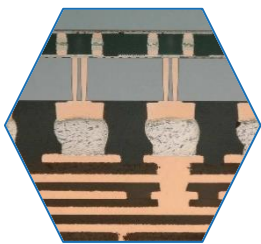
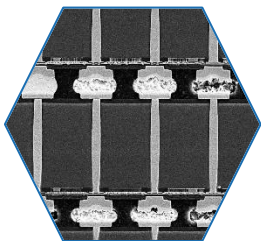


NVIDIA A100 Ampere GPU

NVIDIA's new generation Graphics Processing Unit (GPU) with TSMC CoWoS, 40GB Samsung HBM2, 2.5D and 3D packaging.



The high-end electronic packaging market was worth more than \$880 million dollars in 2019. The biggest market for high end performance packaging comes from telecom and infrastructure. It has more than a 50% market share according to Yole Développement's report **High-End Performance Packaging: 3D/2.5D Integration 2020**.



The NVIDIA Ampere A100 targets high performance data centers, artificial intelligence applications, data analytics, and High-Performance Computing (HPC). It uses advanced technologies, including TSMC's 7nm FinFET chip, 3D stacked memory with 2.5D integration on a silicon interposer in a Chip-on-Wafer-on-Substrate (CoWoS) process.

silicon in a single package. TSMC is the main provider for the NVIDIA Ampere A100. Using its 2.5D CoWoS platform, it manufactures the world's largest processor built on 7nm process technology.

The report includes a complete physical analysis of the package, the GPU die, interposer die and the HBM2 DRAM. Along with the manufacturing process of the silicon dies, CoWoS process and final assembly, this report comes with a cost analysis and a price estimation of the NVIDIA Ampere A100. Finally, the report includes a comparison to highlight the similarities and differences between the NVIDIA Ampere A100 and NVIDIA's Tesla P100 and V100.

Title: NVIDIA A100 Ampere GPU

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Format: PDF & Excel file

Price: EUR 3,990

Reference: SPR21579

The new generation GPU provides significantly higher performance compared to the previous generation. The HBM2 DRAM solution satisfies the market need for high performance, energy efficiency, and compact integration. A 3D assembly process yields HBM2 stacks composed of eight 1GB memory dies and one logic die, connected with via-middle through-silicon vias and micro-bumps.

More than 6,000mm² of silicon area is integrated in a single 55mm x 55mm 12-layer ball grid array (BGA) package of the NVIDIA Ampere A100. Two major semiconductor leaders, Samsung and TSMC, collaborate to deliver this much

COMPLETE TEARDOWN WITH

- Detailed optical and SEM photos
- Precise measurements
- Materials analysis (EDX)
- Manufacturing process
- Supply chain evaluation
- Manufacturing cost analysis
- Estimated selling price
- Technology and cost comparisons of NVIDIA A100, NVIDIA Tesla P100 and Tesla V100

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AUTHORS

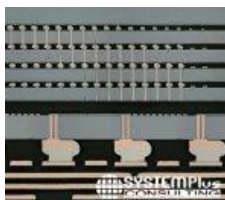


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Véronique Le Troadec has joined System Plus Consulting as a laboratory engineer. Coming from Atmel Nantes, she has extensive knowledge in failure analysis of components and in deprocessing of integrated circuits.

RELATED ANALYSES



NVIDIA Tesla P100 GPU with HBM2

It is the world's first artificial intelligence supercomputing data center GPU with 3D stacked memory (2.5D integration on a silicon interposer in a Chip-on-Wafer-on-Substrate (CoWoS) process).

October 2017 - EUR 3,490*



Intel Foveros 3D Packaging Technology

Intel Core i5-L16G7: the first utilisation of Intel's Foveros Technology with Package-on-Package configuration in a consumer product.

September 2020 - EUR 3,990*

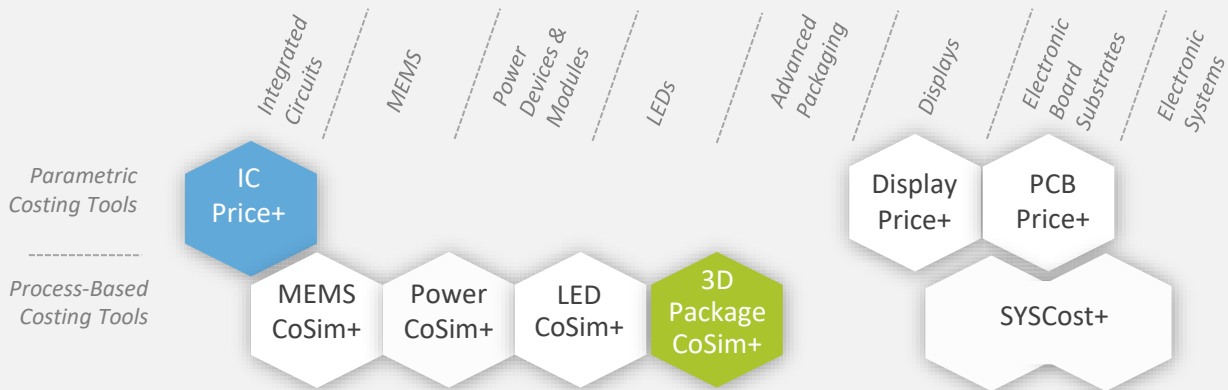


Computing for Datacenter Servers 2021

Popular data-intensive applications and the spread of AI applications are boosting server computing market to reach US\$33B in 2025.

December 2020 - EUR 6,490*

COSTING TOOLS



Our analysis is performed with our costing tools 3D Packaging CoSim+ and IC Price+.

System Plus Consulting offers powerful costing tools to evaluate the production cost and selling price from single chip to complex structures.

3D Packaging CoSim+

Cost simulation tool to evaluate the cost of any Packaging process: Wafer-level packaging, TSV, 3D integration...

IC Price+

The tool performs the necessary cost simulation of any Integrated Circuit: ASICs, microcontrollers, memories, DSP, smartpower...

ABOUT SYSTEM PLUS CONSULTING

WHAT IS A REVERSE COSTING®?

Reverse Costing® is the process of disassembling a device (or a system) in order to identify its technology and calculate its manufacturing cost, using in-house models and tools.



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System Plus Consulting is specialized in the cost analysis of electronics from semiconductor devices to electronic systems.

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The present terms and conditions apply to the offers, sales and deliveries of services managed by System Plus Consulting except in the case of a particular written agreement.

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Prices of the purchased services are those which are in force on the date the order is placed. Prices are in Euros and worked out without taxes. Consequently, the taxes and possible added costs agreed when the order is placed will be charged on these initial prices.

System Plus Consulting may change its prices whenever the company thinks it necessary. However, the company commits itself in invoicing at the prices in force on the date the order is placed.

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The quoted prices already include the rebates and discounts that System Plus Consulting could have granted according to the number of orders placed by the Buyer, or other specific conditions. No discount is granted in case of early payment.

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System Plus Consulting delivered services are to be paid within 30 days end of month by bank transfer except in the case of a particular written agreement.

If the payment does not reach System Plus Consulting on the deadline, the Buyer has to pay System Plus Consulting a penalty for late payment the amount of which is three times the legal interest rate. The legal interest rate is the current one on the delivery date. This penalty is worked out on the unpaid invoice amount, starting from the invoice deadline. This penalty is sent without previous notice.

When payment terms are over 30 days end of month, the Buyer has to pay a deposit which amount is 10% of the total invoice amount when placing his order.

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System Plus Consulting remains sole owner of the delivered services until total payment of the invoice.

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System Plus Consulting responsibility will not be involved in non execution or late delivery of one of its duties described in the current terms and conditions if these are the result of a force majeure case. Therefore, the force majeure includes all external event unpredictable and irresistible as defined by the article 1148 of the French Code Civil?

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