

# Osram – Platinum Dragon LED 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 **Platinum Dragon** LED series (ref: LW W5SN) from OSRAM. 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 Platinum Dragon series is round type and consumes 0.5 watt at 150mA. A typical luminous flux is 90lm at 350mA and up to 190lm at 1A.
- The component is provided in a specific 2-pins 7x6mm package.
- It is used in various applications such as exterior and interior automotive lighting, flashlight, backlighting, reading lamps, substitution of micro incandescent lamps, indoor and outdoor 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 three bond wires. Each bond wire is double-stitched at the lead frame to increase reliability. The bond wire is 35µm diameter (gold).

Protection diode

Dies are attached with silver-filled epoxy.

**LED Cross-Section**

The die which supports the thin GaIn layer is a Germanium wafer. It is attached to the heat spreader copper block with silver epoxy.

The lens and y

LED die cross-section optical view.

**LED Wafer & Die Cost (FE+BE 0)**

	Low Yield		Medium Yield		High Yield	
	Cost	Breakdown	Cost	Breakdown	Cost	Breakdown
FE: Raw Substrate Cost	0.00	0.00	0.00	0.00	0.00	0.00
FE: Battery Cost (with Yield losses)	0.00	0.00	0.00	0.00	0.00	0.00
FE: Other Front-End Cost (with Yield losses)	0.00	0.00	0.00	0.00	0.00	0.00
BE 0: Probe + Dicing Cost	0.00	0.00	0.00	0.00	0.00	0.00
<b>TOTAL Wafer Cost</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
No of potential dies per wafer	100	100	100	100	100	100
No of good dies per wafer	100	100	100	100	100	100
FE: Raw Substrate Cost	0.00	0.00	0.00	0.00	0.00	0.00
FE: Battery Cost (with Yield losses)	0.00	0.00	0.00	0.00	0.00	0.00
FE: Other Front-End Cost (with Yield losses)	0.00	0.00	0.00	0.00	0.00	0.00
BE 0: Probe + Dicing Cost	0.00	0.00	0.00	0.00	0.00	0.00
<b>Die Cost</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

**Wafer Cost Breakdown**

- The final LED die cost range from ... according to yield variations.
- The Front-End (FE) cost represents (including the manufacturing steps of the die).
- The Back-End level 0 (including the steps: Probe Test & Dicing) represents ...
- The yield losses cost represent ... of the total manufacturing cost.

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- ✓ SYS.Cost which is a powerful costing tool for electronic boards and systems

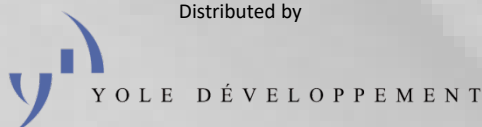
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