Specifications for Approval

Customer Part No.:

Inhere Part No.: LUB935A3-001

Part Name: 平头小蝴蝶水清透明蓝光 LED

Spec Issue Date: 2018-08-14

Revision No.: A

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To Customer:

We submit herewith the following information for your approval:

■Sample ☐OQC Inspection Record ■LED Dimension

■Electrical Characteristics Curve ■Internal Circuit Diagram

■Soldering recommendation

Prepared by: Lily	Checked by: Tom	Approved by: Wangxiaojun
Date: 2018-08-14	Date: 2018-08-14	Date: 2018-08-14

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Customer Opinion

☐ Approve and no objection

☐ Reject with the following reason:

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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.

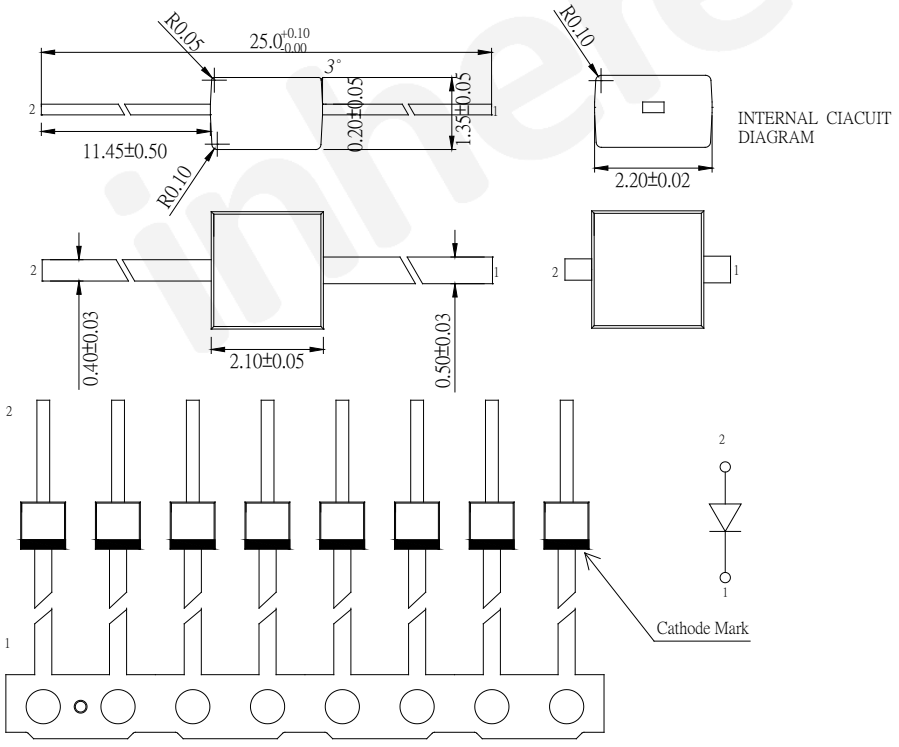
Description

- The Blue source color devices are made with InGaN/GaN on Al_2O_3 Light Emitting Diode.

Applications

- Automotive: Dashboards, stop lamps,
- Backlighting: LCDs, Key pads advertising
- Status indicators: Consumer & industrial electronics.
- General use

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.	Max.	$2\theta_{\frac{1}{2}}$
LUB935A3-001	InGaN	Blue	Water Clear	80	160	--	120

Note:

1. $\theta_{\frac{1}{2}}$ 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	Value			Unit	Test Condition
		Min.	Typ.	Max.		
Forward Voltage	V_F	2.7	--	3.5	V	I_F = 20mA
Dominant Wavelength	λ_D	455	--	465	nm	I_F = 20mA
Reverse Current	I_R	--	--	10	μA	V_R = 5V
Spectral Line Half Width	$\Delta\lambda$	--	22	--	nm	I_F = 20mA

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℃)

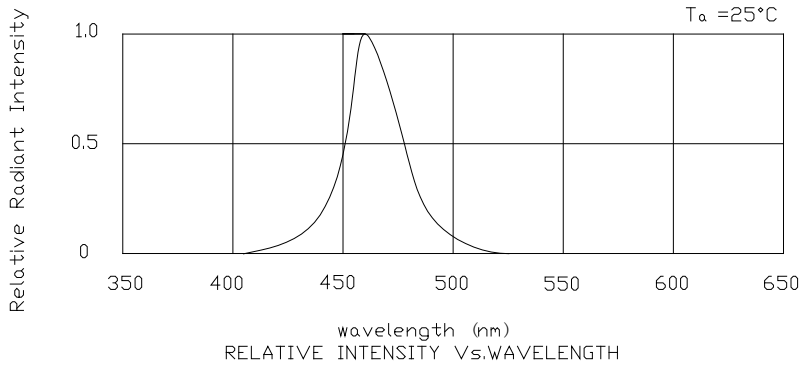
Parameter	Symbol	Value	Unit
Power Dissipation	P_D	95	mW
Peak Forward Current ＊1	I_{FP}	100	mA
Forward Current	I_F	25	mA DC
Reverse Voltage	V_R	5	V DC
Operating Temperature	T_{opr}	-40 ～ +85	℃
Storage Temperature	T_{stg}	-40 ～ +100	℃
Soldering Temperature	T_{sol}	260℃ for 5 sec 3 times	

＊1 Condition for IFP is pulse of 1/10 duty and 0.1msec width.

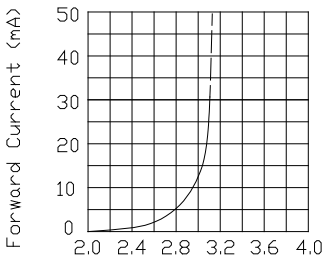
Reliability Testing Conditions

Classification	Test Item	Reference Standard	Test Conditions	Result
Endurance Test	Operation Life	MIL-STD-750D:1026 MIL-STD-883D:1005 JIS-C-7021:B-1	Ta: Under room temperature Test time:1,000hrs IF= Product Recommended IF	0/32
	High Temperature High Humidity Storage	MIL-STD-202F:103B JIS-C-7021:B-11	Ta:85±5℃ RH:90%-95% Test time:240hrs	0/32
	High Temperature Storage	MIL-STD-883:1008 JIS-C-7021:B-10	Ta:100±5℃ Test time:1,000hrs	0/32
	Low Temperature Storage	JIS-C-7021:B-11	Ta:-40±5℃ Test time:1,000hrs	0/32
Environmental Test	Temperature Cycling	MIL-STD-202F:107D MIL-STD-750D:1051 MIL-STD-883D:1010 JIS-C-7021:A-2	Ta: -40℃±5℃～25℃±5℃～100℃±5℃～25℃±5℃ 30min 5min 30min 5min	0/32
	Thermal Chock	MIL-STD-202F:107D(1980) MIL-STD-750D:1051(95) MIL-STD-883D:1011(1991)	Ta: -40℃±5℃～85℃±5℃ 10min 10min Time:20min/cycle 10cycle	0/32
	Wetting balance	MIL-STD-883:2003 MIL-STD-202F:208D MIL-STD-883D:2003	Ta: 230℃±5℃ Time:5±0.5s	0/32
	Solder Resistance	MIL-STD-202F:210A MIL-STD-883D:1011 JIS-C-7021:A-1	Ta: 260℃±10℃ Time:10±1s	0/32

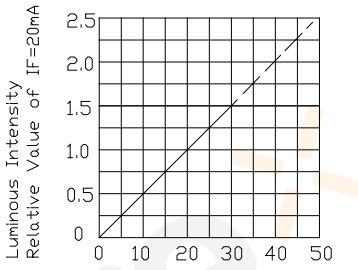
Characteristic Curves



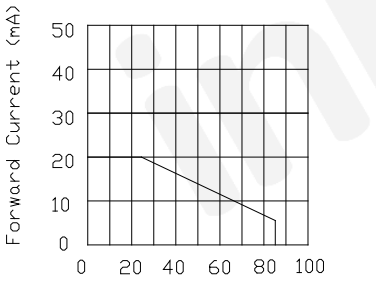
RELATIVE INTENSITY Vs.WAVELENGTH



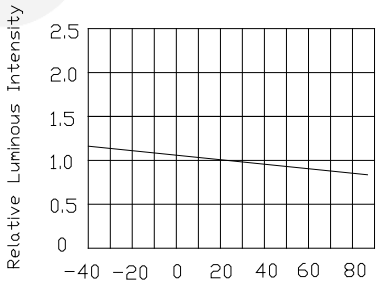
FORWARD CURRENT Vs.
FORWARD VOLTAGE



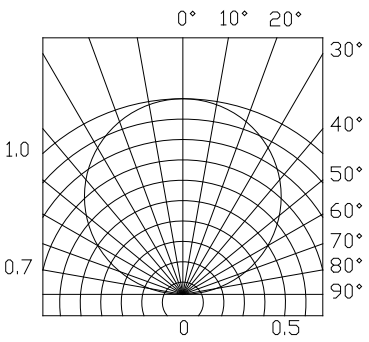
LUMINOUS INTENSITY Vs.
FORWARD CURRENT



FORWARD CURRENT
DERATING CURE

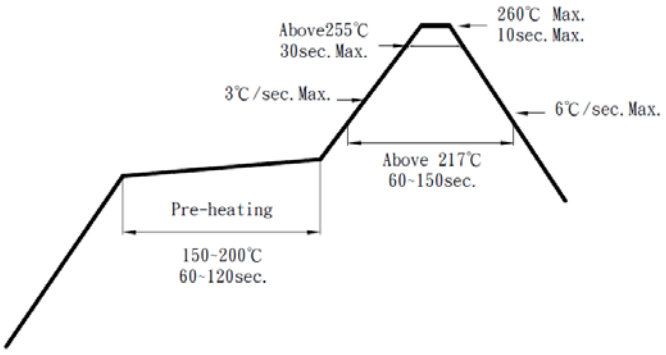


LUMINOUS INTENSITY Vs.
AMBIENT TEMPERATURE



SPATIAL DISTRIBUTION

IR-Reflow Soldering



1. Avoid any external stress applied to the resin while the LEDs are at high temperature, especially during soldering.

2. Avoid rapid cooling or any excess vibration during temperature ramp-down process

3. Although the soldering condition is recommended above, soldering at the lowest possible temperature is feasible for the LEDs

IRON Soldering

350℃ Within 3 sec., One time only.

Notes for designing:

Care must be taken to provide the current limiting resistor in the circuit so as to drive the Inhere LEDs within the rated figures. Also, caution should be taken not to overload Inhere LEDs with instantaneous voltage at the turning ON and OFF of the circuit.

When using the pulse drive care must be taken to keep the average current within the rated figures. Also, the circuit should be designed so as be subjected to reverse voltage when turning off the Inhere LEDs.

Storage:

In order to avoid the absorption of moisture, it is recommended to solder Inhere LEDs as soon as possible after unpacking the sealed envelope.

If the envelope is still packed, to store it in the environment as following:

(1) Temperature: 5℃-30℃; Humidity: RH 60%Max.

(2) After this bag is opened, devices that will be applied to infrared refold, vapor-phase refold, or equivalent soldering process must be:

a. Completed within 168 hours.

b. Stored at less than 30% RH.

(3) Devices require baking before mounting, if:

(2) a or (2) b is not met.

(4) If baking is required, devices must be baked under below conditions:

48 hours at 60℃±3℃.