

# STMicroelectronics LIS3DH / Apple A2L 3-Axis MEMS Accelerometers

Reverse Costing Analysis – March 2011



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

### TEARDOWN - REVERSE COSTING

System Plus Consulting is proud to publish the reverse costing report of the 3-Axis MEMS accelerometers LIS3DH and Apple A2L supplied by STMicroelectronics. Available on STMicroelectronics portfolio, the LIS3DH is the first linear 3-axis accelerometer in the "nano" family. Packaged in a 3.0x3.0x1.0mm, the device features an ultra low-power consumption that allows power saving functions in consumer applications. Specifically made for Apple, the A2L 3-axis accelerometer shares the same silicon dies with the LIS3DH but is packaged in a smaller 2.0x2.0x1.0mm package. The A2L is featured in the Apple iPod Nano 6G.

Manufactured with the same THELMA process than the previous STM inertial sensors, the LIS3DH / A2L uses a new gold-gold thermocompression bonding process which allows the MEMS die area to be shrunk by a ratio of 2 compared to the previous linear 3-axis accelerometer (LIS331DLH). Cumulated with a shrunk ASIC die, the manufacturing cost of this new generation of "Nano" accelerometers has been seriously reduced to fit the price pressure of consumer applications.

### CONTENT OF THE REPORT

This report provides complete teardown of the MEMS accelerometer with:

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

### WHO SHOULD BUY THIS REPORT ?

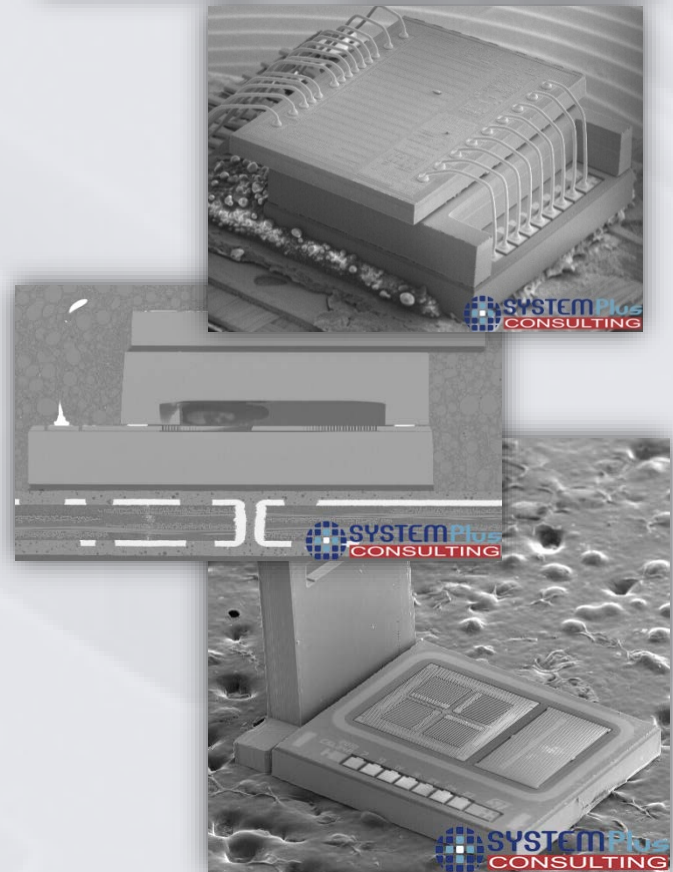
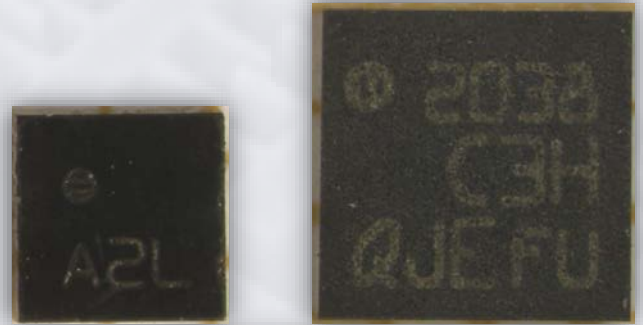
➤ Reverse costing reports contain exclusive information on technology and cost structure, they are useful to:

- Supply-Chain Executives
- Procurement Managers
- Product Line Managers
- Technologists

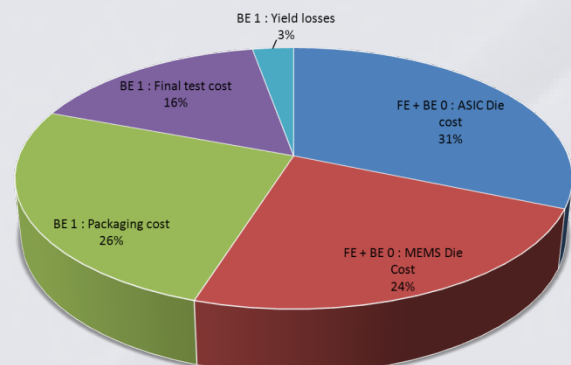
from

- OEM companies (consumer, telecom)
- MEMS manufacturers
- Semicon Equipment and Materials providers

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LIS3DH Component Cost Breakdown (Medium Yields)



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# TABLE OF CONTENTS

## Glossary

<b>Overview/Introduction.....</b>	<b>4</b>	<b>Manufacturing Process Flow.....</b>	<b>78</b>
• Executive Summary		•Global Overview	
• Reverse Costing Methodology		•ASIC Process Flow	
<b>STMicroelectronics Company Profile.....</b>	<b>6</b>	•Description of the ASIC Wafer Fabrication Unit	
<b>iPod Nano 6G Teardown.....</b>	<b>15</b>	•MEMS Process Overview	
<b>Physical analysis.....</b>	<b>20</b>	•MEMS Sensor Process Flow	
•Synthesis of the Physical Analysis		•MEMS Cap Process Flow	
•Physical Analysis Methodology		•MEMS Wafer Bonding Process Flow	
•Package Characteristics & Markings (LIS3DH)		•Description of the MEMS Wafer Fabrication Unit	
•Package Characteristics & Markings (A2L)		<b>Cost Analysis.....</b>	<b>93</b>
•Package Pin-Out		•Synthesis of the Cost Analysis	
•Package X-Ray		•Main Steps of Economic Analysis	
•Package Cross-Section		•Yields Explanation	
•Device Structure		•Yields Hypotheses	
•Package Opening (LIS3DH)		•Die per wafer & Probe Test	
•Package Opening (A2L)		•ASIC Front-End : Hypotheses	
•ASIC – Dimensions (LIS3DH)		•ASIC Front-End Cost	
•ASIC – Dimensions (A2L)		•ASIC Back-End 0 : Probe Test, Backgrinding & Dicing	
•ASIC – Markings		•ASIC Die Cost	
•ASIC – Bond Pads		•MEMS Front-End : Hypotheses	
•ASIC – MIM Capacitors		•MEMS Front-End Cost	
•ASIC – Delayering		•MEMS Front-End Cost per Process Steps	
•ASIC – Cross-Section		•MEMS Front-End : Equipment Cost per Family	
•ASIC – Process Characteristics		•MEMS Front-End : Material Cost per Family	
•MEMS – Dimensions (LIS3DH)		•MEMS Back-End 0 : Probe Test & Dicing	
•MEMS – Dimensions (A2L)		•MEMS Die Cost (Front End + Back End 0)	
•MEMS – Markings		•Back-End 1 : Packaging Cost (LIS3DH / A2L)	
•MEMS – Bond Pads Opening		•Back-End 1 : Final test & Calibration Cost	
•MEMS – Bond Pads		•LIS3DH Component Cost (FE + BE 0 + BE 1)	
•MEMS – Cap Opening		•A2L Component Cost (FE + BE 0 + BE 1)	
•MEMS – Cap		<b>Estimated Manufacturer Price Analysis.....</b>	<b>122</b>
•MEMS – Sealing Frame		•Definition of Prices	
•MEMS – Comparison with Previous Generation		•Manufacturer Financial Ratios	
•MEMS – Sensor Optical Overview		•LIS3DH Estimated Manufacturer Price	
•MEMS – Sensor SEM Overview		•LIS3DH Estimated Selling Price	
•MEMS Sensor – X/Y Axes		•A2L Estimated Manufacturer Price	
•MEMS Sensor – Z Axis		•A2L Estimated Selling Price	
•MEMS Sensor – Masses Removed		<b>Conclusion.....</b>	<b>129</b>
•MEMS – Cross-Section			
•MEMS Process Characteristics			
•Physical Data Summary			

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