

## **3D Glass Solutions Introduces the Industry's First Glass Ceramic-Based Technology Node for Heterogeneous Integration**

*Industry Leading Technology Will Support Streamlined Assembly Integration and Advanced Packaging of Commercial Off the Shelf Components and Custom Integrated Circuits*

ATLANTA – INTERNATIONAL MICROWAVE SYMPOSIUM – June 8, 2021 – 3D Glass Solutions (3DGS), a leading innovator of glass ceramic-based, three-dimensional passive radio frequency (RF) devices, today introduced the industry's first glass ceramic technology node for heterogeneous integration. The novel technology will support streamlined assembly integration and advanced packaging of commercial off the shelf components and custom integrated circuits, especially benefitting military and defense, advanced RF front end and system in package markets.

“Advanced packaging for heterogeneous integration provides new design levers to improve semiconductor chip performance at an affordable cost,” says Mark Popovich, CEO of 3DGS. “Glass ceramic plays an important role in advanced packaging due to its unique properties, scalability and manufacturability. When it comes to optimizing high performance integration of advanced electronics systems, our APEX<sup>®</sup> glass ceramic technology far outperforms alternative platforms currently available on the market.”

Glass ceramic offers numerous qualities that streamline advanced packaging, including intermediate coefficient of thermal expansion to minimize in-process and final product warp, precise 3D structuring for the formation of Through Glass Vias for input and output signals and cavities for embedded die, and a smooth surface that enables fine-line metallization to achieve high interconnect density. In addition, it produces low RF material loss, resulting in reduced device RF loss and power consumption.

Leveraging the company's proprietary APEX manufacturing technology, 3DGS' heterogeneous integration node combines a highly integrated systems-level device with a multi-layer glass stacking assembly technology to significantly reduce size, weight, power and cost (SWaP-C). Designed in a compact electronic package, the technology delivers up to 90% reduction in device footprint and up to 75% reduction in device weight. Featuring optimal flexibility, the node enables the assembly integration of commercial off the shelf components and custom application-specific integrated circuits (ASIC) and monolithic microwave integrated circuits (MMIC). In addition, it is compatible with surface-mount device, flip chip and wire bond assembly approaches. Ideally suited for frequencies between 0.1 to 200 GHz, the node supports high performance antenna integration for phased array solutions, cavity filter integration, as well as 3DGS' industry leading high frequency Air-Filled Substrate Integrated Waveguides (eSIW).

The 3DGS heterogeneous integration node will be available in the third quarter of 2021. For more information, contact [sales@3dgsinc.com](mailto:sales@3dgsinc.com) or (505) 916-5590. 3DGS is attending the 2021 Internal Microwave Symposium, June 8-9 in Atlanta, Georgia. Visit us at booth 1521 to learn more.

### **About 3D Glass Solutions**

3D Glass Solutions (3DGS) is a world-class expert on the fabrication of electronic packages and devices using photo-definable glass-ceramics. The company manufactures a wide variety of glass-based, system-in-package (SiP) devices and components using its patented low-loss photosensitive APEX® glass ceramic technology for applications in RF electronics and photonics used in automotive radar, IC electronics, medical, aerospace, defense, wireless infrastructure, mobile handset and IoT industries. 3DGS offers high-precision products with exceptional high-frequency and low-loss properties. 3DGS glass ceramic-based RF products can be combined with any number of designs or devices to create incredibly unique and valuable SiP products. The company has created foundational patent positions related to all photosensitive glass-ceramic materials and devices and owns the fundamental intellectual property for all four positions (materials, design, systems and manufacturing) related to glass-ceramic devices for the electronics packaging industry. 3DGS leverages its unique product solutions to provide device manufacturing and systems integration services for several standard and custom products. To learn more about 3DGS, visit [www.3DGSinc.com](http://www.3DGSinc.com).

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