DYNGA Semiconductor Application Series Manual 2023

Jiaxing DYNGA Semiconductor Co., Ltd.

Lifesaving Medical Treatment Industrial Environment Protection People's Livelihood and Health

Strive to be the most professional gallium nitride chip supplier in China

DYNGA Semiconductor

Contents

Company Profile

Jiaxing DYNGA Semiconductor Co., Ltd., headquartered in Jiaxing City, Zhejiang Province, China, is a new high-tech enterprise specializing in third-generation semiconductor epitaxial wafer preparation, chip design and related application product development. Our products are mainly made of third-generation semiconductor materials, including GaN UV photoelectric semiconductor chips (DUV LED chips), DUV detectors, gallium nitride power chips and related application products. We supply the above high-tech products to domestic and international markets.

As a young semiconductor enterprise, owing to China's vigorous implementation of the innovation-driven development and autonomous control strategies, under the premise of breaking through the existing technological blockade, we keep up with the pace of international semiconductor industry development, deepen product development and innovation, insist on the autonomy of homemade chips, and strive to be the most professional gallium nitride chip supplier in China.

34
Completely independent chip development
34 core patents

20
Application products
20 core patents

26
26 product testing and certification items

3
3 product trademarks registered

2
2 core works

Semiconductor technology governing unit

Member of Zhejiang Semiconductor Industry Association

Member of Jiangsu Cold Chain Association

Principle of UV Sterilization

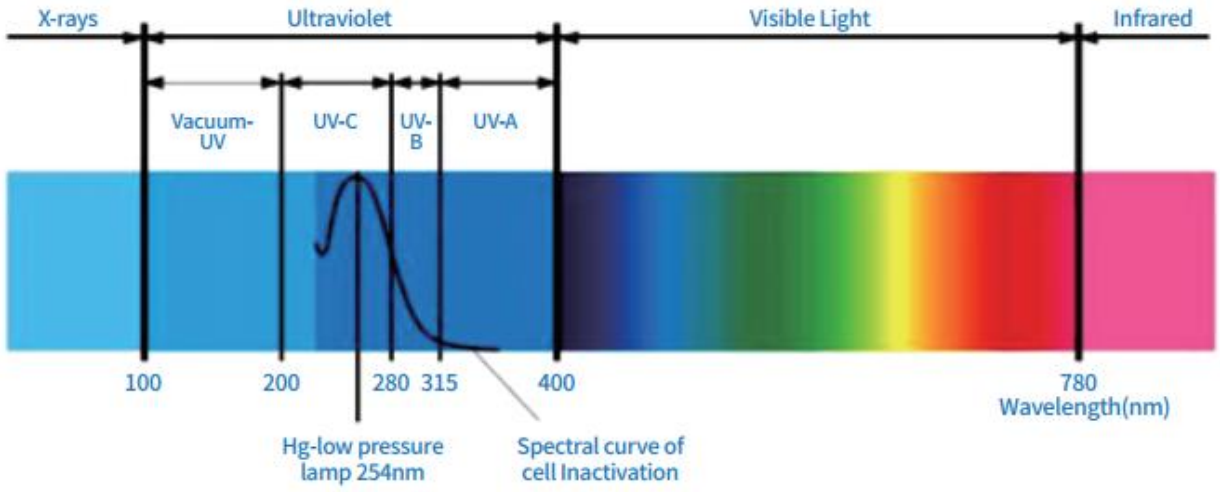
UV sterilization is, through specific-wavelength DUV irradiation, to destroy and change the DNA (deoxyribonucleic acid) structure of microorganisms, so that bacteria die immediately or are unable to reproduce, thus to achieve the purpose of sterilization.

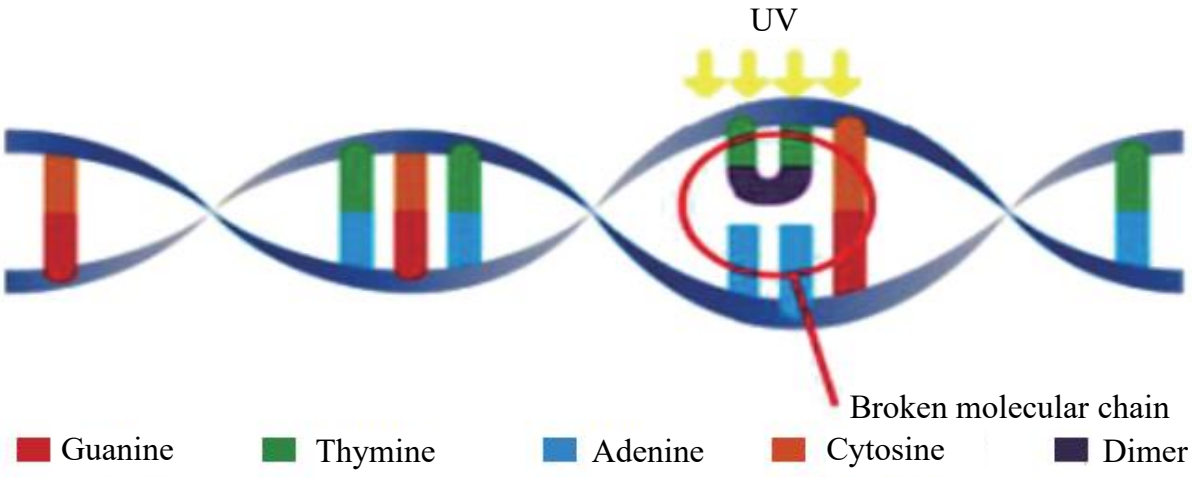
According to the relevant authoritative literatures of World Health Organization (W.H.O) and *Nature*, the UV with the highest sterilization efficiency is 265nm DUVC.

The gallium nitride based DUV chip developed and produced according to the relevant standards of the World Health Organization and the Chinese national standard (GB28235-2020) *Hygienic Requirements for UV Sterilizer*

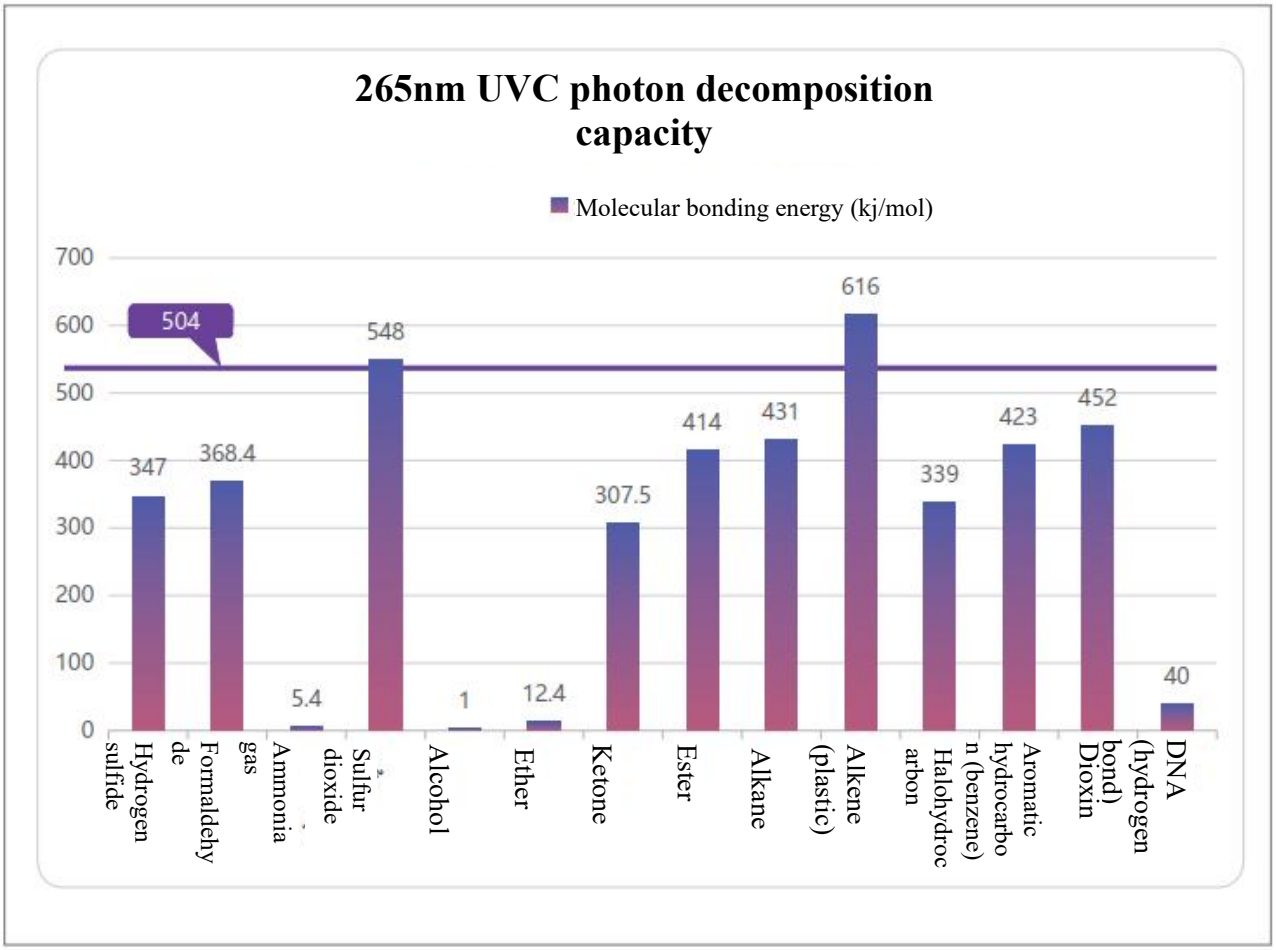
can be widely used in hospitals, schools, nurseries, cinemas, buses, offices, families, and so on. Meanwhile, its DUV light source, whose radiant flux (output) is above 100mW, can purify air, eliminate odor and degrade harmful gases (e.g. dioxins, formaldehyde, hydrogen sulfide, etc.), and thus give people a healthy living environment in the urban life with increasingly serious environmental pollution.

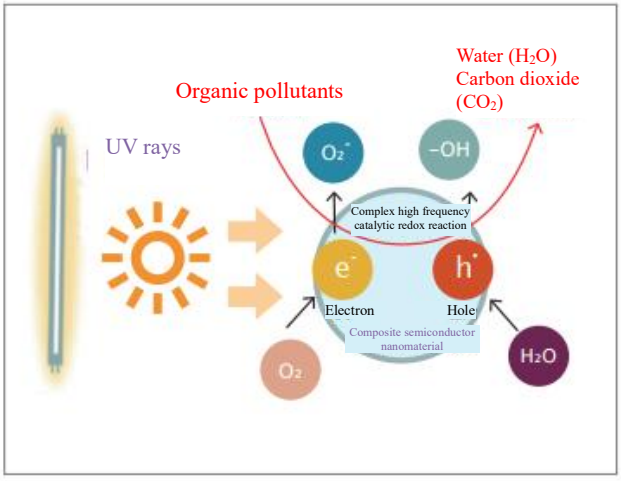
UV sterilization of public places can prevent some germs from spreading through the air or by the surface of any objects.

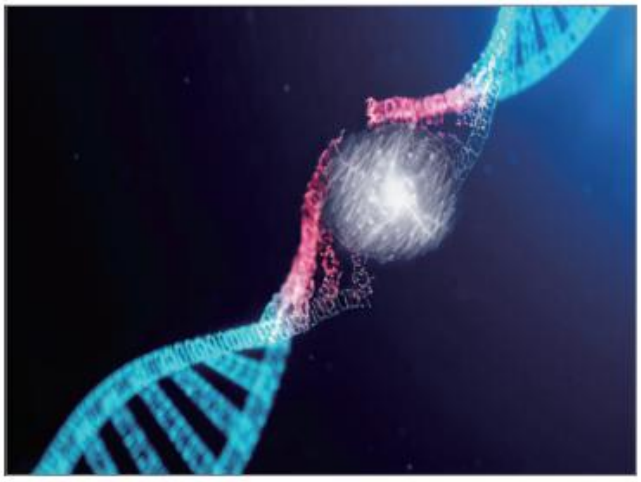




Principle of Hazardous Substance Decomposition and Removal by UV





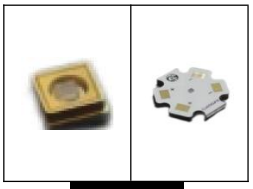


UVC photon decomposition capacity

Product Layout

DUV LED chip series

· Radiant flux (output) 50mW
· Peak wavelength 265nm, optimum for sterilization
· 35C6 packaged chip carried on high thermal conductivity alumina substrate, with a better heat dissipation performance



· New III-generation packaging technology, radiant flux (output) 263mW
· Chip carried on copper substrate, better heat dissipation
· Shorter sterilization time, enhanced sterilization effect

UVC

· High-power chip (industrial grade) with radiant flux (output) of 1.2W
· Peak wavelength 265nm, optimum for sterilization
· 35C6 packaged chip carried on high thermal conductivity alumina substrate, with a better heat dissipation performance

· Ultra-high-power chip with radiant flux (output) of 4.2W (industrial grade)
· Chip carried on upgraded ultra-high thermal conductivity alumina substrate, with a better performance in heat dissipation and high thermal resistance
· Shorter sterilization time, enhanced sterilization effect

UVC module

· Water-through dynamic water sterilization module
· Radiant flux: 50-526mW
· Sterilization rate ≥ 99.99%

· Static water sterilization module
· Radiant flux: 50-526mW
· Sterilization rate ≥ 99.99%

UVB

· Radiant flux (output) 50mW
· Peak wavelength: 308-312nm
· Used in medical treatment, dermatitis treatment, skin phototherapy, and other areas

UV detector chip series

· Excellent single photon detection sensitivity
· Long optical detection work distance (spectrum response: 210~280nm)
· Effective detection area 0.965mm², good temperature stability

Application Areas


Healthcare


Environmental protection and control


Pet space


Healthy life


Water purification


Air purification

Lifesaving Medical Treatment VIRUS PROTECTION

Hospital-wide UV sterilization system

Sterilization rate up to 99.99%

Ward - third-generation honeycomb

Nurse station

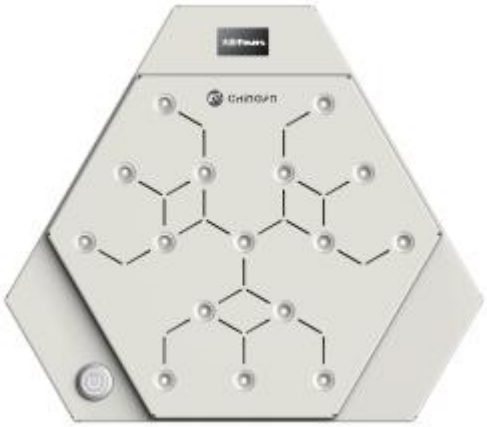
Operating room

Ward - fourth-generation honeycomb

Dental clinic

Temporary storeroom

Honeycomb odor removing sterilizer



Technical parameters of third-generation intelligent honeycomb odor removing sterilizer
Model: DLU-004W24C6BD03
Wavelength: 265nm
Voltage: 220V AC
Radiant flux: 263mW/chip
Size: 241*209*52.5mm

Product features

- Sixteen 263mW high-power sterilizing chips carried
- Sterilization rate up to 99.9%
- Being able to effectively and continuously sterilize the irradiation space
- Easy installation
- No noxious residual chemicals, no secondary pollution
- Own chip application product

Dental-chair water-way sterilizer

Technical parameters of dental-chair water-way UV sterilizer
Model: DLU-400M0243
Wavelength: 265nm±5nm
Voltage: 12V DC
Radiant flux: 50mW/chip
Size: 156*54.2*81.6mm

Product features

- GBT-5749 compliant
- One-step installation, no consumables required, no noxious residual chemicals, no secondary pollution
- Being able to control the sterilization time, duration, frequency, and so on
- Own chip application product

Applicable Scenarios

Stomatological hospitals, dental clinics, dental care centers, etc.

Solid hospital waste treatment facility

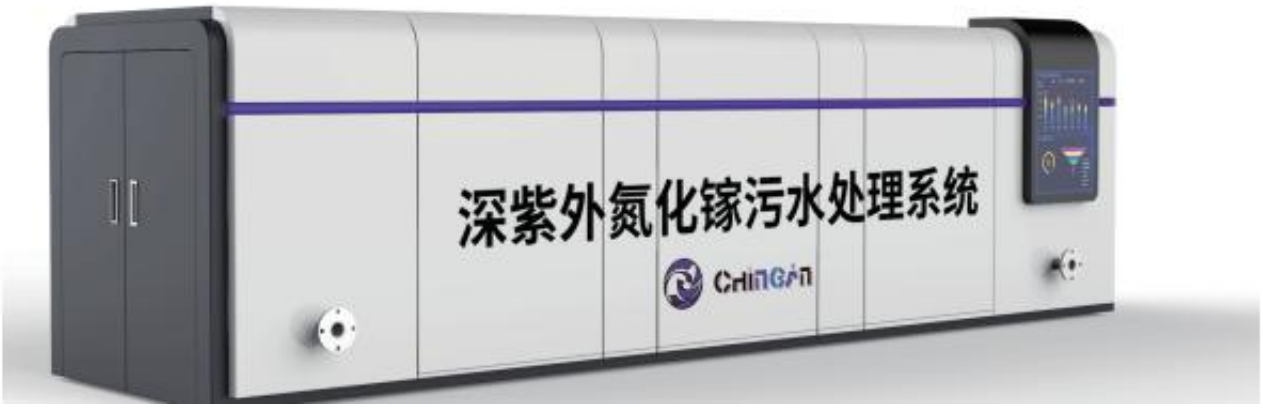
Technical parameters of intelligent solid medical waste sterilizing chamber
Model: DLM-050M02YY
Wavelength: 265nm±5nm
Voltage: 220V AC
Radiant flux: 263mW/chip
Size: 40*50*85mm

Product features

- Wide sterilization range, fast sterilization, sterilization rate up to 99.9%, effective odor removal
- Within the operating range, the device can effectively kill vegetative forms of bacteria, gemma,mycobacteria, coronavirus, fungi, rickettsia, chlamydia, and so on
- One-step installation, no consumables required, being able to control the sterilization time, duration, frequency, and so on
- No noxious residual chemicals, no secondary pollution
- Own chip application product

Industrial Environment Protection

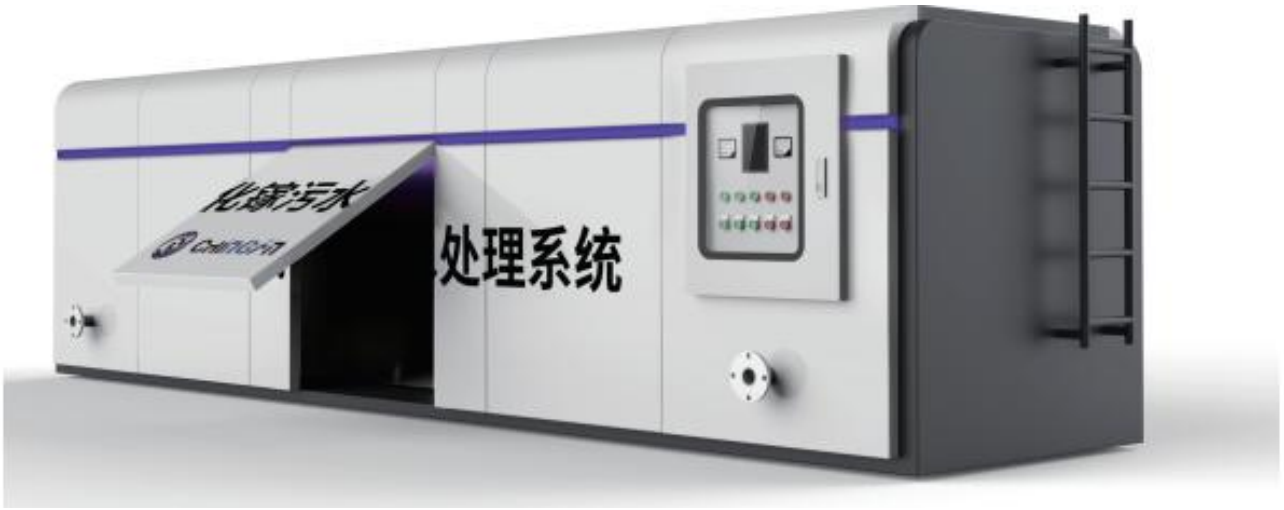
Industrial environmental protection wastewater treatment system



Intelligent

DUV gallium nitride sewage treatment system

Mechanical



Type of pollutant	GB18466 reference value	Post-treatment value	Remark
Fecal coliform	500MPN/L	0MPN/L	Up to standard
Enteropathogenic bacteria	Not detectable	Not detected	Up to standard
Enterovirus	Not detectable	Not detected	Up to standard
Chemical oxygen demand (COD)	≤60mg/L	18mg/L	Up to standard
Ammonia nitrogen	≤15mg/L	12mg/L	Up to standard
Total cyanide	≤0.5mg/L	0mg/L	Up to standard
Total mercury	≤0.05mg/L	0mg/L	Up to standard
Total residual chlorine	≤0.5mg/L	0mg/L	Industrial chloride filling point(s) can be added separately as requested by customers, to adjust the chlorine ion content in the water bodies within the range of 2-8mg

Product features

- Small size, high efficiency
- Real-time monitoring, prompt response
- Easy installation, no secondary pollution
- Own chip application product

Applicable Scenarios

Various electroplating factories, printing and dyeing mills, garbage-disposal sites, farms, pharmaceutical factories, and other places prone to produce high-concentration wastewater and pollutants

People's Livelihood and Health

People's Livelihood and Health Related Products

Technical parameters of portable DUV sterilizing stick	
Model: DUJ-050M02E6	Operating wavelength: 265nm±5nm
Rated power consumption: ≤1.75W	Type of battery: Rechargeable lithium battery
Operating temperature: -10°C~60°C	Radiant flux: 50mW/chip
Size: Φ 23mm, length 100mm	

Product features

- Sterilization rate up to 99.9%, fast sterilization (about 0.3s)
- ffective sterilization range: within the range of Φ 7.5cm^2 at a height of 1cm away from the light source
- Compact size, easy to carry in pocket; own chip application product
- Certificates and patents: CE\FCC\ROHS Certification, *Gmicro Testing Microorganism Sterilization Report*, *Gmicro Testing Coronavirus Sterilization Report*, and appearance design patents

Applicable Scenarios

Portable, used for surface sterilization of objects such as elevator buttons, mobile phones and masks

People's Livelihood and Health Related Products

Technical parameters of fourth-generation honeycomb odor removing sterilizer	
Model: DLU-002W30C6BD01	Operating wavelength: 265nm±5nm
Rated power consumption: ≤40W	Power supply mode: 220V AC
Operating temperature: -10°C~60°C	Radiant flux: 263mW/chip
Size: 25*38*336mm	

Product features

- Eight 263mW high-power sterilizing chips carried
- Sterilization rate up to 99.9%
- Being able to effectively and continuously sterilize the irradiation space
- Easy installation, no noxious residual chemicals, no secondary pollution
- Own chip application product.

Applicable Scenarios

Portable, used for surface sterilization of objects such as elevator buttons, mobile phones and masks

People's Livelihood and Health Related Products

Technical parameters of USB high-power DUV sterilizing lamp	
Model: DLU-050M18M6	Operating wavelength: 265nm±5nm
Rated power consumption: ≤2.25W	Power supply mode: DC 5V 1A/2A
Operating temperature: -10°C~60°C	Radiant flux: 263mW/chip
Size: Φ 25mm, length 35mm	

Product features

- Sterilization rate up to 99.9%; fast sterilization, about 0.3s
- The sterilizing lamp can effectively and continuously sterilize the irradiation space
- Compact size, USB port, plug-and-play; own chip application product
- Being able to be lighted for continuous sterilization of the environment within the irradiation range

Applicable Scenarios

Surface irradiation sterilization of objects, suitable for continuous sterilization of small spaces (3-5m^2)
High-speed rail, bus, private car, restaurant, toilet, office, living room, etc.People's Livelihood and Health Related Products

People's Livelihood and Health Related Products

Technical parameters of DUV air cleaner (desktop)	
Model: DLU-050M01AP	Operating wavelength: 265nm±5nm
Rated power consumption: ≤1.925W	Power supply mode: 220V AC
Operating temperature: -10°C~60°C	Radiant flux: 263mW/chip
Size: Φ 200, height 330mm	

Product features

- Sterilization rate up to 99.9%
- Irradiate the filtrating screen for sterilization, and blow fresh air in real time
- Cyclic sterilization of air: Sterilize a space of less than 20 square meters every 8 minutes
- Own chip application product

Applicable Scenarios

The product is used for indoor air purification and environmental sterilization

People's Livelihood and Health Related Products

Technical parameters of household DUV sterilizing odor purifier	
Model: DLM-050M01TP	Operating wavelength: 265nm±5nm
Rated power consumption: ≤1.925W	Power supply mode: TYPE-C 5V
Operating temperature: -10°C~60°C	Radiant flux: 263mW/chip
Size: Φ 87mm, height 33mm	

Product features

- Being able to remove odor and sterilize at the same time, with sterilization rate up to 99.9%
- Being able to effectively and continuously remove odor and sterilize within the operating range
- No consumables required, no noxious residual chemicals, operational after charging
- 2 modes, namely continuous power-on and intermittent power-on, more intelligent and more power-efficient
- Own chip application product

Applicable Scenarios

Refrigerator, wardrobe, shoe cabinet, automotive interior, elevator car and other small confined spaces

People's Livelihood and Health Related Products

Technical parameters of intelligent voice sterilizing & temperature-measuring door	
Model: DLU-050M02E6	Operating wavelength: 265nm±5nm
Rated power consumption: ≤40W	Power supply mode: 187-242V
Operating temperature: -20°C~40°C	Hauled weight: about 60Kg
Operating humidity: 95% non-condensing	Outline size: 2,220*820*400mm (width * height * depth) Passageway size: 1,950*700*400mm (width * height * depth)

Product features

- Sterilizing and temperature-measuring sensor, multifunctional, e.g. image display, voice alarm, fever alarm
- 0.3s sterilization, instant disinfection, instant temperature measurement
- Support cloud storage of data
- Own chip application product

Applicable Scenarios

Refrigerator, wardrobe, shoe cabinet, automotive interior, elevator car and other small confined spaces

People's Livelihood and Health Related Products

Technical parameters of mini sterilizing chamber	
Model: DLU-100M01MCB	Operating wavelength: 265nm±5nm
Rated power consumption: ≤2.25W	Power supply mode: 187-242V
Radiant flux: 50mW/chip	Outline size: 80.5*25.5*30cm
Chamber interior (sterilization) size: 20*12*4.5cm	

Product features

- Two 50mW high-power sterilization chips carried, designed with lens to make light beams more focused, doubled sterilization effect; sterilization rate up to 99.9%
- Being able to effectively and continuously sterilize the irradiation space in the chamber
- Own chip application product

Applicable Scenarios

Sterilization of household supplies, office/hospital/school public goods, and so on

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People's Livelihood and Health Related Products

Technical parameters of UV high-efficient sterilizer for logistics conveyer system	
Model: DLU-012W01E6	Operating wavelength: 265nm±5nm
Power supply mode: 220V AC	Power consumption: 600W
Device weight: about 150Kg	Waterproofing level: IP66
Lightning protection level: Meet Type III standard requirements	UPF level: ≥ UP50

Product features

- Multiple 50mW high-power DUV sterilizing chips carried
- Fast sterilization, about 0.2s
- Physical sterilization, no noxious residual chemicals

Applicable Scenarios

The product can be used for sterilization of conveyor belts for express warehousing, logistics sorting & transportation, goods transportation & transfer, security check, and other scenarios

People's Livelihood and Health Related Products

Technical parameters of T8 DUV sterilizing LED light tube	
Model: DLU-200M60C6(T8) DLU-400M01E6(T8)	Operating wavelength: 265nm±5nm
Chip count: 4 chips/light tube 8 chips/light tube	Power supply mode: 220V AC
Total UVC radiant flux: 200mW 400mW	Operating temperature: -10°C~60°C
Size: Length 60cm, circumference 25.4mm/Length 120cm, circumference 25.4mm	

Product features

- Sterilization rate up to 99.9%
- Four/eight high-power sterilizing chips carried, fast sterilization
- The sterilizing lamp can effectively and continuously sterilize the irradiation space, with harm to the staff
- No consumables required, no noxious residual chemicals, one-step installation, operational after charging
- Own chip application product

Applicable Scenarios

Food processing factories, packaging workshops, warehouses, storage spaces requiring fresh-keeping and sterilization, etc.

People's Livelihood and Health Related Products

Technical parameters of static sterilization module for warehouse shelves	
Model: DLM-200M01WS	Operating wavelength: 265nm±5nm
Rated power consumption: ≤1.925W	Power supply mode: 220V AC
Operating temperature: -10°C~60°C	

Product features

- Sterilization rate up to 99.9%;
- One sterilizing chip carried per square meter, fast sterilization (about 0.3s)
- The sterilizing lamp can effectively and continuously sterilize the irradiation space
- Built-in sterilizing chip, hidden sterilization, no interference
- No consumables required, no noxious residual chemicals, one-step installation, operational after charging.
- Own chip application product

Applicable Scenarios

The product is used for warehousing, out-put and in-put of warehouse, logistics transportation

Pet health products

Technical parameters of combined therapy chamber for pets	
Model: DLU-002W56C6PCT02	Operating wavelength: 265nm±5nm
Rated power consumption: ≤22W	Power supply mode: 100-240V AC
Operating temperature: -10°C~60°C	Radiant flux: 1.2W/chip
Size: 560*520*462mm	

Product features

- Two 1.2W high-power sterilization chips carried, sterilization rate up to 99.9%
- Being able to effectively and continuously sterilize the irradiation space in the bin
- Being able to perform phototherapy and nebulizer therapy respectively on pets
- Timing or self adjustment of sterilization (treatment) time as needed
- Own chip application product

Applicable Scenarios

Pet disinfection at home, pet hospitals, pet care centers, etc.

Detectors - Industrial & Electrical Safety

Technical parameters of lightning protective plug	
Model: DTU-100M14C5SPD01	Maximum continuous operating voltage: 275V
Limiting voltage: 2KV L-N, L-G	Lightning discharge current: 1,500A
Operating temperature: -40°C~85°C	Test UV wavelength: 254nm
Size: 145*50*103mm	

Product features

- DUV detector carried
- Response wavelength range: 210-280nm
- Effectively protect circuits, and quickly respond
- Support Euro-standard sockets

Applicable Scenarios

Lightning protection of household appliances in villa and other buildings

Household water purifying plant

Technical parameters of household water purifying plant	
Model: DLU-526M60M6HW01	Operating wavelength: 265nm±5nm
Rated power consumption: ≤3.4W	Power supply mode: 220V AC
Operating temperature: -10°C~60°C	Radiant flux: 263mW/chip
Size: 60*60*45mm	

Product features

- Two 263mW high-power sterilization chips carried, sterilization rate up to 99.99%
- Intelligent reminding, provided with a display screen for monitoring the sterilization rate in real time
- Being able to effectively sterilize the flowing and moving stream of water
- Easy installation and use
- Own chip application product

Applicable Scenarios

Used at home, placed between basin and faucet

Solar-powered sterilizing lamp

Technical parameters of solar-powered sterilizing lamp	
Model: DLU-263M17C6SE01	Operating wavelength: 265nm±5nm
Rated power consumption: ≤0.98W	Power supply mode: Solar power/TYPE-C 5V
Operating temperature: -10°C~60°C	Radiant flux: 263mW/chip
Size: 172*72*23mm	

Product features

- One 263mW high-power sterilization chip carried, sterilization rate up to 99.9%
- Being able to effectively and continuously sterilize the automotive interior space
- Collocated with a solar panel, no additional power supply required, also allowed to use TYPE-C power supply
- Own chip application scenarios

Applicable Scenarios

Mainly used for automotive sterilization

Appendix: Test Reports

广微测 Gmicro Testing

广东省微生物分析检测中心

分析检测结果

广微测 Gmicro Testing

广东省微生物分析检测中心

分析检测结果

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分析检测结果


广微测
Gmicro Testing
广东省微生物分析检测中心
分析检测结果
45


广微测
Gmicro Testing
广东省微生物分析检测中心
分析检测结果
49


广微测
Gmicro Testing
广东省微生物分析检测中心
分析检测结果
62


二、有组织废气检测结果
85

2023 DYNGA Semiconductor

Application Series Manual

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