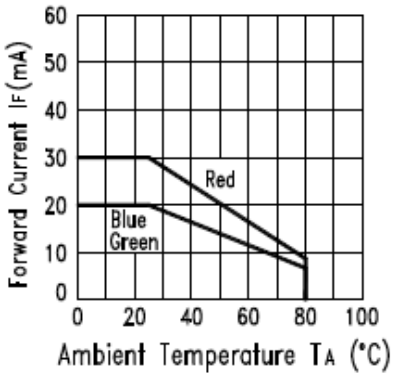


Fig.3 Forward Current Derating Curve

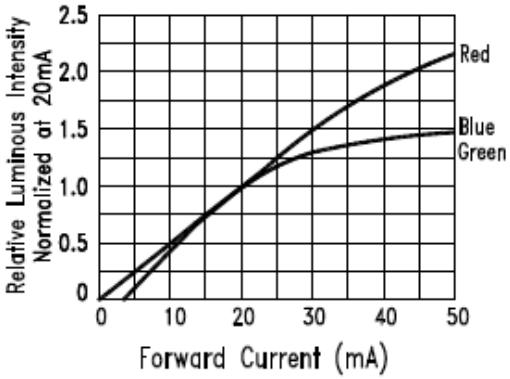


Fig.4 Relative Luminous Intensity vs. Forward Current

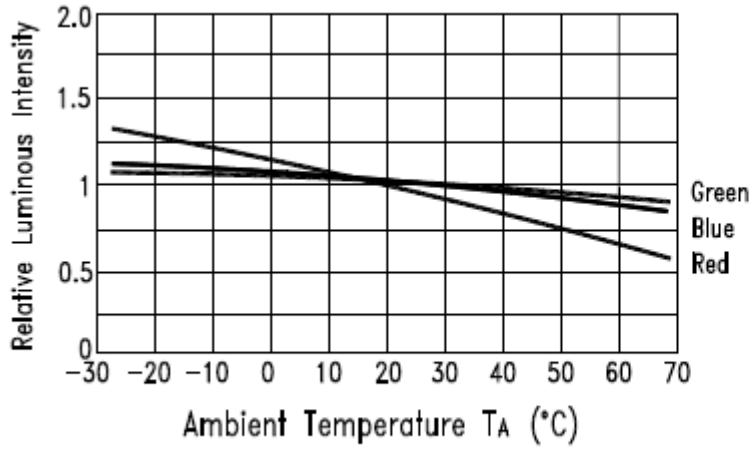


Fig.5 Luminous Intensity vs.Ambient Temperature

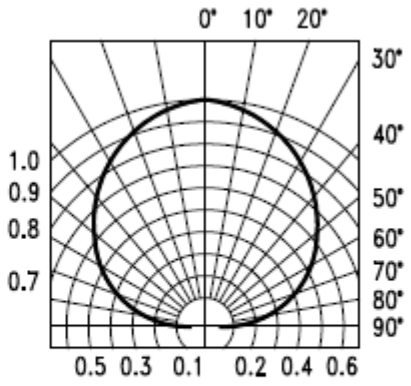
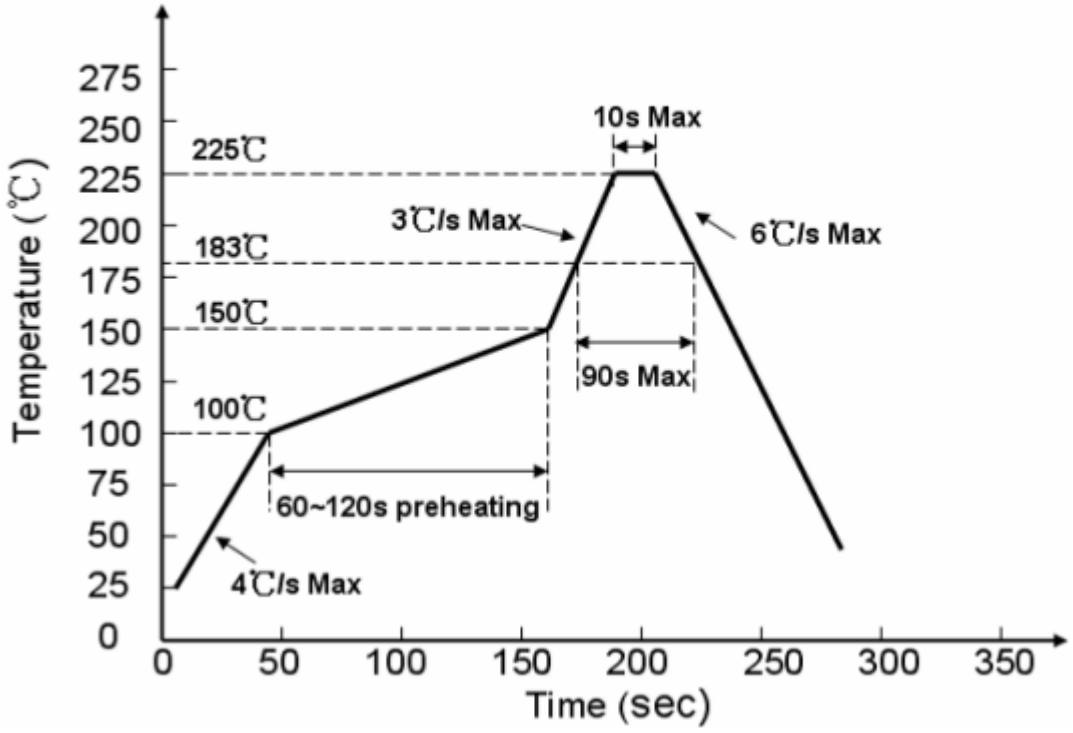


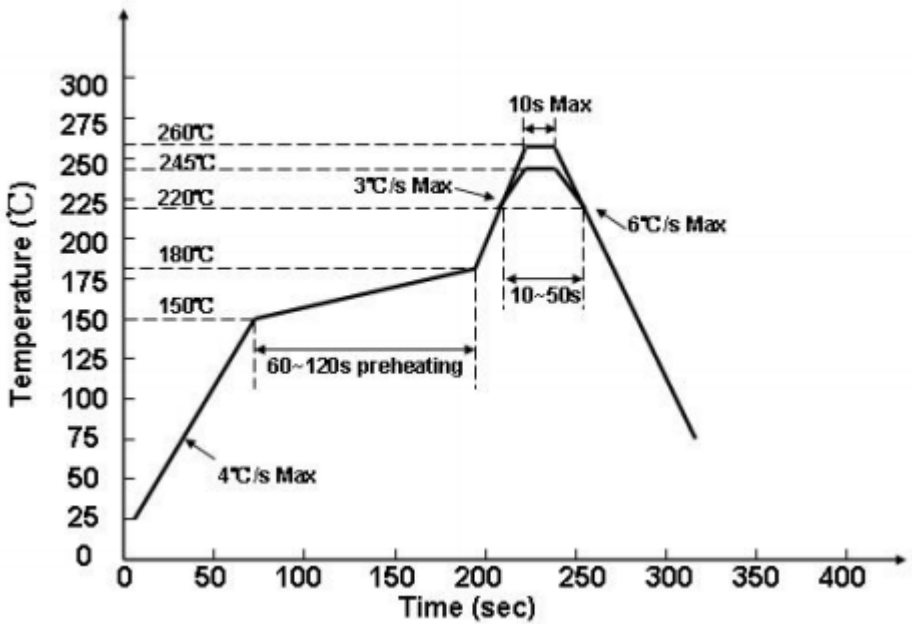
Fig.6 Spatial Distribution

■ **Soldering Profile Suggested**

1、For Lead Solder



2、For Lead Free Solder



● CAUTIONS

1. Static Electricity:

* Static electricity or surge voltage damages the LEDs.

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.

It is recommended that measures be taken against surge voltage to the equipment that mounts the LEDs.

* When inspecting the final products in which LEDs were assembled, it is recommended to check whether the assembled LEDs are damaged by static electricity or not. It is easy to find static-damaged LEDs by a light-on test or a VF test at a lower current (blew 1mA is recommended).

* Damaged LEDs will show some unusual characteristics such as the leak current remarkably increases, the forward voltage becomes lower, or the LEDs do not light at the low current.

Criteria: (VF>2.0V,at IF=0.5m A)

2. Storage :

* Before opening the package :

The LEDs should be kept at 30°C or less and 85%RH or less. When storing the LEDs, moisture proof packaging with absorbent material (silica gel) is recommended.

* After opening the package :

The LEDs should be kept at 30°C or less and 70%RH or less. The LEDs should be soldered within 168 hours (7 days) after opening the package. If unused LEDs remain, they should be stored in moisture proof packages, such as sealed containers with packages of moisture absorbent material (silica gel). It is also recommended to return the LEDs to the original moisture poof bag and to reseal the moisture proof bag again.

If the moisture absorbent material (silica gel) has faded away or the LEDs have exceeded the storage time, baking treatment should e performed using the following conditions.

Baking treatment: more than 24hours at 65±5℃.

* Please avoid rapid transitions in ambient temperature in high humidity environments where condensation may occur.

3. Soldering:

Do not apply any stress to the LED lens during soldering while the LED is at high temperature.

Recommended soldering condition.

* Reflow Soldering :

Pre-heat 120~150°C, 120sec. MAX., Peak temperature : 240°C Max. Soldering time : 10 sec Max.

* Soldering Iron : (Not recommended)

Temperature350°C Max., Soldering time : 3 sec. Max.(one time only), power dissipation of iron : 20W Max. use SN60 solder of solder with silver content and don't to touch LED lens when soldering.

4. Lead-Free Soldering

For Reflow Soldering :

1、Pre-Heat Temp: 150-180℃,120sec.Max.

2、Soldering Temp: Temperature Of Soldering Pot Over 240℃,40sec.Max.

3、Peak Temperature: 260℃，10sec.

4、Reflow Repetition: 2 Times Max.

5、Suggest Solder Paste Formula : 93.3 Sn/3.1 Ag/3.1 Bi/0.5 Cu

For Soldering Iron (Not Recommended) :

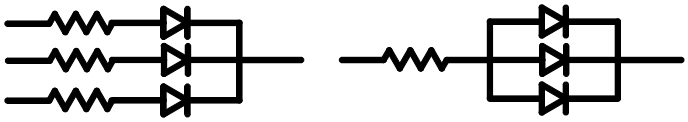
1、Iron Tip Temp: 350℃ Max.

2、Soldering Iron: 30w Max.

3、Soldering Time: 3 Sec. Max. One Time.

5. Drive Method

Circuit model A Circuit model B



(A)Recommended circuit.

(B)The difference of brightness between LED`s could be found due to the Vf-If characteristics of LED.

6. Reliability

1、Criteria For Judging The Damage

Item	Symbol	Test Conditions	Criteria for Judgement	
			MIN.	Max.
Forward Voltage	VF	IF=20mA	-	U.S.L.*)×1.1
Reverse Current	IR	VR=5V	-	U.S.L.*)×2.0
Luminous Intensity	IV	IF=20mA	L.S.L**)×0.7	-

*) U.S.L.: Upper Standard Level

**) L.S.L: Lower Standard Level

2、Test Items And Results

Test Item	Standard Test Method	Test Conditions	Note	Number of Damaged
Resitance to Soldering Heat (Reflow Soldering)	JEITA ED-4701 300 301	Tsld=180℃, 10sec. (Pre treatment 30℃,70%,168hrs)	2 times	0/20
Solderability (Reflow Soldering)	JEITA ED-4701 300 303	Tsld=240±5℃, 3sec. (Leader Solder)	1time over 95%	0/20
Thermal Shock	JEITA ED-4701 300 307	-40℃~100℃ 5min. 5min.	100cycles	0/20
Temperature Cycle	JEITA ED-4701 100 105	-40℃~25℃~100℃~25℃ 30min. 5min. 30min. 5min.	100cycles	0/20
Moisture Resistance Cycle	JEITA ED-4701 200 203	25℃~65℃~-10℃ 90%RH 24hrs./1cycle	10 cycles	0/20
High Temperature Storage	JEITA ED-4701 200 201	Ta=100℃	1000 hrs	0/20
High Temperature High Humidity Storage	JEITA ED-4701 100 103	Ta=60℃, 90%RH	1000 hrs	0/20
Low Temperature Storage	JEITA ED-4701 200 202	Ta=-40℃	1000 hrs	0/20
Steady State Operating Life		Ta=25℃, IF=20mA	1000 hrs	0/20
Steady State Operating Life of High Temperature		Ta=85℃, IF=20mA	1000 hrs	0/20
Steady State Operating Life of High Humidity Heat		60℃, 90%RH, IF=20mA	500 hrs	0/20
Steady State Operating Life of Low Temperature		Ta=-30℃, IF=20mA	1000 hrs	0/20
Drop		H=75cm	3 cycles	0/20
Substrate Bending	JEITA ED-4702	3mm, 5 ± 1 sec.	1 time	0/20
Stick	JEITA ED-4702	5N, 10 ± 1 sec.	1 time	0/20