HK255S50CG-Z209



Specification Datasheet

CFCL Optoelectronics (Shenzhen) Co., Ltd.

Model No.: HK255S50CG-Z209

Product: 5050 patented package UVC LED (20 × 20 mil chip × 9)

Revision: V1.0

Date: October 2026

Table of Contents

No.	Item	Page
1	General Description	2
2	Key Features	2
3	Application Fields	2, 3
4	Absolute Maximum Ratings	3
5	Electro-Optical Characteristics	3, 4
6	Binning Specifications	4
7	Outline Dimensions	4, 5
8	Packaging & Storage	5
9	Notes & Precautions	5

Address: 6th Floor, Building D, No. 48 Paotai Road, Lisonglang Community, Gongming Sub-district, Guangming District, Shenzhen, Guangdong, P.R. China
Website: https://www.cfclopto.com E-mail:uvclcd@qq.com

1. General Description

The HK255S50CG-Z209 is a high-performance deep-ultraviolet (UVC) LED in a patented 5050 (5.0 × 5.0 mm) SMD package with a sapphire plano lens, integrating nine 20 × 20 mil high-efficiency UVC LED chips in parallel. It delivers stable ultraviolet output in the 250–260 nm range, with excellent thermal dissipation and a long operating lifetime.

- This device is fully compatible with standard surface mount technology (SMT) assembly processes, and is suitable for Gemstone Authentication & Fluorescence Grading applications. All products undergo 100% testing and sorting by forward voltage, optical power and wavelength before delivery.

2. Key Features

- Peak wavelength range: 250.0 – 260.0 nm
- 9 × 20 × 20 mil UVC LED chips
- Sapphire plano lens on the patented 5050 SMD package; nine chips in parallel
- Package dimensions: 5.00 × 5.00 × 1.47 mm (Length × Width × Height)
- Gold (Au) positive and negative electrodes for high reliability
- Low thermal resistance ceramic substrate
- RoHS, CE and REACH compliant
- 100% visual and electrical inspection before shipment

3. Application Fields

- Molecular Biochemical Detection
- Gemstone Authentication & Fluorescence Grading
- Mineral Prospecting & Ore Identification
- Industrial Non-Destructive Quality Testing
- Forensic Evidence & Anti-Counterfeiting Detection
- High-power UVC LED modules for large-area treatment; specialty short-wave UV curing
- Dual-mechanism disinfection via simultaneous DNA damage and protein denaturation

4. Absolute Maximum Ratings

(Test condition: Ambient temperature Ta = 25°C)

Parameter	Symbol	Rating	Unit
Forward Current	I_F	900	mA
Peak Forward Current (10% duty cycle, 1ms pulse)	$I_{F(peak)}$	1400	mA
Reverse Voltage	V_R	5	V
Operating Temperature Range	T_{opr}	-40 ~ +85	°C
Storage Temperature Range	T_{stg}	-40 ~ +100	°C
Maximum Junction Temperature	T_j	105	°C

5. Electro-Optical Characteristics

(Test condition: Ta = 25°C, Forward current I_F = 900 mA)

Parameter	Symbol	Min.	Typ.	Max.	Unit
Peak Wavelength	λ_p	250.0	254.0	260.0	nm
Spectral Half-Width	Δλ	-	12	-	nm
Forward Voltage	V_F	4.8	5.4	6.0	V
Radiant Output Power	P_e	72.0	108.0	144.0	mW
Viewing Angle (Half Intensity)	$2\theta_{1/2}$	-	120	-	deg
Reverse Leakage Current	I_R	-	-	10	μA
Thermal Resistance (Junction to Board)	$R_{th(j-b)}$	-	18	-	°C/W

6. Binning Specifications

(Test condition: Ta = 25°C, I_F = 900 mA)

6.1 Forward Voltage Binning

Level	A01	A02	A03	A04	A05	A06
Min. (V)	4.8	5.0	5.2	5.4	5.6	5.8
Max. (V)	5.0	5.2	5.4	5.6	5.8	6.0

6.2 Radiometric Power Binning

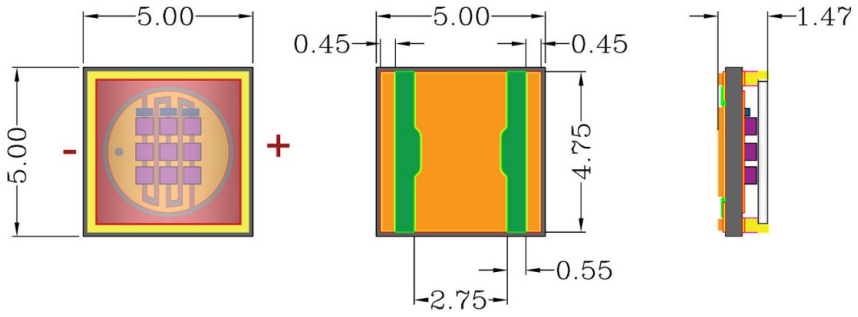
Level	P1	P2	P3	P4
Min.	72.0 mW	90.0 mW	108.0 mW	126.0 mW
Max.	90.0 mW	108.0 mW	126.0 mW	144.0 mW

6.3 Peak Wavelength Binning

Level	255A	255B
Min.	250.0 nm	255.0 nm
Max.	255.0 nm	260.0 nm

7. Outline Dimensions

- **Package Type: 5050 patented package (SMD, sapphire plano lens)**
- **Overall Dimensions:** 5.00 ± 0.10 mm (Length) × 5.00 ± 0.10 mm (Width) × 1.47 ± 0.10 mm (Height)
- **Lens Diameter:** 3.80 mm (Sapphire Plano Lens)
- **Pad Layout:** Standard 5050 SMD footprint



8. Packaging & Storage

8.1 Packaging

- Packaging form: Tape and reel
- Quantity per reel: 500 pieces
- Reel diameter: 178 mm (7 inch)
- Moisture Sensitivity Level: MSL 3

8.2 Storage Conditions

- Store in a dry environment at room temperature
- Recommended storage: 5°C ~ 30°C, 30% ~ 70% RH
- Avoid direct sunlight, corrosive gases and high humidity
- Reseal the bag properly after opening to prevent moisture absorption

9. Notes & Precautions

1. Peak wavelength tolerance: ± 2.0 nm
2. Radiant flux measurement tolerance: ± 10%
3. Forward voltage tolerance: ± 10%
4. All parameters are measured at chip level by UV-CHIPS
5. UVC LEDs emit high-energy ultraviolet radiation. Avoid direct exposure to eyes or skin during operation.
6. The device is sensitive to electrostatic discharge (ESD). Proper ESD protection is required during handling and assembly.
7. Operating beyond absolute maximum ratings may cause permanent damage to the device.