Enabling fast PIC-testing in high-volume wafer production

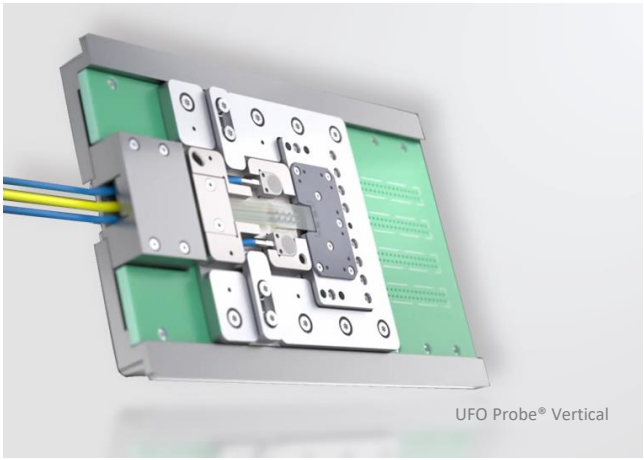
New Jenoptik Probe Card Solution

UFO Probe® Vertical for time-saving functional PIC testing at wafer-level

Testing not only electrical but at the same time optical functionalities on wafers and even at high cycle rates?

This is possible with the innovative and patented UFO Probe® technology from Jenoptik. It combines a novel optical concept with industry-proven needle technology in just one probe card. It is especially designed for use on common standard wafer probers operating in high-volume production.

The consistent further development of the patented technology expands the possibilities of optical coupling and, with the new UFO Probe® Vertical version, enables parallel functional tests of optical as well as electrical components on chips using vertical needle technology from established test card manufacturers.
This allows the user to couple up to 32 optical channels in parallel as standard – or more if required – without the need for active alignment.


UFO Probe® Vertical

Benefits of the UFO Probe® Vertical at a glace:

- ✓ Works for **vertical emitting** PICs
- ✓ Covers **entire wavelength range from 1260 to 1625 nanometers** used in the tele- and data communication sector
- ✓ Functionality tests of e.g., bond pads, solder bumps or copper pillars **in early stage** of wafer production process **to increase overall yield**
- ✓ Provides **polarization preservation for individual or all optical channels**
- ✓ **Contacting of** up to 6000 bond pads/ of bond pads with dimensions down to 35 microns (depending on needle type, even more)
- ✓ **Smallest addressable pitch** of the electrical contacts in the range of **40 to 80 micrometers**
- ✓ **Lower and more uniform contact resistance** in the range of **0.2 to 1.0 ohms** (depending on the probe type)

Simultaneous testing electrical and optical functionalities

Plug & play for use on existing standard IC wafer probers

New optical concept eliminates the need for active alignment per chip

Capability for parallel qualification of multi-DUT

Enables testing of more and smaller structures on chips

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More Information

UFO Probe® Vertical – Powerful test solution for increased requirements

Specifications	Current generation	Future generations
Component to be tested (Device under test/DUT)	Electronic and photonic integrated circuits (EPIC); optical transceivers for data transmission and telecommunications applications	EPICs for transceivers, photodiodes, biosensors and Solid State LIDAR
Electric needle technology	Cantilever and Vertical	Cantilever, Vertical/Advanced
Optical coupling principle DUT	Vertical coupling	Vertical coupling
Number of optical inputs/outputs (OI/OO)	Up to 32 or more	<200
Pitch OI/OO	127 µm, 250 µm, flexible for >250 µm	flexible
Layout configuration of OI/OO arrays	Linear arrangement with same direction of inputs/outputs	Configurable to own needs
Coupling angle	0° and 11.6° standard, up to 20° customized	0° - 20°
Supported wavelength	1260 – 1625 nm (O/ L-band)	VIS to NIR (U-band)
Measurement of insertion loss	Repeatability: ~ 0.3 – 0.5 dB	Repeatability target: 0.1 dB
RF measurement	Up to 110 GHz, depending on needle technology	GHz
Amount of PICs measured in parallel	One	Multi-DUT
Interfaces	Eurocard format; ATE*	Eurocard format; ATE interface

* Currently without automatic optical docking

Test applications


Transceivers

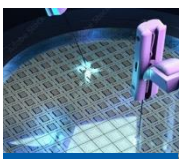

LED/VCSEL


Photo Diodes

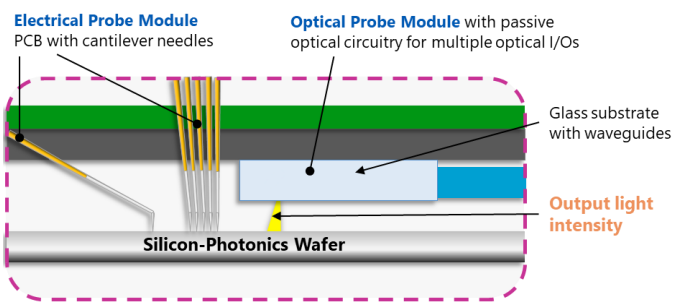

Optical Bio Sensors

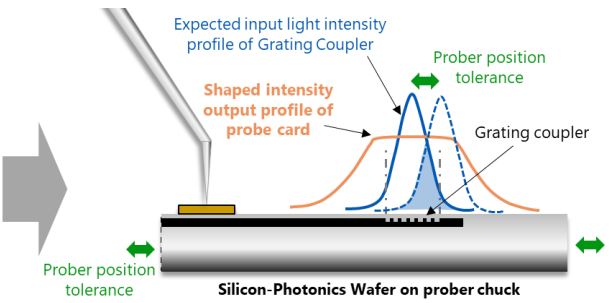

Solid State LiDARs


Optical Quantum Chips


Process Monitor Structures

Patented opto-electronical testing concept => compensates prober alignment tolerances





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