

LUMILEDS – Luxeon K2 Reverse Costing Report

System Plus Consulting - September 2010

Physical Analysis of the Device Step by Step Reconstruction of the Process Flow Cost of Manufacturing and Estimation of Selling Price

System Plus Consulting is proud to publish the reverse costing report of the Luxeon K2 (Ref. LXX2-PW14-U00), supplied by Lumileds. Based on a complete teardown process, the report provides an estimation of the production cost as well as the selling price of the component.

- The Luxeon K2 series is round type and consumes 0.48 watt at 150mA. The typical luminous flux is 100 lm at 1000 mA and up to 130 lm at 1.5 A.
- The component is provided in a specific 4-pins package, compatible with SMT process.
- It is used in various applications such as backlighting, reading lamps, substitution of micro incandescent lamps, indoor and outdoor commercial and residential, architectural lighting.

This report provides complete teardown of the LED with:

- Detailed photos
- Material analysis
- Schematic assembly description
- Manufacturing Process Flow
- In-depth economical analysis
- Manufacturing cost breakdown
- Selling price estimation

Package Opening

In total, there are 2 bond wires. The two bonds connect the protective diode to the lead frame. The LED is connected by 25 bumps to the protective diode.

Bumps

Die area: 0.99mm x 0.99mm = 0.98 mm²

LED die SEM View. (Die thickness = 100µm) singulation by scribe and break

Equipment Family	Cost	Percentage
Inspection	\$5.94	5.7%
Removal	\$19.62	19.2%
Etching	\$68.25	65.9%
TOTAL	\$93.81	

Wafer Equipment Cost Breakdown per Family

Wafer cost per Equipment Family

Epitaxy 68%
Etching 13%
Lithography 13%
Removal 2%
Cleaning 2%
Measurement 2%
Dicing 2%
Backgrinding 2%
Management 2%
Inspection 2%

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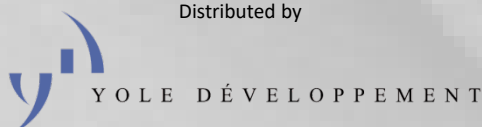
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- ✓ Other costing models can be developed according to customer specification

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