PIC packaging scale up challenges

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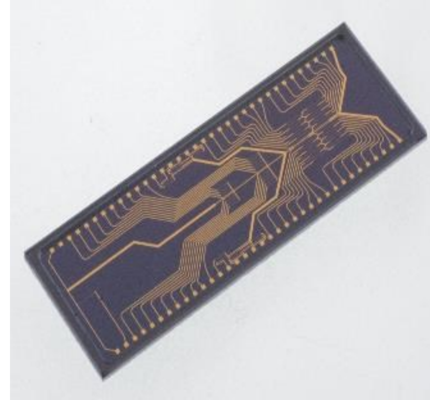
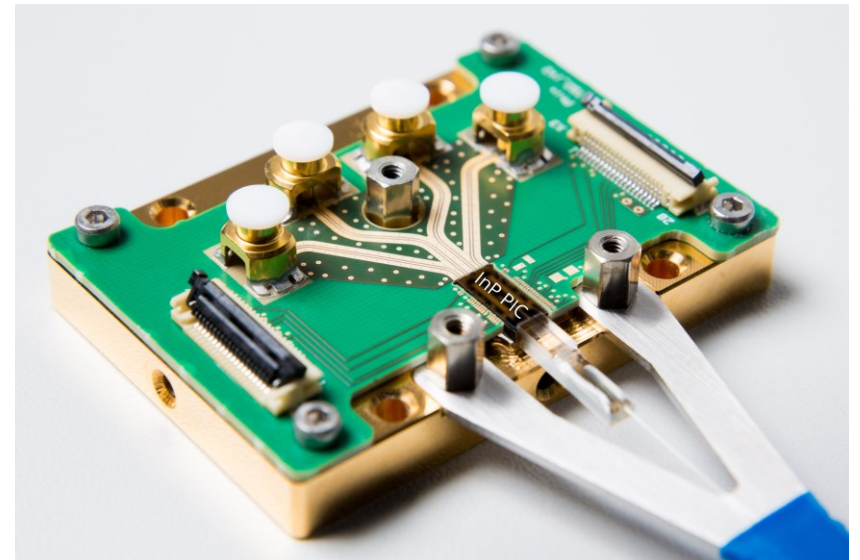
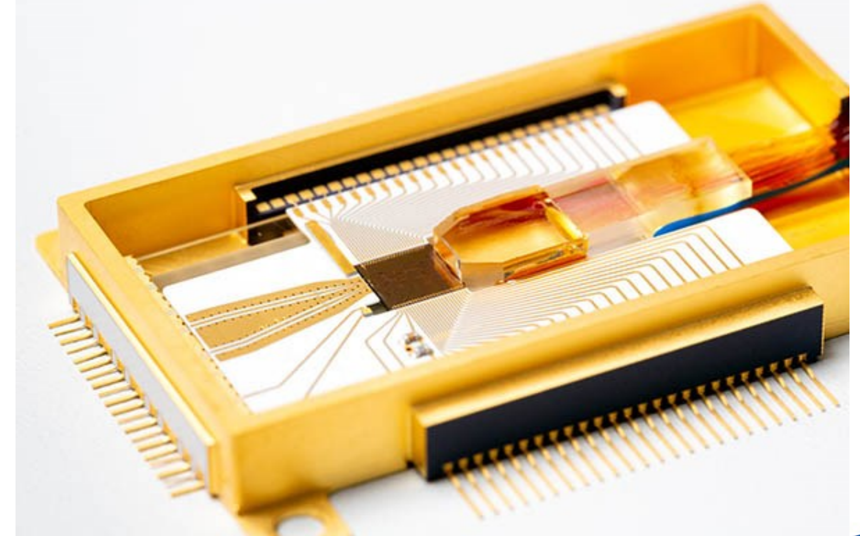
PHOTONIC ASSEMBLY

A PIC by itself is not a product!

- Interfacing with fibers
- Interfacing with electronics
- Thermal interfacing
- Mechanical support







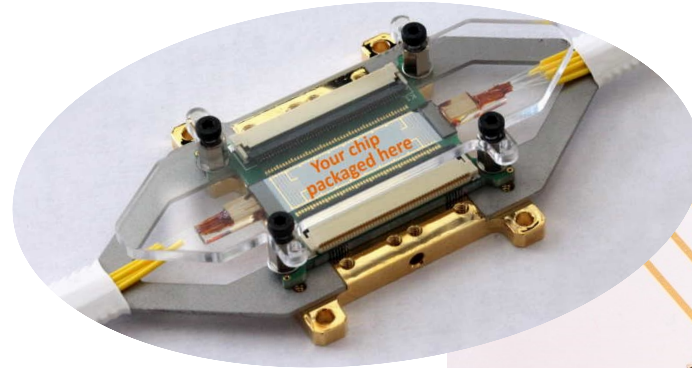
- Assembly is 60-80% of the costs

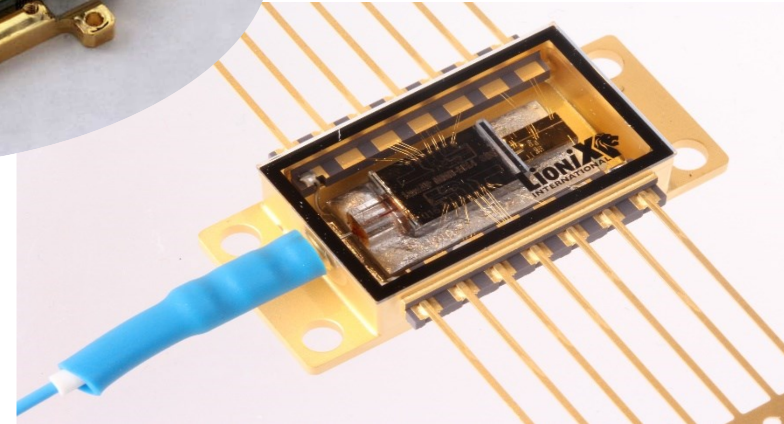
How to create an acceptable cost roadmap

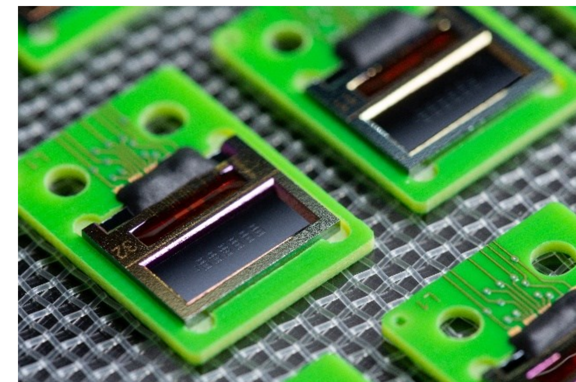
PHIX Photonics Assembly (from prototype to volume)

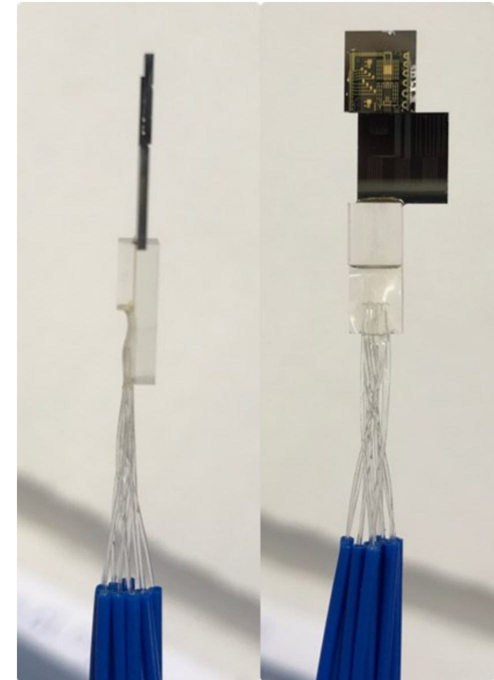
Competencies

- Die preparation
- Die alignment and bonding
- Electrical interfacing
- Thermal Packaging
- (Polarisation Maintaining) Fiber Arrays
- High Power
- Free Space packaging
- Hybrid assembly

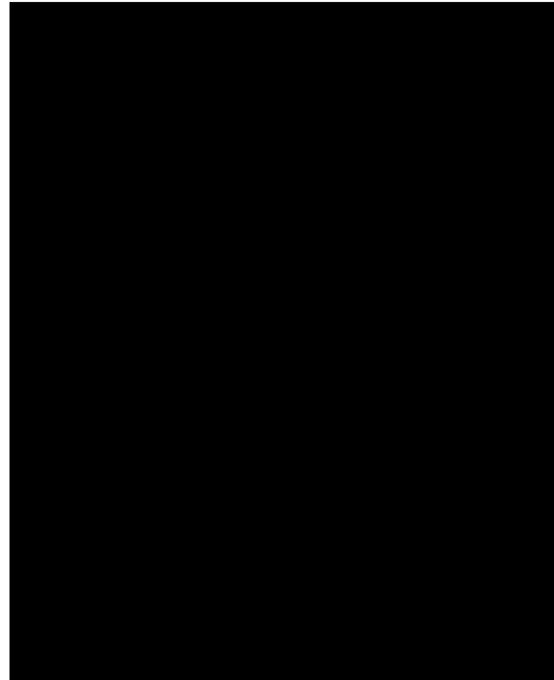








Automated fiber array assembly machine developed in conjunction with Fraunhofer IPT & Aixemtec



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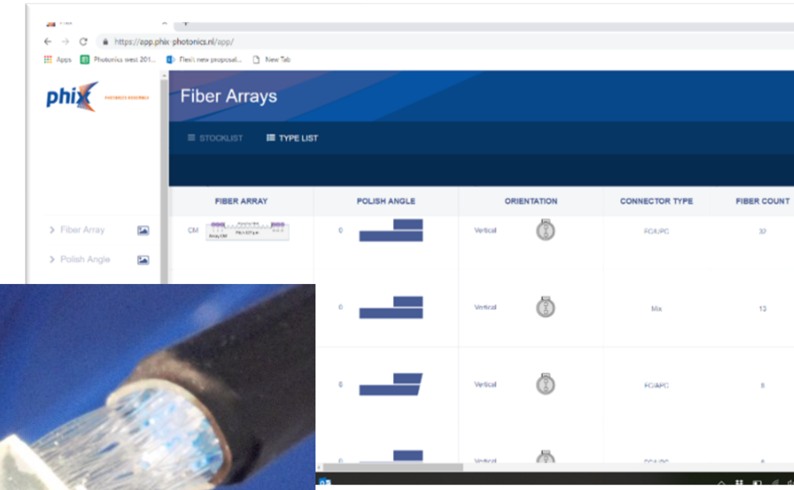
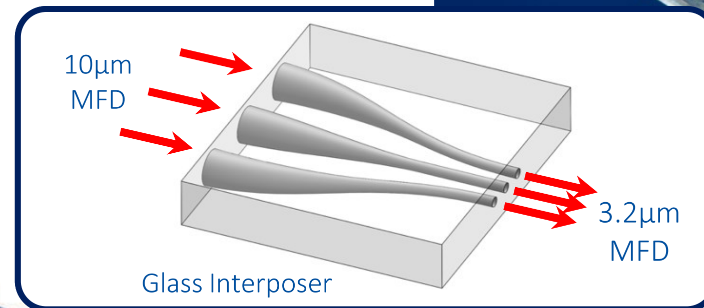
Wide variety of fiber array configurations

- 2, 4, 8, 16, 24, 32, 40 fiber
- Single Mode, Multimode, Polarization Maintaining
- High NA, SMF 28 small core (visible)
- Pitches 127 & 250 microns standard
- Flat, 8 degrees, any custom angle
- Different connector interfaces FC, SC, LC, SMA
- Different lengths, 1 m
- Spot Size Converter available

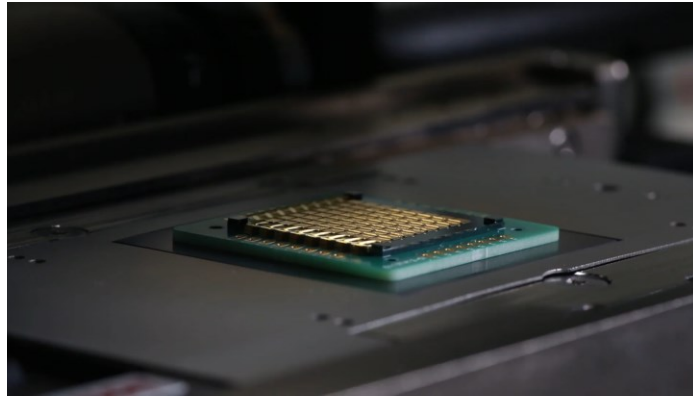




Automation of hybrid assembly of PICs through Ficontec

Full movie can be seen on PHIX youtube channel

Automation of flexible flip chip assembly through Finetech



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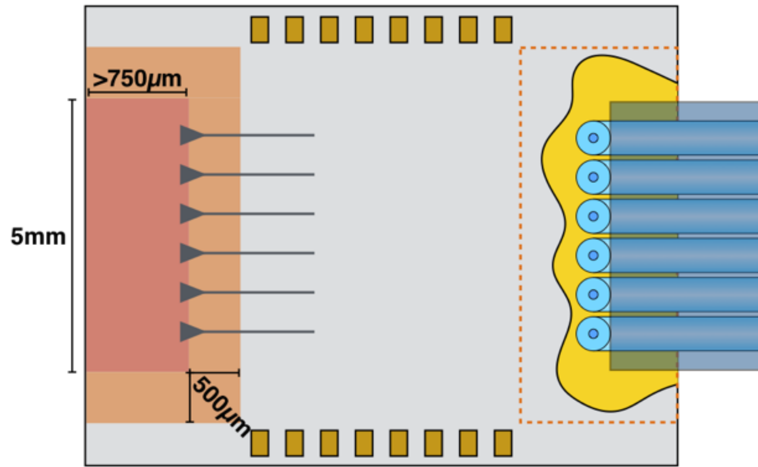
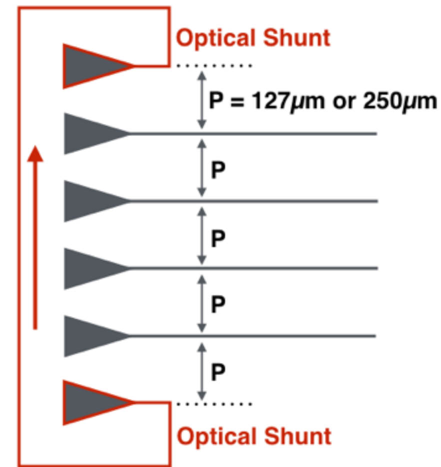
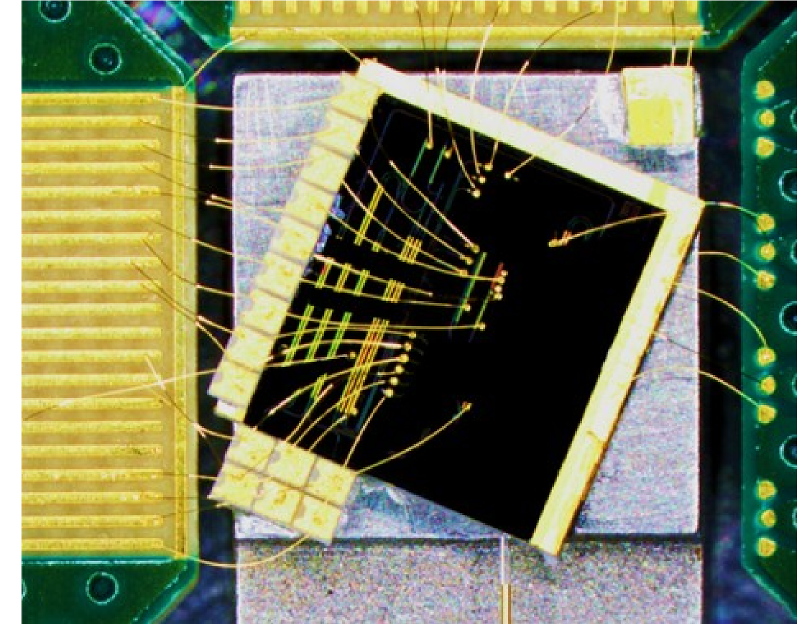
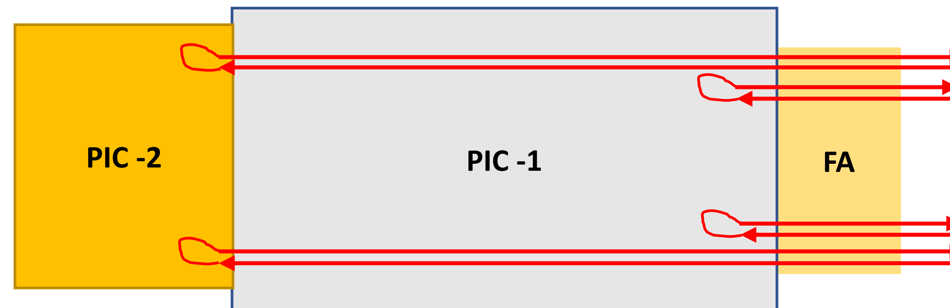
Design for assembly; design guidelines



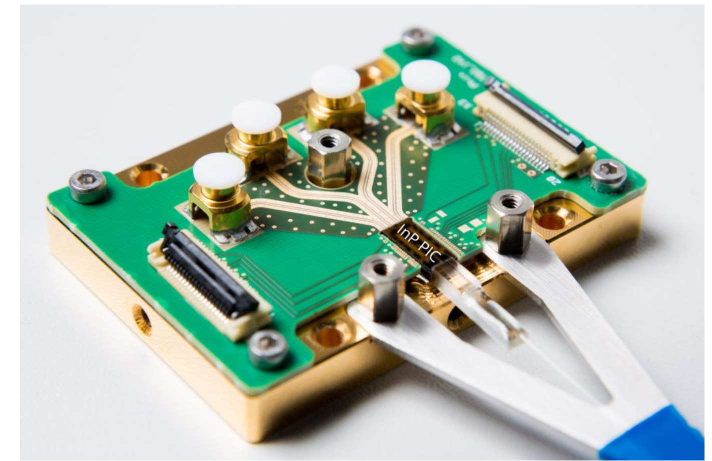




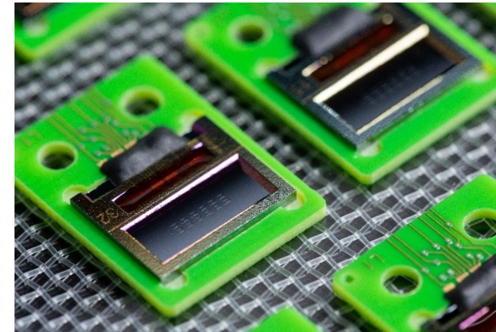


https://www.phix.com/our-offering/prototype-package/

Cost drivers during scale up



- Reduce customized engineering in the early stage -> use of PHIX CPS
- Hermeticity / Gold boxes of the shelf depending on size and volume 100’s of euro’s + NRE
- Low volume ceramic / organic interposer (pad/gap: 50/50 µm, RF > 40Ghz)
- PM fiber array vs SM Fiber array
- Isolator (array style)
- Mode conversion: on chip vs external
- Active integration: Edge, flip chip
- Automatability of process steps
- Polishing



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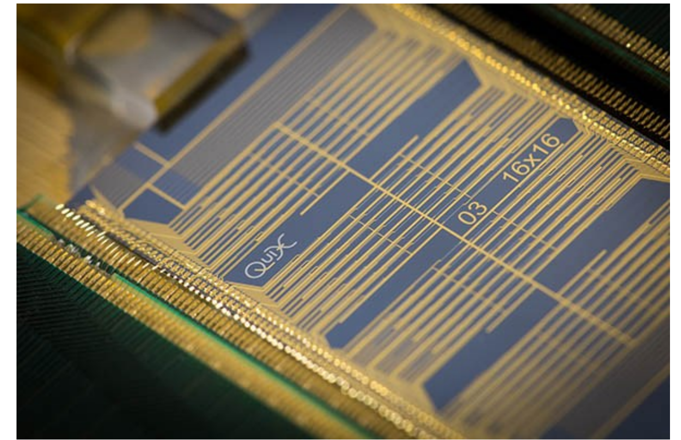

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The EPIC question: where can we help you where can you help us

The possibilities are endless, where can we support you

My full contact details

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