

Advanced Packaging Solutions Globalfoundries

Advanced Packaging Solutions Globalfoundries Advanced Packaging Solutions A GlobalFoundries Guide GlobalFoundries GF a leading foundry in the semiconductor industry offers a comprehensive suite of advanced packaging solutions designed to address the increasing complexity and performance demands of modern electronics This guide delves into GFs advanced packaging capabilities providing a stepbystep understanding of the process best practices and potential pitfalls to avoid I Understanding GlobalFoundries Advanced Packaging Portfolio GlobalFoundries offers a diverse range of advanced packaging technologies catering to various applications and performance requirements These include 2.5D Packaging ThroughSilicon Vias TSVs This technology utilizes TSVs to interconnect multiple dies vertically enhancing performance and density GFs 2.5D solutions are particularly beneficial for highbandwidth memory HBM integration improving memory access speeds significantly For example a highperformance GPU could benefit from integrating HBM using GFs 2.5D packaging resulting in a significant performance boost in gaming or AI applications 3D Packaging SysteminPackage SiP This advanced technique stacks multiple dies vertically and horizontally creating a highly integrated system within a single package This is ideal for applications requiring miniaturization and power efficiency such as mobile devices and wearables A smartphone incorporating a 3D packaged system could integrate the CPU GPU memory and RF components into a smaller footprint improving battery life and overall device size Fanout WaferLevel Packaging FOWLP This technique distributes IO connections over the entire wafer surface enabling high IO counts and smaller package sizes GFs FOWLP solutions are suitable for highdensity applications like mobile processors and highspeed interfaces An example could be a highend mobile processor with many cores requiring a large number of IO connections for efficient communication Chiplet Integration GF facilitates chiplet integration enabling designers to combine multiple specialized chiplets each optimized for specific functions into a single system This modular approach offers flexibility and allows for faster design cycles and reduced development costs 2 A server processor for example might integrate compute chiplets memory chiplets and IO chiplets each

optimized for its respective task leading to a superior overall performance

II StepbyStep Guide to Utilizing GlobalFoundries Advanced Packaging Services

1 Design Consultation

Initiate the process by contacting GF to discuss your application requirements and explore suitable packaging solutions Their design experts will help determine the optimal technology and configuration

2 Design Development Verification

Utilize GFs design tools and libraries to create your design and simulate its performance Rigorous verification ensures functionality and reliability before manufacturing

3 Package Assembly Testing

GF handles the complex assembly process employing their stateoftheart facilities and expertise Extensive testing guarantees the quality and performance of the final package

4 Manufacturing Delivery

Once the package is validated GF manufactures the product according to your specifications and delivers it to your location

III Best Practices for Advanced Packaging Design with GlobalFoundries

Early Engagement

Collaborate with GF early in the design process to leverage their expertise and avoid potential issues

Thermal Management

Consider thermal management strategies from the outset to prevent overheating and ensure reliable operation

Signal Integrity

Optimize signal routing and impedance matching to minimize signal loss and ensure highspeed data transmission

Power Delivery Design

Design efficient power delivery networks to minimize power consumption and voltage drops

Robust Design for Manufacturing DFM

Employ DFM principles to ensure manufacturability and yield optimization

IV Common Pitfalls to Avoid

Ignoring Thermal Considerations

Poor thermal management can lead to device failure and reduced lifespan

Insufficient Signal Integrity Analysis

Neglecting signal integrity can result in signal degradation and performance limitations

Lack of Early Collaboration

Delayed engagement with GF can lead to design modifications and project delays

3 Unrealistic Expectations

Understand the limitations of the chosen technology and set realistic performance targets

Insufficient Testing

Inadequate testing can result in unexpected failures in the field

V GlobalFoundries Advanced Packaging Examples Case Studies

While specific customer projects are confidential GF showcases success stories through general application areas Examples include highperformance computing HPC systems utilizing 25D packaging for enhanced memory bandwidth mobile processors leveraging FOWLP for smaller form factors and automotive applications benefiting from GFs robust and reliable packaging solutions for enhanced safety and reliability Detailed case studies are typically available upon request from GlobalFoundries

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GlobalFoundries provides a comprehensive ecosystem for advanced packaging solutions enabling designers to create highly integrated highperformance electronic systems By following best practices and avoiding common pitfalls designers can leverage GFs expertise to achieve optimal results and bring their innovative products to market efficiently VII FAQs 1 What types of advanced packaging technologies does GlobalFoundries support GF supports a wide range including 25D TSV 3D SiP FOWLP and chiplet integration allowing flexibility based on specific application requirements 2 What are the key benefits of using GlobalFoundries advanced packaging services Key benefits include enhanced performance miniaturization reduced power consumption increased IO density and faster timetomarket 3 How does GlobalFoundries ensure the quality and reliability of its advanced packaging solutions GF employs rigorous testing and quality control procedures throughout the entire process from design verification to final package testing 4 What support does GlobalFoundries provide to its customers throughout the design and manufacturing process GF offers extensive support including design consultation design tools technical expertise and manufacturing services 5 What are the typical lead times for GlobalFoundries advanced packaging services Lead times vary depending on the complexity of the package and the volume of production Its essential to discuss specific timelines with GF during the initial design consultation 4

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explore our extensive range of bottles jars lids and custom packaging solutions trusted by businesses for quality bulk pricing and fast shipping

every facility is focused on creating custom packaging solutions for the local market but with the support of a large network welch packaging companies have access to the knowledge resources

packaging may be described in relation to the type of product being packaged medical device packaging bulk chemical packaging over the counter drug packaging retail food packaging military

what is packaging why do we need packaging for products what are some common materials used in packaging how does packaging help protect items during shipping

associated packaging is a full service packaging company we provide our customers with a vast array of services which include packaging materials and equipment shrink and stretch wrap materials and

custom packaging solutions for retail shipping or takeout from boxes and mailers to flexible packaging bags food packaging tags and accessories

join the leading forum for packaging recycling professionals featuring cutting edge solutions expert insights and the connections you need to advance the circular economy

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