3D-MID Technology for New Space

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Hahn-Schickard
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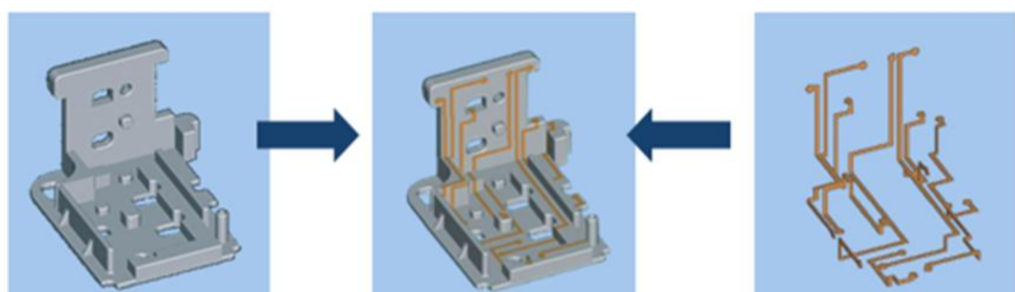
Hahn-Schickard has over 25 years of experience in the development of application-specific 3D electronics. Our wide range of technologies enables the matching of requirements, functionality and producibility to create customized solutions.

In our ISO 9001:2015 certified production we offer the entire process chain including base body production, surface structuring, metallization and 3D assembly and packaging.

3D-MID: Circuit Carrier Beyond PCB

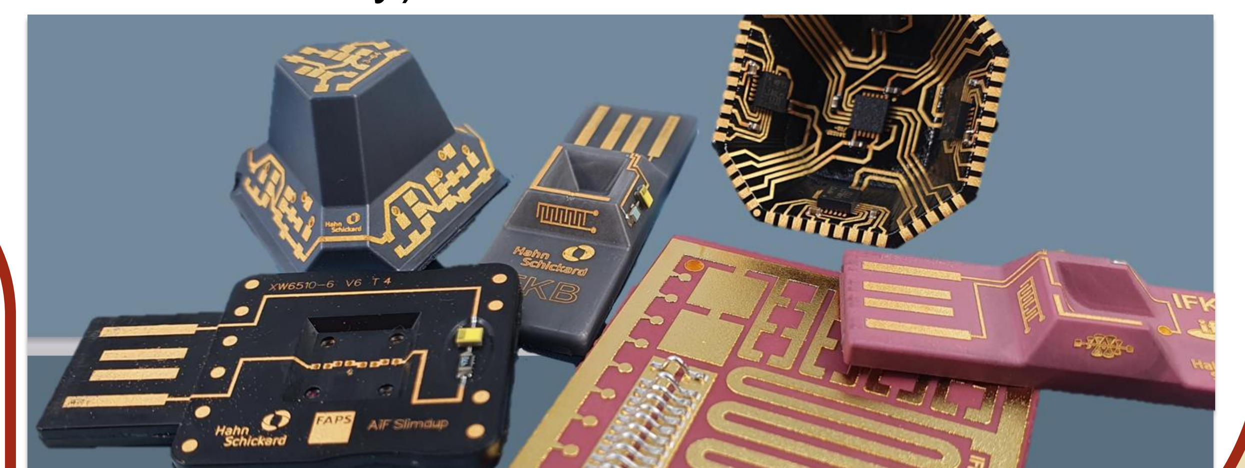
- 3D-MID (Mechatronic Integrated Devices) open new possibilities for integration of application-specific functions into 3D assemblies:
  mechanic, electric, optic, thermal, sensoric, shielding,…
- Arrangement of components and sensors in 3D is functionally relevant
- Directional interaction with the environment: sensor, lighting, antenna
- Miniaturization and weight saving
- Ratio effects by reduced number of components



Injection molded 3D plastic part — 3D-MID — 3D conductor tracks

Materials and Functionalization

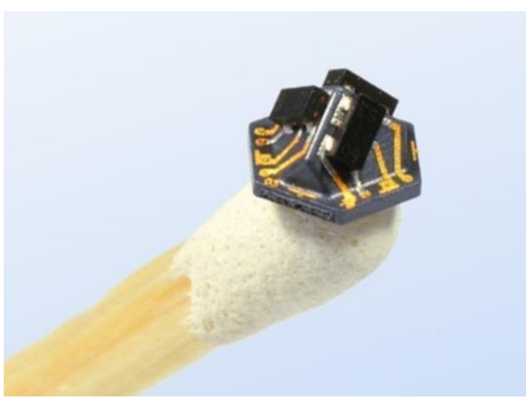
- 3D conductor tracks on molded 3D parts by Laser Direct Structuring and Laser Induced Metallization
- Selective metallization with Cu/Ni/Au, Cu/Pd/Au or Cu/Ag
- Technologies for different substrate materials available
  - Thermoplastics, e.g. LCP, PEEK (low outgasing, high radiation and temperature resistance, good dielectric properties)
  - Thermoset (suitable for encapsulation solutions)
  - Ceramics (high temperature and media resistance, high thermal conductivity)



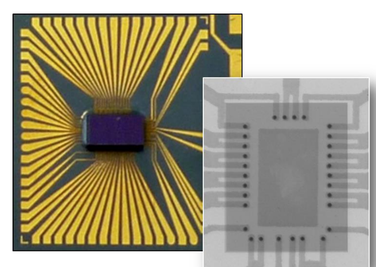
Sun Sensor for New Space

- Reduction in height and weight up to 75%
- Validation to the space norms (ECSS) for reliability and electrical performance

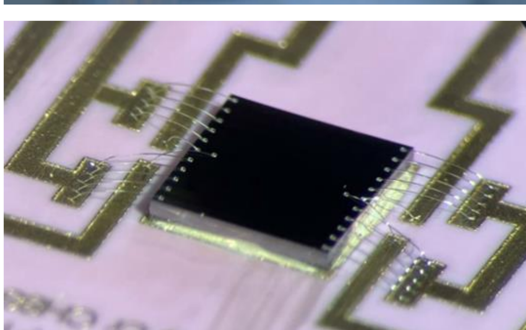
3D Assembly and Packaging



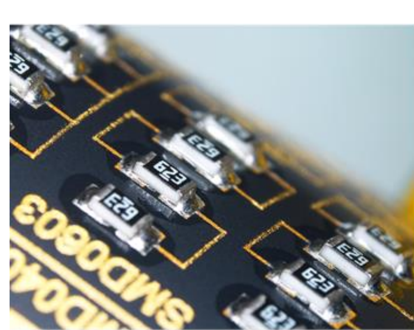
Soldering, conductive bonding, silver sintering



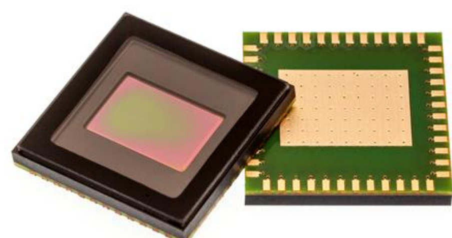
Flip chip



Wire bonding



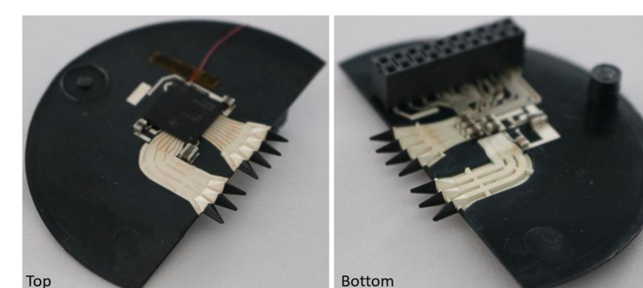
Laser based In-Mold Electronics



PCB based Film-Assisted Molding

RF Applications

PEEK foil with CPW



80 GHz radar demonstrator

Customized air cavity package

Components for millimeter-wave antenna array for beam forming module

Visions to Products