

Technical Data Sheet

CMH235A1V107Z1 (UVA-395nm)



Company introduction:

BYTECH Electronics CO., Ltd, Chinese national high and new tech enterprise, is a subsidiary company of Hongli Zhihui Group (stock code: 300219). BYTECH is the first company in China to produce and sale the full inorganic UV LEDs, and to provide application solutions for customer.

CMH packaging technology platform is a kind of packaging technology which adopts ceramic, metal, hard glass as packaging materials. CMH packaging technology platform originates independent intellectual property owned by BYTECH. By now, BYTECH can provide CMH series (high reliability) and U/D series (high cost performance) products, including UVA/UVB/UVC/VCSEL. It covers curing, printing, (money) authentication, medical, disinfection/sterilization and security industry.

DESIGN	CHECKED	APPROVED
2021.05.13	2021.05.13	2021.05.13
GAN	研发专用章	REN

Under Development	
Mass Production	•



ATTENTION
OBSERVE PRECAUTIONS
FOR HANDLING
ELECTROSTATIC
DISCHARGE
SENSITIVE
DEVICES



Features

- Based on CMH full inorganic packaging technology;
- Dimension: 3.70mm×3.70mm×2.77mm;
- Long operating life;
- High reliability;
- Superior ESD protection;
- RoHS compliant.

Applications

- Fluorescent spectroscopy;
- Bio-analysis/detection;
- Phototherapy;
- Curing;
- Printing;
- Coating.

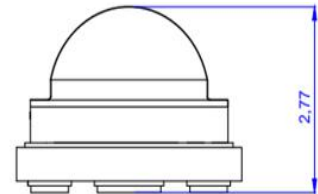
Product ID:

CMH235A1V107Z1

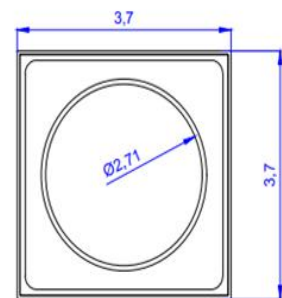
- CMH: packaging technology;
- 2: viewing angle, 45°;
- 35: package size, 3.5mm*3.5mm;
- A1: peak wavelength, 390~400nm;
- V107: LED chip code, vertical chip;
- Z1: zener chip code;

Package Dimensions (Unit: mm):

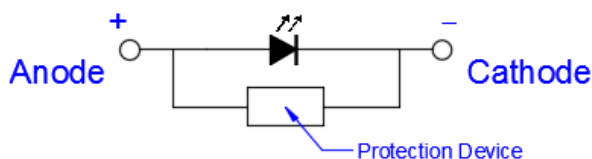
Side View



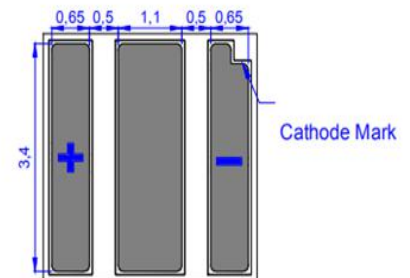
Top View



Circuit:



Bottom View



Tolerance: ± 0.20mm

Characteristics of UV LED

1. Electrical / Optical Characteristics (IF=1000mA, Ta=25°C, RH=40%)

Parameter	Symbol	Units	CMH235A1V107Z1
Peak Wavelength [1]	λ_p	nm	390~400
Radiant Flux [2]	Φ_e [3]	mW	1400~1800
Inverse voltage	Vr	V	3.4~4.0
Forward Voltage [4]	VF	V	5
Thermal Resistance [5]	R _{th}	°C/W	5
Spectrum Half Width	$\Delta\lambda$	nm	13
View Angle	2 $\theta_{1/2}$	deg	45

Notes:

- [1].Peak wavelength measurement tolerance:±3nm;
 [2].Radiant flux measurement tolerance:±10%;
 [3]. Φ_e is the total radiant Flux as measured with an integrated sphere;
 [4].Forward voltage measurement tolerance:±3%;
 [5].R_{th} is the thermal resistance between junction to substrate.

2. Absolute Maximum Ratings (T_a=25°C, RH=40%)

Parameter	Symbol	Units	数值
DC Forward Current	I _{Fmax}	mA	1200
Peak Forward Current (1/10 duty@1khz)	IFp	mA	1500
Maximum Rating Junction Temperature	T _{jmax}	°C	125
Operating Temperature Range	T _{opr}	°C	-40 ~ +60
Storage Temperature Range	T _{stg}	°C	-40 ~ +85

Notes:

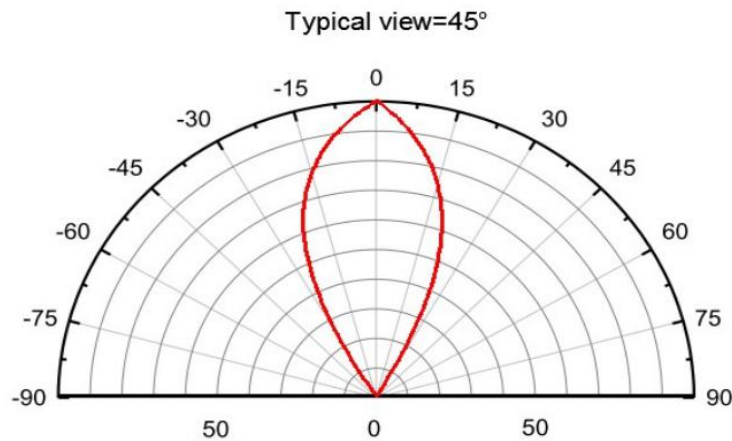
The operating condition must meet the requirement of those listed maximum ratings. Otherwise, it may reduce the device's reliability and cause permanent damage. In this case, BYTECH will not be responsible for product failure or any other consequences.

Under Development	
Mass Production	•

3. BIN Rank (IF=1000mA, Ta=25°C, RH=40%)

Peak Wavelength (nm)	Voltage (V)	Radiant Flux (mW)	
		1400~1600	1600~1800
390~395	3.4-3.5	A1001	A1002
	3.5-3.6	A1005	A1006
	3.6-3.7	A1009	A1010
	3.7-3.8	A1013	A1014
	3.8-3.9	A1017	A1018
	3.9-4.0	A1021	A1018
395~400	3.4-3.5	A1033	A1032
	3.5-3.6	A1037	A1038
	3.6-3.7	A1041	A1042
	3.7-3.8	A1045	A1046
	3.8-3.9	A1049	A1050
	3.9-4.0	A1053	A1054

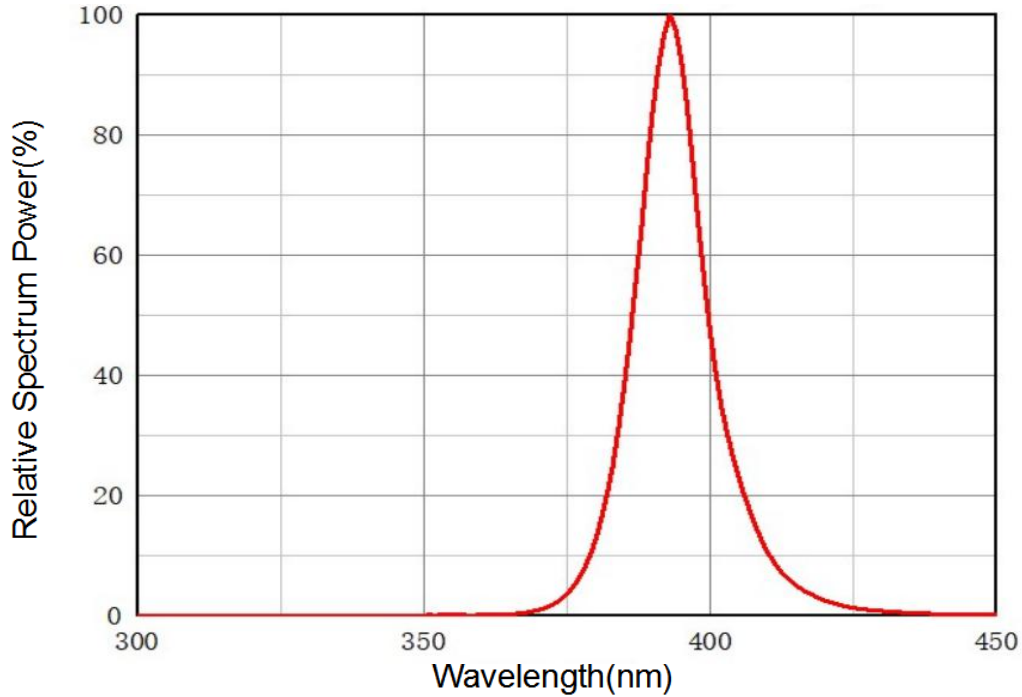
4. Spatial Distribution (IF=1000mA, Ta=25°C, RH=40%)



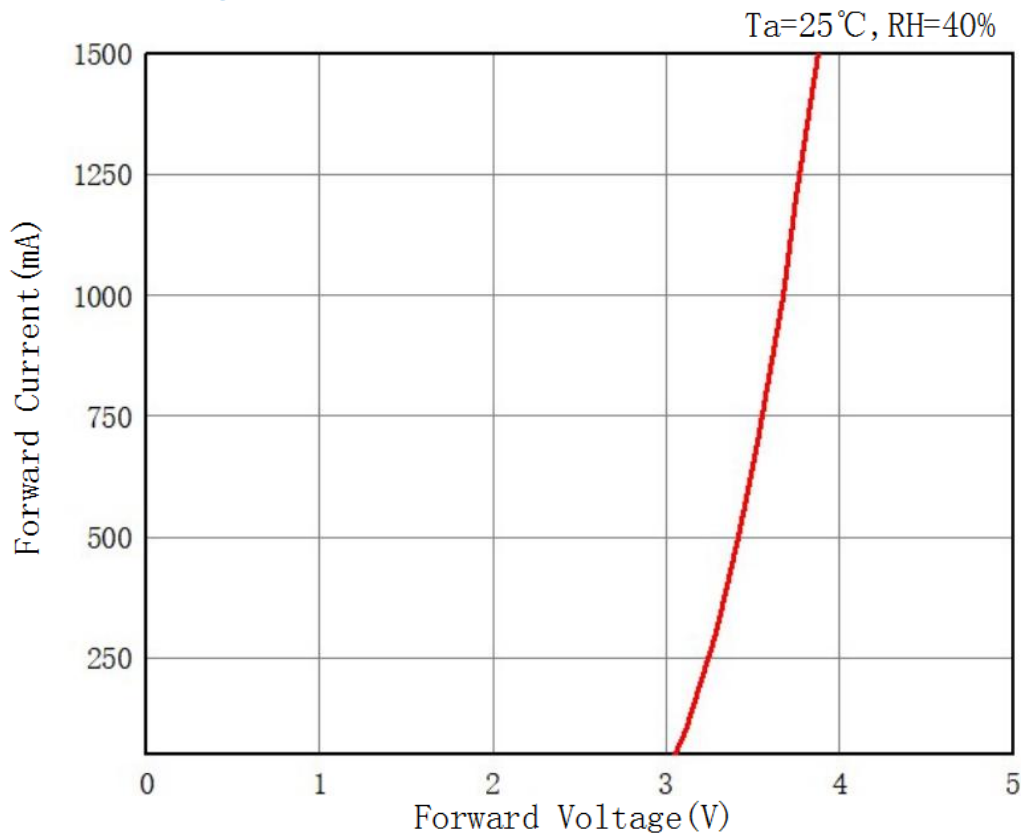
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Mass Production	•

Characteristics Diagrams

1. Relative Spectrum Power Distribution (IF=1000mA, Ta=25°C, RH=40%)

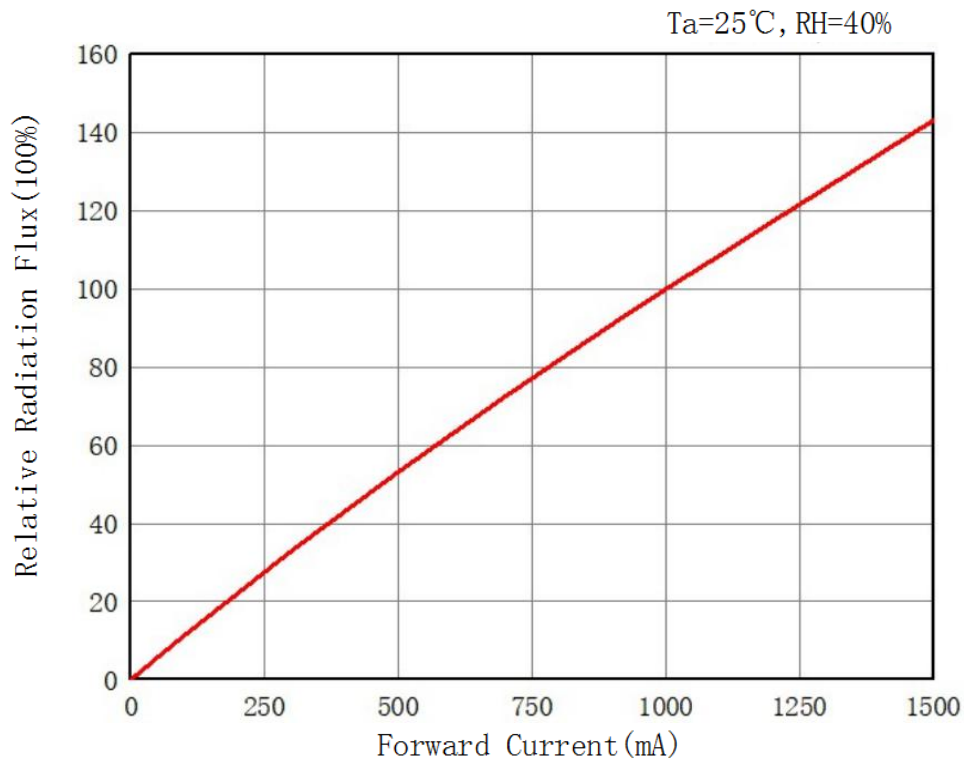


2. Forward Voltage VS Forward Current

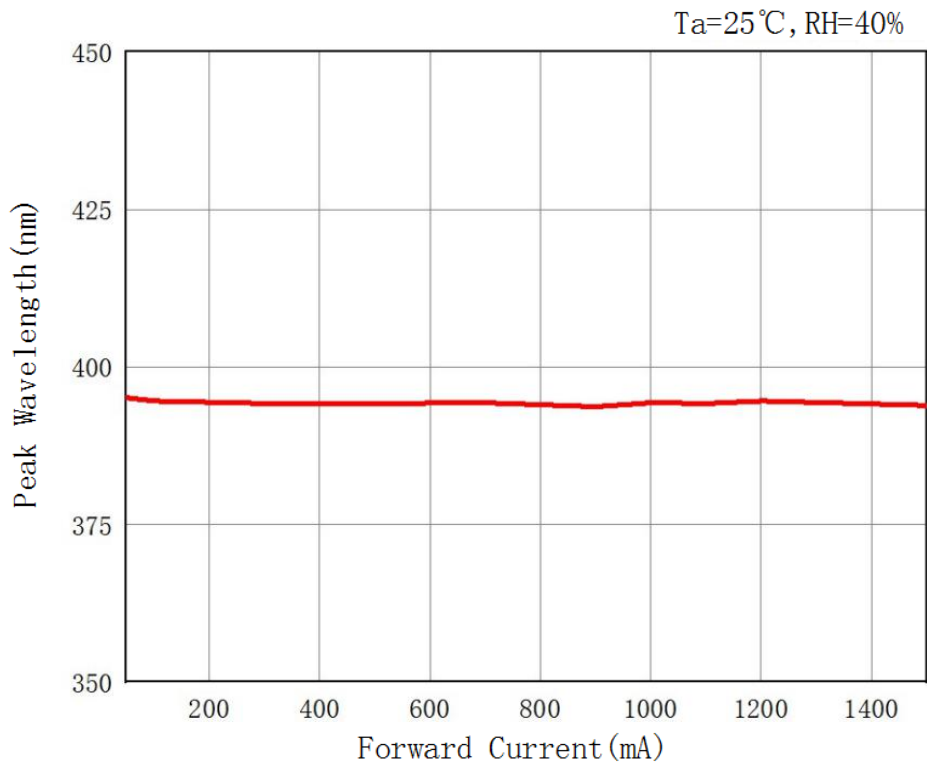


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3. Relative Radiation Flux VS Forward Current

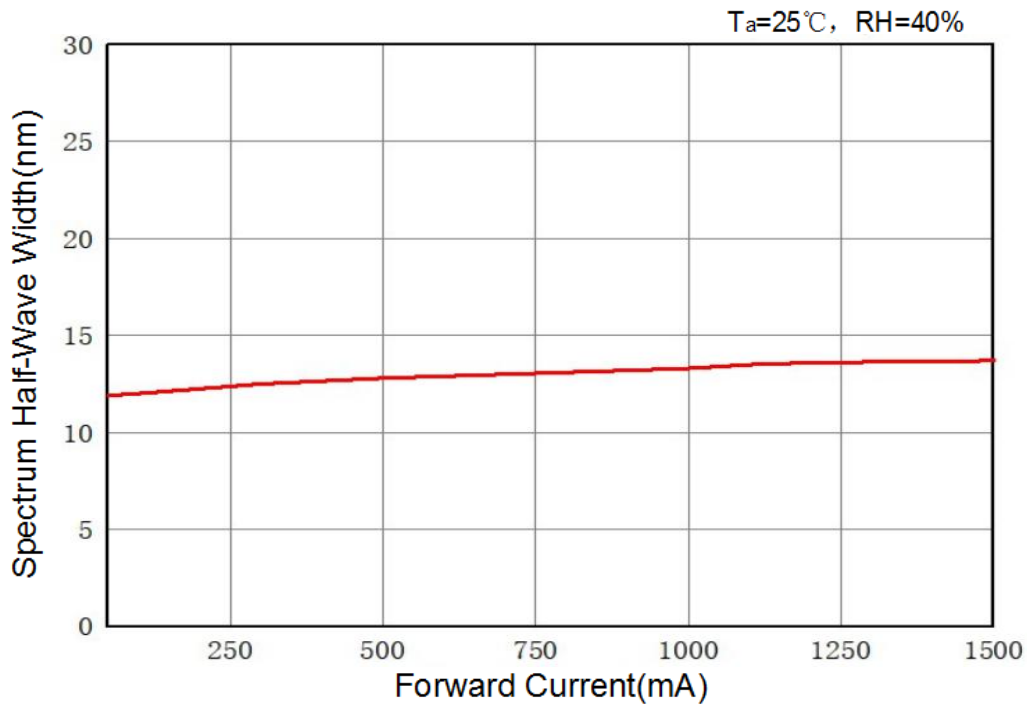


4. Peak Wavelength VS Forward Current



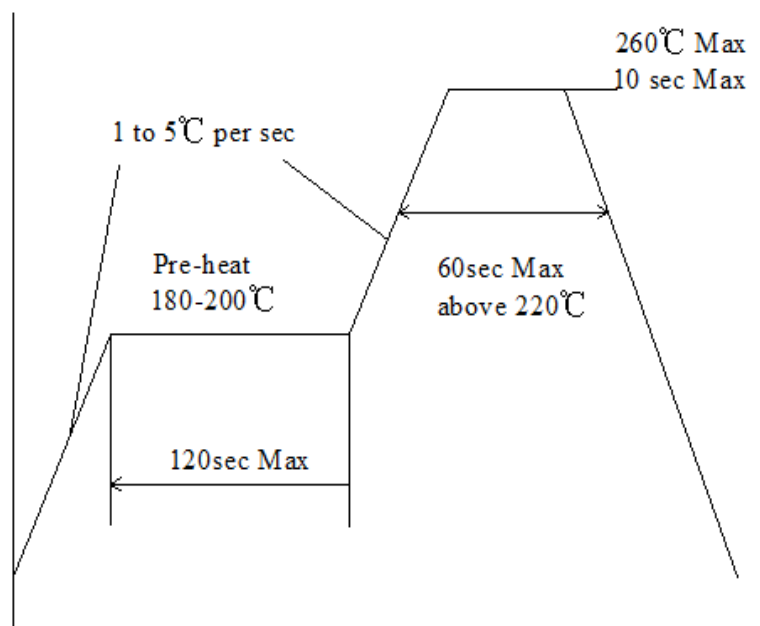
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Mass Production	•

5. Spectrum Half-Wave Width VS Forward Current

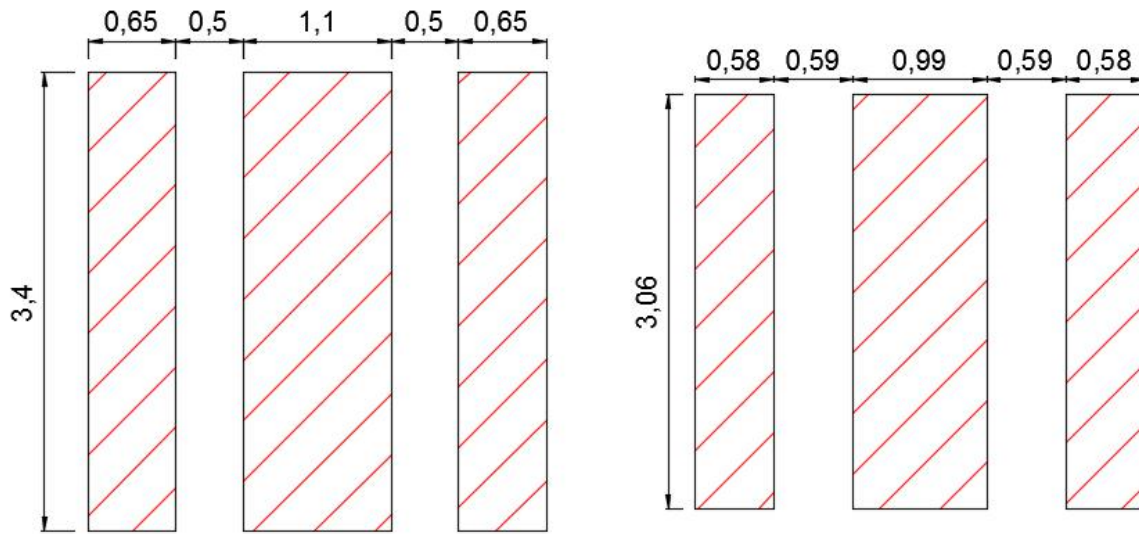


Product Application Information

1. Recommended soldering condition



Recommended Reflow Soldering Condition (Lead free soldering)



Recommended Soldering pad Layout
(Unit: mm)

Recommended Soldering Mask Layout

Notes:

- *This LED is designed to be reflow soldered on to a PCB. If dip soldered or hand soldered, Bytech cannot guarantee its reliability.
- *Reflow soldering must not be performed more than twice.
- *Avoid rapid cooling. Ramp down the temperature gradually from the peak temperature.
- *Nitrogen reflow soldering is recommended. Air flow soldering conditions can cause optical degradation, caused by heat and/or atmosphere.
- *Since the glass used in the encapsulating glass is fragile, do not press on the encapsulant glass. Pressure can cause nicks, chip-outs, encapsulant delamination and deformation, and wire breaks, decreasing reliability
- *Repairing should not be done after the LEDs have been soldered. It should be confirmed beforehand whether the characteristics of the LEDs will or will not be damaged by repairing.
- *The Die Heat Sink should be soldered to customer PCB. If it is difficult or impossible, use high heat-dissipating adhesive.
- *When soldering, do not apply stress to the LED while the LED is hot.
- *When using a pick and place machine, choose an appropriate nozzle for this product.
- *When flux is used, it should be a halogen free flux. Ensure that the manufacturing process is not designed in a manner Where the flux will come in contact with the LEDs.
- *Make sure that there are no issues with the type and amount of solder that is being used.

CAUTIONS

1. Handling Precautions

- Do not handle the LEDs with bare hands as it will contaminate the LEDs surface and may affect the optical characteristics.
- When handling the product with tweezers, be careful not to apply excessive force to the glass. Otherwise, the glass can be cut, chipped, delaminate or deformed, causing wire-bond breaks and catastrophic failures.
- Dropping the product may cause damage.

2. Electrostatic Discharge (ESD)

- The product are sensitive to static electricity or surge voltage. ESD can damage a die and its reliability. When handling the products, the following measure against electrostatic discharge are strongly recommended:

Eliminating wrist strap, ESD footwear, clothes, and floors

Grounded workstation equipment and tools

ESD table/shelf mat made of conductive materials

- Ensure that tools, jigs and machines that are being used are properly grounded and that proper grounding techniques are used in work areas. For devices/equipment that mount the LEDs, protection against surge voltages should also be used.

- The customer is advised to check if the LEDs are damage by ESD

When performing the characteristics inspection of the LEDs in the application.

Damage can be detected with a forward voltage measurement at low current($\leq 1\text{mA}$).

3. Eye Safety

- Please proceed with caution when handling any UVLEDs driven at low or high current. Since UV light can be harmful to eyes, do Not look directly into the UV light, even through an optical instrument.
- UV protective glasses are required to use in order to avoid damage by UV light in case of viewing UV light directly.

