QUELIGHTING

Sustainable Lighting Solution

QLUV07DZGDM
UVB LED

Product Outline:

The high-performance output 3535 LEDs, UVB LED series are designed for high current operation and high power output applications. Quelighting UV LED is ideal UV light source for water disinfection.

Features:

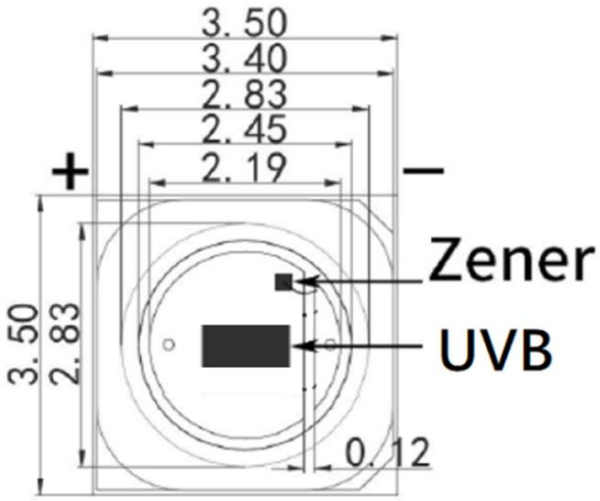
- UVB 290~320nm LED
- **Quartz glass lens**
- Package Dimension = 3.5mmX3.5mmX3.4mm
- View angle **30 degree**
- RoHS compliant
- Custom Bin available upon special request

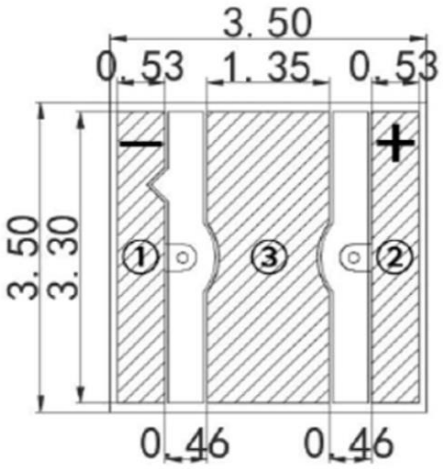
Application:

- Plant Growth
- Skin Condition Treatment
- Disinfection
- Phototherapy
- Bio-Analysis/Detection Features
- Curing

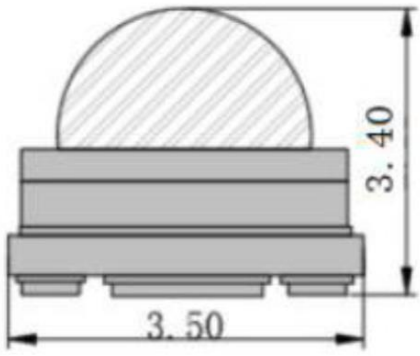
Compliance and Certification:

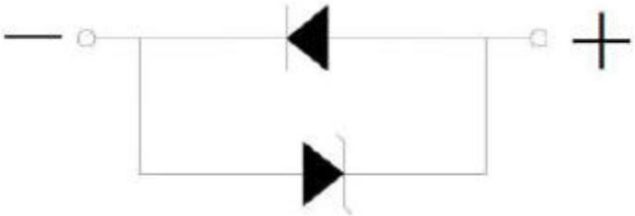
Mechanical Property:





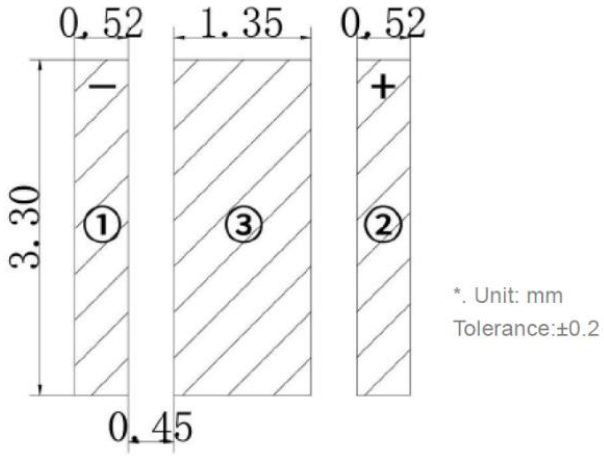
Side View





Note:
1. All dimension in millimeters
2. tolerance is ±0.4mm

Recommended Solder footprint:



Note:
1. Pad ① is the positive pole, pad ② is the negative pole,, and pad ③ is the heat dissipation pad.
2. All dimension in millimeters
3. The drawing without tolerances is for reference only
4. Suggest stencil T=0.12 mm
5. It is recommended that the metal mask be designed below 80% of the pad size.

Electrical / Optical Characteristic

(T=25 °C)

Product	View angle	I_F(mA)	V_F(V)		Wavelength (nm)	Radiant Power(mW)	
			Typ.	max		min.	typ.
QLUV07DZGDM	30	100	5.8	6.5	290-320	22	26

(1) The Forward Voltage tolerance is ±0.2V
(2) The Peak wavelength tolerance is ±5
(3) The Radiant power is ± 10%

Absolute Maximum Rating

(T=25 °C)

Part #	P_d (mW)	I_F (mA)	I_{FP} (mA)*	V_R (V)	T_{OP} (°C)	T_{ST} (°C)	Tj (°C)**	T_{SOL} (°C)**	$R_{th(J-S)}$ (C/W)***
QLUV07DZGDM	1	150	180	-10	-30 – 60	-40 - 85	80	260	20

*Duty 1/10 @ 10Khz
** Junction Temperature
*** IR Reflow for no more than 10 sec @ 260 °C
**** Thermal resistance is calculated from junction to solder

Peak Wavelength Binning

Wavelength Rank @ 100mA			
Code name	**Low**	**High**	**Units**
U290	290	300	nm
U300	300	310	
U310	310	320	

The Peak Wavelength tolerance is ± 5 nm

Forward Voltage (V_F) Bin:

VF Rank @ 100mA			
Code name	**Min.**	**Max.**	**Units**
3	5.0	5.5	V
4	5.5	6.0	
5	6.0	6.5	
6	6.5	7.0	

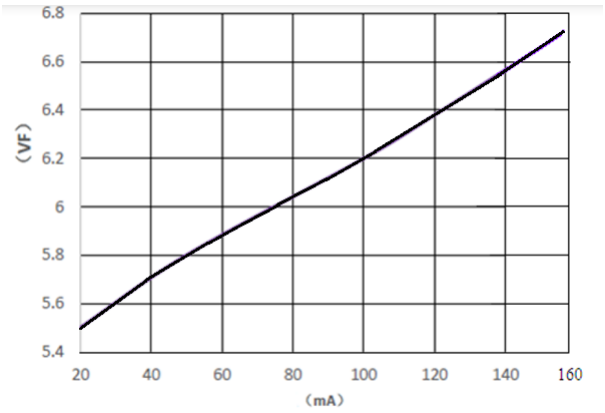
The forward voltage tolerance is ± 0.2V

Radiant Power Binning:

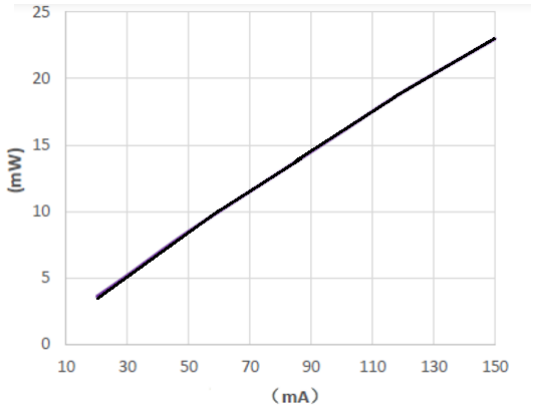
Radiant Power rank (mW) @ 100mA			
Code name	**Low**	**High**	**Units**
P8	22	24	mW
P9	24	26	
P10	26	28	
P11	28	30	

luminous flux tolerance is ± 7%

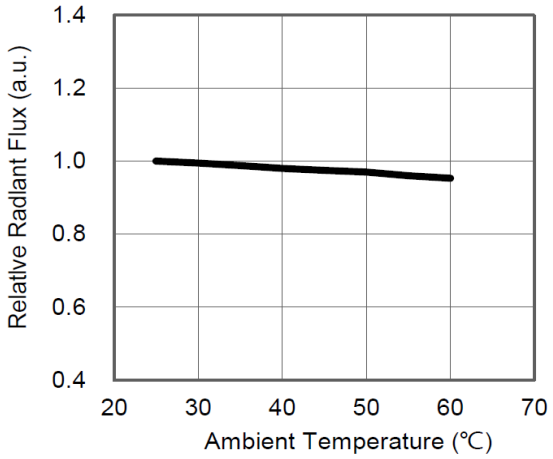
Characteristic Curves



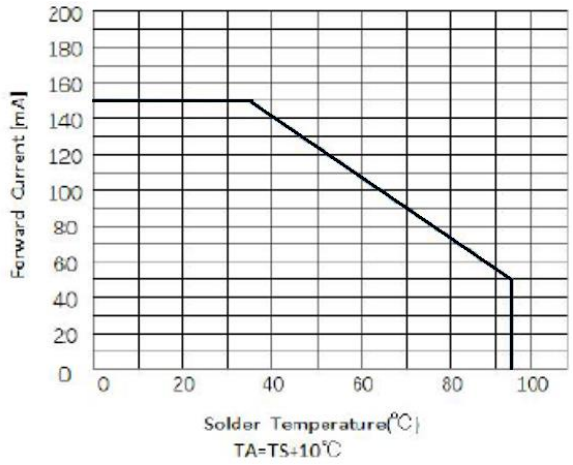
Forward Voltage vs. Forward Current



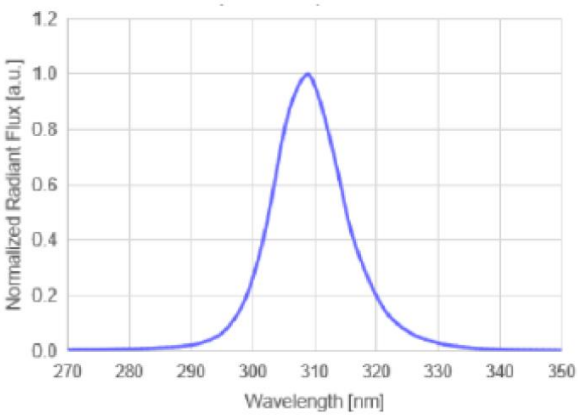
Forward current vs. Relative luminous intensity



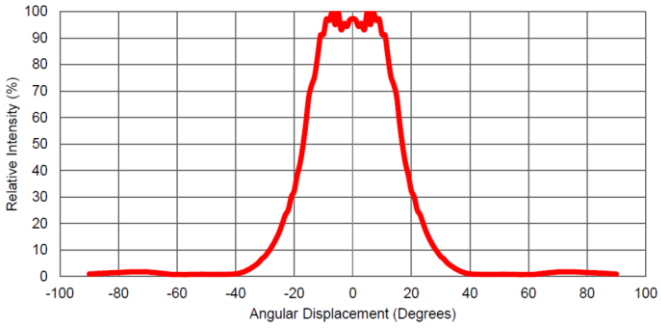
Relative Luminous Intensity vs Ambient Temperature



Solder Temperature vs. Maximum Forward Current



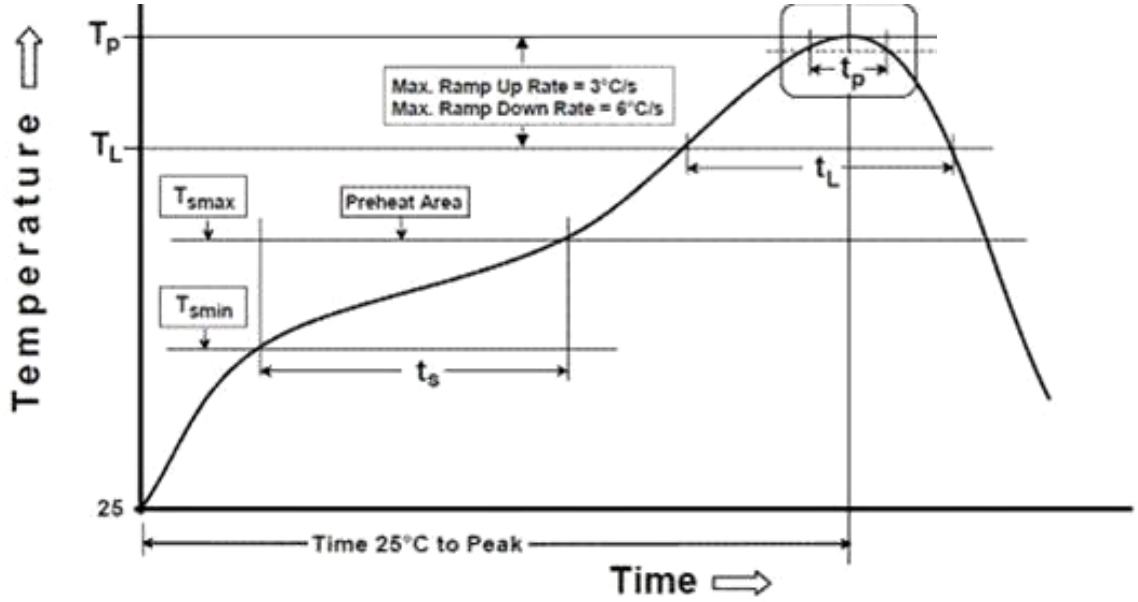
Spectrum Distribution



Typical Representative Spatial Radiation Pattern

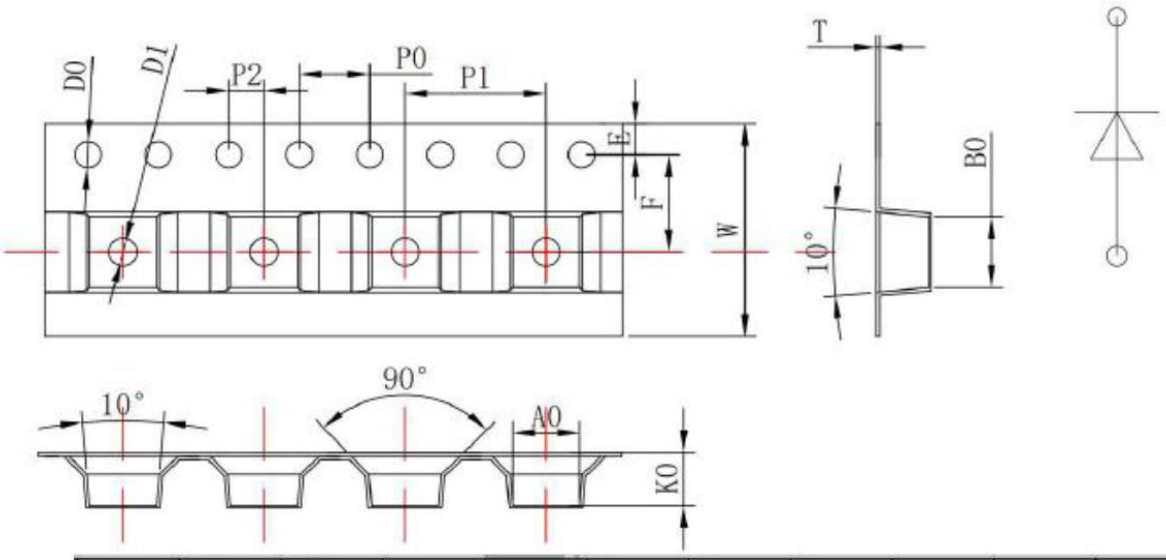
Solder Profile:

-The recommended reflow soldering profile is as follows (temperatures indicated are as measured on the surface of the LED resin):



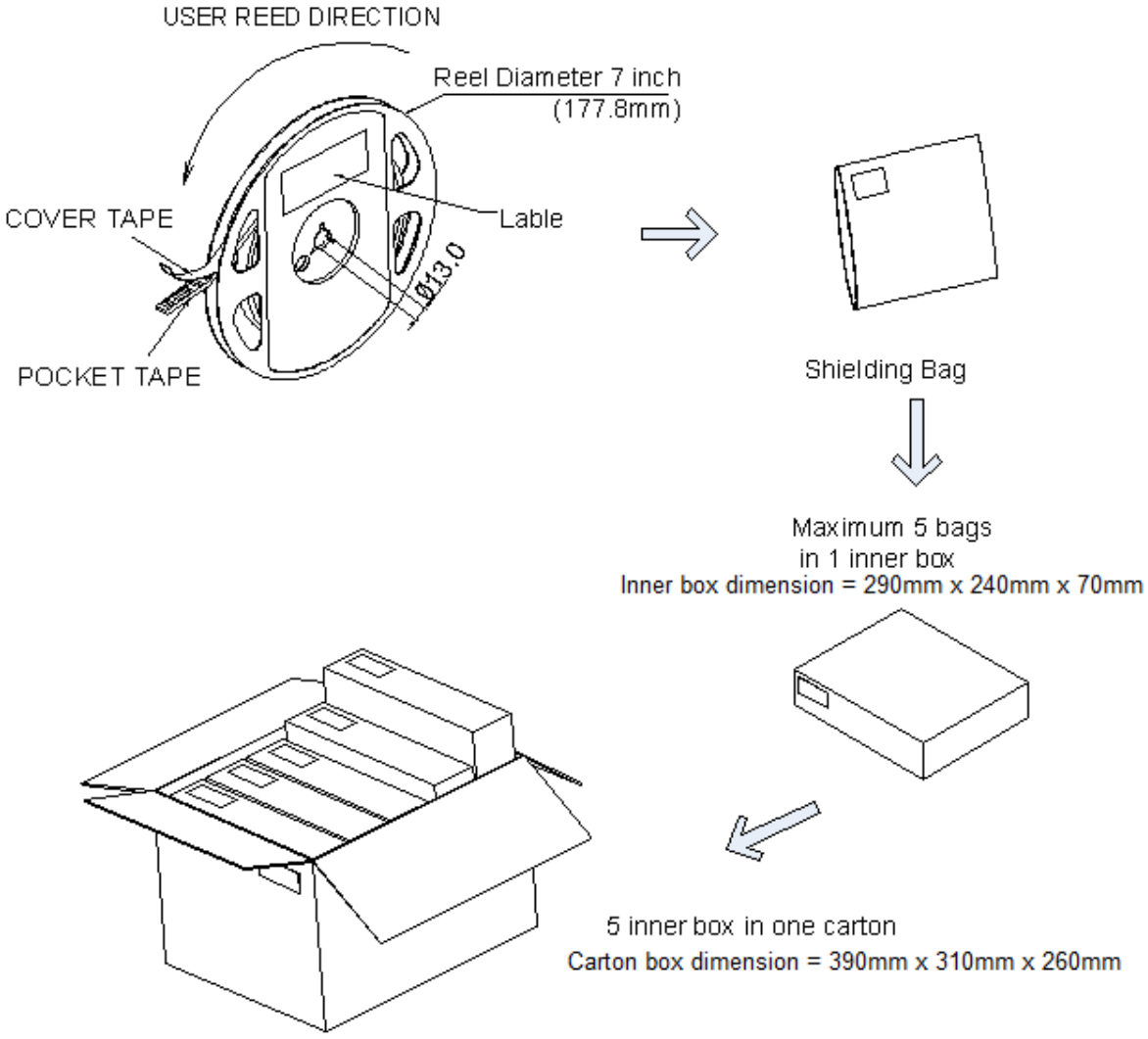
Profile Feature	Sn-Pb Eutectic Assembly	Pb-Free Assembly
Temperature Min(T_{smin})	100℃	150℃
Temperature Max(T_{smax})	150℃	200℃
Time(t_a) from (T_{smin} to T_{smax})	60-120 seconds	60-120 seconds
Ramp-up rate(T_L to T_P)	3℃/second max.	3℃/second max.
Liquidous Temperature(T_L)	183℃	217℃
Time(t_L) maintained above T_L	60-150 seconds	60-150 seconds
Peak package body temperature(T_P)	235℃	260℃
Time within 5℃ of Actual Peak temperature (t_p)	20seconds*	30 seconds*
Ramp-down rate(T_P to T_L)	6℃/second max.	6℃/second max.
Time 25℃ to peak temperature	6 minutes max.	8 minutes max.
* Tolerance for peak profile temperature (T_P) is defined as a supplier minimum and a user maximum.		

Taping & Packing:



W	A_0	B_0	K_0	P1	F	E	D_0	D_1	P_0	P_2	T
12.0±0.10	3.70±0.10	3.90±0.10	3.10±0.05	8.00±0.10	5.50±0.10	1.75±0.10	$1.50^{+0.10}_{-0.00}$	$1.50^{+0.10}_{-0.00}$	4.00±0.10	2.00±0.10	0.25±0.03

Notes:
1. Drawing not to scale.
2. All dimensions are in millimeters.
3. Unless otherwise indicated, tolerances are ± 0.10mm.



Handling Precautions

- LEDs are ESD (electrostatic discharge) sensitive; static electricity and surge voltages seriously damage UV LEDs and can result in product failure
- Use proper ESD protection, including grounded wrist straps, ESD footwear and clothes
- Ensure that tools, jigs and machines being used are properly grounded
- LED mounting equipment should include protection against voltage surge
-
- The UV LED is not protected by a lens and requires careful handling

- Do not handle the LED with bare hands as it may contaminate the LED surface and affect the optical characteristics.
- Avoid touching the LED die
- Do not use adhesives that outgas organic vapor
- Dropping the product may cause damage
- If handling the product with tweezers, use only the side of the package and be careful not to apply excessive force
- Proper thermal management is required to prevent warpage and damage to the modules and its components.
- Do not apply mechanical force or excess vibration during handling or normal operation

Storage Precautions

Please do not open the moisture proof package (with silica desiccant).more than one week.
This may cause the leads of LED discoloration.
We recommend storing LEDs in a dry box once moisture proof bag is opened.
The recommended storage conditions are temperature 5 to 30°C and humidity less than 40% RH.
It is also recommended to restore the LEDs into the moisture proof bag and reseal it.

Notes for handling Quartz lens LEDs

- Avoid touching the quartz lens especially by sharp tools such as Tweezers.
- Avoid leaving fingerprints on the quartz lens.
- Please store the LEDs away from dusty areas or seal the product against dust.
- Under SMT production, please avoid the mechanical pressure on the quartz lens.
- Please do not mold over the quartz lens with another resin. (epoxy, urethane, etc)

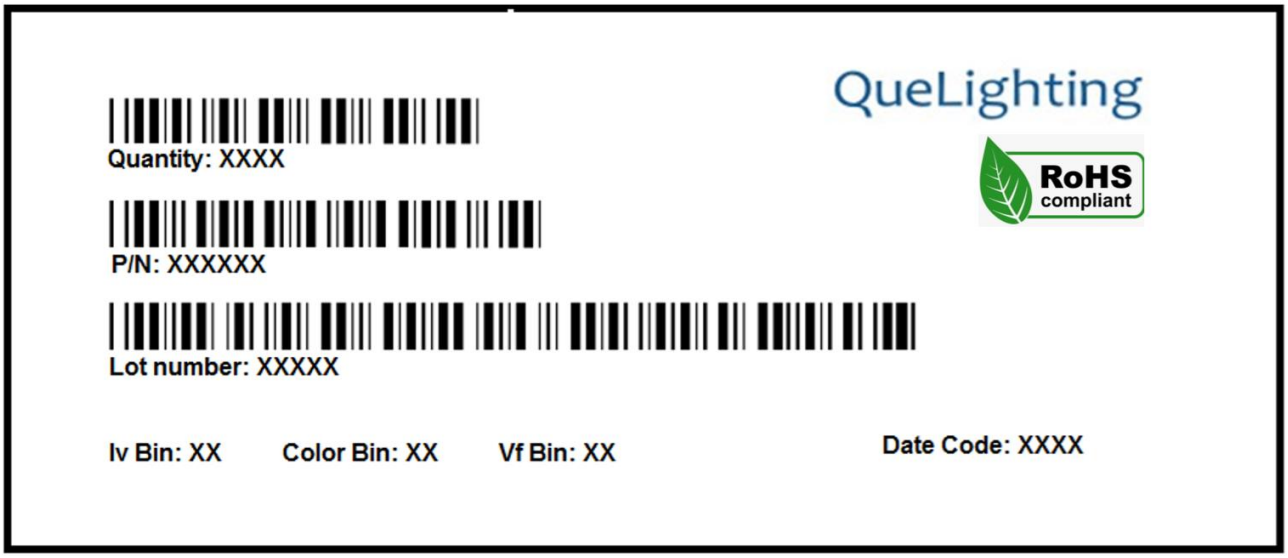
Eye Safety Guidelines During operation

The LED emits high intensity ultraviolet (UV) light, which is harmful to skin and eyes. UV light is hazardous to skin and may cause cancer.

1) Avoid looking directly at the UV light: Wear protective glasses/goggle with ANSI Z87 rated.
2) Wear facial shield / Lab Coat with long sleeve / Gloves to cover skin may exposed to UV LEDs.
3) Attach warning labels on products/systems that is composed with UV LEDs.

Samples of Warning label:

Labeling



Ordering Information:

Part #	Multiple Quantities	Quantity per Reel
QLUV07DZGDM		500 pcs

Revision History:

Revision Date:	Changes:	Version #:
10-31-2024	Initial release	1.0