HK310S25CG-250

Specification Datasheet



CFCL Optoelectronics (Shenzhen) Co., Ltd.

Model No.: HK310S25CG-250

Product: 2525 flat sapphire glass package UVB LED (20 × 20 mil chip)

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1. General Description

The HK310S25CG-250 is a high-performance medium-wave ultraviolet-B (UVB) LED in a 2525 (2.5 × 2.5 mm) SMD package with a flat sapphire glass window, integrating a 20 × 20 mil high-efficiency UVB LED chip. It delivers stable ultraviolet output in the 300–320 nm wavelength range, featuring excellent thermal dissipation and long operational lifespan.

This device is fully compatible with standard surface mount technology (SMT) assembly processes, and is suitable for Vitamin D_3 biosynthesis etc. All products undergo 100% testing and sorting by forward voltage, optical power and wavelength before delivery.

2. Key Features

- Peak wavelength range: 300.0 – 320.0 nm
- 20 × 20 mil UVB LED chip
- Flat sapphire glass window on the 2525 SMD package
- Package dimensions: 2.50 × 2.50 × 1.30 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
- Lower erythemogenic risk than shorter UVB bands, enabling longer safe exposure duration
- Excellent therapeutic index; the most widely adopted UVB band for clinical dermatology

3. Application Fields

- Narrowband UVB (NB-UVB, 311–313 nm) phototherapy — first-line treatment for psoriasis, vitiligo and mycosis fungoides
- Cosmetic tanning equipment
- Plant UV acclimation and growth regulation in controlled environment agriculture
- Accelerated weathering and photodegradation testing of polymers, coatings and materials

4. Absolute Maximum Ratings

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

Parameter	Symbol	Rating	Unit
Forward Current	I_F	100	mA
Peak Forward Current (10% duty cycle, 1ms pulse)	$I_{F(peak)}$	150	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 = 100 mA)

Parameter	Symbol	Min.	Typ.	Max.	Unit
Peak Wavelength	λ_p	300.0	308.0	320.0	nm
Spectral Half-Width	$\Delta\lambda$	-	12	-	nm
Forward Voltage	V_F	4.8	5.4	6.0	V
Radiant Output Power	P_e	15.0	20.0	40.0	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 = 100 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

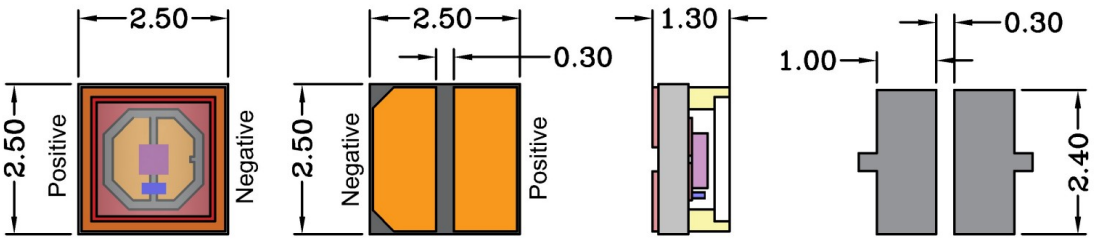
Level	P1	P2	P3	P4
Min.	15.0 mW	20.0 mW	25.0 mW	30.0 mW
Max.	20.0 mW	25.0 mW	30.0 mW	40.0 mW

6.3 Peak Wavelength Binning

Level	310A	310B	310C	310D
Min.	300.0 nm	305.0 nm	310.0 nm	315.0 nm
Max.	305.0 nm	310.0 nm	315.0 nm	320.0 nm

7. Outline Dimensions

- **Package Type: 2525 SMD flat sapphire glass package**
- **Overall Dimensions:** 2.50 ± 0.10 mm (Length) × 2.50 ± 0.10 mm (Width) × 1.30 ± 0.10 mm (Height)
- **Lens Diameter: 1.90 mm (typical, flat sapphire glass window)**
- **Pad Layout:** Standard 2525 SMD footprint



8. Packaging & Storage

8.1 Packaging

- Packaging form: Tape and reel
- Quantity per reel: 1000 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. UVB 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.