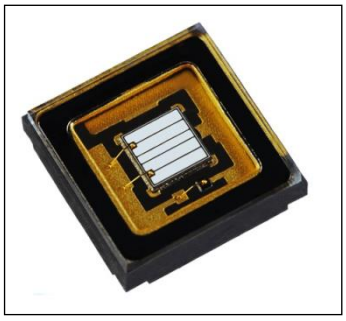
Under development

Standard product reference sheet

YL-4343F(115)-405nM(1600mW)



Features

Package	Wide distribution angle, high power type **Near-UV LED (UVA) Peak wavelength 405nm** Outer dimension 4.3 x 4.3 x 1.1mm(L x W x H)
Product features	・Operating temperature : -10 to +85 deg. ・Total power : 1,600mW (TYP.) @ I_F = 1,000mA ・High reliability hermetically sealed package to reduce influence of humidity and out gasses ・Lead–free soldering compliant ・RoHS2 compliant

Recommended applications

UV resin curing equipment, UV printing machines, air purifiers, etc.

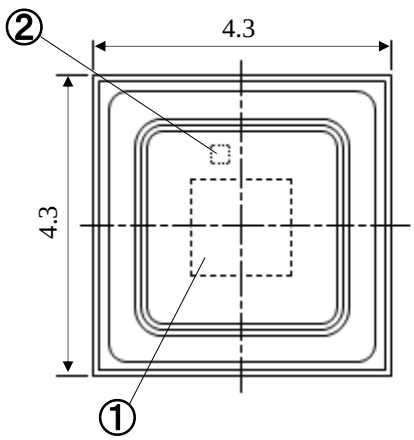
WARNING

- **UV LEDs emit high intensity UV (ultraviolet) light.**
- **Do not look directly into the UV light source ; this can be harmful to your eyes and skin.**
- **Wear protective eyewear to avoid exposure to UV light, as well as protective masks and gloves, etc. in order not to expose your skin to the light.**
- **Attach warning labels to your products which contain UV LEDs.**
- **keep out of reach of children.**

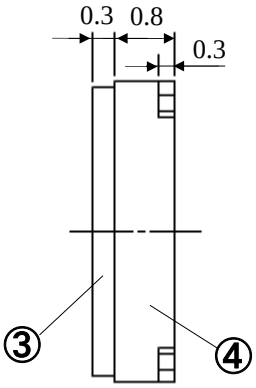
2019.3.4

Outline dimensions

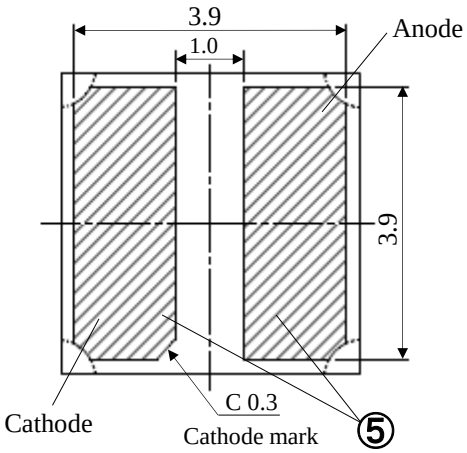
Unit : mm
Weight : 64.2mg
Tolerance : ±0.2



Top view

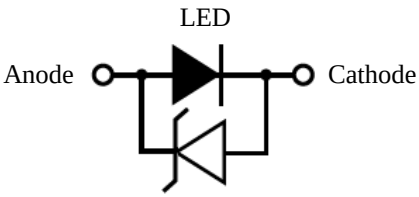


Side view



Back view

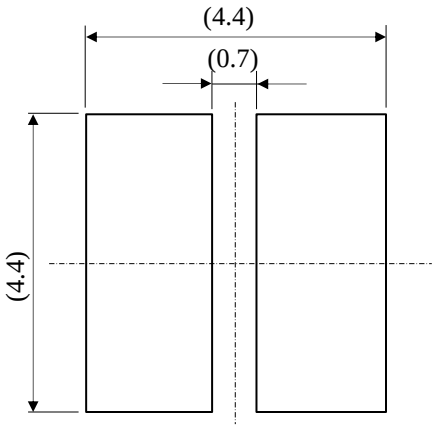
【 Internal circuit 】



No.	Part name	Materials	Qty.
①	LED die	GaN based material	1
②	Protection diode	Si	1
③	Sealing glass	Silica glass	1
④	Substrate	Ceramic	1
⑤	Electrode	Au plating	Anode : 1 Cathode : 1

Recommended pad

Unit : mm



Specifications

【 Product overview 】

Die material	GaN based material
Sealing glass	Water clear

【 Absolute maximum ratings 】

ITEM	SYMBOL	MAXIMUM RATINGS	UNITS	
Operating temperature	T_{opr}	−10 to +85	℃	Note 1
Storage temperature	T_{stg}	−40 to +100	℃	Note 1
Junction temperature	Tj	125	℃	
Forward current	I_F	1,400	mA	
Forward current reduction rate from "Ta=50℃"	ΔI_F	17.1	mA/℃	
Electrostatic diccharge threshold "HBM" (Ta=25℃)	V_{ESD}	2	kv	Note 2
Peak temperature of reflow soldering	T_{sld}	260	℃	

Note 1 The ranges of operating and storage temperature are not applied to taping condition.

Note 2 ESD testing method : EIAJ4701/300(304) Human Body Model (HBM) 1.5kΩ,100pF

【 Thermal characteristics 】

(Ta=25℃)

ITEM	SYMBOL	TYP.	UNITS
Thermal resistance(Junction - Soldering point)	$R_{th(j-s)}$	3.5	℃/W

Specifications

【 Electro-Optical characteristics 】

(Ta=25℃)

ITEM	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS	
Total power	Po	I_F = 1,000mA	1,400	1,600	2,100	mW	Note 3
Peak wavelength	λp	I_F = 1,000mA	400	405	410	nm	Note 4
Spectral half width	Δλ	I_F = 1,000mA	-	14	-	nm	
Half intensity angle	$2\theta_{1/2}$	-	-	115	-	deg.	
Forward voltage	V_F	I_F = 1,000mA	3.2	3.4	4.2	V	Note 5

Note 3 Total Power is measured by integrating sphere, and the Tolerance is ±10%.

Note 4 Peak Wavelength Tolerance is ±3nm.

Note 5 Forward Voltage Tolerance is ±3%.

【 Sorting chart for total power 】

LEDs shall be sorted out "Total power" into the following chart and each rank parts shall be packed separately when shipping.

Rank	Total power (mW)		Conditions
	Min.	Max.	
A	1,400	1,710	I_F=1,000mA Ta=25℃
B	1,710	2,100	

Notes Measurement tolerance: ±10%

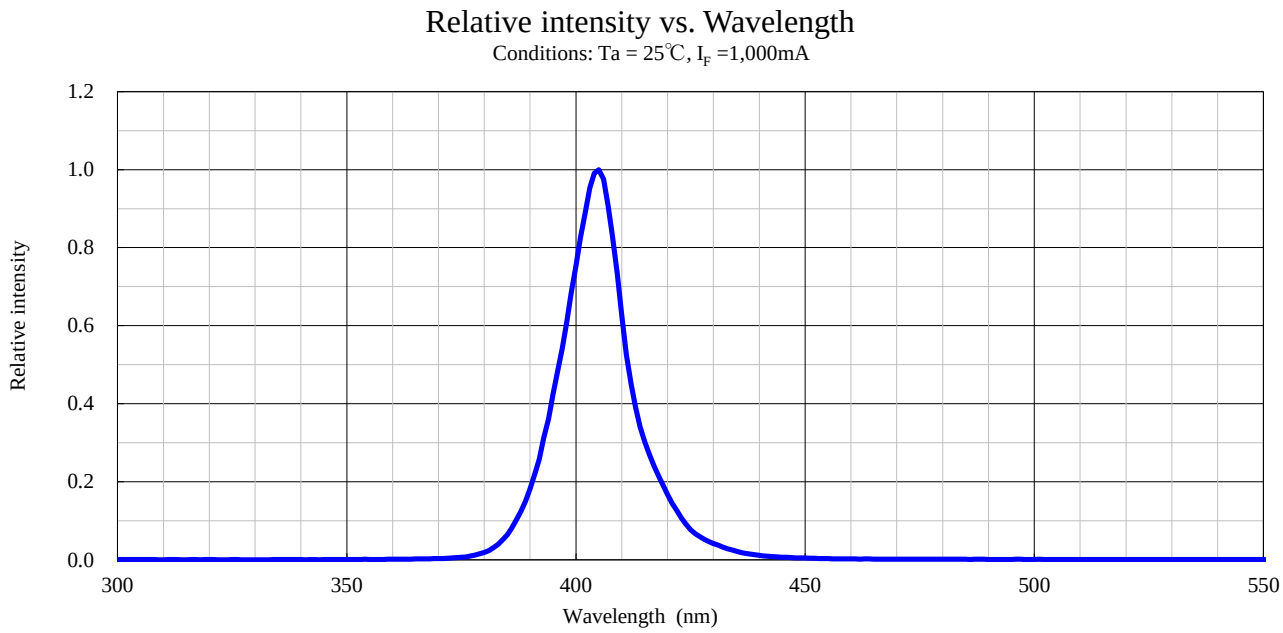
【 Sorting chart for forward voltage 】

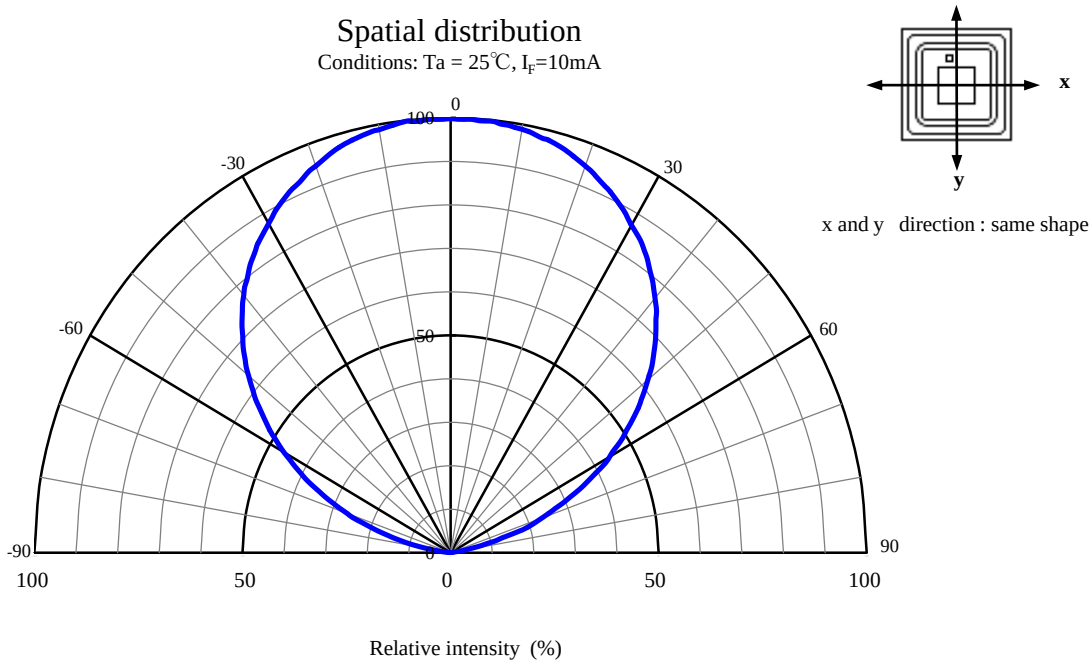
LEDs shall be sorted out "Forward voltage" into the following chart and each rank parts shall be packed separately when shipping.

Rank	Forward voltage(V)		Conditions
	Min.	Max.	
A	3.2	3.7	I_F = 1,000mA Ta = 25℃
B	3.7	4.2	

Notes Measurement tolerance: ±3%

Technical data





Soldering condition

【Soldering precaution】

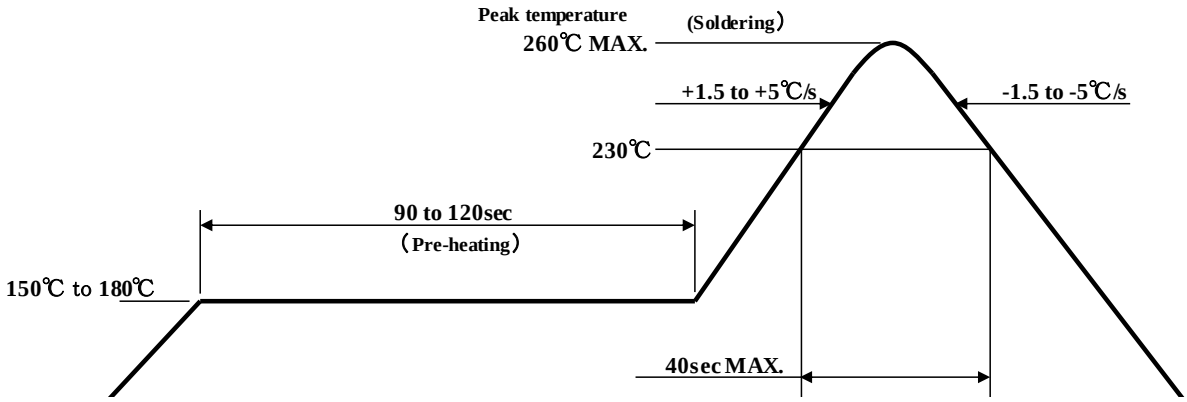
(acc.to EIAJ-4701/300)

1. Heat stress during soldering will influence the reliability of LEDs, however that effect will vary on heating method. Also, if components of varying shape are soldered together, it is recommended to set the soldering pad temperature according to the component most vulnerable to heat (e.g., surface mount LED).

2. The LEDs constituent parts, do not stabilize immediately after soldering. Any mechanical stress may cause damage to the products. Please avoid stacking the PCBs, or any other storage method which may cause the PCBs to bend; also, prevent contact of LED with any materials.

3. The recommended temperature profile for reflow soldering is listed as the top surface temperature. This is due to the fact that temperature distribution varies on heating method, PCB material, other components in the assembly, and concentration of the parts mounted. Typically, when FR-4 PCB is mounted with one single LED and heated via Far infrared and hot air, the difference in temperature between PCB and top surface of LED will be around 5 to 10 deg.C.
   Please do not repeat the heating process during reflow more than two times.

【Recommended reflow soldering condition】



Note 1 Recommended temperature profile for the reflow soldering is listed as the temperature of the surface of LED. This should be the maximum temperature for soldering. Lowering the heating temperature and decreasing heating time is very effective in achieving higher reliability.

Note 2 The reflow soldering process should be done up to twice(2 times Max). When second process is performed, interval between first and second process should be as short as possible to prevent absorption of moisture to LED. The second soldering process should not be done until LEDs have returned to room temperature (by nature-cooling) after first soldering process.

Soldering condition

4. When using a metal PCB, the solder may crack and problems may occur due to major stress on the soldered portion caused by thermal shock. Please carry out a thorough advance verification before use. For the metal PCB's insulation, it is recommended to use stress-reducing materials

5. The products cannot be used for hand soldering and dipping (through the wave) soldering.

6. When cleaning, using isopropyl alcohol is recommended. Some chemicals, including Freon substitute detergent could corrode the surface of products, which cause discoloration, clouding, cracks and so on. Please review the reference chart below when cleaning.
   If water is used to clean (including the final cleaning process), please use pure water (not tap water), and completely dry the LED before using. Cleaning with supersonic wave is not recommended.

Cleaning agents	Recommended / Not recommended
Isopropyl alcohol	✓ **Recommended**
Ethyl alcohol	✓ **Recommended**
Pure water	✓ **Recommended**
Trichloroethylene	x **Not recommended**
Chlorothene	x **Not recommended**
Acetone	x **Not recommended**
Thinner	x **Not recommended**

Handling precaution

【For electric static discharge (ESD)】

1. Electrification/Static electricity protection

In order to avoid product (die) damage from static electricity caused by electrified operator and other materials electrified friction coming in contact with the product, YesLED recommends taking the following precautions.

① Do not place electrified non-conductive materials near the LED product.
Avoid LED products from coming into contact with metallic materials.(Should the metallic material be electrified , the sudden surge voltage will most likely damage the product.)

② Avoid a working process which may cause the LED product to rub against other materials.

③ Install ground wires for any equipment, where they can be installed, with measures to avoid static electricity surges.

④ Prepare a ESD protective area by placing a Conductive Mattress (1MΩ MAX.) and Ionizer to remove any static electricity.

⑤ Operators should wear a protective wrist-strap.

⑥ Operators should wear conductive work-clothes and shoes.

⑦ To handle the products directly, YesLED recommends the use of ceramic, and not metallic, tweezers.

2. Working environment

① Dry environment is more likely to cause static electricity. Although a dry environment is ideal for storage state of LED products, YesLED recommends an environment with approximately 50% humidity after the soldering process.

② Recommended static electricity level in the working environment is 150V or less, which is the same value as Integrated Circuits (which are sensitive to static electricity).

Handling precaution

【Other precautions】

1. The products are designed to achieve higher performance reliability, however, they can be influenced by usage conditions.

2. Absolute maximum ratings are set to prevent LED products from failing due to excess stress (temperature, current, voltage, etc.). These ratings must never be overrun even for a moment.

3. To achieve the highest performance reliability, it is necessary to take into account, factors such as forward voltage adjusted to the usage temperature condition, derating of the power consumption, and other variable factors.

4. Please insert Straight Protective Resistors into the circuit in order to stabilize LED operation and to prevent the device from igniting due to excess current.

5. Please avoid to using the products with materials and products that contain sulfur and chlorine elements because the reliability may be decreased. Please keep in desiccator before and after mounting, to prevent the products from being affected by corrosive gas.
   Also please make sure there isn't any gas in the surrounding area or entering from outside when using the products.

6. Supersonic wave welding is not recommended because wire open circuit may occur.
   ex) bonding outer lens to this product or housing

7. Please check the actual performance in the assembly because the Specification Sheets are described for LED device only.

8. When there is a process of supersonic wave welding etc. after mounting the product, there is a possibility of affecting on the reliability of junction part in package (junction part of die bonding and wire bonding). Please make sure there is no problem before using.

9. The products are designed to perform without failure in the recommended usage conditions. However, please take the necessary precautions to prevent fire, injury, and other damage from these unexpected failures.

10. The products are manufactured to be used for ordinary electronic equipment.
    Please contact our sales staff in advance when exceptional quality and reliability are required, when the failure or malfunction of the products might directly jeopardize life or health (such as for airplanes, aerospace, medical applications, nuclear reactor control systems and so on).

Correspondence to RoHS2 / ELV instruction

This product is in compliance with RoHS2 / ELV.
Prohibition substance and it's criteria value of RoHS2 / ELV are as follows.

- RoHS2 instruction … Refer to following 1 to 10.
- ELV instruction … Refer to following 1 to 4.

No.	Substances	Threshold
1	Lead and its compounds	0.1% (1,000ppm)
2	Mercury and its compounds	0.1% (1,000ppm)
3	Cadmium and its compounds	0.01% (100ppm)
4	Hexavalent chromium compounds	0.1% (1,000ppm)
5	PBB : Polybrominated Biphenyls	0.1% (1,000ppm)
6	PBDE : Polybrominated Biphenyl Ethers	0.1% (1,000ppm)
7	DEHP : Bis (2-ethylhexyl) phthalate	0.1% (1,000ppm)
8	BBP : Butyl benzyl phthalate	0.1% (1,000ppm)
9	DBP : Dibutyl phthalate	0.1% (1,000ppm)
10	DIBP : Diisobutyl phthalate	0.1% (1,000ppm)

Special notice to customers using the products and technical information shown in this data sheet

1) 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.

2) For the purpose of product improvement, the specifications, characteristics and technical data described in the data sheets are subject to change without prior notice. Therefore it is recommended that the most updated specifications be used in your design.

3) When using the products described in the data sheets, please adhere to the maximum ratings for operating voltage, heat dissipation characteristics, and other precautions for use. We are not responsible for any damage which may occur if these specifications are exceeded.

4) The products that have been described to this catalog are manufactured so that they will be used for the electrical instrument of the benchmark (OA equipment, telecommunications equipment, AV machine, home appliance and measuring instrument).
The application of aircrafts, space borne application, medical equipment and nuclear power control equipment, etc. needs a high reliability and safety, and the breakdown and the wrong operation might influence the life or the human body. Please consult us beforehand if you plan to use our product for the usages of aircrafts, space borne application, transportation equipment, medical equipment and nuclear power control equipment, etc. except OA equipment, telecommunications equipment, AV machine, home appliance and measuring instrument.

5) In order to export the products or technologies described in this data sheet which are under the "Foreign Exchange and Foreign Trade Control Law," it is necessary to first obtain an export permit from the Japanese government.

6) No part of this data sheet may be reprinted or reproduced without prior written permission from Yes International Company

7) The most updated edition of this data sheet can be obtained from the address below.

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- **Wear protective eyewear to avoid exposure to UV light, as well as protective masks and gloves, etc. in order not to expose your skin to the light.**
- **Attach warning labels to your products which contain UV LEDs.**
- **keep out of reach of children.**