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UPDATE

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Greater China Technology Semiconductors | Asia Pacific

CIOE Key Takeaways: Expanding the Growth Runway

We attended CIOE and see growing photonics opportunities for semi and semi equipment companies

Key Takeaways

- ELSFP reinforces our confidence in USI's optical roadmap, which provides another route to participate in optical architectures
- ASMPT's Fluxless TCB could address two key challenges in OE packaging, namely warpage and optical-port contamination
- We see progress in domestic laser chips' capacity expansion and move to higher power CW; NPO bandwidth improves; VCSEL remains active
- Tencent 512-card supernode using 3.2T NPO to be deployed 1Q27; Alibaba targets 4Q26 MP of 3.2T NPO followed by mid-2027 MP of 6.4T UPO

USI (601231.SS): ELSFP reinforces our confidence in USI's optical roadmap. EugenLight, USI's photonics subsidiary, showcase its external laser source modules (ELSFP) during CIOE. We believe EugenLight's solution stands out on power efficiency, 8 channel ELSFP around 12W, which should become increasingly important as optical I/O scales and system-level power constraints tighten. More importantly, we see ELSFP as a strategically important building block for the migration toward NPO and ultimately CPO, where moving the laser source outside the compute/package environment can improve overall system reliability. While USI's optical-module business has so far ramped below our earlier expectations (link), our CIOE discussions suggest that the company has not fallen behind in ELSFP, giving it another route to participate as architectures evolve beyond conventional pluggables. Customer design in and production ramp are key things to watch going forward.

ASMPT (0522.HK): Fluxless TCB addresses two key challenges in optical engine packaging. Our key takeaway from CIOE is that optical engine packaging faces two critical manufacturing challenges – warpage and optical-port contamination – both of which could become more pronounced as OEs scale in size and complexity. Compared with conventional mass reflow, thermo-compression bonding (TCB) offers better control over the bonding process and can help mitigate warpage, potentially improving assembly yield and reliability. Meanwhile, ASMPT's fluxless TCB solution, enabled by AOR (Atmospheric Oxide Removal), eliminates the need for flux during bonding, thereby avoiding flux residue and reducing the risk of contamination at sensitive optical ports. We believe these process advantages make TCB particularly well suited for next-generation optical engine packaging and strengthen ASMPT's positioning as NPO/CPO architectures scale. *(Continued)*

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Industry View **Attractive**

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Takeaways from other booths: Laser chip capacity expansion and higher power CW products were key themes, with Source Photonics outlining significant EML and CW capacity expansion for 2027, with its 200mW CW products targeted to support NPO in 1Q27. Source Photonics also demonstrated an ELSFP for 6.4T application using its in-house CW lasers, with 8 outputs delivering ~112mW per channel. Yunling displayed 200mW and 300mW chips, HiSilicon showcased a 400mW device, and Everbright launched a 400mW-at-50°C CW DFB chip. We believe customer qualification and sustained volume delivery remain key differentiators as product availability broadens. NPO optical-engine bandwidth is progressing from 3.2T to 6.4T, with exhibits from Source Photonics and Accelink, and to 7.2T in HiSilicon's integrated-light-source design. VCSEL also remains an active NPO route for short-reach applications with HiSilicon displaying a 3.2T VCSEL NPO.

Conference takeaways: Tencent outlined a roadmap targeting the deployment of a 512-acceleratotor supernode using 3.2T NPO in 1Q27, followed by a feasibility assessment in 2Q27. Alibaba's roadmap targeted 4Q26 mass production of 3.2T NPO modules and QFabric switches followed by 6.4T UPO production around mid-2027. Its 6.4T UPO, developed with Accelink, is set to be demonstrated at the Sep 2026 Apsara conference. Tencent and Alibaba highlighted scale-up as a key near-term opportunity for NPO, citing its balance of bandwidth density, power consumption, supplier openness and delivery readiness. Industry participants also argued that NPO could remain a viable long-term architecture rather than a transitional one. For scale out, pluggables may remain the favored solution for broad deployment by some industry participants. Huawei's roadmap has progressed from 50G VCSEL solution in its 384-accelerator A3 supernode to 100G VCSEL LPO solution for its A5 supernode up to 8,192 accelerators. HiSilicon showcased both 3.2T VCSEL NPO and 7.2T SiPh NPO with integrated CW sources as potential future architectures.

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Key Charts

Exhibit 1: CPO External Laser Module (ELSFP)



Source: Company data

Exhibit 2: EugenLight's 8-channel ELSFP delivers >23dBm optical output per channel, module power consumption at ~12W

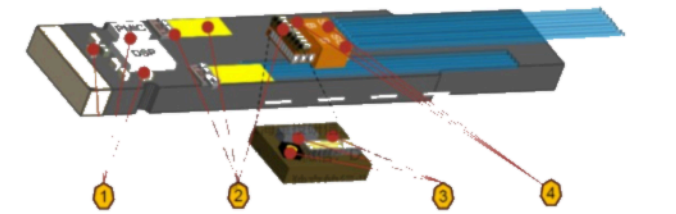


Source: Company data, Morgan Stanley Research

Exhibit 3:

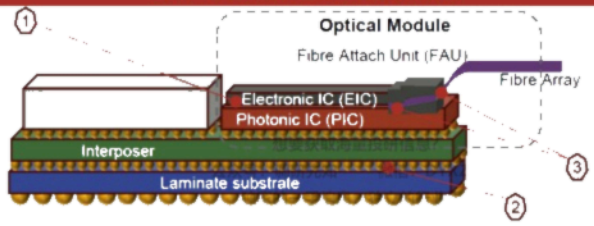
Strong position in photonics: comprehensive solutions from pluggable optical transceivers to CPOs

Pluggable Optical Transceiver



	Bonding Step	ASMPT Equipment	Placement Precision
1	DSP & Passive Component Attach	SMT SIPLACE Placement Solutions	±25μm
2	Transmitter & Receiver Attach	SEMI High-End Photonics Solutions	±2μm to ±3μm
3	Chips on Submount Assembly	SEMI AMICRA Solutions	±3μm
4	Electrical & Optic Accessories	SEMI Photonics Solutions	±5μm to ±15μm

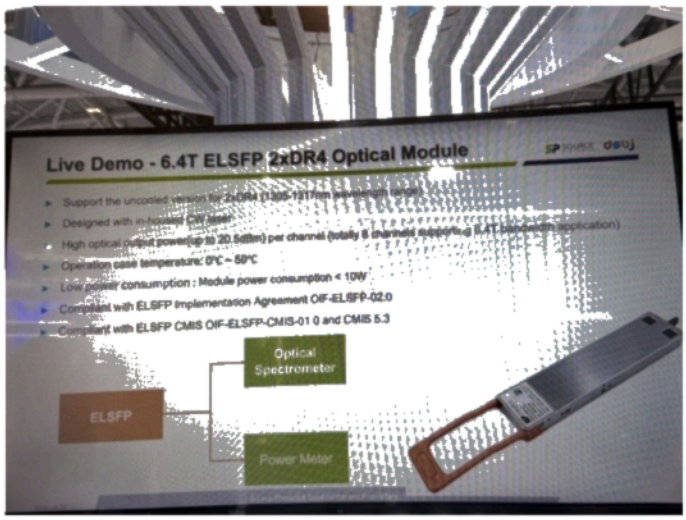
Co-Packaged Optics (CPO)



	Bonding Step	ASMPT Equipment	Placement Precision
1	EIC on PIC	SEMI Hybrid Bonding and TCB solutions	±200nm to ±2μm
2	Optical Engine on Substrate	SEMI Flip Chip Mass Reflow Solutions	±5μm
3	FAU and Micro Lens Attach	SEMI AMICRA Solutions	±500nm to ±1μm

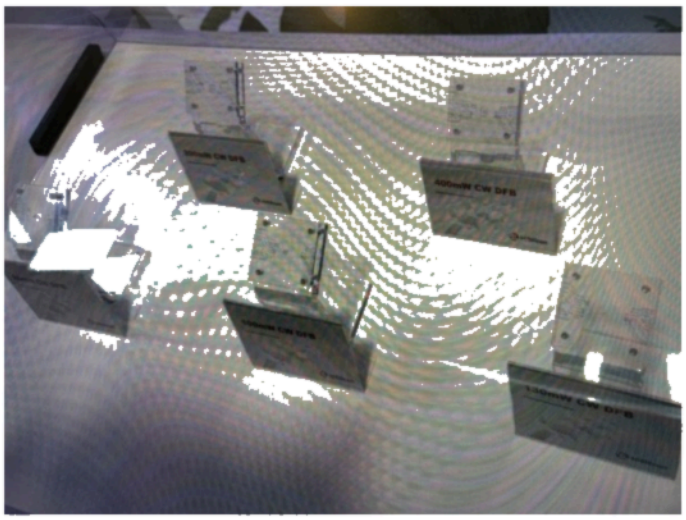
Source: Company data

Exhibit 4: ELSFP displayed by Source Photonics



Source: Source Photonics, Morgan Stanley Research

Exhibit 5: 400mW and other high power CW displayed by HiSilicon Optoelectronics



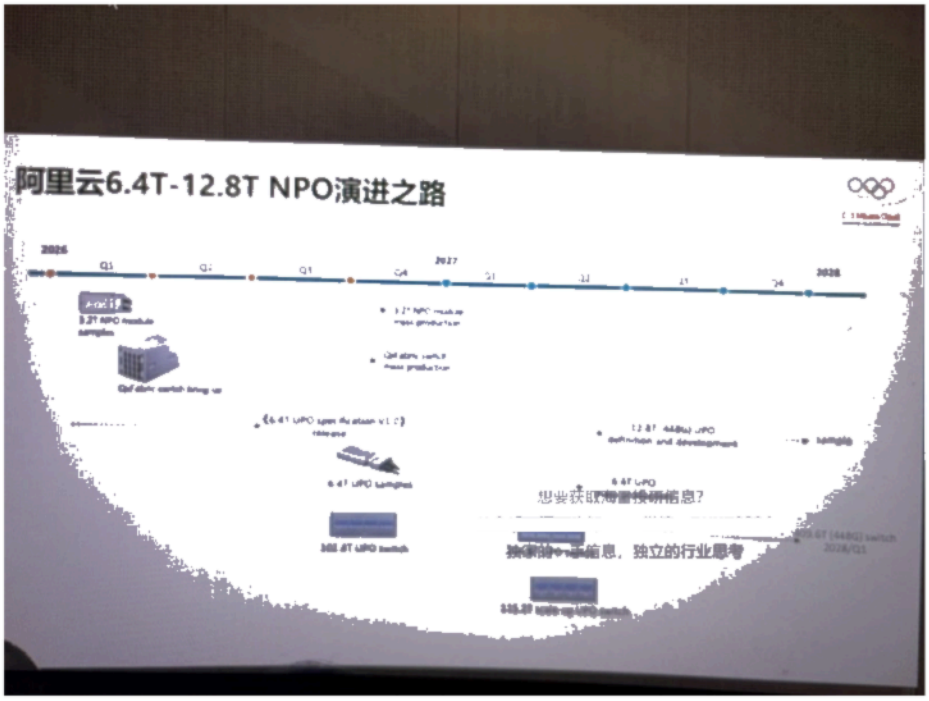
Source: HiSilicon, Morgan Stanley Research

Exhibit 6: Tencent NPO Roadmap



Source: Tencent, Morgan Stanley Research

Exhibit 7: Alibaba NPO Roadmap



Source: Alibaba, Morgan Stanley Research