ProLight Opto

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UV Series CATALOGUE

About

Established in 2004, ProLight Opto has been providing customers products and services based on our high-power LED packaging technologies.

Along with the general trend of integrated development of the global LED industry, ProLight Opto became a key member of Ennostar Inc. in 2021. To catch up with the development trend of compound semiconductor technology, taking the advantages of Ennostar's upstream resources and our strengths of high-power LED packaging technologies accumulated over more than 10 years, ProLight Opto will continue to lead the market in providing customers differentiated products of total LED solutions for various applications with our innovative technologies, diversified products and trustful services.

In addition, ProLight Opto has established a brand-new corporate identity system (CIS) at the same time to convey a new brand concept : innovative technologies, diversified products, and reliable services ! In the new CIS design, the double diamond symbol represents infinitely [∞] possible ambitions! We add the red bullseye into the letter O to convey our upmost commitments to products and customer services. The new logo represents ProLight Opto's ambition toward the new technology era, and the staff's creativity and innovative spirit ! ProLight Opto will stick to the strategy of differentiated manufacturing and service capabilities to create win-win relationships with partners as the ultimate goal!

Vision:
Realize the infinite possibilities of compound semiconductor applications.

Mission:
Provide customers differentiated LED packaging technology with all-around service solutions.

ISO certificated

ISO 9001:2015

ISO 14001:2015

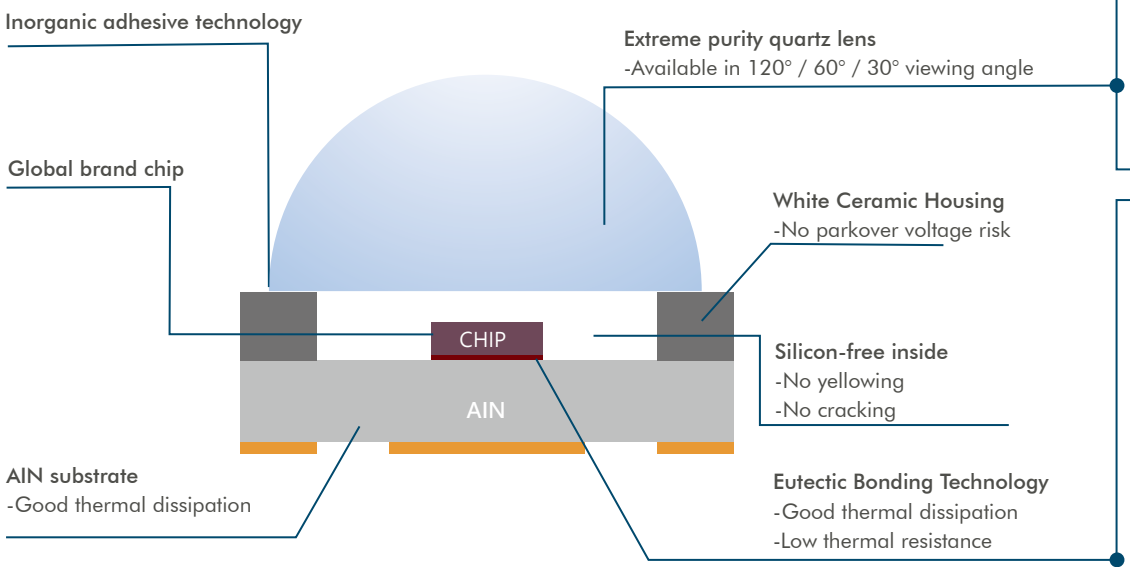
IATF 16949:2016

ProLight opto not only focus on quality and environmental control, we are also IATF-16949 certificated which means ProLight have placed manufacturing quality products as highest priority and have received recognition in the LED products used for automotive market. Furthermore, we have successfully in supplying UVC LED product used in Automotive disinfection applications.

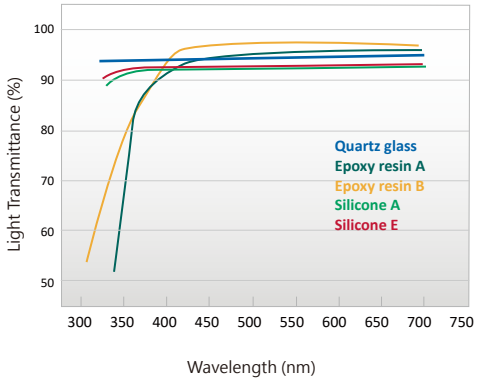
Energy Star Certificated

ProLight also pursues highest reliability in its product and having officially certified LM-80 Lab in house, we are able to provide LED products which can fulfill energy star standards.

The feature of Quartz Lens for UV LED

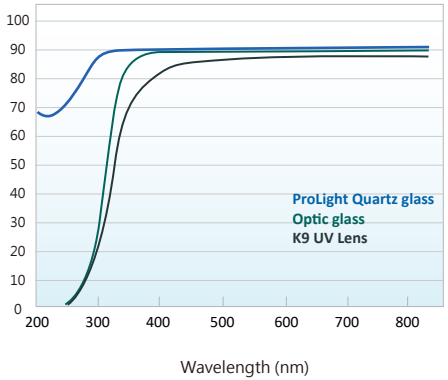


The benefit of Quartz Lens for UV LED

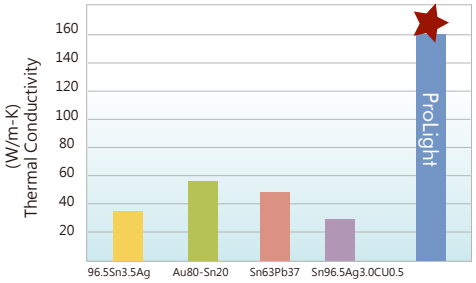


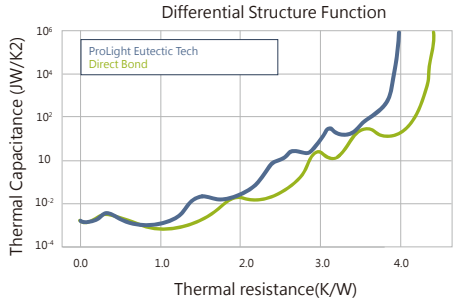
Advantage of Quartz Lens

ProLight adopts Germany high purity quartz, its high transmittance of UV light covers wavelength range from UVA to UVC, which is most suited for UV output.



Exclusive eutectic technology provides high thermal conductivity and lower heat resistance.

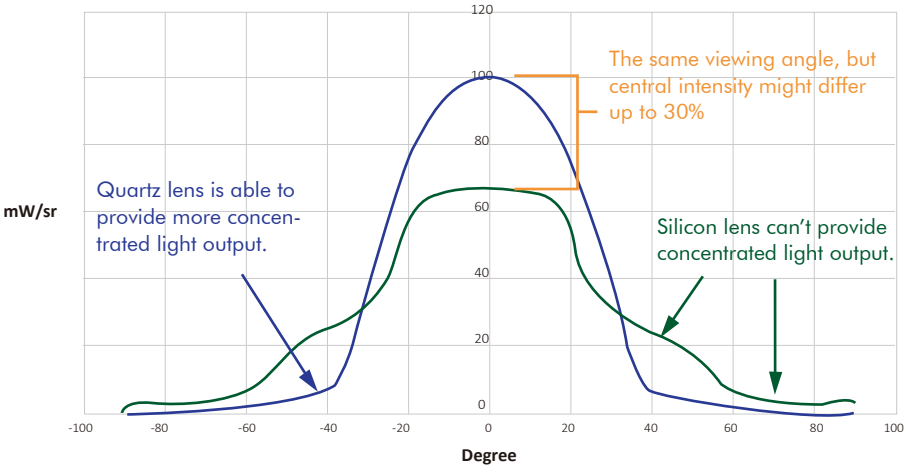




Why quartz lens for UV LED packaging?

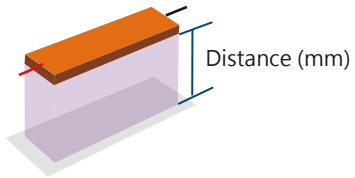
Quartz Lens and Silicon Lens comparison

While both Quartz lens LED product and Silicon lens LED product have 60 degrees viewing angle, the central intensity might differ up to 30%. Also it is evident that using silicon lens will get more scattered light through various viewing angles. On the other hand, Quartz lens is able to provide more concentrated light output.



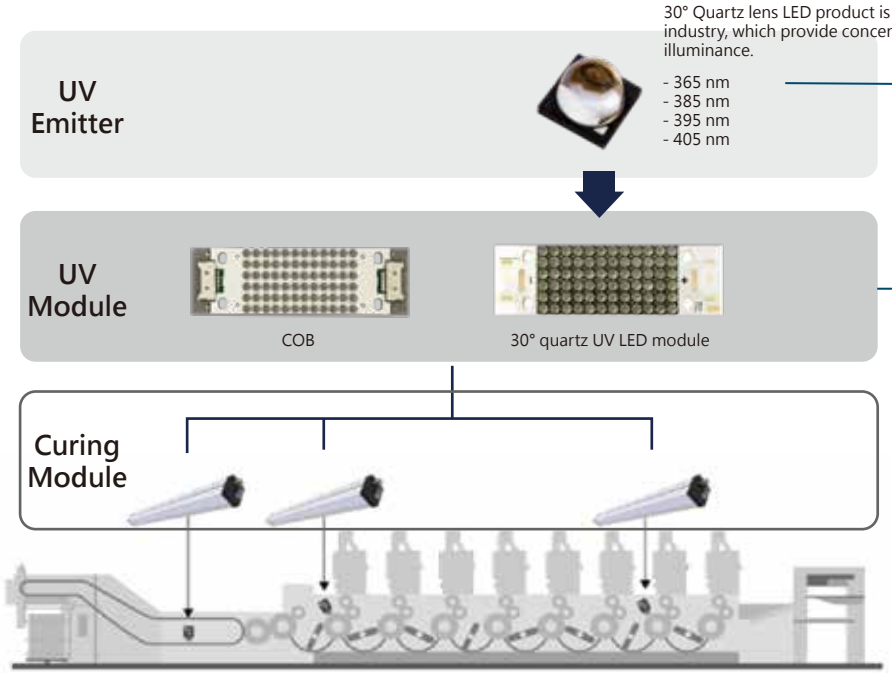
Comparison of the radiation intensity from Quartz lens 3535 LED package and Silicon lens 3535 LED

Package \ Distance(cm) / Radiometice Power (W/cm2)	2	3	5	10	15	20
ProLight Quartz Lens 60° UV 395nm	9.009	7.787	5.265	2.015	1.001	0.650
Others Silicon Lens60° UV 395nm	8.736	6.006	3.796	1.469	0.702	0.455
Lux differentiation (%)	+3%	+23%	+28%	+27%	+30%	+30%

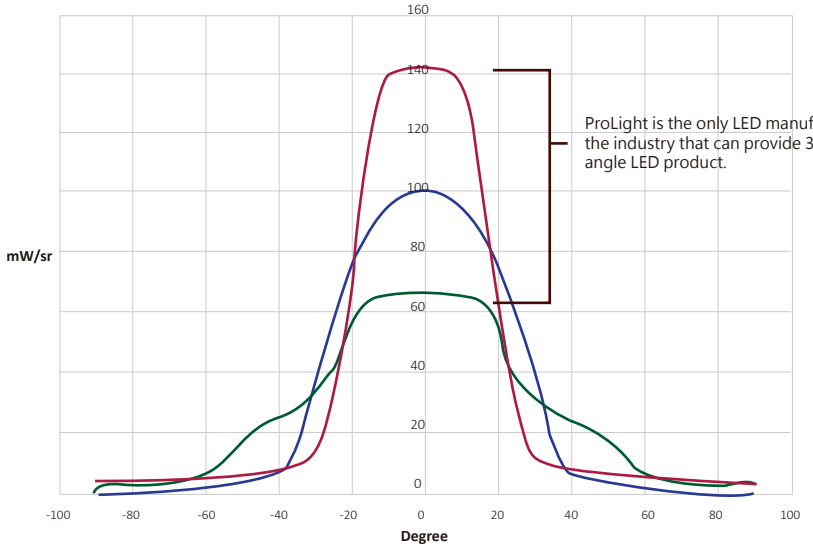


Although quartz lens and silicon lens both have 60^0 , there is a huge difference in the W/cm^2.

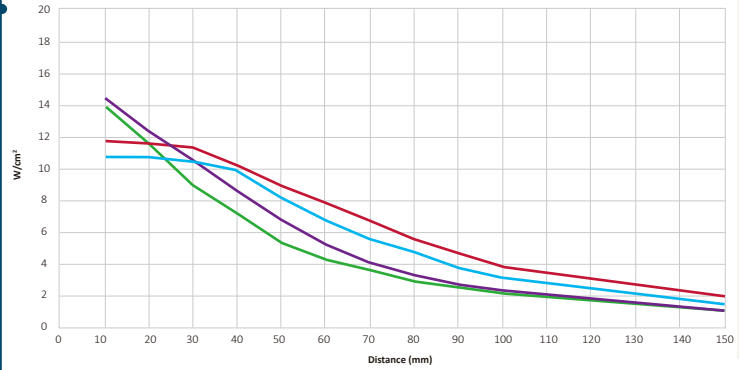
The best choice of UV LED for sheet fed offset printing machine



30° viewing angle is the best packaging choice for long distance curing



ProLight Quartz lens 385nm & 395nm LED product with driving current of 700mA. Comparison chart for Distance VS. W/cm²



3535 30°

30° 3535 LED product is best for distance >3cm, which has highest W/cm² in the industry when assembled as an LED array.

7070 48°

48° 7070 LED product can replace 6868 LED product directly without remake of PCB, which still have good W/cm².

7070 60°

60° 7070 LED product can replace 6868 LED product directly without remake of PCB, which still have good W/cm².

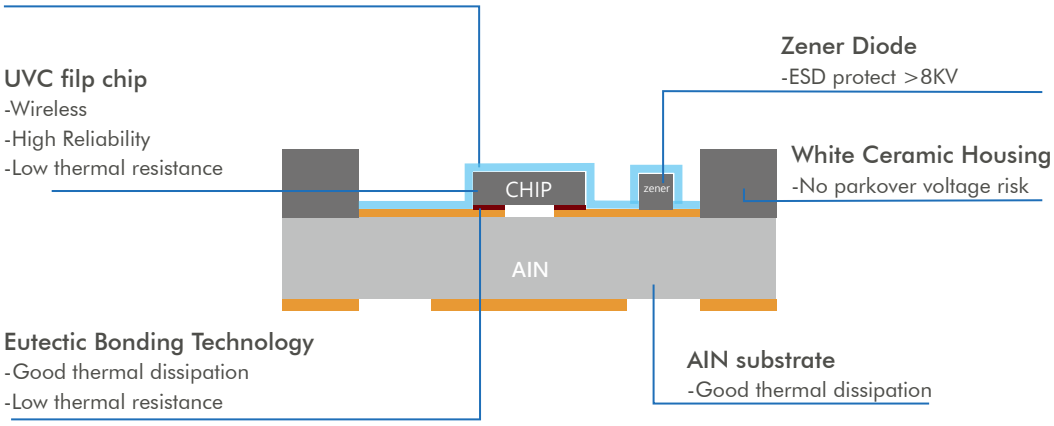
3535 60°

Remark : 1. Industry standard EIT UV Illuminometer 2. Value of UVA, UVB value is added 3. LED array refer to ProLight' s standard module 4. Test time<3sec
5. Board temperatures may cause differences in measured values

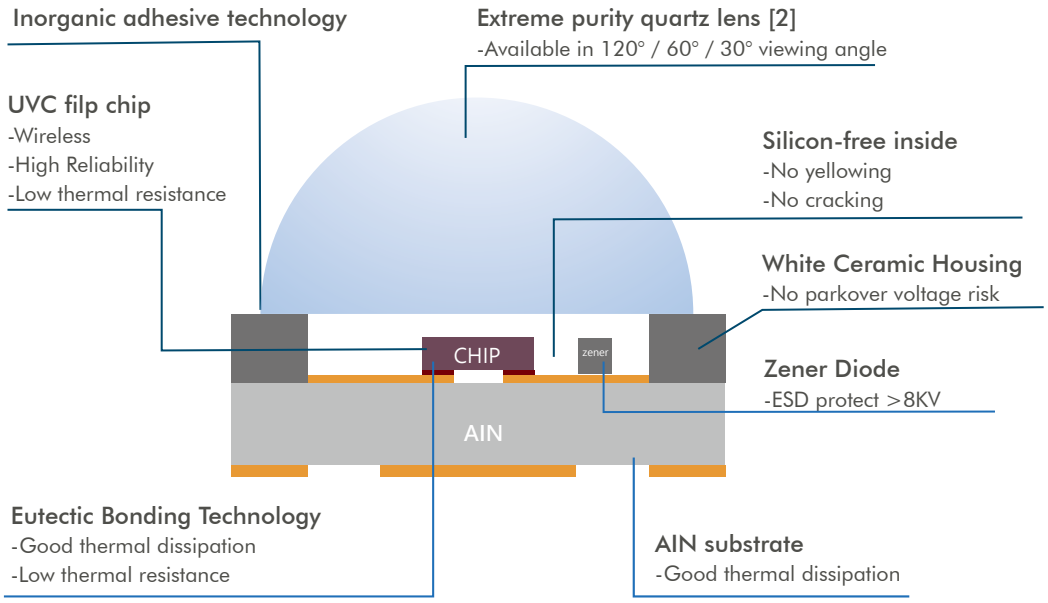
Currently, there are three main stream packaging technology used for UVC LED: 1. Organic packaging 2. Half inorganic packaging 3. Inorganic packaging. Due to the fact that UVC light will cause severe damage to the adhesive material within the LED package, therefore we have seen low reliability from LED products using organic packaging material in the market. More researches have been done and we came to realize that the key to better reliability is to improve the air tightness in packaging. In a half inorganic packaging, the glass lens is sealed onto the substrate by glue to form an enclosure in the package. But if the enclosure degrade overtime, there is the possibility that moisture will get inside the package and causing degradation in LED chip and the substrate, hence affecting the overall performance and reliability. Therefore, high quality UVC LED have now adopted the inorganic packaging approach. The main reason is that inorganic packaging material does not degrade from UV light, which means that there is minimal light degradation and also have little impact from moisture and heat stress overtime. This not only can maintain high performance of UVC LED, but improve the overall reliability.

UVC Nano-quartz coating

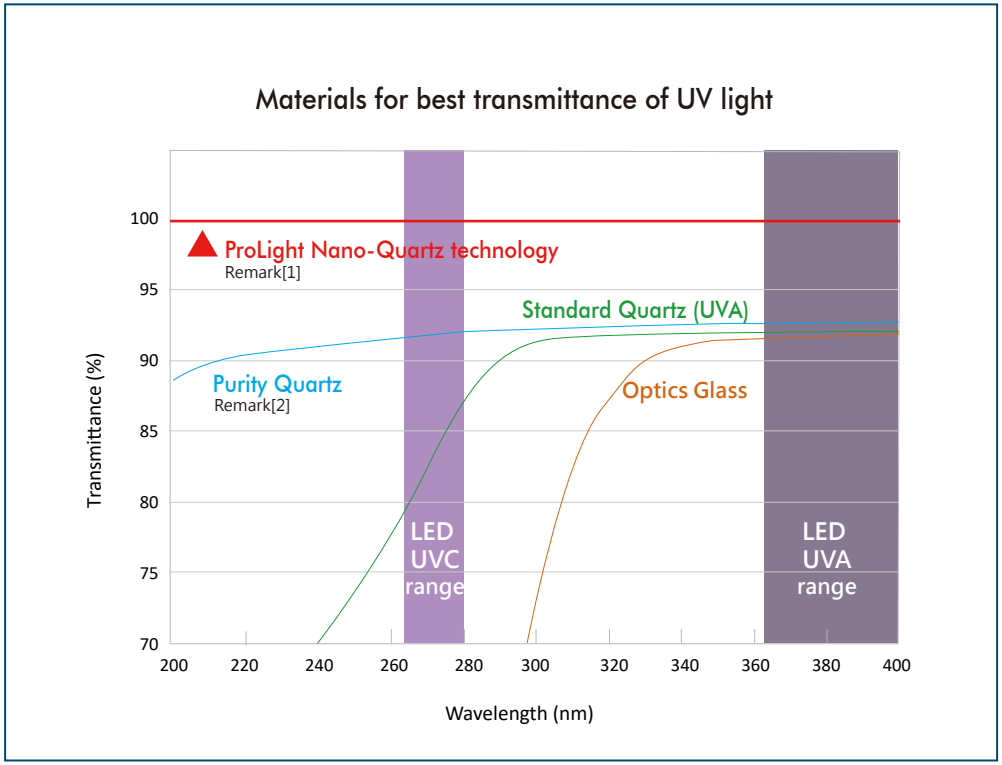
ProLight Nano Quartz coating technology [1]
-ProLight Nano Quartz coating thickness is only nanometer (nm), penetration >99%
-Nano-quartz coating can block water vapor, humidity and air to improve reliability.



UVC Quartz Lens



◎ Remark[1] [2] : Please refer next page about [material for best transmittance of UV light]



報告編號：M61-200501008

SUPER LAB
because results matter

Test Report

台美檢驗科技（檢驗中心）測試報告

委託單位

藏天科技股份有限公司

桃園市中壢區西園路89號

第 1 頁 / 共 2 頁

檢體名稱：PRO-UVC-1616
製造公司：藏天科技股份有限公司
製造日期：-
批　　號：-
檢體狀態：室溫
送檢方式：顧客送檢
聯 絡 人：
聯絡電話：(03)461-8618
有效期限：-
原 產 地：-
檢體包裝：如附件照片
檢體數量：1件
報告用途：研發

-------- 以上檢體資訊係由委託單位提供且確認 --------

收檢日期：2020/05/21　　檢驗日期：2020/05/22　　報告日期：2020/06/11

檢驗項目	檢驗結果	單位	檢驗方法	定量 / 偵測極限
抗菌試驗：大腸桿菌 *Escherichia coli*	99.19	%	參考 Japanese Industrial Standard (JIS) Z 2801 (2012) Antibacterialproducts - Test for antibacterial activity andefficacy	-

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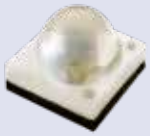
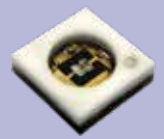
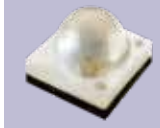
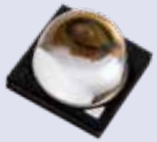
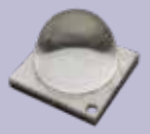
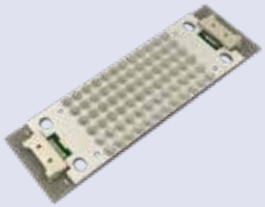
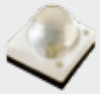
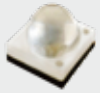
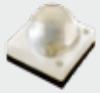
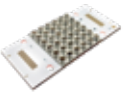
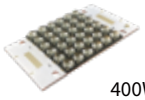
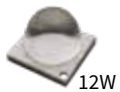
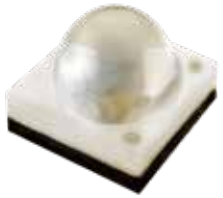
UV Packaging series Line-up

Packaging	UVA	UVB	UVC
1616			 Nano-quartz Covering UVC
3030			 Nano-quartz Covering UVA+UVC
3535	 Silicon Lens 60°/130°  Quartz Lens 30°/60° 	 Nano-quartz Covering 120°	 Quartz Lens 30°  Quartz Lens UVA+UVC  Quartz Lens 120°  Nano-quartz Covering 120°  Nano-quartz Covering UVC  Nano-quartz Covering UVC
7070 (6868)	 Quartz Lens 48°/60° 		 Quartz Lens 150 mW 120°  Quartz Lens 130 mW 48° / 60°
Quartz COB			

UV radiometric power Line-up

mW / Wavelength	~3mW	~10mW	>50mW	~100mW	~1000mW	~4000mW	>60W	>100W
420 nm					 3W/5W/8W  3W/5W	 10W		
405 nm					 3W/5W/8W  3W/5W	 10W		
395 nm 385 nm 365 nm					 3W  3W/5W/8W  3W/5W	 10W	 200W  200W COB	 400W  400W
310 nm	 0.2W							
275 nm	 0.2W  0.2W  1W  1W	 1W  0.5~1W  1W	 3-4W  3W  3W  3W  3~4W	 12W  12W			

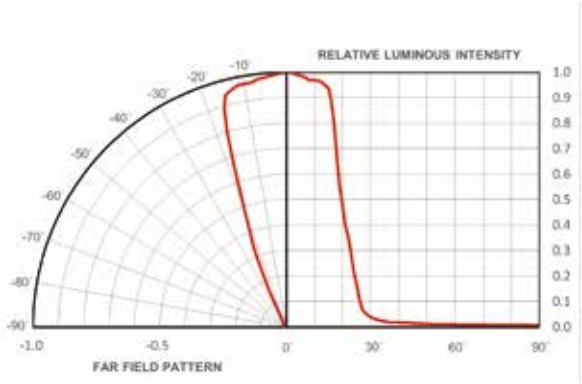
UVA series

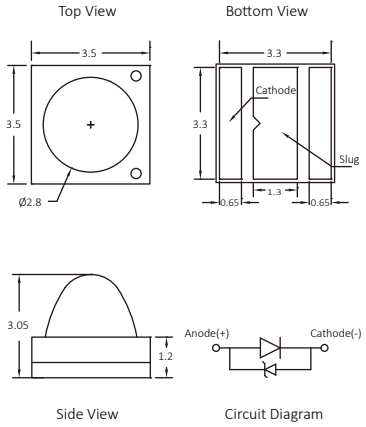


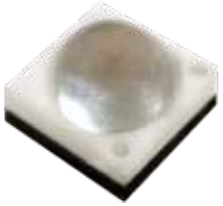
Features

- Quartz Lens, high UV penertation
- 3535 package comes in 3W / 5W / 8W with 30° viewing angle to deliver more focus radiometric power.
- Suitable for long-distance UV curing / UV printing applications.

Part No.	Test Current (mA)	Vf (Typ.)	Radiometric Power (Typ.mW)	λp (Typ.)	2θ 1/2	Max Current (mA)
PB2D-3JLA-GS	700	3.7	1060	365 nm	30	1000
PB2D-3JLA-GM	700	3.5	1200	385 nm	30	1000
PB2D-3JLA-G	700	3.5	1150	395 nm	30	1000
PB2D-5JLA-US	700	3.6	870	365 nm	30	1500
PB2D-5JLA-UM	700	3.5	1150	385 nm	30	1500
PB2D-5JLA-U	700	3.5	1150	395 nm	30	1500
PB2D-5JLA-UL	700	3.5	1150	405 nm	30	1500
PB2D-8JLA-GS	700	3.7	930	365 nm	30	2500
PB2D-8JLA-GM	700	3.5	1150	385 nm	30	2500
PB2D-8JLA-G	700	3.5	1150	395 nm	30	2500
PB2D-8JLA-GL	700	3.5	1150	405 nm	30	2500



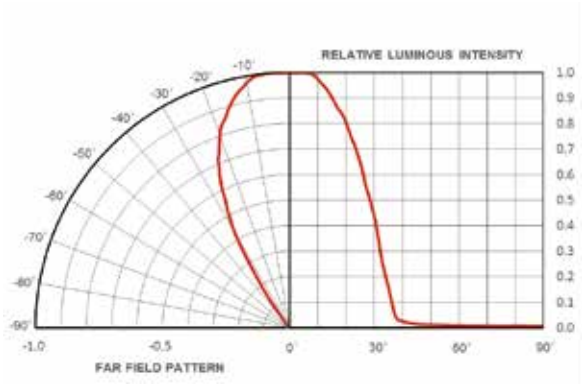


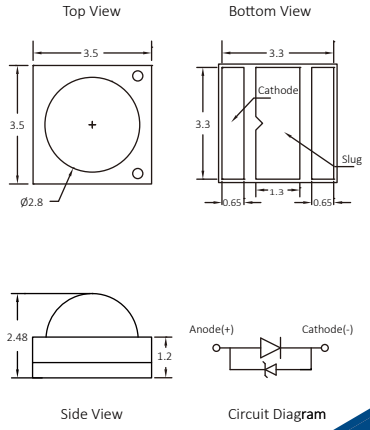


Features

- Quartz Lens, high UV penertation
- 3535 package comes in 3W / 5W with 60° viewing angle
- Suitable for mid-distance UV curing / UV printing applications.

Part No.	Test Current (mA)	Vf (Typ.)	Radiometric Power (Typ.mW)	λp (Typ.)	2θ 1/2	Max Current (mA)
PB2D-3KLA-GS	700	3.7	1080	365 nm	60	1000
PB2D-3KLA-GM	700	3.5	1250	385 nm	60	1000
PB2D-3KLA-G	700	3.5	1180	395 nm	60	1000
PB2D-3KLA-GL	700	3.5	1250	405 nm	60	1000
PB2D-5KLA-US	700	3.6	870	370 nm	60	1500
PB2D-5KLA-UM	700	3.5	1150	385 nm	60	1500
PB2D-5KLA-U	700	3.5	1150	395 nm	60	1500
PB2D-5KLA-UL	700	3.5	1150	405 nm	60	1500
PB2D-5KLA-UP	700	3.5	1610	415 nm	60	1500





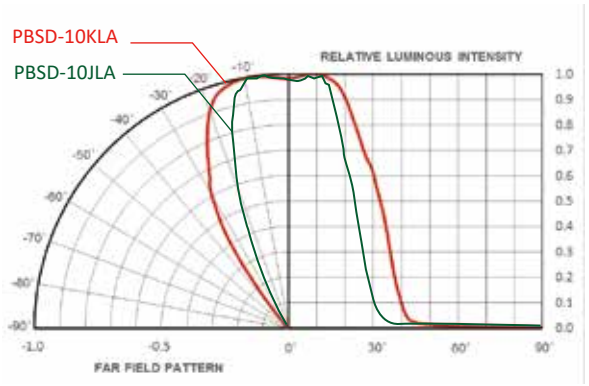
UVA series

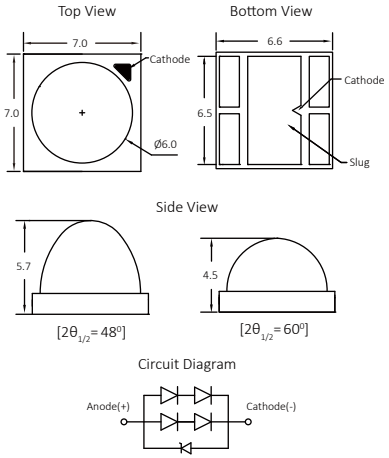
Features

- Quartz Lens, high UV penertation.
- The footprint of 7070 package is compatible with 6868 package, which allow no design change on the PCB. 7070 package can deliver higher illuminance (lux).

Quartz Lens | 7070 | 48° | 60°

Part No.	Test Current (mA)	Vf (Typ.)	Radiometric Power (Typ.mW)	λp (Typ.)	2θ 1/2	Max Current (mA)
PBSD-10JLA-GS	1000	7.4	2900	365 nm	48	1400
PBSD-10JLA-M	1000	6.8	3000	385 nm	48	1400
PBSD-10JLA	1000	6.8	3200	395 nm	48	1400
PBSD-10KLA-GS	1000	7.4	3000	365 nm	60	1400
PBSD-10KLA-M	1000	6.8	3100	385 nm	60	1400
PBSD-10KLA	1000	6.8	3300	395 nm	60	1400



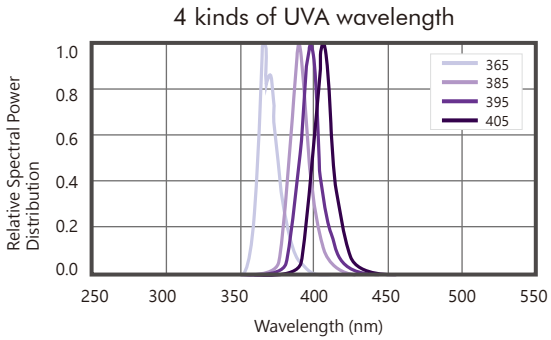


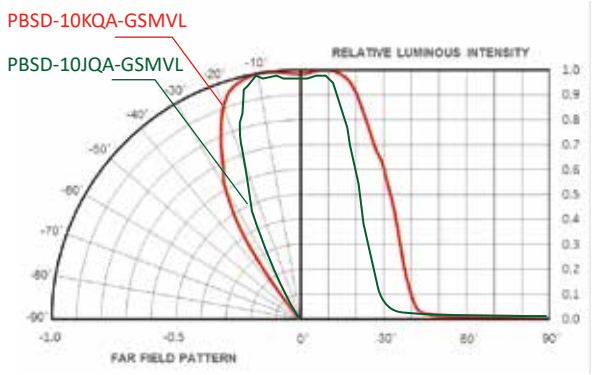
Features

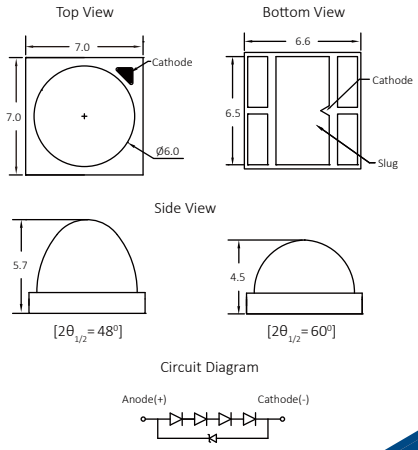
- Quartz Lens, high UV penertation.
- Integrate 4 kinds of UVA wavelength in a 7070 package, to provide full range of UV curing.

Quartz Lens | 7070 | 48° | 60°

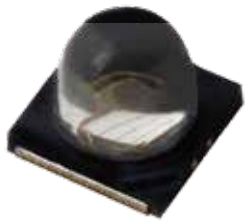
Part No.	Test Current (mA)	Vf (Typ.)	Radiometric Power (Typ.mW)	λp (Typ.)	2θ 1/2	Max Current (mA)
PBSD-10JQA-GSMVL	500	13.9	3400	365+385+395+405nm	48	700
PBSD-10KQA-GSMVL	500	13.9	3550	365+385+395+405nm	60	700







UVA series



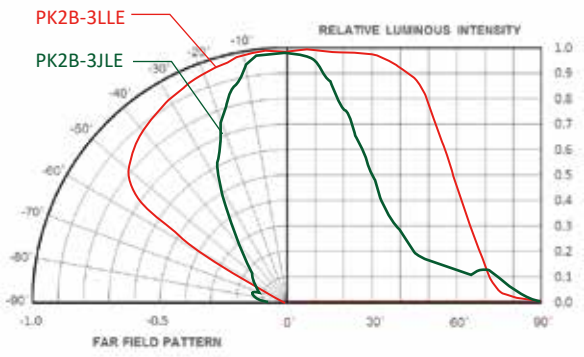
Features

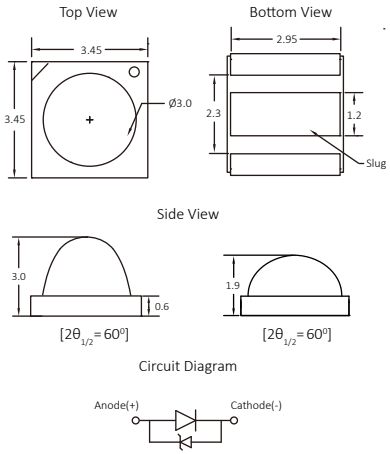
- Silicon Lens UVA LED, suitable for UV exposure / UV curing.

Silicon Lens

3535

Part No.	Test Current (mA)	Vf (Typ.)	Radiometric Power (Typ.mW)	λp (Typ.)	2θ 1/2	Max Current (mA)
PK2B-3JLE-NVM	500	3.4	1000	385 nm	60	700
PK2B-3JLE-NV	500	3.4	1050	395 nm	60	700
PK2B-3LLE-NVM	500	3.4	1000	385 nm	130	700
PK2B-3LLE-PNV	500	3.4	1050	395 nm	130	700





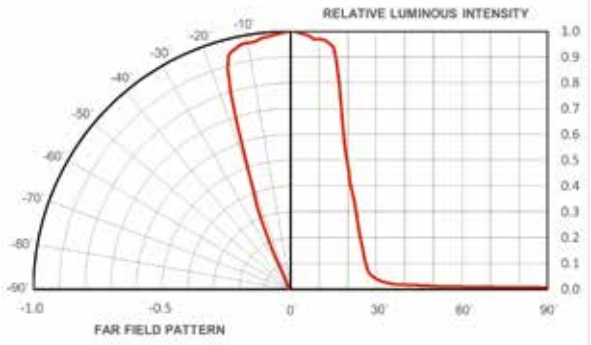
UVA series

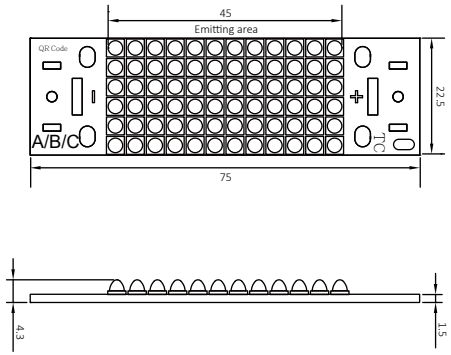
Features

- 3535 LED quartz lens module with narrow angle design to deliver more focus radiometric power.
- Suitable for long-distance UV printing / UV curing application.
- Seamless substrate design to keep illuminance (lux) uniformity.

Quartz Lens | 3535 | 35°

Part No.	Test Current (mA)	Vf (Typ.)	Radiometric Power (Typ.W)	λp (Min.-Max.)	2θ 1/2
PB2M-3JLU-GDA72A0S	4200	46.8	67.0	365-370 nm	35
PB2M-3JLU-DA72A0M	4200	42.0	68.4	385-390 nm	35
PB2M-3JLU-DA72A0	4200	42.0	68.4	390-395 nm	35



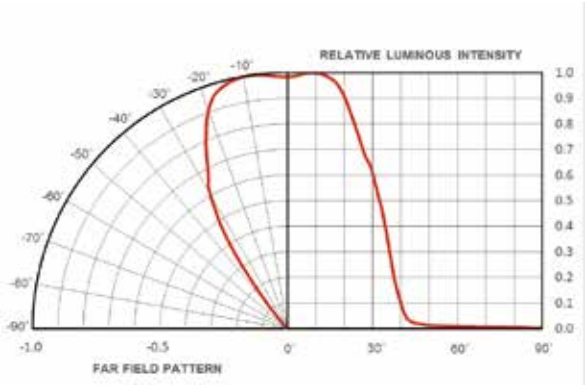


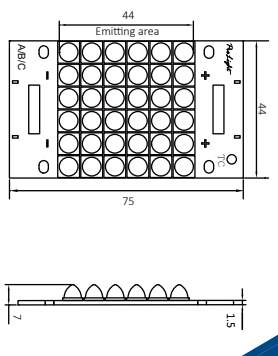
Features

- 7070 LED quartz lens module.
- Suitable for UV printing / UV curing application.
- Seamless substrate design to keep illuminance (lux) uniformity.

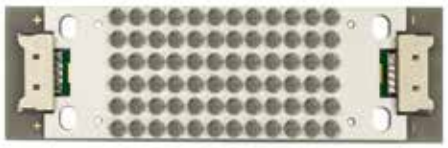
Quartz Lens | 7070 | 35°

Part No.	Test Current (mA)	Vf (Typ.)	Radiometric Power (Typ.W)	λp (Min.-Max.)	2θ 1/2
PBSM-10JLU-DA36A0M	6000	40.8	104	380-390 nm	48
PBSM-10JLU-DA36A0	6000	40.8	111.5	390-400 nm	48





UVA series

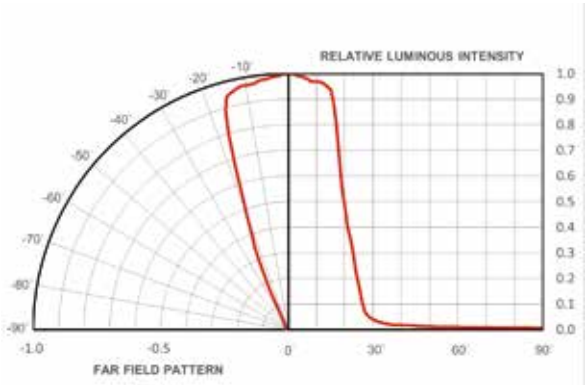


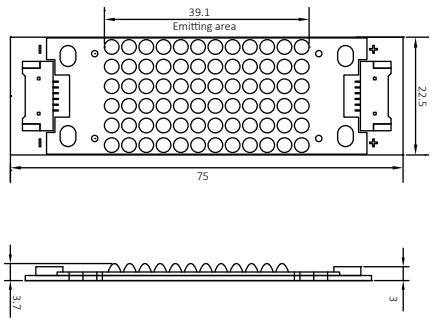
Features

- AIN ceramic substrate with good heat dissipation. Plug and play with connector design.
- Seamless substrate design to keep illuminance (lux) uniformity.
- 30° viewing angle design to deliver more focus radiometric power.

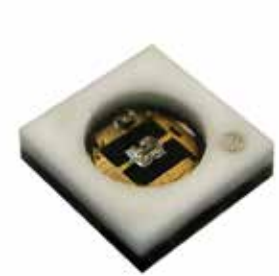
Quartz Lens | COB

Part No.	Test Current (mA)	Vf (Typ.)	Radiometric Power (Typ.W)	λp (Min.-Max.)	2θ 1/2
PBCD-200JLK-GDA72A1S	4200	44.4	66.9	365-370 nm	30
PBCD-200JLK-GDA72A1M	4200	42.0	74.2	380-390 nm	30
PBCD-200JLK-GDA72A1	4200	42.0	74.2	390-400 nm	30





UVB series

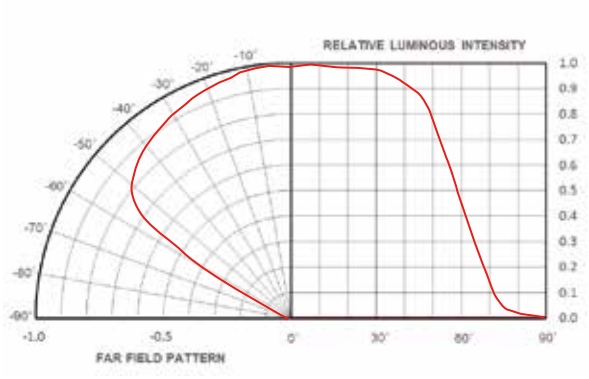


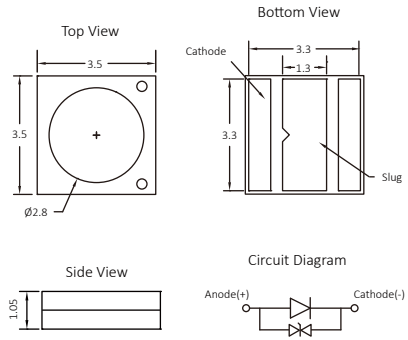
Features

- Narrow band of UVB, suitable for Phototherapy.
- Phototherapy (UVB 311nm) can cure skin immune disease, such as Psoriasis, Atopic dermatitis, Vitiligo.

Nano Quartz coating | 3535

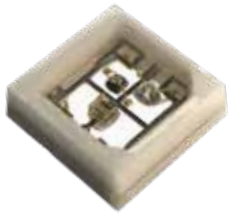
Part No.	Test Current (mA)	Vf (Typ.)	Radiometric Power (Typ.mW)	λp (Min.-Max.)	2θ 1/2
PB2D-UCLA-KB	20	6.0	3.3	303-315 nm	120





UVC+UVA series

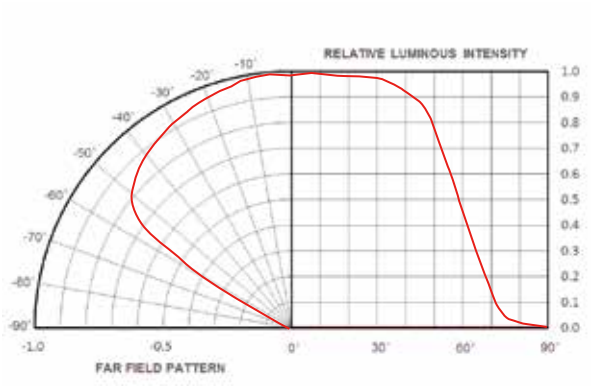
Features

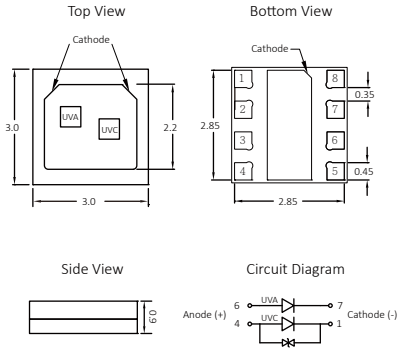


- Nano quartz covering technology to deliver high UV light transmittance.
- Integrating UVA and UVC into one package, where UVC and UVA can be controlled separately. When activate UVC, it can achieve short-term sterilization and UVA can be used as a warning light when UVC is turned on. Also, UVA can operate independently and can be light up for longer hours to have longer sterilization effect.

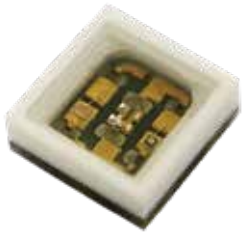
Nano Quartz coating | 3030 | 120°

Part No.	Color	Test Current (mA)	Vf (Typ.)	Radiometric Power (Typ.mW)	λp (Min.-Max.)	2θ 1/2
PBLB-1CQA-TCL	UVC	20	6.8	2.5	265-280 nm	120
	UVA	20	3.2	13	400-410 nm	120





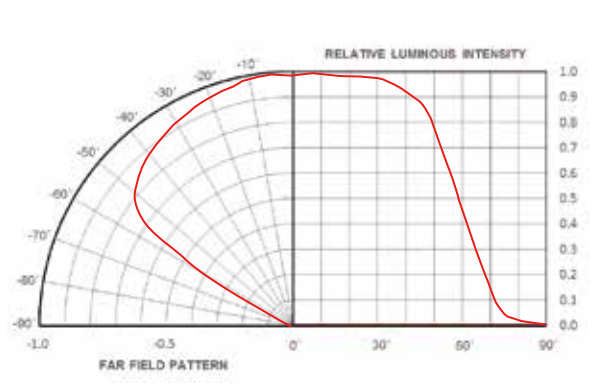
Features

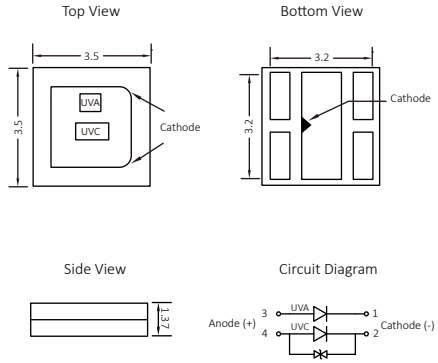


- Quartz Lens.
- Integrating UVA and UVC into one package, where UVC and UVA can be controlled separately. When activate UVC, it can achieve short-term sterilization and UVA can be used as a warning light when UVC is turned on. Also, UVA can operate independently and can be light up for longer hours to have longer sterilization effect.

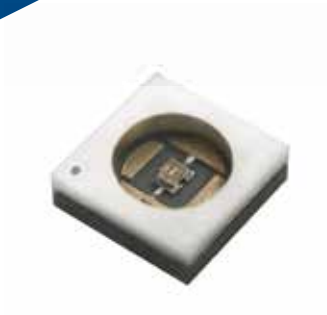
3535 | 120°

Part No.	Color	Test Current (mA)	Vf (Typ.)	Radiometric Power (Typ.mW)	λp (Min.-Max.)	2θ 1/2
PB4D-1FQA-TCL	UVC	20	6.8	2.5	265-280 nm	120
	UVA	20	3.2	13	400-410 nm	120





UVC series

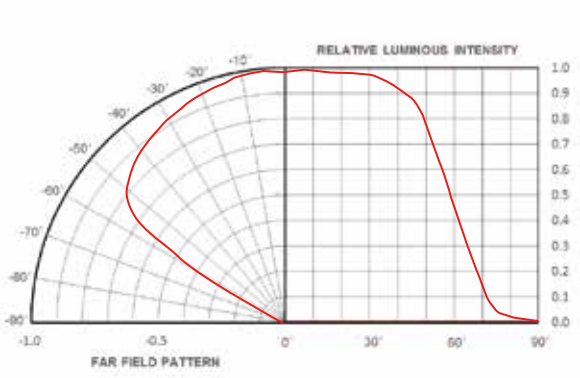


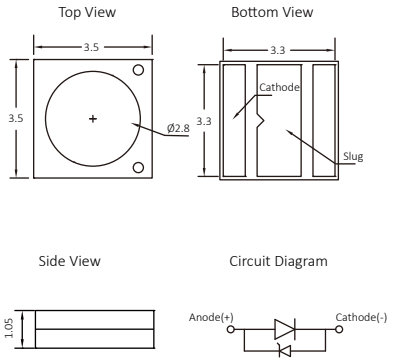
Features

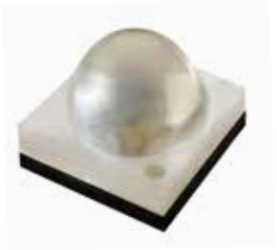
- UVC flip chip with Nano-quartz coating and its transmittance rate>99% to improve sterilization efficiency.
- Nano-quartz coating can block water vapor, humidity and air to improve reliability.

Nano Quartz coating | 3535 | 120°

Part No.	Test Current (mA)	Vf (Typ.)	Radiometric Power (Typ.mW)	λp (Min.-Max.)	2θ 1/2
PB2D-UCLA-TC	20	6.8	3.5	265-280 nm	120
PB2D-1CLA-TC	100	6.0	15	265-280 nm	120
PB2D-1CLA-KC	100	6.0	20	265-280 nm	120
PB2D-4CLA-KC	500	6.0	105	265-280 nm	120





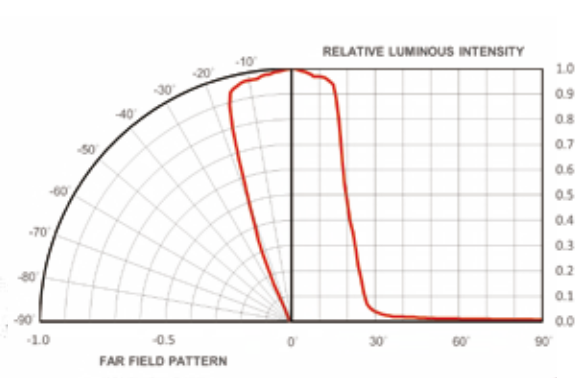


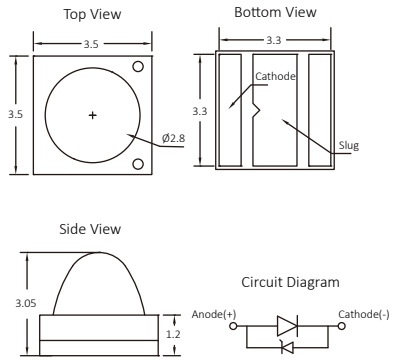
Features

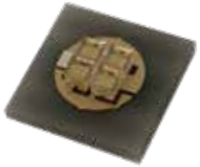
- UVC flip chip with inorganic adhesive material to provide high reliability.
- 30° viewing angle with Germany high purity quartz lens to deliver more focus radiometric power.

Quartz Lens | 3535 | 30° | 60°

Part No.	Test Current (mA)	Vf (Typ.)	Radiometric Power (Typ.mW)	λp (Min.-Max.)	2θ 1/2
PB2D-UJLA-TC	20	6.8	3	265-280 nm	30
PB2D-UKLA-TC	20	6.8	3	265-280 nm	60
PB2D-1KLA-KC	100	6.0	17	265-280 nm	60
PB2D-3KLA-KC4	350	6.0	42	265-280 nm	60
PB2D-4KLA-KC	500	6.0	90	265-280 nm	60





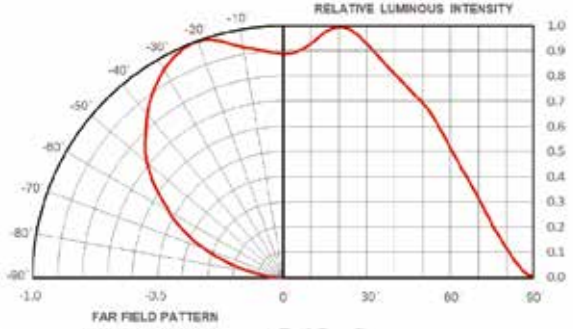


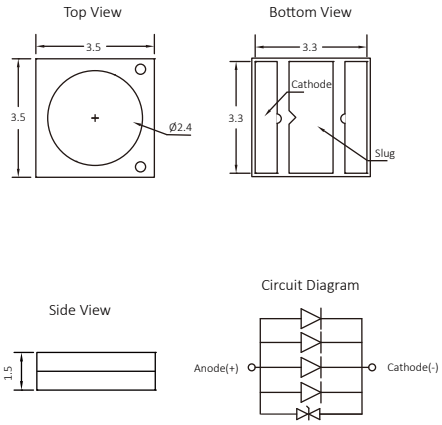
Features

- UVC flip chip with Nano-quartz coating to deliver true UVC disinfection.
- High intensity, high value (mW/$)

Nano Quartz coating | 3535 | 120°

Part No.	Test Current (mA)	Vf (Typ.)	Radiometric Power (Typ.mW)	λp (Min.-Max.)	2θ 1/2
PB2A-3CLA-KC4	350	6.0	55	265-280 nm	120



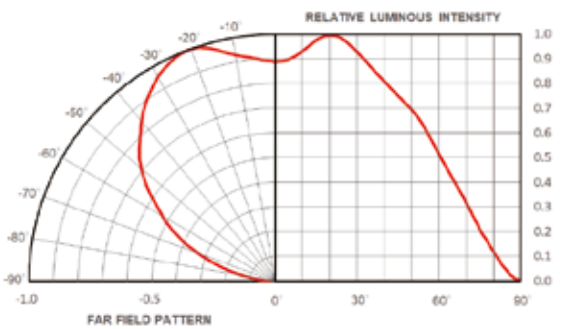


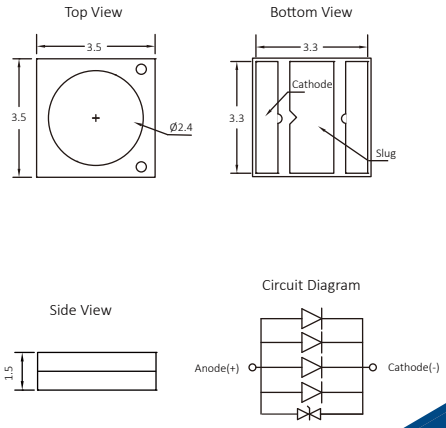
Features

- UVC flip chip with Nano-quartz coating to deliver true UVC disinfection.
- High intensity, high value (mW/$)

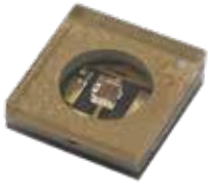
Nano Quartz coating | 3535 | 120°

Part No.	Test Current (mA)	Vf (Typ.)	Radiometric Power (Typ.mW)	λp (Min.-Max.)	2θ 1/2
PB2D-3CLA-KC4	350	6.0	50	265-280 nm	120





UVC series

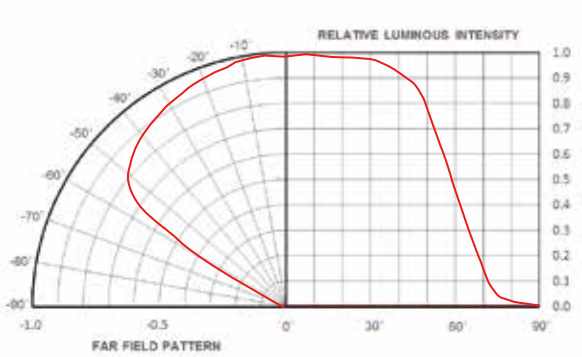


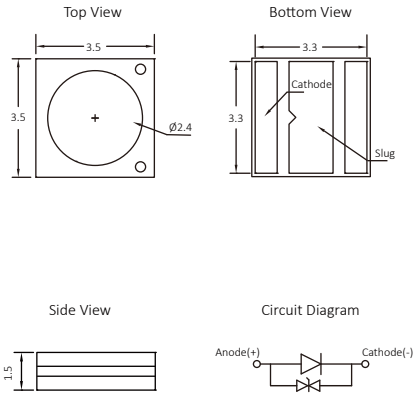
Features

- UVC flip chip with inorganic adhesive material to provide high reliability.
- Quartz lens.

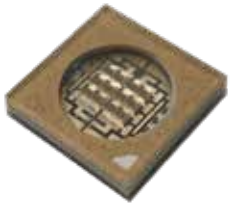
Quartz Lens | 3535 | 120°

Part No.	Test Current (mA)	Vf (Typ.)	Radiometric Power (Typ.mW)	λp (Min.-Max.)	2θ 1/2
PB2D-1FLA-KC	100	6.0	18	265-280 nm	120
PB2D-3FLA-KC4	350	6.0	46	265-280 nm	120
PB2D-4FLA-KC	500	6.0	96	270-280 nm	120





150mW!!

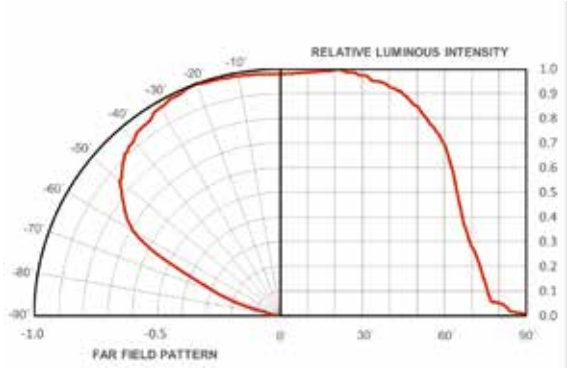


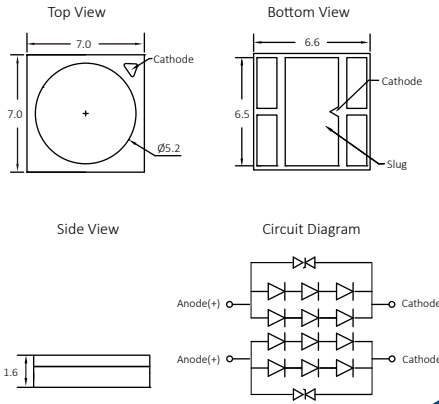
Features

- UVC flip chip with inorganic adhesive material to provide high reliability.
- Multi-chip and high intensity, high value (mW/$)
- 150mW high power can be used for water / air sterilization.

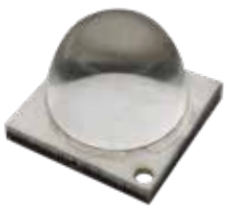
Quartz Lens | 7070 | 120°

Part No.	Test Current (mA)	Vf (Typ.)	Radiometric Power (Typ.mW)	λp (Min.-Max.)	2θ 1/2
PBSD-12FLA-KC	400	18.0	150	265-280 nm	120





130mW!!

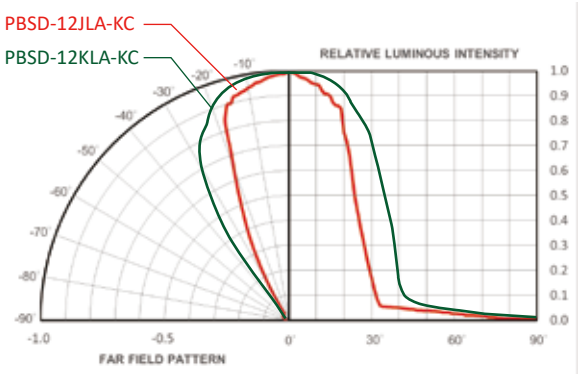


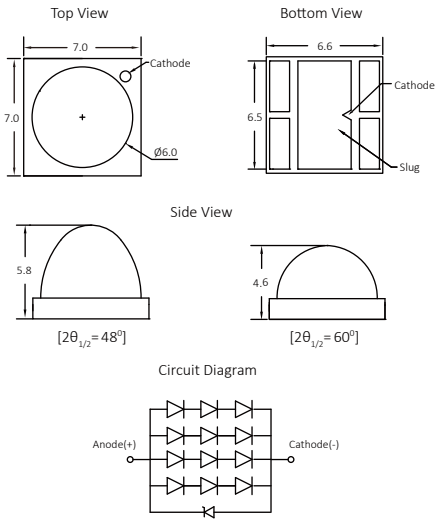
Features

- UVC flip chip with inorganic adhesive material to provide high reliability.
- 48⁰ / 60⁰ viewing angel with Germany extreme purity quartz lens to deliver more focus radiometric power.
- 130mW high power can be used for water / air sterilization.

Quartz Lens | 7070 | 48⁰ | 60⁰

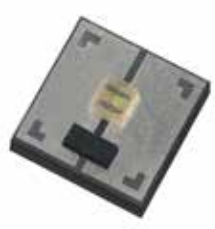
Part No.	Test Current (mA)	Vf (Typ.)	Radiometric Power (Typ.mW)	λp (Min.-Max.)	2θ 1/2
PBSD-12JLA-KC	400	18.0	120	265-280 nm	48
PBSD-12KLA-KC	400	18.0	130	265-280 nm	60





Features

- UVC flip chip with Nano-quartz coating and its transmittance rate>99% to improve sterilization efficiency.
- Nano-quartz coating can block water vapor, humidity and air to improve reliability.



Nano Quartz coating | 1616

Part No.	Test Current (mA)	Vf (Typ.)	Radiometric Power (Typ.mW)	λp (Min.-Max.)	2θ 1/2
PQ2A-UCLA-KC	20	6.8	3.5	265-280 nm	130