

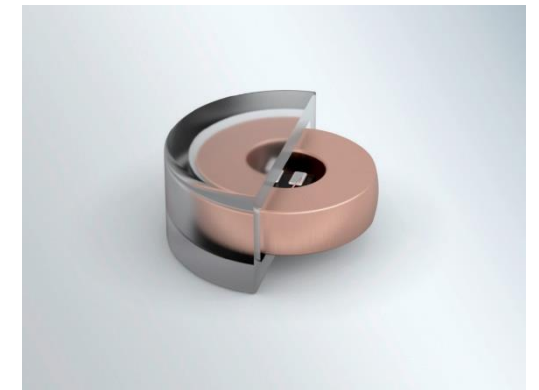
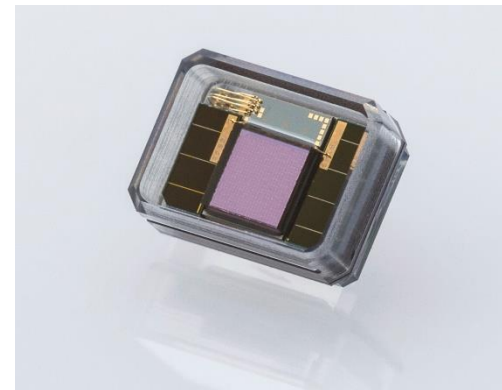
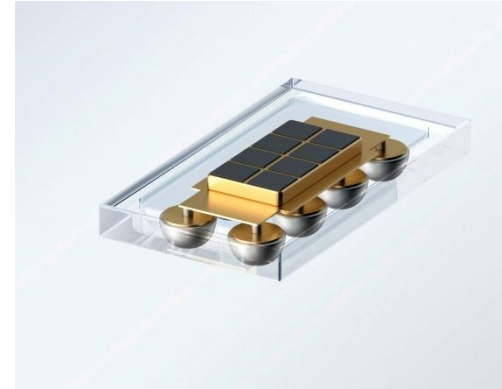
Glass micro bonding for the next generation smart implants

SCHOTT Primoceler

Ultra reliable, miniaturized glass packages

SCHOTT Primoceler: Who Are We?

- Glass Micro Bonding specialist founded in 2010 and headquartered in Tampere, Finland
- Joined the SCHOTT family in August 2018
- Pioneering Technology: Unique additive-free, room temperature hermetic glass bonding
- Specializing in medical implants, microfluidics, micro-electronics and micro-optics
- Mass production on-going with multimillion device production capacity



Next generation requirements

More focus on information



Multiple functions for deeper understanding



Miniaturization for less invasion and closer to the treated area



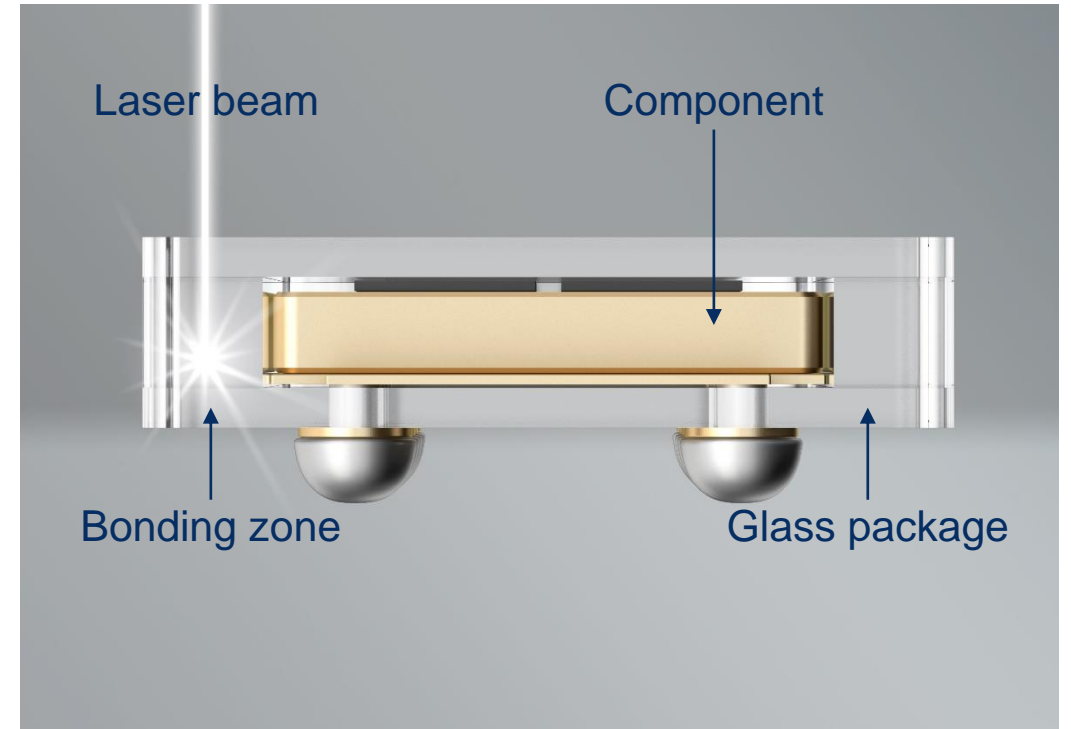
RF Transparency for data transfer and collection



MRI compatibility

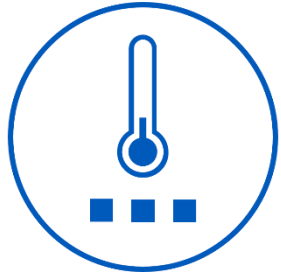
What Is Glass Wafer Micro Bonding?

- **Wafer level hermetic bonding:** high level of hermeticity
- **Minimal heat load:** heat-affected zone of just a few micrometers
- **Additive-free:** no adhesives or extra materials required
- **Miniaturization:** extremely small footprint thanks to simple material construction



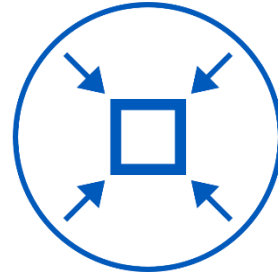
Expanding the Limits of Conventional Hermetic Sealing

Key benefits of Glass Micro Bonding



Room Temperature

- Enables coatings and other active layers
- Bio sensors



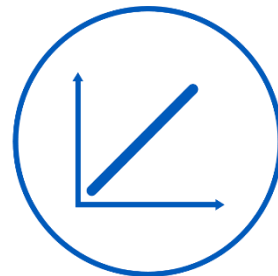
Miniaturization

- Minimal bonding / heat affected zone
- Low heat → less bulk, thinner materials
- Transparency enables RF transmission



High Reliability

- No adhesives → no outgassing
- Fully hermetic
- Medical implants



Scalable Wafer-Level Process

- Easily scale-up possible
- Many devices per wafer
- High yield

Unmatched Miniturization

SCHOTT Primoceler all-glass packages come in sizes so small, you have to see it to believe it



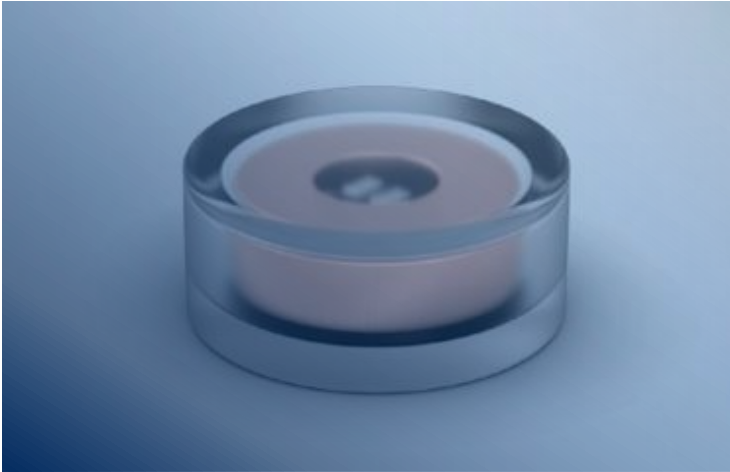
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Internal

SCHOTT
glass made of ideas

Enable Next-Generation Active Medical Implants

With full-glass packages



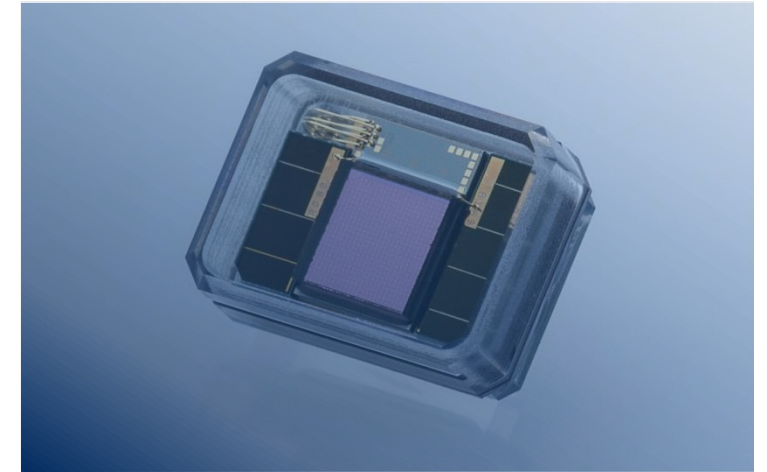
Room Temperature Process

- Flexible assembly sequence
- Die and wafer level possibilities
- Suitable for coatings / sensitive components



RF Transparency

- Wireless power and data transfer
- Glass construction does not interfere with medical imaging process



Biocompatibility

- No additives or adhesives
- High hermeticity
- Cardio friendly: can also be used for heart pacers and neurostimulators

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Do you have any
Questions?