

SETi - UVTOP270TO39HS and SS35DF227513 UVC LEDs for Disinfection and Chemical Analysis

Deep ultraviolet LEDs with 275nm peak emission in 0.1mm² and 1mm² dies.



This report combines the analysis of two components in order to offer a broad vision of the technologies used by UVC LEDs in terms of applications and power output. The UVTOP270TO39HS and SS35DF227513 are two 275nm UVC LEDs from Sensor Electronic Technology Inc. (SETi). The UVTOP270TO39HS, with its hemispherical lens and 0.1mm² LED, is adapted for fluorescent spectroscopy and chemical /

biological analysis. The SS35DF227513, with its flat window, is designed for disinfection.

The two LED dies are based on the same technology: an AlN template layer deposited on a sapphire substrate. The AlGaN active layers are epitaxied on the AlN layer, but the thickness is very different between the two dies. The SS35DF227513 is manufactured using the latest SETi technological evolution. The new AlN and AlGaN structure reduces the defect density to enhance external quantum efficiency. At 1mm², the SS35DF227513 is 9x taller than SETi's first UVC LED and boasts 15x more power.

The TO39 with a hemispherical lens is an expensive package, but it is destined for instrumentation. The new SMD3535 package in the SS35DF227513's ceramic is cheaper and designed for disinfection with a large viewing angle and better thermal resistance that allows continuous use of the 1mm² LED.

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

Title: SETi UVC LED SS35DF227513 & UVTOP270TO39HS
Pages: 170 in 2 files
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 SS35DF227513 (2016), UVTOP270TO39HS (2016), and UVTOP270-BL-TO39 (2012) UVC LED

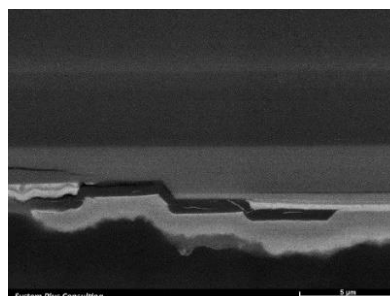
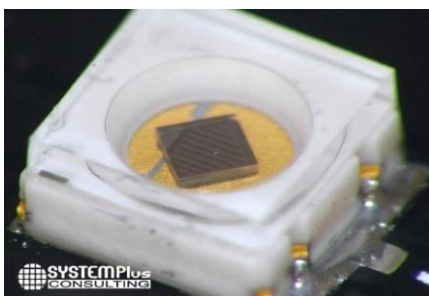


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- SETi Profile

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SETI UV LED: Comparison Between Old and New

The Table of Contents are similar for both components.



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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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Véronique is in charge of structure analysis of semi-conductors. She has a deep knowledge in chemical & physical technical analyses. She previously worked for 20 years in Atmel Nantes Laboratory.

ANALYSIS PERFORMED WITH OUR COSTING TOOL LED COSIM+

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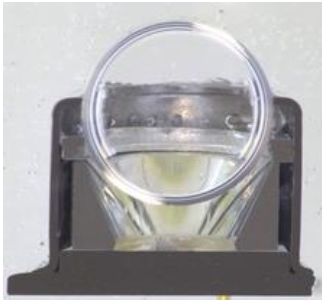
LED CoSim+ is a process-based costing tool used to evaluate the manufacturing cost per wafer using your own inputs or using the pre-defined parameters included in the tool.

It is possible to enter any LED process flow.

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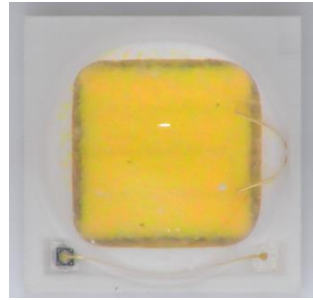
Physical analysis of the device, step by step reconstruction of the process flow, cost of manufacturing and estimation of selling price.



Pages: 83
Date: October 2012

Toshiba TL1L4-WHO 3rd gen GaN on Silicon LED

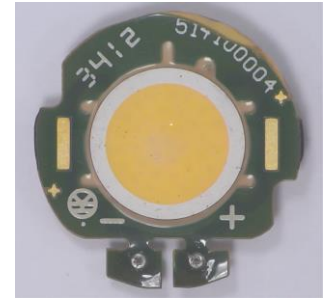
First high brightness LED GaN-on-Silicon with 160lm per watt, almost equivalent to sapphire LED Base.



Pages: 107
Date: June 2015

SORAA : Tri-LED & Lightchip

The first GaN on GaN LED by SORAA on the market. New in this LED: GaN substrate, triangular shape chip, simplified epitaxial structure and an original silicon-based wafer level packaging.



Pages: 75
Date: June 2013

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