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Crystal IS - OPTAN280K-BL and OPTAN-265N-SMD UVC LEDs for Spectroscopic Application and Chemical Analysis

Deep ultraviolet LEDs with 265nm and 280nm peak emission on AlN single-crystal wafer



This report combines the analysis of two components in order to offer a broad vision of the technologies used by Crystal IS (Asahi Kasei) for these UVC LEDs in terms of applications and power output.

The OPTAN280K-BL and OPTAN-265N-SMD are two UVC LEDs, of 280nm and 265nm respectively, from Crystal IS. Both LED use the same 0.58mm² die. The OPTAN-265N-SMD has a hemispherical lens and the OPTAN280K-BL a ball lens, and both are adapted for fluorescent spectroscopy and chemical/biological analysis.

Crystal IS has developed a single-crystal AlN substrate for manufacturing its pseudomorphic AlGaN LEDs. The technology offers AlN substrates with ultra-low dislocation (defect) density. A physical analysis shows the effect on the epitaxy layer, which is very thin compared to a UVC LED on sapphire substrate from SETi. The buffer layers are also very thin.

Today, the impact of the AlN substrate is not visible in its performance, since the External Quantum Efficiency is lower than the EQE of SETi's LEDs. However, this is a first-generation product from Crystal IS, whereas SETi's LED has already been around for four years.

The two packages with their ball/hemispherical lens are expensive, but their applications are promising in analysis and measurement equipment.

This report delivers a deep technology analysis of the packaging and components, with images of the AlGaN epitaxy layer stack and electrode structure. Also included are a production cost analysis and an overall comparison with the latest SETi UVC LED.

Title: Crystal IS UVC LED OPTAN LED

Pages: 115

Date: June 2016

Format: PDF & Excel file

COMPLETE TEARDOWN WITH:

- Detailed photos
- Precise measurements
- Materials analysis
- Manufacturing process flow
- Supply chain evaluation
- Manufacturing cost analysis
- Selling price estimation
- Comparison of OPTAN280K-BL, OPTAN-265N-SMD, SS35DF227513, and UVTOP270TO39HS

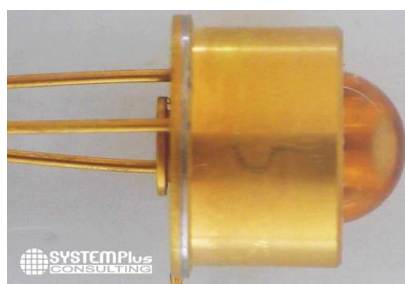
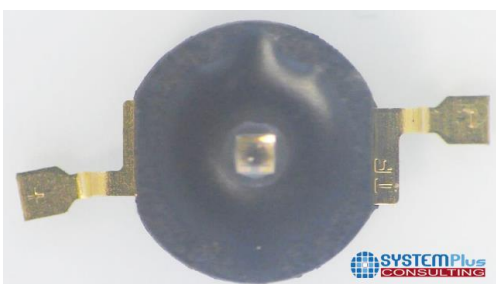


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Crystal IS vs. SETi UVC LED: Comparison



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Sylvain is in charge of costing analyses for IC, Power and LED. He has more than 10 years of experience in the Power Device manufacturing costs analysis and has studied a wide range of technologies.



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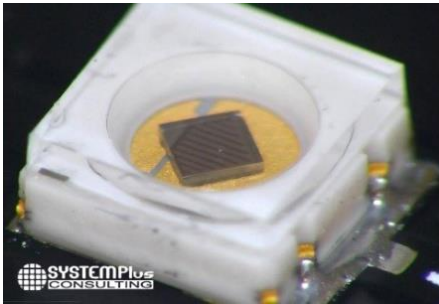
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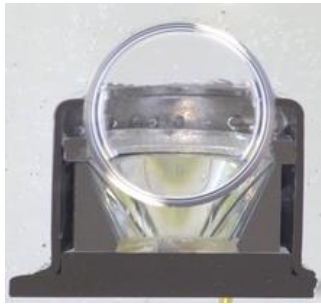
UVC LEDs for disinfection and chemical analysis. Deep ultraviolet LEDs with 275nm peak emission in 0.1mm² and 1mm² dies.



Pages: 170
Date: June 2016

UV LED UVTOP270 Ultraviolet LED

Physical analysis of the device, step by step reconstruction of the process flow, cost of manufacturing and estimation of selling price.



Pages: 83
Date: October 2012

SORAA : Tri-LED & Lightchip

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