After long expectation, the first GaN-on-Sapphire die has been integrated in a commercially available device!

In this report, System Plus Consulting unveils Power Integrations’ technical choices; from the device design up to the packaging.

The first GaN on Sapphire based Power IC die has been found in the Wall-Charger PowerPort Atom PD1: A2017, from Anker. The die is co-packaged with three ICs constituting primary-side and secondary-side controllers, in the device SC1933C.

To our great surprise, the power GaN HEMT was processed on a sapphire substrate which is a major breakthrough that we did not observe before in other power GaN HEMTs. The latter being generally processed on Silicon substrates.

In this report, System Plus Consulting presents a deep teardown analysis of the SC1933C. Detailed optical and SEM pictures and cross-sections with EDX analysis are included to reveal Power Integrations’ technical choices till the microscopic level of the ICs and HEMT’s designs.

The report provides an estimation of the production costs of the ICs, the HEMT and the package as well as the estimated selling price of the component.

Finally, the report shows a comparison with the GaN-on-Si HEMT from Navitas. This comparison highlights the differences in GaN dies’ design and manufacturing costs.

A system-oriented analysis of the PowerPort Atom PD1: A2017 from Anker, can be found in our report "GaN Chargers Comparison"; a report which focus on the impact of the GaN dies adoption in the latest wall chargers design and performances.

COMPLETE TEARDOWN WITH

- Detailed optical and SEM photos
- Precise measurements
- Materials EDX analysis
- Supply chain evaluation
- Manufacturing cost analysis
- Estimated selling price
- Technology and cost comparisons with GaN-on-Si HEMT from Navitas.
TABLE OF CONTENTS

Overview/Introduction
• Executive Summary
• Market
• Reverse Costing Methodology

Company Profile
• Power Integrations

Physical Analysis
• Summary of the Physical Analysis
• Power IC in Wall-Charger Anker PowerPort Atom PD 1
  • Package Analysis
    • Package opening, package cross-sections
  • HEMT Die
    • HEMT die view and dimensions
    • HEMT die process, cross-section, and process characteristics
• Primary and Secondary Control ICs
  • IC die views and dimensions
  • IC die processes, cross-sections, process characteristics

Manufacturing Process
• HEMT Die Front-End Process and Fabrication Unit
• IC Die Front-End Processes and Fabrication Units
• Packaging Process Flow

Cost Analysis
• Summary of the Cost Analysis
• Yield Explanations and Hypotheses
  • HEMT Die
    • HEMT wafer front-end cost and front-end cost per process step.
    • HEMT back-end cost: Die probe test, thinning and dicing
    • HEMT die cost
  • IC dies
    • IC front-end cost
    • IC back-end cost: Die probe test, thinning and dicing
    • IC die cost
• Packaging Assembly Cost
• Component Cost
  • Back-end: Final test cost
  • Component cost

Price Analysis
• Definition of Prices
• Estimation of Selling Price

Price Analysis
• Technology and Cost Comparison Between Power Integrations and Navitas GaN HEMT Dies

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