



# APAC Opto's Silicon Photonics Applications Solution



# Outline

- Snapshot
- Core Technology
- CPO Fiber Coupling Solution
- Summary



# Snapshot

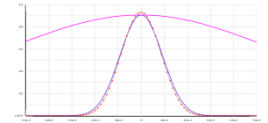
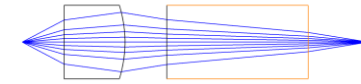
- ✓ **Founded from July 1998, more than 20 years optical transceivers shipping records**
- ✓ **Listed on OTC, Taiwan on Jan. 2002, healthy financial performance to support long-term business**
- ✓ **Comprehensive 100Mbps to 800Gbps optical transceiver portfolios to support datacenter, switch OEMs, mobile fronthaul & midhaul, FTTx and industrial optical communication applications**
- ✓ **Strong technology platform capability to support silicon photonics applications as pluggable transceivers and CPO optical coupling & detachable optical interconnection solution**



# Core Technology

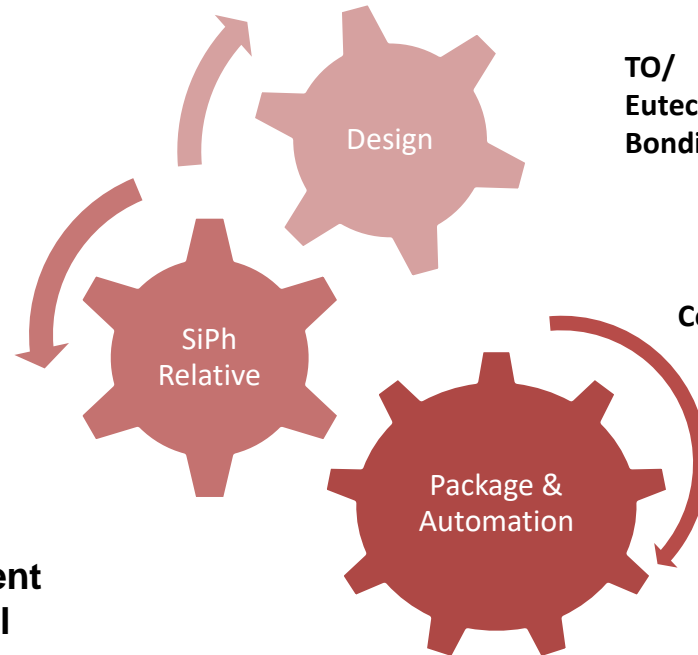
## Design

- High speed circuitry, optical system, thermal, stress simulation and validation
- Materials know-how about epoxy, optics (LD/ PD/ PIC/ passive components), high speed subtract, Alloy composition
- Software, Firmware, CMIS compliant
- Reliability validation



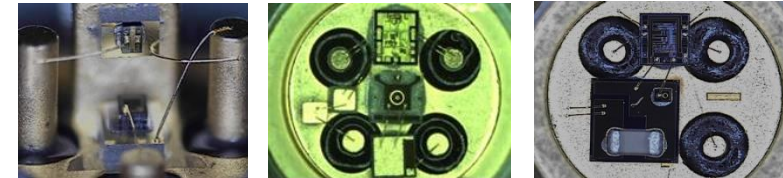
## SiPh Technology Platform

- Optical system design
- Precision dies package
- Passive FAU attachment for V-groove PIC
- Active TX coupling
- Active RX coupling
- Index matching epoxy system
- Thermal management for high power CW LD
- Remote LD with PMF management
- Remote CW laser optical moduel

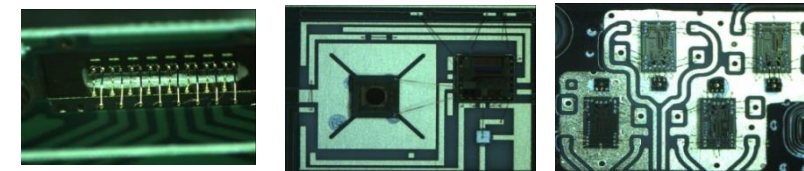


## Package

TO/  
Eutectic  
Bonding



CoB



## Automation



SMT

Die Bonder

Wire Bonder

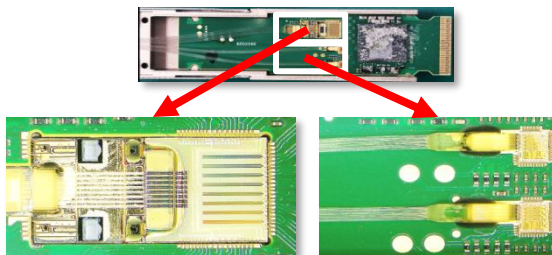


Active Aligner

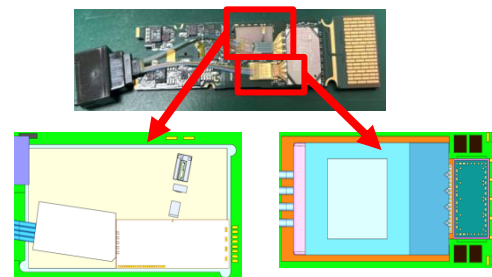
Burn-in

Testing

800G DR8 V-Groove SiPh TRX



400G DR4 Edge Couple SiPh TRX





# CPO Fiber Coupling Solution (Looking for Partnership)

## • Feature

- Detachable optical interconnection
- $< 2\text{dB}$  coupling loss @  $\sim 20\mu\text{m}$  to support detachable connector plugging tolerance

## • Supporting PIC

- Mode field diameter close to SM MFD (SSC implanted)
- Vertical coupling
- Edge coupling with V-groove

## • Coupling Process

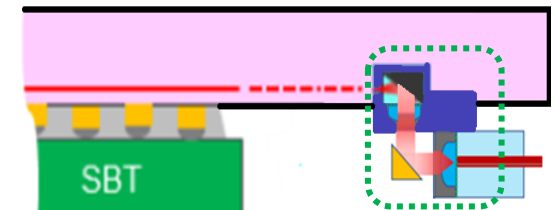
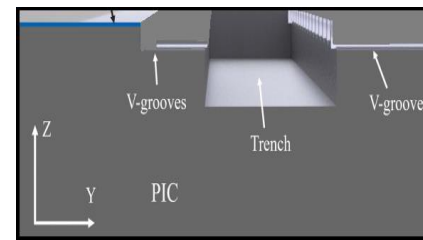
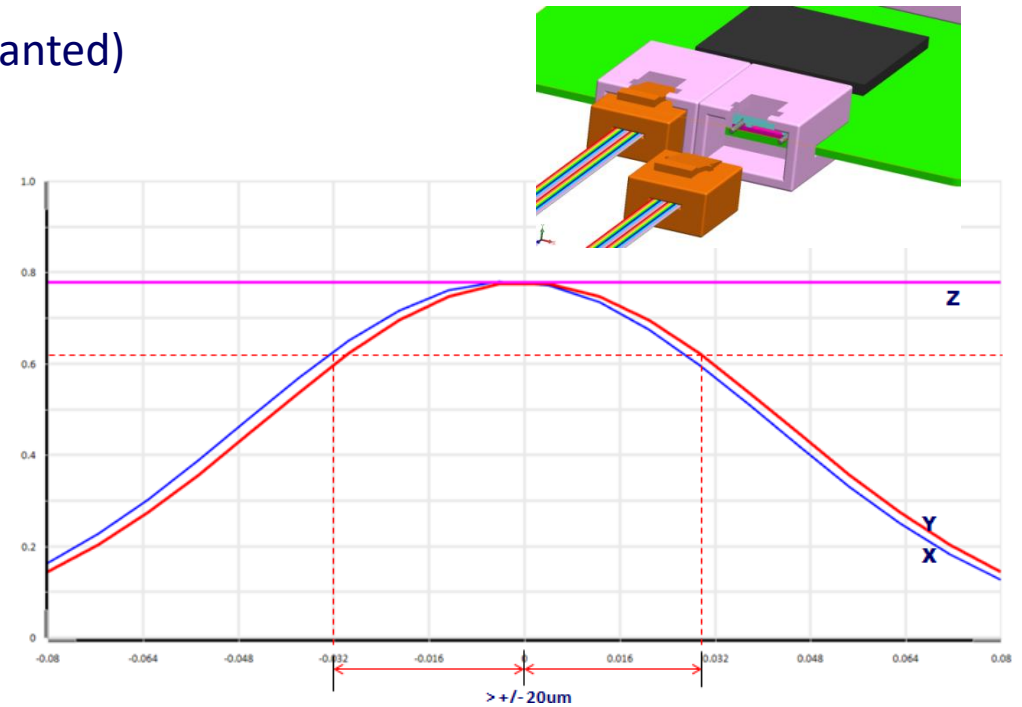
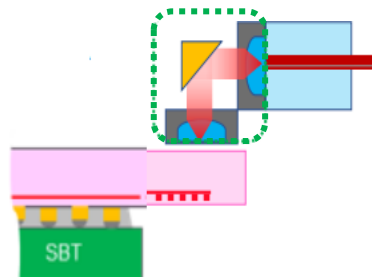
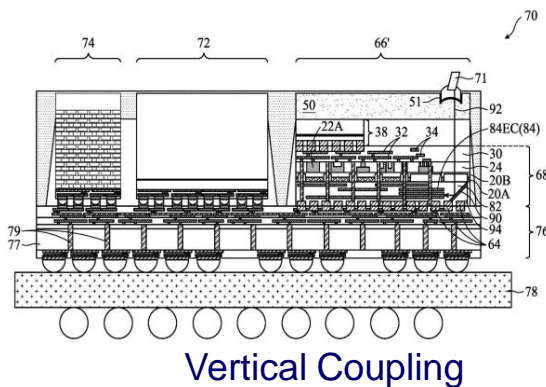
- Passive alignment for PIC side coupling
- Bonding accuracy requirement  $\leq 2\mu\text{m}$

## • Connector

- Mini-MT / MT like
- Customize to support more channels

## • Partnership JDM

- PIC/ OSAT



Edge Coupling with V-groove



# Summary

- ✓ Ready to go SiPh base package & testing technology capability and SiPh base pluggable transceivers products
- ✓ Looking forward partnership from PIC/ OSAT to join development CPO solution
  - PIC : MFD? PIC bonding pad design for optical lens system?
  - OSAT: <2um post shift accuracy bonding
  - APAC Opto: Optical system design, lens FAU solution, detachable mechanical solution
- ✓ Contact information: [tedkuo@apacoe.com.tw](mailto:tedkuo@apacoe.com.tw)



# *Thank you*

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