

# **GF at the Forefront of the Photonics & Advanced Packaging Revolution**

Investor Webinar  
March 2026



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## Head of Investor Relations



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**Mike Hogan**

**Chief Business Officer**



**Kevin Soukup**

**SVP – Silicon Photonics**



**Gregg Bartlett**

**Chief Technology Officer**



# The AI Data Center Revolution

# Key Themes Defining AI Data Centers



**AI Workloads Driving Explosive Growth in Compute Demand**



**Forcing a Fundamental Shift in Infrastructure Requirements**



**Leading to Critical System-Level Objectives**

## Explosion of Global Data

~**24,000 EB** of annual global wide area network AI traffic in 2030 (~**100%**↑ vs '25)

## LLM Complexity Growing

>**5T parameters** now, increasing computational requirements

## Power Consumption Skyrocketing

~**1,000 TWh** of annual data center electricity consumption in 2030 (~**100%**↑ vs '25)

Transition from **Copper to Optical** to enable larger scale-up networks

Transition to **High Voltage DC** to improve power distribution efficiency

Transition from **lateral to vertical xPU power delivery** to reduce conduction loss



**Reach**



**Bandwidth Density**



**Energy Efficiency**



**Compute Efficiency**

**At the right total cost**



Third party industry and company estimates

# The Benefits of Optical Networking

Critical Industry Needs	Copper Interconnect	Optical Networking
 Reach	<2 m	>>100m
 Bandwidth Density	<1 Tb/s/mm	>10 Tb/s/mm
 Energy Efficiency	>5 pJ/bit	2-5 pJ/bit
 Compute Efficiency	~15% GPU Utilization	~85% GPU Utilization

At data rates beyond 200G per lane, Optical is the preferred solution



Illustrative Purposes Only  
Third party industry and company estimates

# Optical Solutions Embraced by Industry Leaders



“ Copper-based interconnects used in today's scale-up systems are approaching their fundamental limits in reach and bandwidth, **creating a compelling need for optical solutions.**”

*December 2, 2025*



“ **CPO technology is a key enabler for next-generation data center architectures,** offering unprecedented bandwidth density and power efficiency by tightly integrating optical engines with switch silicon.”

*October 1, 2025*



“ You are going to see a transition to optics... from a I/O density point of view, from a bandwidth point of view, from a power point of view, **it just makes all the sense in the world.**”

*November 11, 2025*



“ The **co-packaged optical design** reduces power consumption, improves reliability, enables rapid deployment, and supports the massive interconnect requirements of agentic AI workloads.”

*August 18, 2025*

- **Silicon Photonics:**
- **GF Leadership & Opportunity**

# Why GF Wins In Silicon Photonics

## GF Advantages

## GF Capabilities/Roadmap

## Enabling for our Customers



### Technology Leadership

- Leading device portfolio
- Thru-silicon vias
- Broadband couplers



### Design Support & Ecosystem

- In-house turnkey design
- Strategic partners (EDA/Test/Fiber/Assembly)



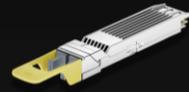
### Global Footprint

- 300mm & 200mm SiPh manufacturing at scale in NY & Singapore
- In-house packaging / test

Accelerated time to market on highly integrated electro-optical solutions for every AI Datacenter application

# Specialized GF Solutions Across All Use Cases

## Selected Portfolio Examples



### Pluggables



### Co-Packaged Optics (CPO)

**Long-Range**  
Greater distance & capacity



- 400G/800G ZR+
- 1.6T CIM8`

Not applicable

**Scale-Out**  
High bandwidth, low loss



- 800G DR4 / 1.6T DR8
- 1.6T DR4 / 3.2T DR8



- 1.6T (200G/λ MRM-based)

**Scale-Up**  
High radix, low latency



- 400G AOC



- CWDM Bi-Directional
- DWDM Bi-Directional
- Optical Interposer

● High-Volume Production    ● Product Taped Out    ● In Development



AOC: Active Optical Cable; CIM: Coherent Interface Module; CWDM/DWDM: Wave division multiplexing types; DR/ZR: Reach based interface classes; MRM: Micro-ring modulator



# Voice of the Customer



“ The 45CLO process offers a robust portfolio of device and coupling options that **enable bandwidth scaling and improve energy efficiency** for advanced scale-up optics.”

— Mark Fuselier, SVP Technology & Product Engineering



“ GlobalFoundries is a trusted partner with a proven ability to bring silicon photonics technology to market **demonstrating industry leading quality and scale.**”

— Mehrdad Givhchi, VP of Engineering & Acacia co-founder



“ GlobalFoundries is a strong development partner and a **key supplier for our next generation of optical networking products.**”

— Near Margalit, VP and GM of Optical Systems Division



“ Lumentum continues to view silicon photonics as a **critical enabling technology** for optical interconnects. We look forward to **working with GlobalFoundries to push the limits** of what silicon photonics can offer.”

— Matthew Sysak, CTO, Global Business Units

# Recent Acquisitions Accelerating GF's progress



## infini!ink



### Scale & Geography

Singapore operation adds second strategic manufacturing location for GF



### Complementary Customers

Immediately broadens GF customer base with opportunity for cross-sales in SiGe/FDX



### Robust Product Offering

Best in class C band platform for long-haul applications, gross margin accretive

2026 Revenue Generation



### Differentiated IP

GF platform experience; IP for photonic control, modulator enhancement, other innovation



### Design Services

Digital, AMS, and Photonic design teams able to accelerate customers' designs into GF



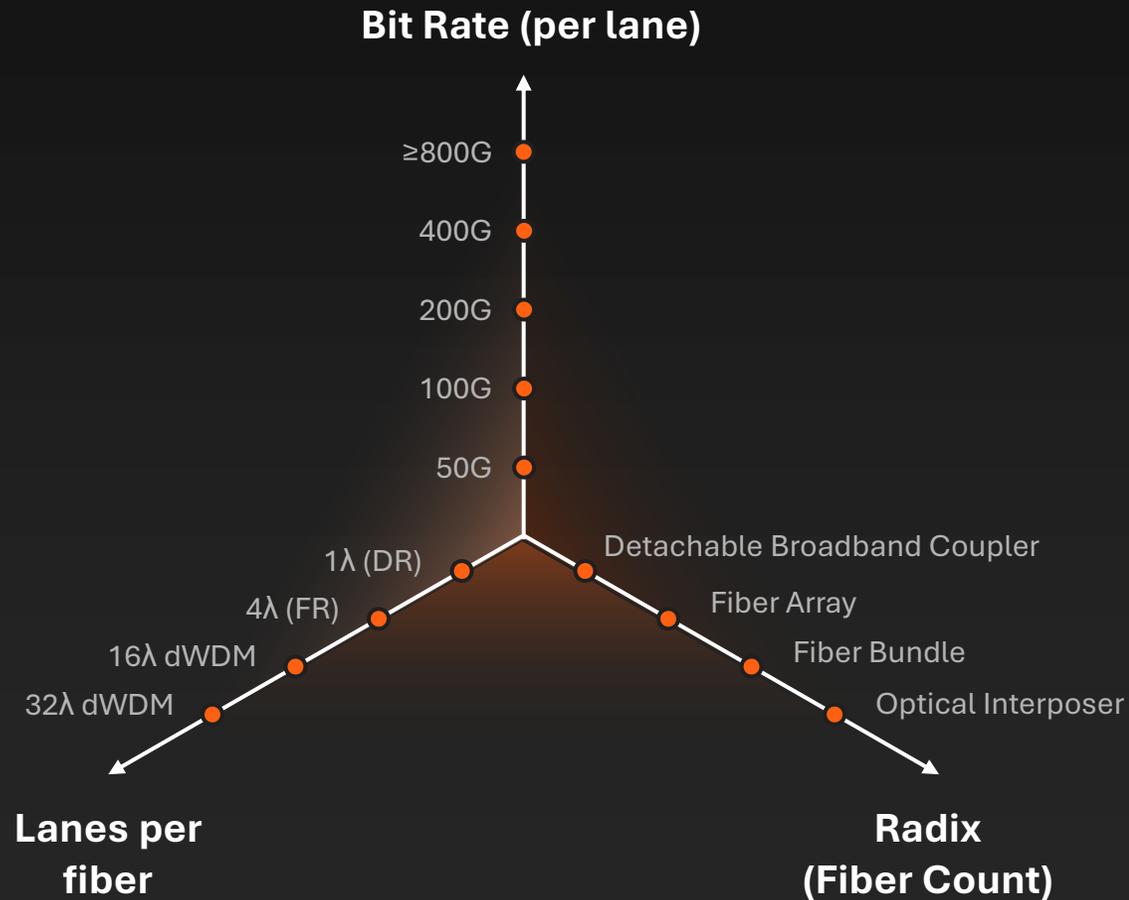
### System Support

Enhancing systems architecture, providing product engineering, packaging/test expertise

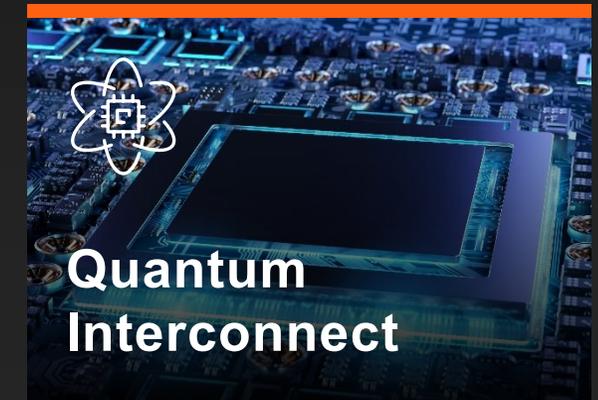
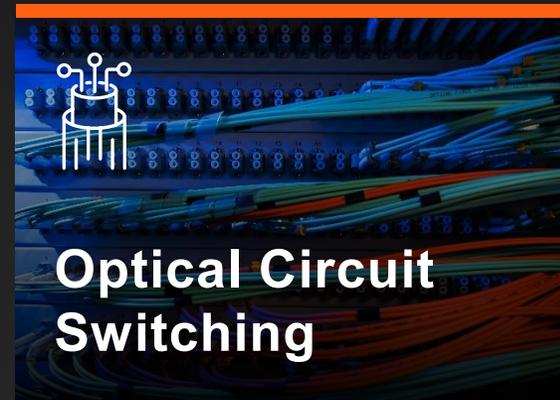
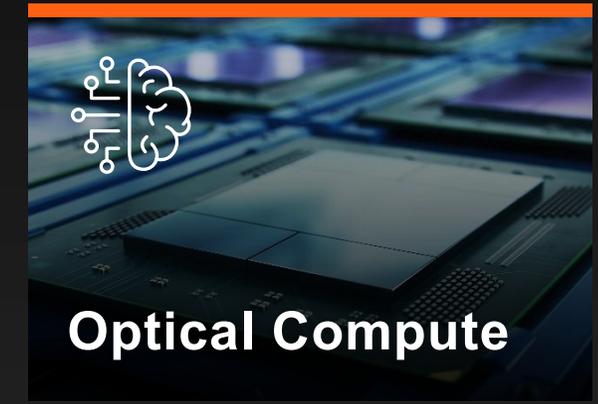
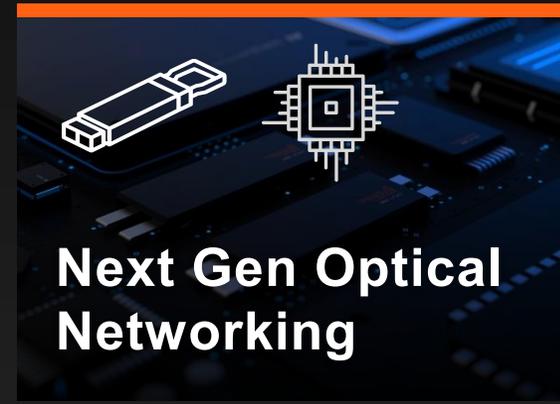
2028 Revenue Generation

# GF's Solid Foundation & Robust Roadmap

## Innovating in All Three Dimensions



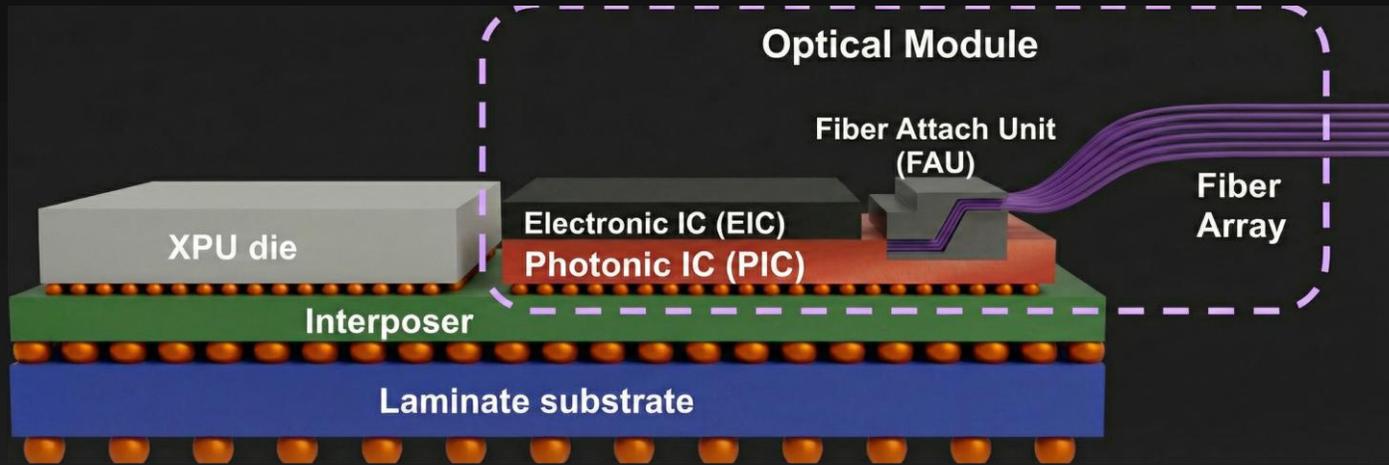
## Groundbreaking Products in Development





# **Advanced Packaging: Accelerating GF's Differentiation**

# Co-Packaged Optics: A Critical New Innovation



## AI XPU/ASIC & Co-Packaged Optics

- Massive optical bandwidth & low latency
- Enables terabit-scale optical I/O, reducing power and reach constraints
- GPU utilization goes from 15% to 85% for AI workloads



### Performance

Faster data transfer via short, dense interconnects



### Power

Reduced signal travel distance & capacitance



### Size

Vertical stacking & tight integration for compact devices



### Integration

Combine best-of-breed chiplets from different processes

# Complete CPO Development Under One Roof

Fully integrated manufacturing: from Si substrate to known-good optical module

Malta, New York



**Photonic Wafer  
Fabrication**

Modulators, Wave  
Guides Photon detectors



**Optical I/O  
Integration**

Detachable Broadband  
Optical Coupler



**Optical Wafer  
Testing**

Optical Functional  
Testing



**Optical Module  
Assembly**

Assembly / Packaging of  
EIC & PIC



**Optical  
Modules Test**

EIC / PIC  
Functional Testing

# Scaling Designs With Trusted Partners



## IP / Design

cādence® SIEMENS

FLEXCOMPUTE

SYNOPSYS®

EDA

KEYSIGHT

Test

ADVANTEST®

ficonTEC  
photronics assembly & testing



Bringing Together  
a Complete  
Ecosystem

Teramount

Detachable  
Fiber

Laser  
Providers

LUMENTUM

CORNING

SENKO®  
Advanced Components

sivers  
SEMICONDUCTORS

SMART  
Photonics  
11-12 Industry Conference

fabrinet

ASE

Assembly

Research  
Partners

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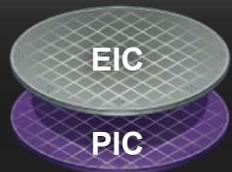


# Packaging Capability Expands Beyond Photonics

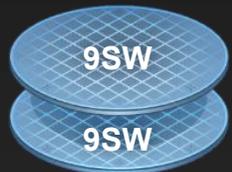
3D Capabilities + Heterogenous Integration = An Exponential Differentiation Multiplier

## Selected Examples

### In Production



EIC-PIC W2W bonding for SiPh Data Center

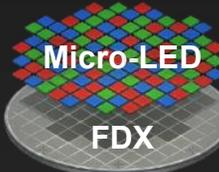


9SW Slate W2W for die area reduction in SMD

### In Development



SiGe-HBT: FDX W2W for Data Center (TIA/Driver)



Micro-LED:FDX D2W for Data Center and Display

### In Roadmap

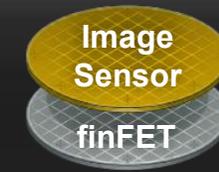
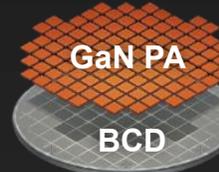


Image Sensor: 12LP+ for next gen imaging platform



GaN PA: BCD D2W for Power applications

Investing in Adv. Packaging across all product roadmaps to enable new architectures



# The Market Opportunity

# Capacity Ramp Driven by Demand & Incentives

## Strong Government Partnerships Are a Critical Enabler



- Full turnkey advanced packaging, bump, assembly and testing under Trusted Foundry accreditation.
- Advanced packaging, wafer-to-wafer bonding, assembly and testing of 3D and HI chips.
- Supported by Investment Tax Credits (ITC) as well as approximately \$100 million of incremental funding from the State of New York and the U.S. Department of Commerce.



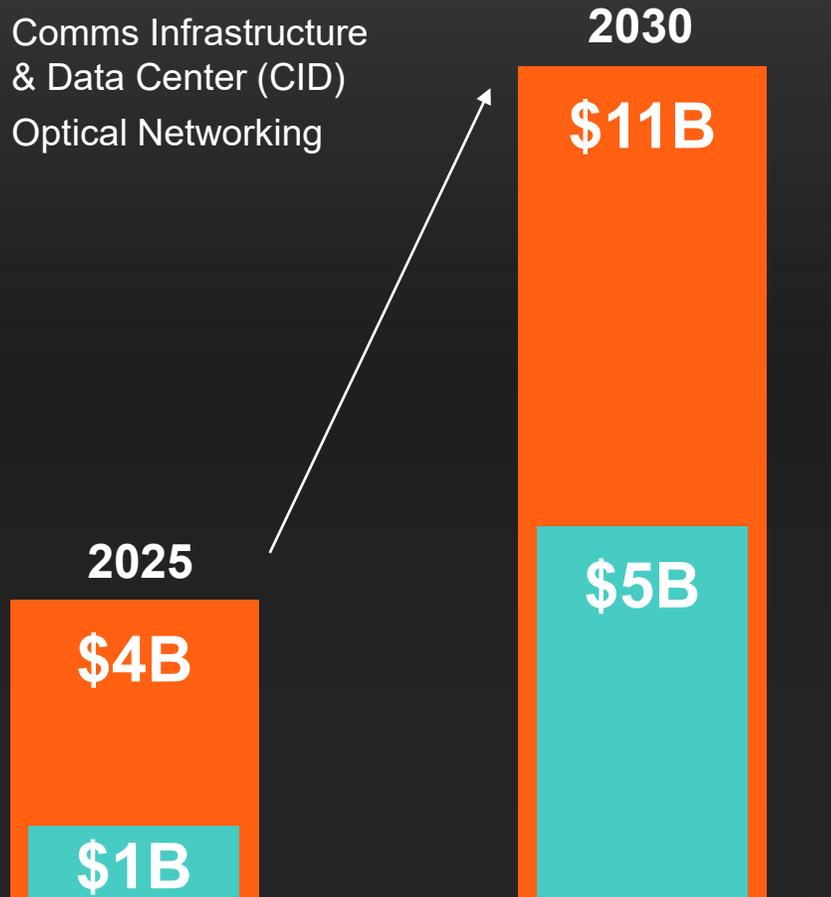
- Manufacturing on 200mm silicon photonics platform, with plans to scale to 300mm.
- Expanded technology portfolio, production capacity and R&D, complementing GF's U.S. capabilities.
- R&D Center of Excellence, in partnership with A\*STAR, focused on next-generation photonics.

# A Significant, Fast-Growing Opportunity

With a Well-Rounded Portfolio, GF is Participating Via Many Vectors

## Wafer Serviceable Addressable Market

- Comms Infrastructure & Data Center (CID)
- Optical Networking



**~25%**

CID Wafer SAM CAGR 2025 ▶ 2030

**~40%**

Optical Networking Wafer SAM CAGR 2025 ▶ 2030

- SiPho – Pluggables & CPO
- SiGe/FDX – TIA, Driver, DSP

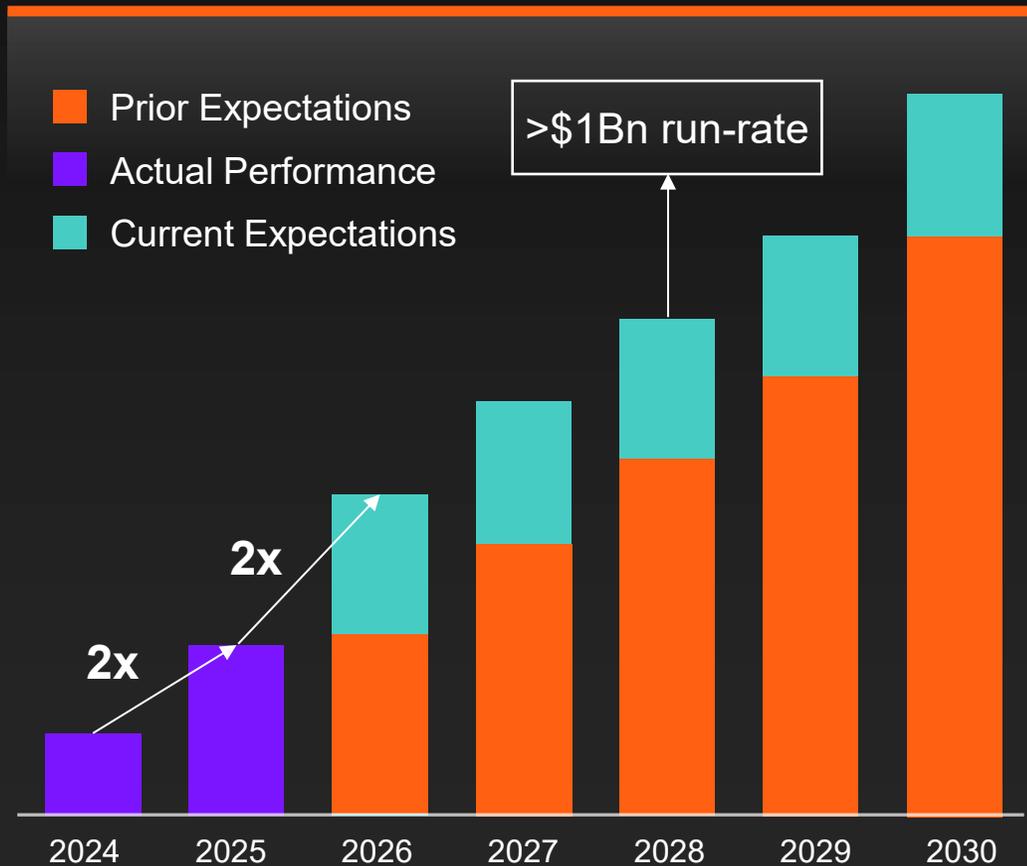
**Meaningfully higher CID share 2030 vs 2025**



# Clear Line-of-Sight to Accelerated Revenue

Faster Market Penetration | Broader Product Portfolio | Greater Margin Accretion

## Silicon Photonics Revenue



## Growth Requires Investment

Capacity Scalable With Current Cleanroom Space

+

Continue to Accelerate Capex in Line with Demand

+

High-Margin, High-Growth Products Serving Key Megatrends

**A Unique Opportunity Well Worth the Incremental Capex & R&D**



Illustrative Purposes Only  
Silicon Photonics revenue is reported within the Comms Infrastructure & Data Center end market



# Q&A



# Thank You

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