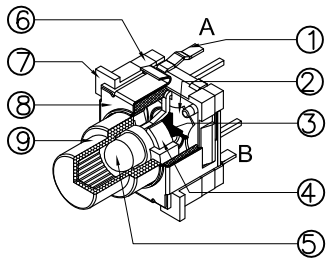
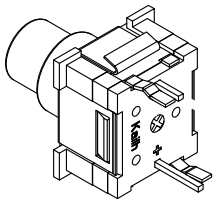
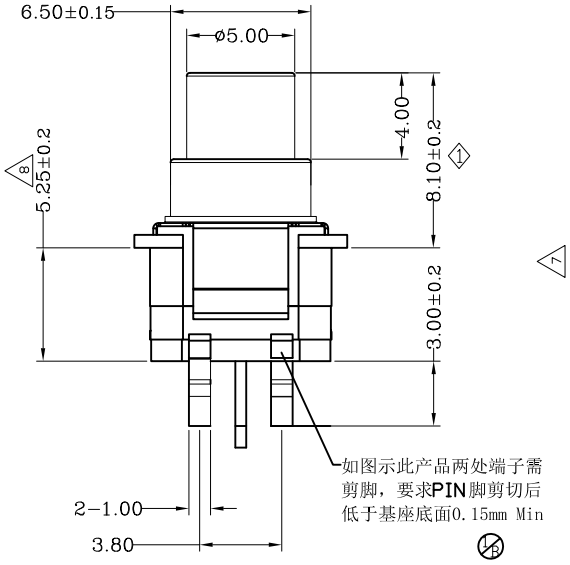
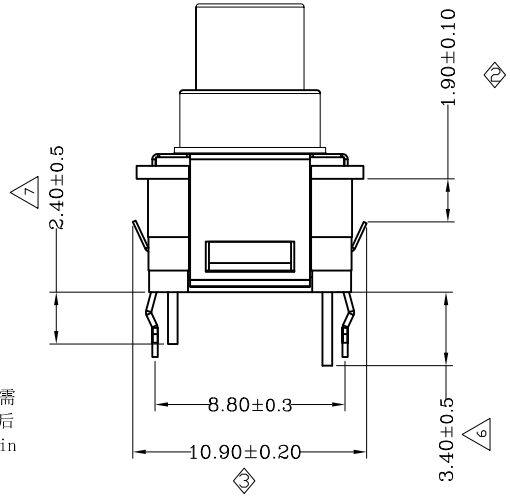
ABIDE BY WEEE & ROHS

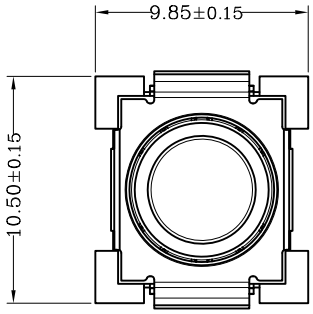


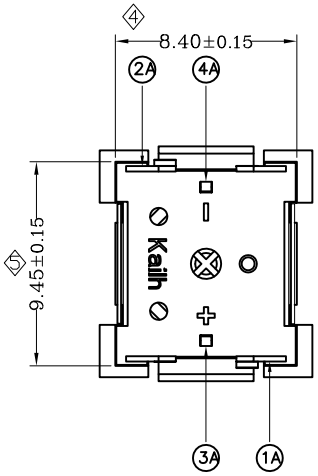


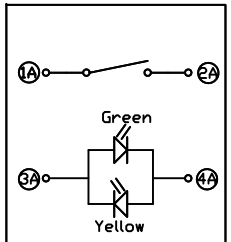




■ Specification :
- 1.Rated voltage: DC.12V 50mA;
- 2.Contact Resistance: 100mΩ(Max);
- 3.Insulation resistance: 100MΩ(Min) DC250V;
- 4.Dielectric strength: AC250V(50-60Hz)for 1 minute;
- 5.Operation force:450±100gf;
- 6.Travel closure:1.20±0.20mm;
- 7.Life Test 25,000 Cycles(min).







电路图

ITEM	PART NAME	TER'NO.	QTY.	MATERIAL	FINISHING	REMARK
⑨	Keystoke	——	1	PC	Transparent	——
⑧	Shell	——	1	Stainless Steel	——	——
⑦	Cover	——	1	PA46	Black	——
⑥	Base	——	1	PA46	Black	——
⑤	LED	——	1	ø2.8mm Super Bright Yellow&Green LED		——
④	Pad	——	1	LCP	Black	——
③	Rubber pad	——	1	Rubber	Gray	——
②	Contact	——	1	Stainless Steel	Plating Au(4u")	——
①	Terminal	A.B	2	Brass	Plating Au(3u")	——

ECN NO.	REV.	DATE.	DESCRIPTION.	CHANGE.	CHECK.	APPRO.
ECN-2305-027	B	2023.05.19	Non-functional pins are 0.15mm below base base after shearing	QK		
——	A	2012.08.06	NEW	——	——	——

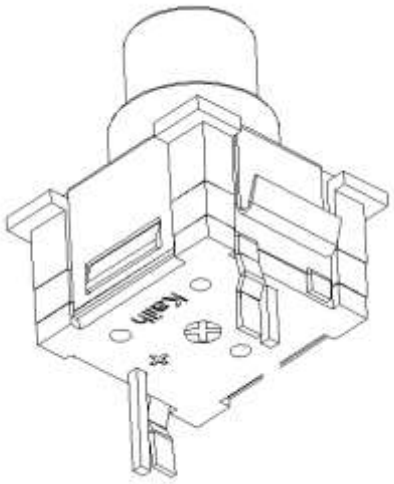
APPROVALS		DATE	东莞市凯华电子有限公司 KAIHUA ELECTRONICS CO.,LTD
DRAWN	HUA	2012.08.06	
CHECKED			TITLE: LA9313 Lamp Switch
APPROVALS			PART NO: CLA931301D12
TOLERANCES ARE	30<L ±0.30; 10<L≦30 ±0.20; 5<L≦10 ±0.15; L≦5 ±0.10	ANGLE ±2°	UNIT: mm; SCALE: 1:1; PROJ:
			DRAWING NO. KHA-LA9313-003EN; SHEET: 1OF1

凯华电子 Kailh KAIHUA ELECTRONICS

Document Number:

KH-PS2305-17

Product Specification



P/N: **CLA931301D12**

Title : **Lamp Switch**

Rev.	ECN	Release and Revision Description:	Prepared By /Date:	Checked By/Date:	Approved By/Date:
A	— —	New releasing	HQC 2023/05/20	LPH 2023/05/20	David 2023/05/20

Content

1. Scope:

This Product Specification covers the requirement of Micro switch on product performance, test methods and quality assurance provisions.

2. Product Application：

The Switch is applied in all types of electrical appliances. Please let us know before using any of the products in the application not described abovev.

3. Technology Parameters:

Ambient Humidity：	45~85% R.H.；
Operating Temperature Range：	-10℃～+70℃；
Storage Temperature Range：	-20℃～+80℃；
Suggested storage period ：	about 6 months

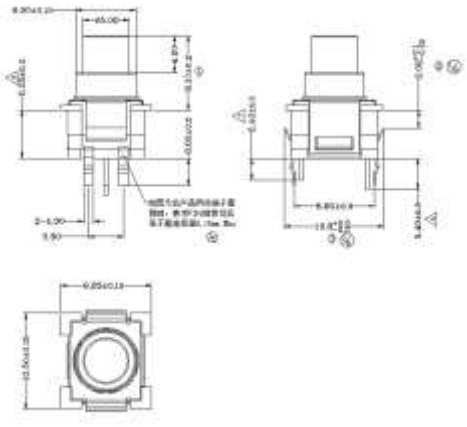
Normal Condition:

Ambient temperature：	20±5
Relative humidity：	65%±5% R.H.；
Air pressure ：	86~101KPa;
Contact Resistance：	100 mΩ Max；
Operation Force：	450±100gf
Solder Ability ：	Tim-lead soldering ： 245℃±5℃ 5s±0.5s；
	Lead-free welding ： 255℃±5℃ 5s±0.5s；
Withstand Soldering Temperature:	Wave soldering： 260±5℃ 5±0.5s；

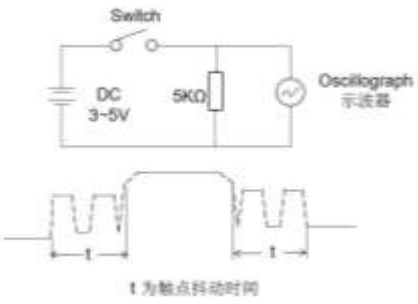
4. Rated Performance Requirements:

Rating：	DC12V / 50mA
Insulation Resistance：	≥100MΩ/DC 250V;
Withstand Voltage：	250V AC 1 Minute;
Mechanical Life：	25,000 Cycles.

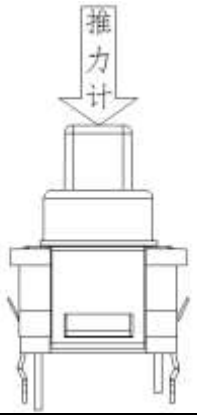
5. Profile Dimensions :

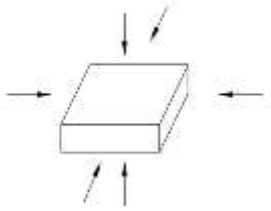


6. Electrical Performance:

Item	Description	Test Condition	Requirement
6.1	Contact Resistance	Static load: (Operation force)x2, which is applied on the center of Switch stem. Be measured when the switch contact stabilization. Measurement tool: Contact resistance Meter. (1KHz, 20mV,5~50mA) Measured at low current (100mA or less).	100mΩ Max
6.2	Insulation Resistance	Apply a Voltage of DC 250 V for 1 minute, according to the below method. (1) Between terminals. (2) Between terminal and Body.	100MΩ Min
6.3	Dielectric withstanding voltage	Apply a Voltage of AC250 V (50~60Hz) for 1 minute, according to the below method. (1) Between terminals. (2) Between terminal and Body.	No evidence of breakdown.
6.4	Bouncing	Operation speed：3~4 times/s Oscilloscope Switch Bouncing Test Circuit. 	Before Life cycle: On:5ms MAX Off: 5ms MAX After Life cycle: On:10ms MAX Off 10ms MAX

7. Mechanical Performance:

It	Description	Tes Condition	Requirement
7.1	Operation force	Operate the keystoke of the switch and then increase press strength gradually, Measured maximum operation force while the travel of the switch is full.	450±100gf
7.2	Travel	Operate the keystoke of the switch vertically, the travel distance of keystoke moving from its free position to maximum moving distance shall be measurement.	1.20±0.20mm
7.3	Static Strength	A static load of 3kgf shall be applied in the direction of button operation for a period of 60 seconds. 	No damage (Electrical and mechanical）
7.4	Stem Pull Strength	Break by a pull force applied opposite to the direction of stem operation.	500gf Min

7.5	Shock	Measured by according to the below condition: (1) Acceleration: 80g accelerated speed (2) Cycles of test:3 cycles each in 6 directions, for a total of 18 cycles. . 	Shall meet No.6，7.1，7.2
7.6	Life Test	(1) 1 Weight:600gf (2) Operation speed：60cycles/min (3) Push force：Maximum value of operation force. (4) Cycles：25,000 times Min	Contact resistance: 1000Ω Max Bouncing：10ms Max Operation force and tactile force：Variation rate within ±30%

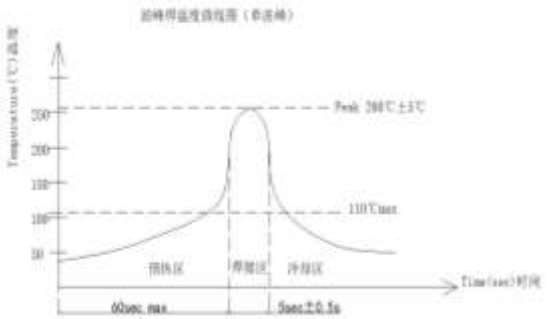
8. Environmental Performance:

Item	Description	Test Cond ion	Requirement
8.1	Cold test	(1) Temperature : - 20±2℃ (2) Duration of test: 96h (3) Take off a drop water (4) Standard conditions after test : 1	Contact resistance: 200mΩ Max Shall meet : No. 6.2 to 6.4 No. 7.1 to 7.2
8.2	Heat test	(1) Temperature : 70±2℃ (2) Duration of test: 96h (3) Take off a drop water (4) Standard conditions after test : 1h	Contact resistance: 200mΩ Max Shall meet : No. 6.2 to 6.4 No. 7.1 to 7.2

<table>
<tr><td>8.3</td><td>Temperature cycle</td><td>(1) Test cycles: 5 cycles
(2) Standard condition after test:1h

<table><tr><td></td><td>Temperature</td><td>Duration of test</td></tr><tr><td rowspan="4">1 cycle</td><td>20±5℃</td><td>1h</td></tr><tr><td>-20±5℃</td><td>1h</td></tr><tr><td>20±5℃</td><td>h</td></tr><tr><td>70±5℃</td><td>1</td></tr></table></td><td>Contact resistance:
200mΩ Max
Shall meet :
No. 6.2 to 6.4
No. 7.1 to 7.2</td></tr>
<tr><td>8.4</td><td>Soldering heat test</td><td>Soldering area: 1/2 of PWB thickness.
(PWB: T=1.6mm)

Soldering temperature: 260±5℃
Soldering time: 5±0.5s

  </td><td>Appearance:
No abnormality.</td></tr>
<tr><td>8.5</td><td>Solder ability</td><td>Lead-tin soldering：
Soldering temperature: 245±5℃
Soldering time: 5±0.5s

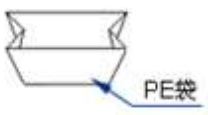
Lead free soldering：
Soldering temperature: 255±5℃
Soldering time: 5±0.5s</td><td>At least 90% of surface area of immersed portion shall be covered by solder.
.</td></tr>
<tr><td>8.6</td><td>Humidity test</td><td>(1) Temperature : 60±2℃
(2) relative humidity: 90~95% R.H.
(3) Duration of test: 96h
(4) Take off a drop water
(5) Standard conditions after test: 1h</td><td>Contact resistance:
200mΩ Max
Shall meet :
No. 6.2 to 6.4
No. 7.1 to 7.2</td></tr>
</table>

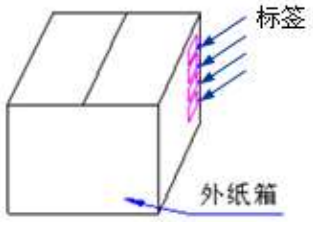
8.7	Salt Spray	Apply the following environment to test : (1) Temperature : 35±5℃ (2) Salt water density: 5±1% (3) Duration: 24hours (4) After test, the salt deposit shall be removed by running water.	Appearance: No corrosion spot, no crack, no base plate naked. Contact Resistance: 200 mΩ Max
8.8	Withstand K_2S	Apply the following environment to test: (1) Temperature: 35±5℃ (2) K_2S Density: 2%； (3) Duration: 2 minute.	Appearance: No corrosion spot, no crack, no base plate naked. Contact Resistance: 200 mΩ Max

9. Packaging

Operation Force Binning：In groups of 65-75gf、75-85gf、85-95gf

Packing Style	Quantity	Notes
PE bag	1000PCS.	1000Pcs/Bag,
Inner Carton	10000PCS.	PE Bag:10 PCS





10.Precautio

10.1 Immersion Soldering condition

ITEM	CONDITION
Preheat temperature	110℃ Max (Ambient temperature of soldering surface of P.W.B)
Preheat time	60s, Max
Area of flux	1/2 Max of PWB Thickness
Temperature of solder	260±5℃ 260±5℃
Time of immersion	5±0.5s 5±0.5s
Number of soldering	2times Max (But should down heat of the first soldering)
Printed wiring board	Single side copper-clad laminates

(1) After switches were soldered, please be careful not to clean switches with solvent

(2) Under the condition of using soldering iron, soldering temperature shall be 350℃±5℃ with 3±0.5s.

10.2 Notes

(1) Please be cautious not to give excessive static load or shock to switches.

(2) Please be careful not to stack up P. W. B. after switches were soldered.

(3) Preservation under high temperature and high humidity or corrosive gas should be avoided Especially. When you need to preserve for a long period, do not open the carton.

(4) The standard storage period is 3 months, with maximum up to 6months, preferably to be used as soon as possible. After opening the package, you should put the remaining switches in a plastic bag to prevent from damp and corrosive gas.

(5) This Product Specification is considered as the technical agreement on product between the receiving customer and Kailh. Any information on Product Catalogue which is in conflict with or different from the corresponding information of this document is considered as invalid.

(6) It will be considered that customer already confirmed and accepted this specification if customer issue purchase order to us directly.

(7) If there is no order or no request for new specification after 1 year upon this specification is issued, the specification will be regarded as invalid.

(8) Products meet the ROHS & REACH environmental management substances control standards

LED SPECIFICATIONS

Features

- High speed response.
- High reliability and long life.
- Low power consumption.
- Available in red, orange, yellow, yellow-green, green, blue, white, pink*
- Suitable for pulse operation.
- RoHS compliant.

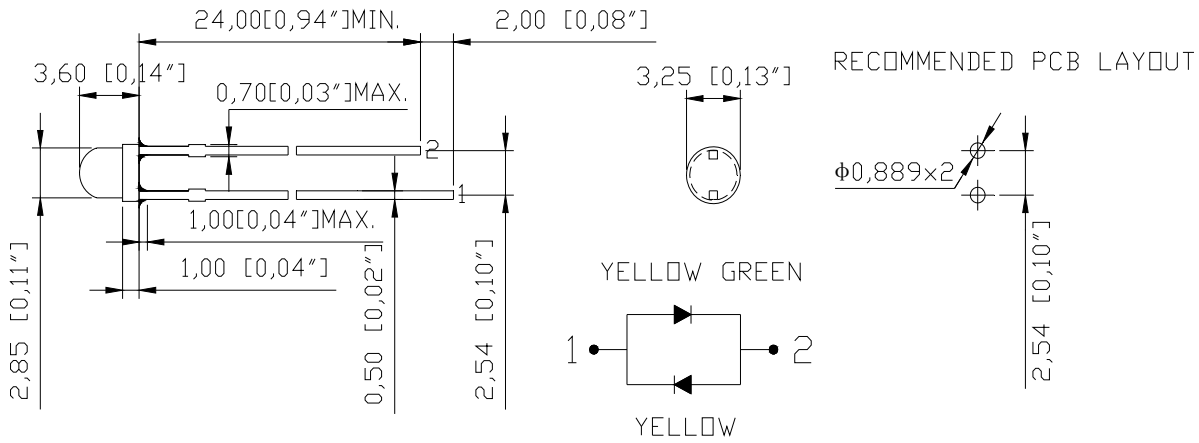
Description

- The Yellow source color devices are made with with AlGaInP on GaAs Light Emitting Diode.
- The Yellow-Green source color devices are made with AlGaInP on GaAs Light Emitting Diode.

Applications

- Consumer electronics
- Display boards
- Indicators

Dimensions



Notes:

1. All dimensions are in millimeters (inches).
2. Tolerance is ±0.25 (0.01") unless otherwise noted.
3. Lead spacing is measured where the leads emerge from the package.
4. Specifications are subject to change without notice.

Selection Guide

Part No.	Dice	Emitting Color	Lens Type	I_V (mcd) @ 20mA		Viewing Angle
				Min.	Typ.	$2\theta_{\frac{1}{2}}$
LYYG11343-001	AlGaInP	Yellow	Water Clear	300	500	--
	AlGaInP	Yellow-Green		30	50	

Note:

1. $2\theta_{\frac{1}{2}}$ is the angle from optical centerline where the luminous intensity is $\frac{1}{2}$ the optical centerline value.

2. The tolerance of luminous intensity (Iv)is ±15％.

Electrical / Optical Characteristics (at T_a = 25℃)

Parameter	Symbol	Color	Value			Unit	Test Condition
			Min.	Typ.	Max.		
Forward Voltage	V_F	Yellow Yellow-Green	1.8 1.8	--	2.4 2.4	V	I_F = 20mA
Dominant Wavelength	λ d	Yellow Yellow-Green	585 565	--	595 575	nm	I_F = 20mA
Reverse Current	I_R	Yellow Yellow-Green	--	--	5	μA	V_R = 5V

Note:

1. The tolerance of forward voltage is±0.05V.

2. The tolerance of dominant wavelength is ±1nm.

3. This specification is a standard specification of our factory, can make in accordance with customer's special requirement.

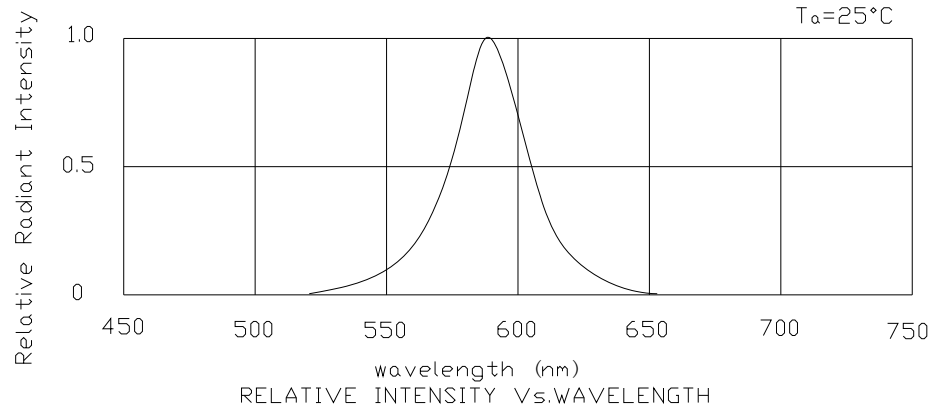
Absolute Maximum Ratings (at T_a = 25℃)

Parameter	Symbol	Value		Unit
		Y	YG	
Power Dissipation	P_D	50	50	mW
Pulse Forward Current(Duty 1/10 @ 1 kHz)	I_{FP}	100		mA
Forward Current	I_F	20		mA DC
Reverse Voltage	V_R	5		V DC
Operating Temperature	T_{opr}	-40 ～ +85		℃
Storage Temperature	T_{stg}	-40 ～ +85		℃
Soldering Temperature	T_{sld}	260℃ for 5 sec		

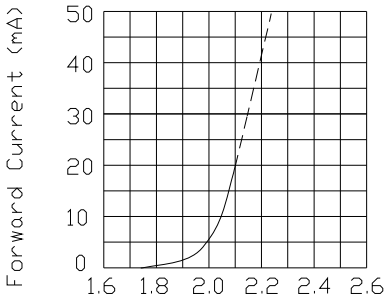
Reliability Testing Conditions

NO	Test Item	Test Conditions	Duration	Sample	Ac/Re
1	Temperature Cycle	-40℃±5℃～25℃±5℃～100℃±5℃～25℃±5℃ 30min 5min 30min 5min	100cycles	22	0/1
2	High Temp. Storage	Ta=100℃±5℃	1000hours	22	0/1
3	Temp.& Humidity Test	Ta=85℃±5℃ RH=85%±5%	1000hours	22	0/1
4	Low Temp. Storage	Ta=-40℃±5℃	1000hours	22	0/1
5	Operating Life Test	Ta=25±5℃ DC IF=20mA	1000hours	22	0/1
6	Solder Heat	Tsol=260±5℃，5s	1times	22	0/1
7	Thermal Shock	-40±5℃→100±5℃ 15min 15min	100cycles	22	0/1

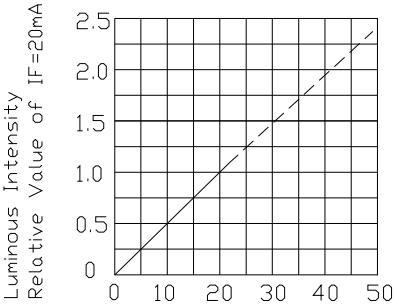
Optical Characteristic Curves (Yellow)



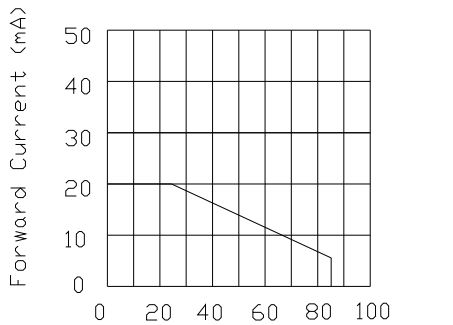
RELATIVE INTENSITY Vs.WAVELENGTH



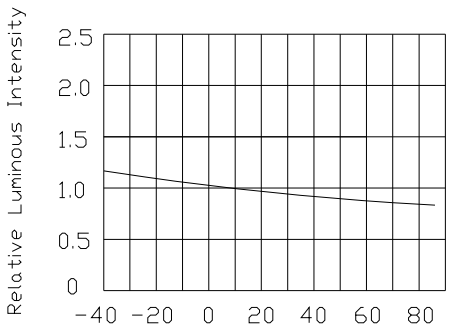
FORWARD CURRENT Vs.
FORWARD VOLTAGE



LUMINOUS INTENSITY Vs.
FORWARD CURRENT

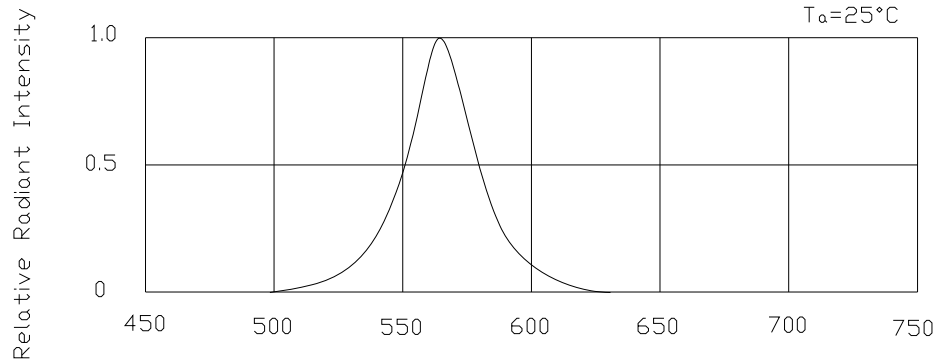


FORWARD CURRENT
DERATING CURE

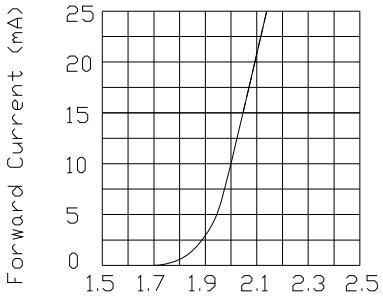


LUMINOUS INTENSITY Vs.
AMBIENT TEMPERATURE

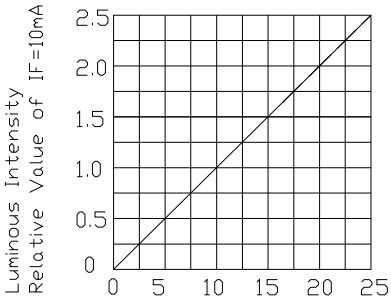
Optical Characteristic Curves (Yellow-Green)



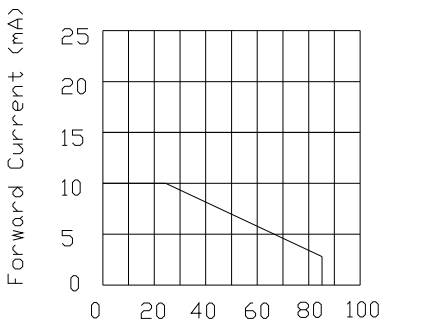
RELATIVE INTENSITY Vs.WAVELENGTH



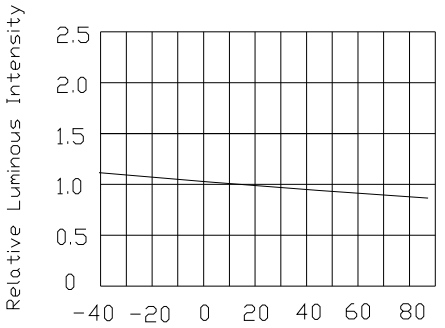
FORWARD CURRENT Vs.
FORWARD VOLTAGE



LUMINOUS INTENSITY Vs.
FORWARD CURRENT



FORWARD CURRENT
DERATING CURE



LUMINOUS INTENSITY Vs.
AMBIENT TEMPERATURE

Precautions in Use

1. Soldering Condition

a. When soldering, leave the minimum clearance between the bottom of the resin and the soldering point.

b. Do not solder closer than 3mm from the base of the epoxy bulb.

c. Maximum allowance soldering conditions are:
Dip Soldering: 260℃ max., 5 sec Max., 1 time.
Soldering iron: 350℃ max., 5 sec Max., 1 time

d. Contact between molten solder and the resin shall be avoided.

e. During soldering, do not put any stress on the lead frame, particularly when heated.

2. Lead frame Forming and Use

a. When forming leads, the leads shall be bent at a point at least 3mm from the base of epoxy bulb. Do not use the base of the lead frame as a fulcrum during lead forming.

b. Lead forming shall be done before soldering.

c. Do not apply any bending stress to the base of the lead. The stress to the base may damage the LED's characteristics or it may break the LED.

d. When mounting the LED onto a printed circuit board, the holes on the PCB shall be exactly aligned with the leads of the LED. If the LED is mounted with stress at the leads, it may cause deterioration of the epoxy resin and this may degrade the LED.

e. Avoid condition which may cause the LED to corrode, tarnish or discolor. This corrosion or discoloration may cause difficulty during soldering operation. It is recommended that the LED be used as soon as possible.

f. Avoid rapid transition in ambient temperature, especially in high humidity environment.

3. Static Electricity

a. The product is sensitive to static electricity charge, and user is required to handle it with care. Particularly, if a current and/or voltage which exceed the Absolute Maximum Rating of the Product is applied, the overflow in energy may cause damage to, or possibly result in electrical destruction of, the LED. The customer is requested to take adequate countermeasure against static electricity charge and surge when handling it.

b. Proper grounding, use of conductive mat, conductive working uniform and shoes, and conductive containers are effective against static electricity and surge.

c. Ground low-resistance area where the product contacts, such as metal surface of the work platform, with a conductive mat (surface resistance $10^6 \sim 10^9$ohm).

d. A tip of soldering iron is requested to be grounded. An ionizer shall also be installed where risk of static generation is high.

Notes:

1. The above specification and dimensions may be modified for product improvement. Inhere reserves the right to change the specification without notice.
2. When using this product, please observe the Absolute Maximum Ratings and the instructions in the specification sheets. Inhere assumes no responsibility for any damage resulting from use of the product that does not comply with the instructions.