

PP3535P3D-M

Product Datasheet SPECIFICATIONS

We take care of your health with UVC

Pueple Planet UVC PKG



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1 Product Features

Inorganic Features:

1、High-Temperature Sintered Bismuth-Based Solder:

High-temperature sintered bismuth-based solder with excellent stability, UV resistance, strong bonding, and reliable sealing.

2、Ultra-High-Frequency Pulsed Laser Welding:

Ultra-high-frequency pulsed laser metal welding ensures a continuous and strong bonding interface, excellent moisture resistance, and superior sealing performance.

3、High-Yield Metal Package Bonding:

Corrosion-resistant metal package bonding connects the lens and bracket. The excellent flexibility of the metal reduces process tolerance requirements for ceramic substrates and quartz lenses, achieving a yield rate above 98%.;

4、Double-Sided Anti-Reflective Quartz Lens:

Double-sided anti-reflective coated quartz lens reduces internal reflection and total internal reflection, significantly improving light extraction efficiency.

5、Highly Precise Quartz Lens Height Control:

Precise quartz lens height control allows package height adjustment according to chip height, maintaining lens-to-chip spacing within 0.05 mm. This reduces absorption of lateral light emission from deep UV LED chips and improves light extraction efficiency.

6、High-reflectivity Al-based coating significantly improves light extraction efficiency.:

Al-based high-reflectivity coating with over 95% reflectance in the deep UV range reduces internal absorption and significantly improves light extraction efficiency.

Applications:

Sterilization & Disinfection (especially dynamic water and air sterilization), Medical Phototherapy, Optical Sensors, and Bioanalysis/Detection.

Automotive-grade standards meet the application requirements of high-end fields such as aerospace, military, automotive, and pharmaceuticals.

2 Device Structure

2.1 Product Photo

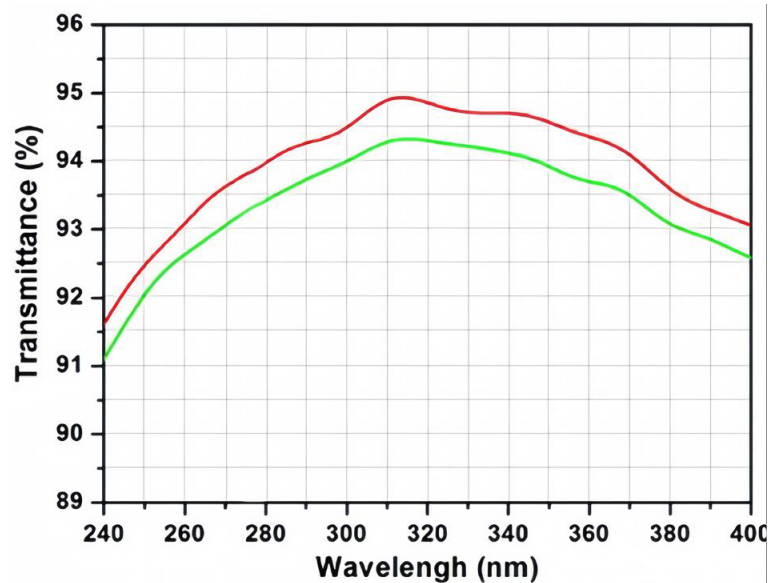


2.2 Device Manufacturing Process



Packaging Features:

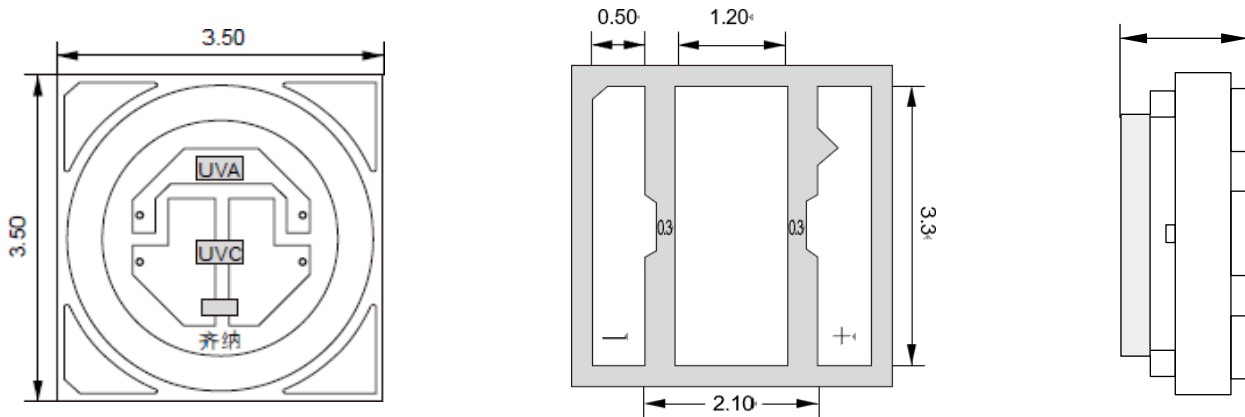
- 1) Non-contact welding with no space limitations and zero contact pressure.
- 2) Suitable for miniaturized components, enabling hermetic sealing of millimeter-scale devices.
- 3) Supports high-density panel processing with improved precision and efficiency.
- 4) Efficiency is 3–5 times higher than parallel seam welding.
- 5) Superior to parallel seam welding.
- 6) Supports automated vacuum processing.



Window Process

- 1) Square exterior with circular interior, flat window lens structure;
- 2) Uses metal, quartz/sapphire materials with no organic components;
- 3) UV transmittance at 275 nm >93.5%;
- 4) Customized spherical structures and package sizes such as 6868;
- 5) Achieves high hermeticity, high optical output power, and low optical decay.

2.3 Device Dimensions

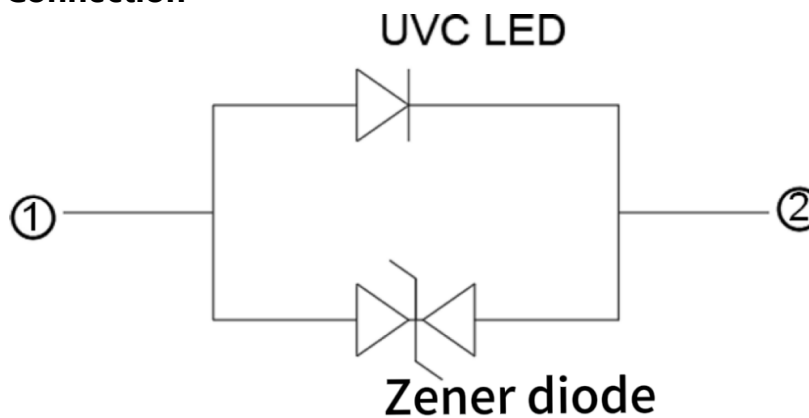


Top View

Bottom View

Side View

2.4 Circuit Connection



Notes:

- [1] Each device contains two different types of chips: a UVC LED chip and a Zener diode. The Zener diode provides ESD protection for the UVC LED chip.
- [2] Package dimensions: $3.5 \times 3.5 \times 1.6$ (L×W×H), Unit: mm.
- [3] As shown in the figure above, ① is the positive electrode, ② is the negative electrode, and the center pad is the thermal pad.
- [4] The front-side notch and back-side chamfer indicate the negative electrode. For tape-and-reel products, the round-hole side indicates the negative electrode. The actual product may not have a back-side chamfer; please refer to Note [3] for polarity identification.
- [5] Due to different bracket batches, slight appearance variations may occur. Products with different appearances are fully compatible and do not affect performance.;
- [6] Dimensional tolerance: ± 0.1 mm.

3 Optical & Eletrical Charateristics

3.1 Optical & Electrical Parameters and SPEC Range @40mA (Ta = 25°C, RH = 30%)

Parameters	Symbol	Min	Max	Step	Unit
UVC Peak Wavelength	λ_P	270	280	2	nm
UVC Radiant Power	P_o	20	30	2	mW
UVC Forward Voltage	V_1	5.6	6.4	4	V

Wavelength Range:

Bin Code	W01	W02
Range (nm)	27~275	275~280

Radiant Power Range:

Bin Code	P201	P202
Range (mW)	20~25	25~30

Voltage Range:

Bin Code	VG1	VG2	VG3	VG4
Range (V)	5.6~5.8	5.8~6.0	6.0~6.2	6.2~6.4

Note:

[1] UVC Maximum Operating Current: 150mA.

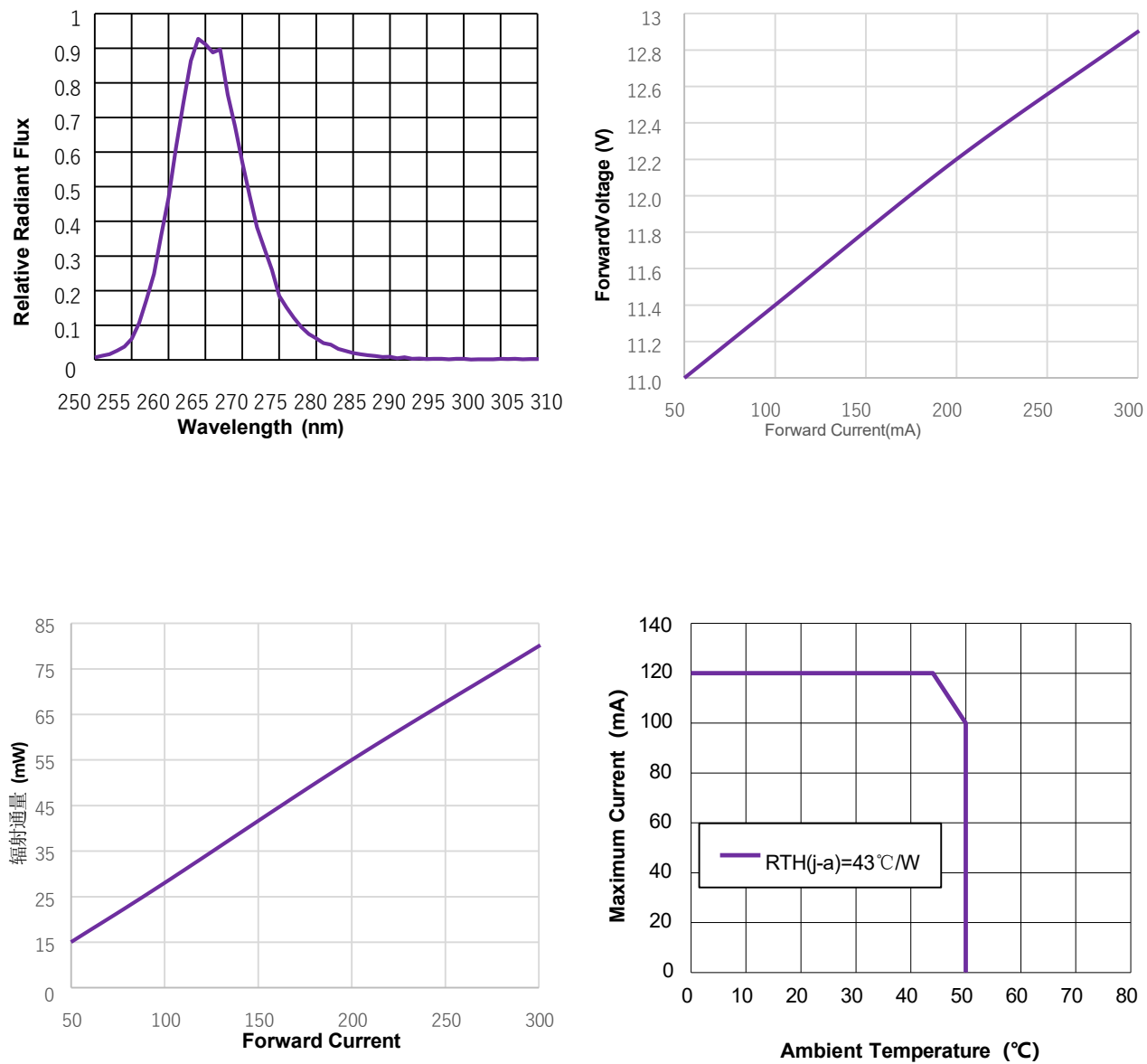
3.2 Absolute Maximum Ratings

Parameters	Symbol	Value			Unit
		Min	Typ	Max	
Operating Temperature	Topr	-30		60	°C
Storage Temperature	Tstg	-40		100	°C
Thermal Resistance	Rjs		15	---	K/W

Note:

- [1] Radiant power refers to the total optical output power collected by an integrating sphere.
- [2] All data are based on measurement results from testing equipment. The measurement tolerances for forward voltage, peak wavelength, and radiant power are $\pm 0.5\text{V}$, $\pm 3\text{nm}$, and $\pm 10\%$, respectively. Increasing the drive current will raise the temperature, accelerate LED light degradation, and shorten the lifetime. Operation or testing beyond the specified absolute maximum ratings may affect device reliability and cause permanent damage.
- [3] Proper thermal management or a suitable heat dissipation system is recommended during operation to achieve optimal performance and lifetime.

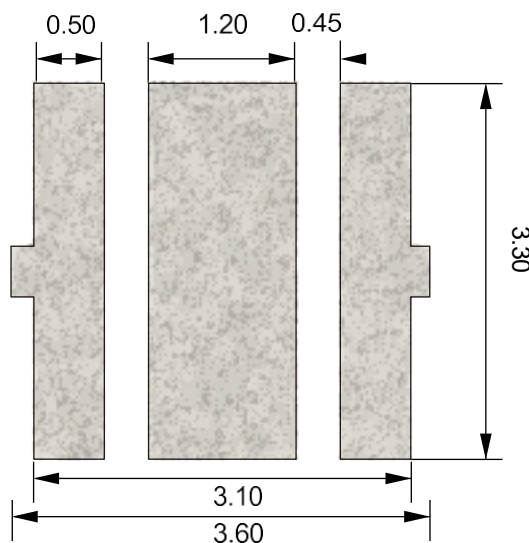
3.3 Characteristic Curves (UVC Chip)



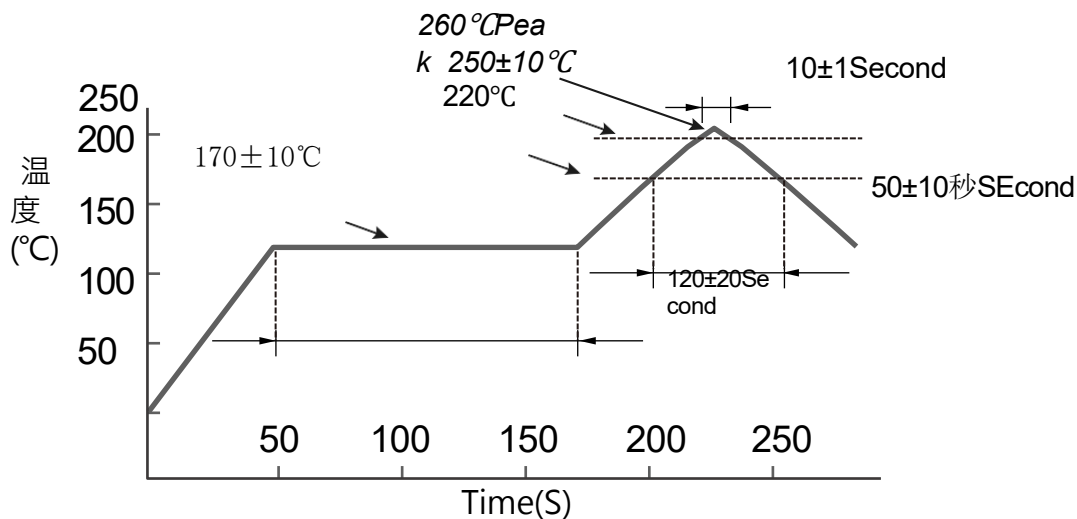
Note:

The above test data are obtained from laboratory measurements. Actual curves may vary depending on sampling conditions.

4 Recommended Pad Design



5 Reflow Process



Notes:

- 1 A convection reflow oven with 7 or more heating zones is recommended. Reflow soldering should be performed only once.
- 2 Repair after LED soldering is not recommended. If repair is unavoidable, use a dual-tip soldering iron and operate carefully to avoid damaging the device.
- 3 High-temperature solder paste is recommended for SMT reflow soldering. The peak temperature should not exceed 260°C, the peak time should be controlled within 10 seconds, and the total reflow time should not exceed 5 minutes.

6 Reliability Test

Test Item	Test Conditions	Criteria	Failure Rate
Normal Operation	T=25°C, Rated Current, Continuous Operation for 1000 hours	Dead LED	0/35
Thermal Shock	-40°C to +120°C, 500 cycles, 15 min/cycle	Dead LED	0/35
Reflow Soldering	Peak Temperature ≤260°C, 10-zone reflow oven, 1 cycle	Dead LED	0/100
ESD Resistance	R=1.5kΩ, C=100pF, Voltagelevel=2kV	Dead LED	0/10

7 Usage Risks



Notes:

- [1] All assembly workers, inspectors, and bystanders must wear appropriate eye and skin protection.
- [2] Do not observe the device with naked eyes (including through a microscope) or handle deep UV LEDs with exposed skin during operation.
- [3] Deep UV light is easily absorbed by contaminants. Do not touch the optical surface of the deep UV LED.
- [4] This product is ESD-sensitive. Proper anti-static measures must be taken during handling to prevent failures such as breakdown, leakage, or LED failure caused by electrostatic discharge.
- [5] This product is moisture-sensitive. Recommended storage conditions: 18°C–30°C, relative humidity 30%–60%, and sealed storage. To ensure product quality, unopened packages should be used within one year after delivery. Opened packages should be used within 24 hours; otherwise, reseal and store properly. Before reuse, dehumidification is recommended: 65°C for 5 hours.