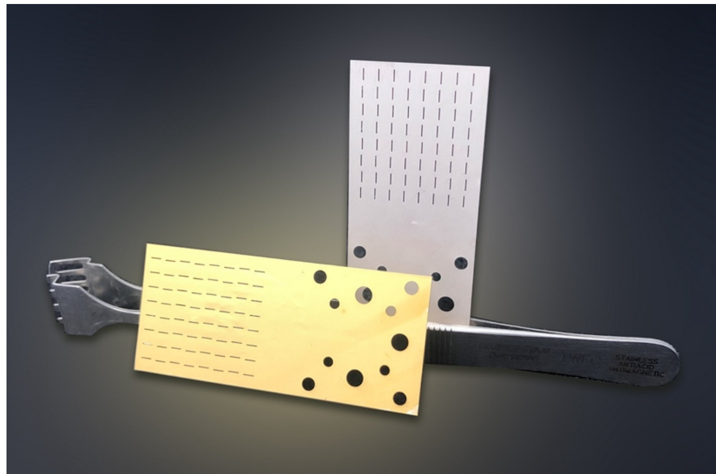
3D Glass Solutions Introduces the Industry's First Glass Ceramic-Based Process Design Kit for Air-Filled Substrate Integrated Waveguides

Novel Glass Ceramic Technology Supports Complete Front-End Design for High Performance Radio Frequency Applications

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 its newest process design kit (PDK) for Empty Substrate Integrated Waveguides (eSIW). The patented technology marks the industry's first glass ceramic-based component PDK, streamlining the design of ultra-low loss waveguides for high performance cellular infrastructure and aerospace applications.



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"Product development on glass ceramic is the future of world class 5G and 6G performance components," said Mark Popovich, CEO of 3DGS. "Our eSIW PDK is an industry first blueprint that exposes RF design engineers to the advantages of glass ceramics. By incorporating our innovative technology into the convenience of a PDK, designers will be able to produce high performance, reliable design solutions at an expedited rate."

Leveraging 3DGS' industry leading glass ceramic manufacturing technique, the eSIW technology node is an air-filled substrate integrative waveguide technology that boasts low parasitic loss for RF systems in frequencies between 60 and 300 GHz. This technology enables the simplified integration of RF integrated circuits, RF passives and antenna onto a single substrate.

"High frequency mmWave productization has been limited specifically by poor board-level solutions. Our eSIW technology node gives our customers a low loss substrate—as low as 0.2dB per centimeter—for the integration of complete RF front ends," said Jeb H. Flemming, chief technology officer and founder of 3DGS. "Our eSIW PDK equips RF designers with a rapid design tool that features high correlation between simulation and performance and enables rapid design cycle times in a cost effective, scalable manufacturing process."

Passive RF components designed on conventional materials, like printed circuit boards, frequently deliver limited bandwidth, high latency and low efficiency. In contrast, components based on 3DGS' novel glass ceramic material are proven to operate at a higher efficiency and minimize energy loss. In addition, the adaptable nature of glass ceramic components facilitates integration with numerous functions, effectively eliminating other components, saving on cost, energy and reducing weight. Using precision manufacturing based on a lithographic process, 3DGS' eSIW technology node is designed to produce compact, highly integrated electronics and supports a lightweight, small cross-section structure that makes it suitable for a variety of applications, including 6G, wireless backhaul devices, test equipment, aerospace and automotive radar at 79 GHz and 140 GHz.

The 3DGS eSIW PDK is available now and will be on demonstration at the 2021 Internal Microwave Symposium, June 8-9 in Atlanta, Georgia. Visit 3D Glass Solutions at booth 1521 to learn more. For sales information, contact sales@3dgsinc.com or (505) 916-5590.

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.

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