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Vertical Micro-Coaxial Interconnects

Researchers at the University of South Florida have invented a method of manufacturing a micro-machined vertical micro-coaxial interconnect through wafer interconnect using 3D vertical coax. It can integrate with packaging systems and characterize the behavior of high frequency active and passive devices. This invention allows the interconnect to be used for signal transmission in packaging systems and measuring devices.

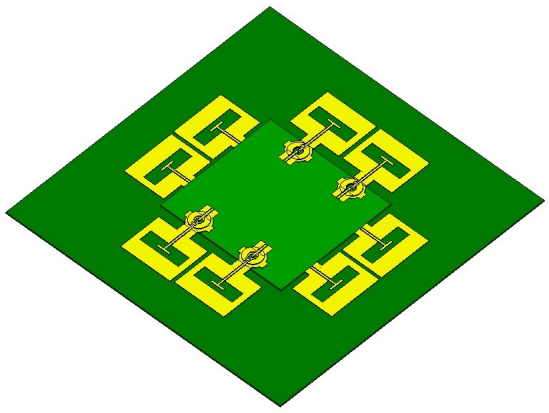
The desire to develop high frequency performance systems that are lightweight, highly reliable, and highly dense, is realized through vertical interconnects. The use of coaxial vertical interconnects in 3-D packaging technologies have grown over the past years due to the need for successful integration in multi-layer packaging systems. However, currently available interconnects only provide an electrical transition to active components in high frequency packaging systems. In addition, these interconnects suffer from signal loss and surface connection issues. Therefore, there is a need for interconnects that can integrate with packaging systems and characterize the behavior of high frequency active and passive devices without any signal loss or connection issues. This allows the interconnect to be used for signal transmission in packaging systems and measuring devices.

The critical benefit of this method in accordance with the present invention will be ideal for use in typical commercial packaging and radar systems for surveillance, communications, and detection, which operate in their desired band of frequency.

ADVANTAGES:

- **Operates from dc-to-70 GHz, applicable for V-band frequencies**
- **Can be used to characterize high frequency active and passive devices**
- **Light weight and occupies less space in commercial packaging**

3D Vertical Coax Interconnect that can Integrate with Packaging Systems



Schematic Depicting Design Topology to Characterize Multiple Antennas Consecutively on the Same Substrate

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