

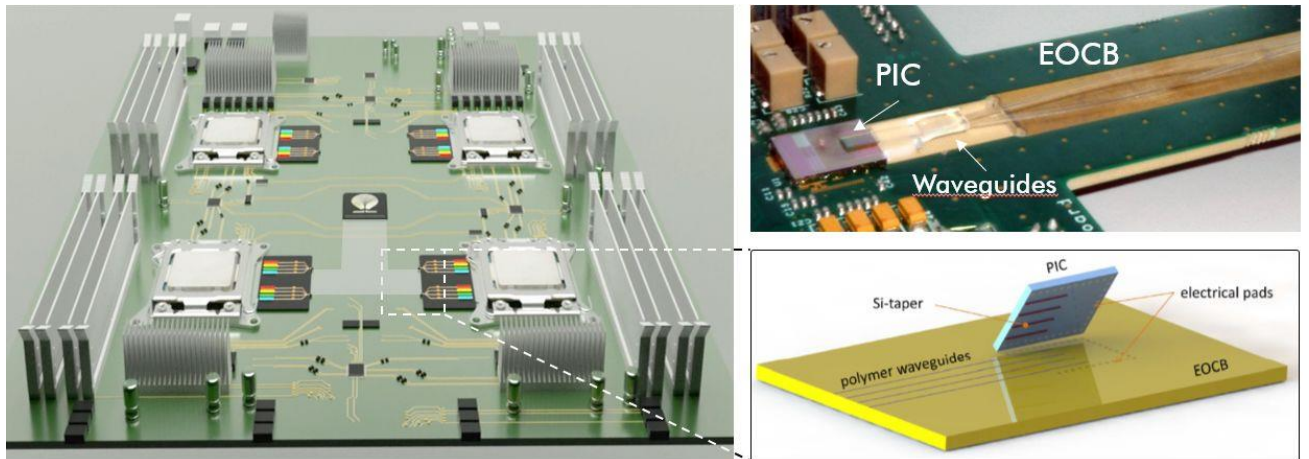
PIC Direct-on-Board Assembly

by
vario-optics ag

Packaging solutions for integrated Photonic Chips

Photonic integrated chips (PICs) are one of the key building blocks for a broad range of photonic applications in the fields of communication, medical, automotive and sensing.

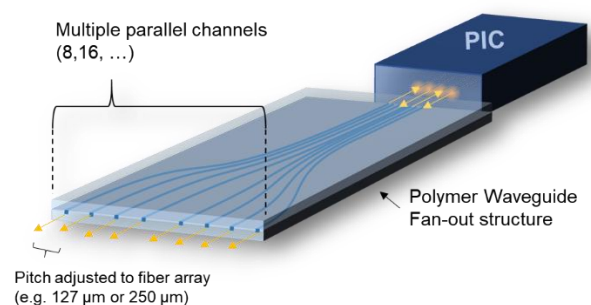
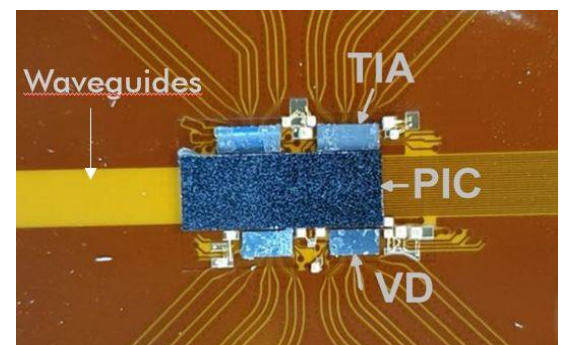
vario-optics is a specialist in the design and development of complex electro-optical circuit boards (EOCBs). Its planar waveguide technology is best suited to address the challenge of efficiently packaging and optically connecting PICs on-board.



By directly integrating an optical layer on- or into circuit boards, **vario-optics** provides a versatile and cost-efficient solution to route light between PICs and can also replace bulky and impractical fiber-optics based assembly-systems. This renders planar waveguides the ideal platform for high-performance electro-optical systems, such as on-board chip-to-chip optical connections or chip-to-fiber interconnects [1,2].

Key benefits & demonstrated features:

- **Optical Fan-outs with efficient coupling schemes**
Multiple parallel channels, high port density;
edge- or adiabatic coupling;
- **Customizable EOCB platform**
Simultaneous electrical & optical coupling interface to PIC; ready for direct or flip-chip bonding
- **Robust & mature material system**
Environmentally tested (temperature, humidity)
> 50 mW optical power operation;
- **Enabling high-performance applications**
400 Gb/s (8-channel) data transmission;
Low power consumption < 5 pJ/bit [2]



References

[1] T. Lamprecht et al., "EOCB-Platform for Integrated Photonic Chips Direct-on-Board Assembly within Tb/s Applications", IEEE 68th Electronic Components and Technology Conference (ECTC), San Diego, USA, 2018, pp. 854-858

[2] S. Pitris et al., "400 Gb/s Silicon Photonic Transmitter and Routing WDM technologies for glueless 8-socket Chip-to-Chip interconnects", Journal of Lightwave Technology, S. 1–1, 2020