PCF-15-V1 (308nm Deep UV LED)

1. Features

- AlGaN base flip type LED chip
- High power and efficiency
- Long lifetime
- RoHS Compliant

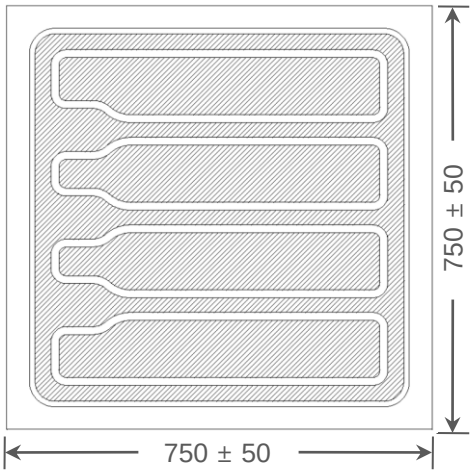
2. Application

- Disinfection
- UV curing
- Fluorescent spectroscopy
- Phototherapy

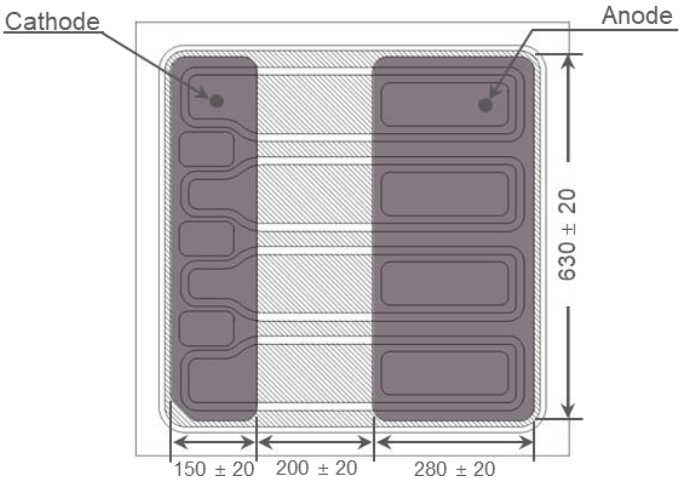
3. Mechanical Dimensions

unit : μm

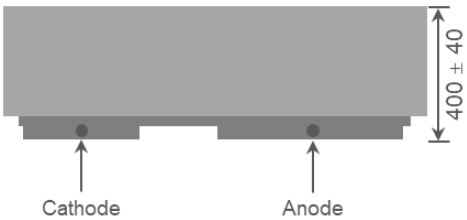
Top View



Bottom View



Cross Section



- Bonding pad metallization: AuSn

4. Electro-Optical Characteristics (I_F = 150 mA, T_a = 25 ℃) Note 1

Parameters	Symbol	Unit	Min.	Typ.	Max.
Peak Wavelength	λ_P	nm	300	308	315
FWHM	Wh	nm	-	12	-
Output Power	P_O	mW	-	21	-
Forward Voltage	V_F	V	5.0	5.7	7.0
Viewing Angle	$2\theta_{1/2}$	degree	-	125	-

5. Absolute Maximum Ratings (T_a = 25 ℃) Note 2

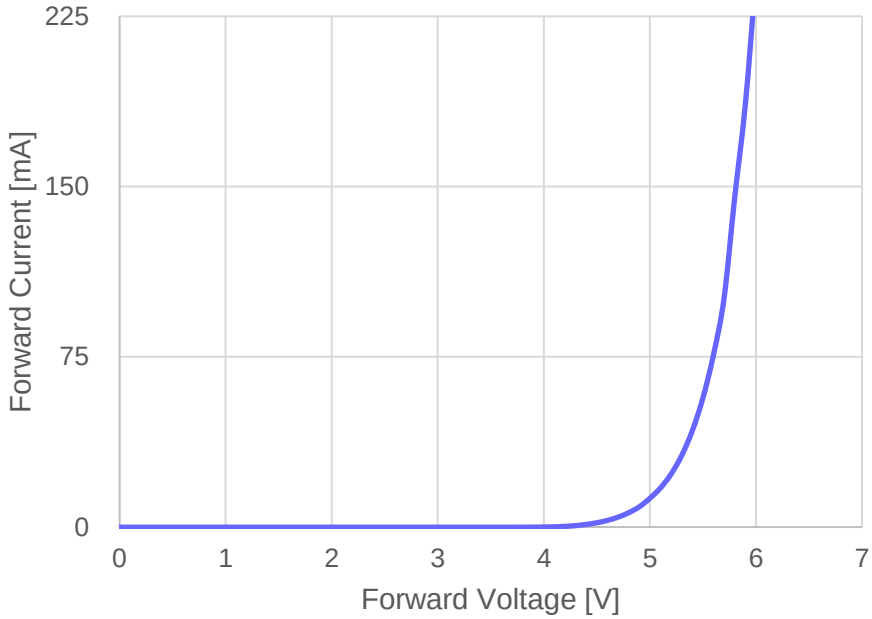
Parameters	Symbol	Ratings	Unit
Forward Current	I_F	225	mA
Junction Temperature	T_j	85	℃
Operating Temperature	T_{opr}	-30 ~ 60	℃
Storage Temperature	T_{stg}	-40 ~100	℃

Notes :

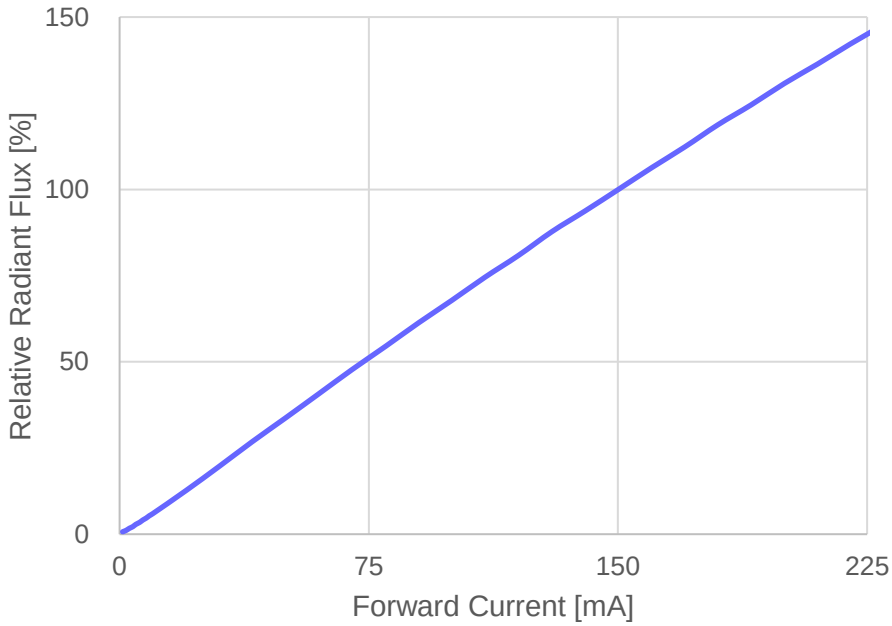
1. Measured by Integrating sphere of Photonwave, some values may vary depending on the test equipment. The measurement tolerance is as following;
   - Forward Voltage (Vf): ±5%
   - Peak wavelength (λ_p): ± 3nm
   - Radiant Flux (P_o): ±10%
2. Maximum ratings are strongly package-dependent. The above ratings were determined using a Photon Wave package die attach for characterization. Ratings for other packages may differ.

6. Characteristic Curves (T_a = 25 ℃)

< Forward Voltage vs. Forward Current >

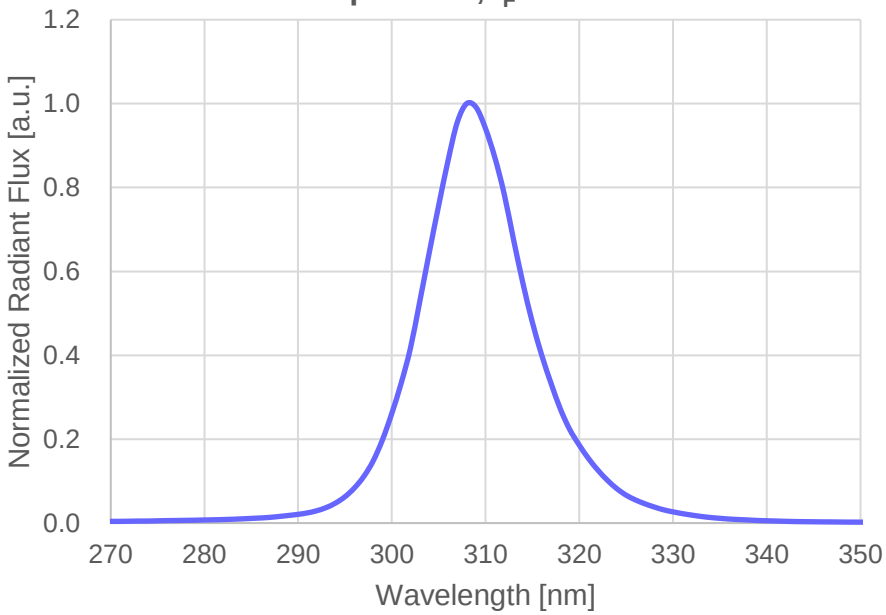


< Forward Current vs. Relative Radiant Flux >

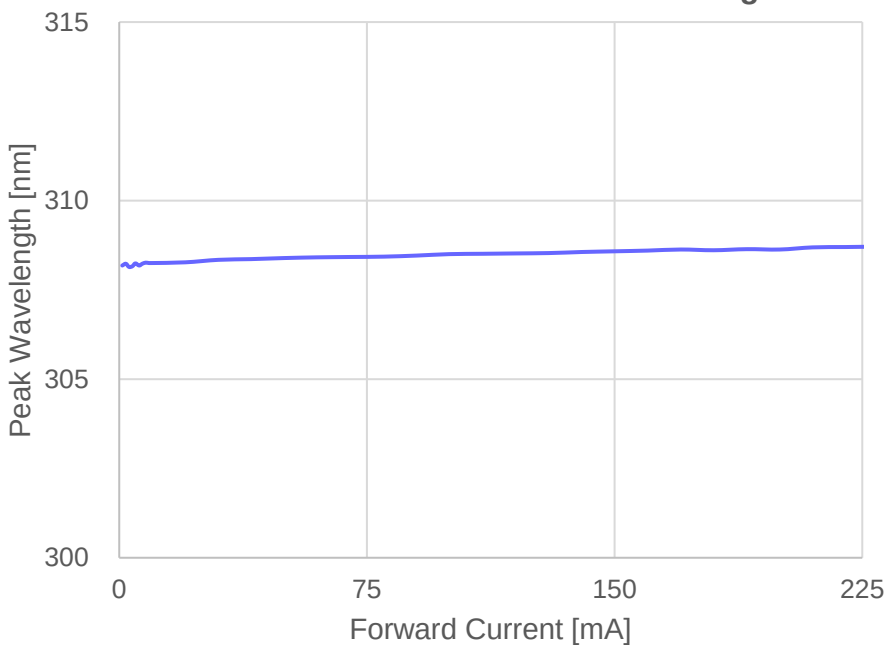


6. Characteristic Curves (T_a = 25 ℃)

< Spectrum, I_F = 150 mA >

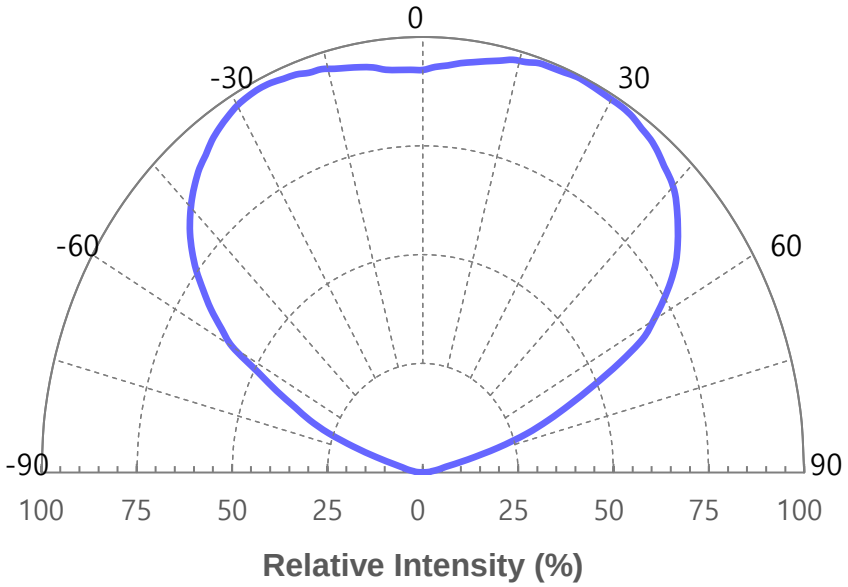


< Forward Current vs. Peak Wavelength >

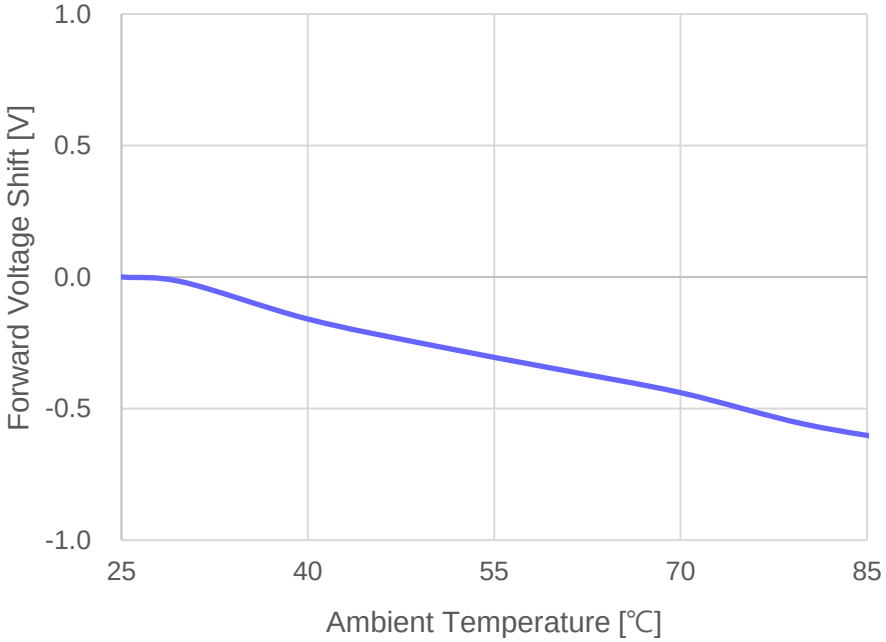


6. Characteristic Curves (I_F = 150 mA, T_a = 25 ℃)

< Directivity >



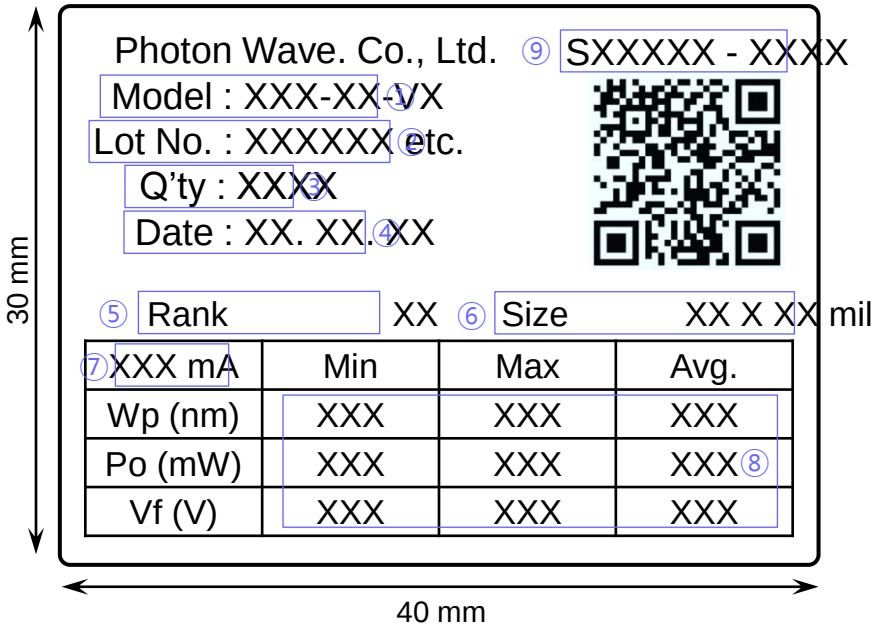
< Ambient Temperature vs. Forward Voltage Shift >



7. Binning Table (I_F = 150 mA, T_a = 25 ℃)

BIN	Peak Wavelength [nm]	Radiant Flux [mW]	Forward Voltage [V]
1	300 ~ 315	15 ~ 20	5.0 ~ 5.5
2			5.5 ~ 6.0
3			6.0 ~ 6.5
4			6.5 ~ 7.0
5		20 ~ 25	5.0 ~ 5.5
6			5.5 ~ 6.0
7			6.0 ~ 6.5
8			6.5 ~ 7.0
9		25 ~ 30	5.0 ~ 5.5
10			5.5 ~ 6.0
11			6.0 ~ 6.5
12			6.5 ~ 7.0
13		30 ~ 35	5.0 ~ 5.5
14			5.5 ~ 6.0
15			6.0 ~ 6.5
16			6.5 ~ 7.0

8. Labeling



① Model No.

② Lot No. (Epi No.)

③ Chip quantity

④ Sorting date

⑤ Rank No.

⑥ Chip size (ex. 20 x 20 mil)

⑦ Forward current

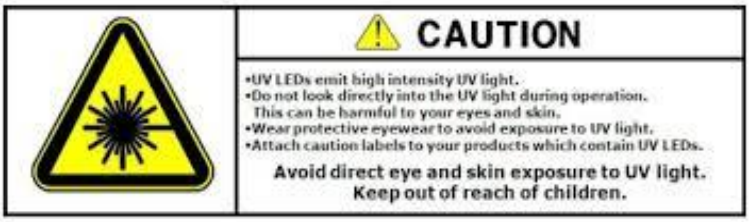
⑧ Bin characteristic

⑨ Blue Tape ID

9. Cautions on Use

Eye Safety Guidelines

- Do not view directly at the UV light of LED or optical instrument because it is harmful to human eyes.
- Do not expose to the human body and eyes during the LED light because UV light can be hazardous for human
- Please wear UV protective products such as UV protective glasses, mask and so on.



Static Electricity

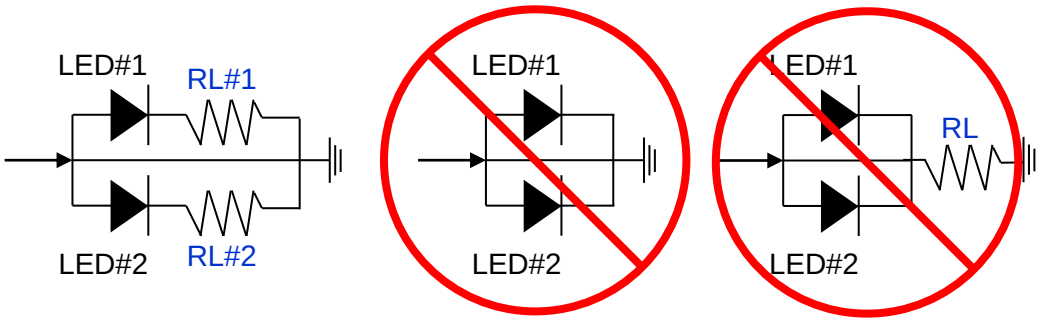
- Wristbands and anti-electrostatic gloves are strongly recommended and all devices, equipment and machinery must be properly grounded when handling the LEDs, which are sensitive against static electricity and surge.
- Precautions are to be taken against surge voltage to the equipment that mounts the LEDs.
- Unusual characteristics such as significant increase of current leakage, decrease of turn-on voltage, or non-operation at a low current can occur when the LED is damaged.

Manual Handling

- Minimize contact between metallic fixtures, tweezers, or other hard objects and the emitting surface. The pressure to the surface can damage the junction and lead to increased leakage current as a consequence.
- If possible, avoid the use of tapes or adhesives to the emitting surface which is subject to be contaminated by tape residue. Contaminated surface leads to reduced light extraction.
- Rubber collets are strongly recommended during the die pick and place process. Harder plastic collets may also be used with minimized die bonding parameters (bonding pressure).

Recommended Drive Circuits

- The parallel circuit design with a single resistor can result in different forward current to each LED, which means the LED shows an unexpected output performance. In the worst case, the currents can exceed the absolute maximum ratings which can stress the LEDs. So, we strongly recommend that a current limiting resistor be applied in the drive circuit, in series with each LED.
- Reverse voltage can damage the Zener diode and cause destructions.



Storage Environment

- The storage location should be kept at normal temperature and humidity, that is 25 to 35 ℃ and 45 to 70 % relative humidity. Care must be taken to avoid storage under temperature and humidity conditions that are significantly different from these.
- Avoid storage in a location with corrosive gas or a large amount of dust.
- Sudden temperature variations can cause condensation to form on devices and/or packaging material, so avoid such an environment.
- Store devices in a location with free of radiation, static electricity and strong electro-magnetic fields.

10. Legal Disclaimer

- Photon Wave Co., Ltd. Is not responsible for any damages or accidents caused if the operating or storage conditions exceed the absolute maximum ratings recommended in this document.
- The LEDs described in this document are intended to be operated by ordinary electronic equipment.
- It is recommended to consult with Photon Wave Co., Ltd. when the environment or the LED operation is non-standard in order to avoid any possible malfunctions or damage to product or risk of life or health.
- Disassembly of the LED products for the purpose of reverse engineering is prohibited without prior written consent from Photon Wave Co., Ltd. All defected LEDs must be reported to Photon Wave Co., Ltd. and are not to be disassembled or analyzed.
- The product information can be modified and upgraded without prior notice.

11. History of Revision

Revision	Date	Contents Revision	Remark
Rev 1.0	21. 03. 29.	Newly published	-
Rev 1.1	21. 06. 18.	Label is changed	-