

Photonics Business Briefing

Value Creation and Business Expansion

Dexerials Corporation

October 14, 2026



Photonics Business Environment and Overview

1. High-speed Response Photodiodes (PDs)

- Production outlook for Tome and Eniwa operations
- Procurement initiatives
- Business expansion: 200G collaboration with TIA manufacturers
- Next-generation 400G initiatives

2. Edge-illuminated Monitor PDs

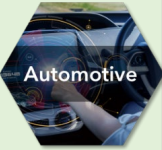
- Business Expansion initiatives: Maximize sales opportunities with chip sizes tailored to laser light source use cases

3. Monitor PDs and Assemblies

- Profit growth initiatives: Cost reduction and productivity improvements to support sales growth in Scale-Across and Scale-Out

Photonics Value Creation and Business Expansion

Position of the Photonics Business within the Dexerials Group

		Dexerials							Dexerials Photonics Solutions (DXPS)	
		Optical Materials				Electronic Materials				
Products		Optical Elastic Resin (SVR)	Smart precision Adhesives	Anti-reflection Film (ARF)	Anti-reflection Film Moth-eye type	Anisotropic Conductive Film (ACF)	Secondary protection fuse	Adhesive Tape	Optical Semiconductors	Inorganic Optical Components
										
Business Domains	 Existing	Displays (Smartphones/ Tablets)	Camera Modules (Smartphones)	Displays (Laptops/ Smartphones)	Medical Face Shields (DxShield)	Displays, MicroLEDs, and Camera Modules	Power Tools, Smartphones, and DC BBU*1	Metal Cards and FPC*2 Bonding		
	 Growth	Automotive Displays	ADAS Cameras and Sensors	Automotive Displays	HUDs (Head-Up Displays)	Automotive Displays and Sensors	E-bikes and BEVs			
	 Growth	Accelerating R&D to Contribute Through Photoelectric Fusion								High-speed Response Photodiodes for Communications

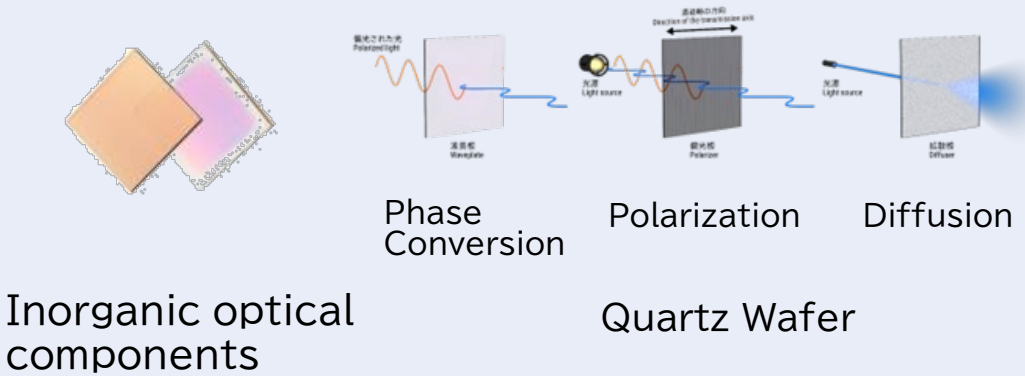
Photonics Selected as a Future Growth Domain

*1:Battery Backup Unit *2:Flexible Printed Circuit Board

Dexerials Photonics Solutions Corporation (Operations began in April 2024)

Dexerials

Technology to Control Light



Optical Design

Microfabrication

Wafer Process

Strong Manufacturing Technology Synergies

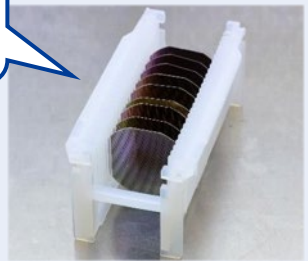
Kyoto Semiconductor Co., Ltd.

Optical Semiconductor Technology

One of a limited number of InP photodiode manufacturers



Photodiodes
(Receiving Devices)



InP Wafer
(Compound Semiconductor)

Compound Semiconductors

Device Design

Wafer Process

Driving Growth of the Dexerials Group

Kyoto Semiconductor Co., Ltd.

Mainly telecom and factory automation equipment

(Stable over the long term, with limited growth)

High-mix, low-volume production, including semi-custom products



Photodiodes (receiving devices)



Sensors (optical receivers and emitters)

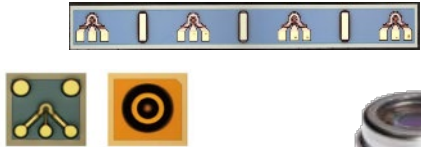
Joined the Dexerials Group

Dexerials Photonics Solutions Corporation

Entry into major customers and high-volume markets

(Entering datacom to drive growth)

High-volume production for global customers



Photodiodes (receiving devices)

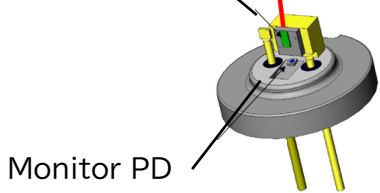


Inorganic optical components

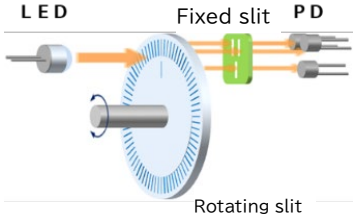
Monitor PDs for telecom (long-distance communications)

For factory automation equipment

Semiconductor laser



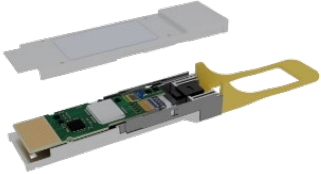
Laser output monitoring



Optical encoders

High-speed Response PDs for datacom

Monitor PDs for datacom



Devices that use lasers and photodiodes to convert electrical and optical signals

Optical transceivers

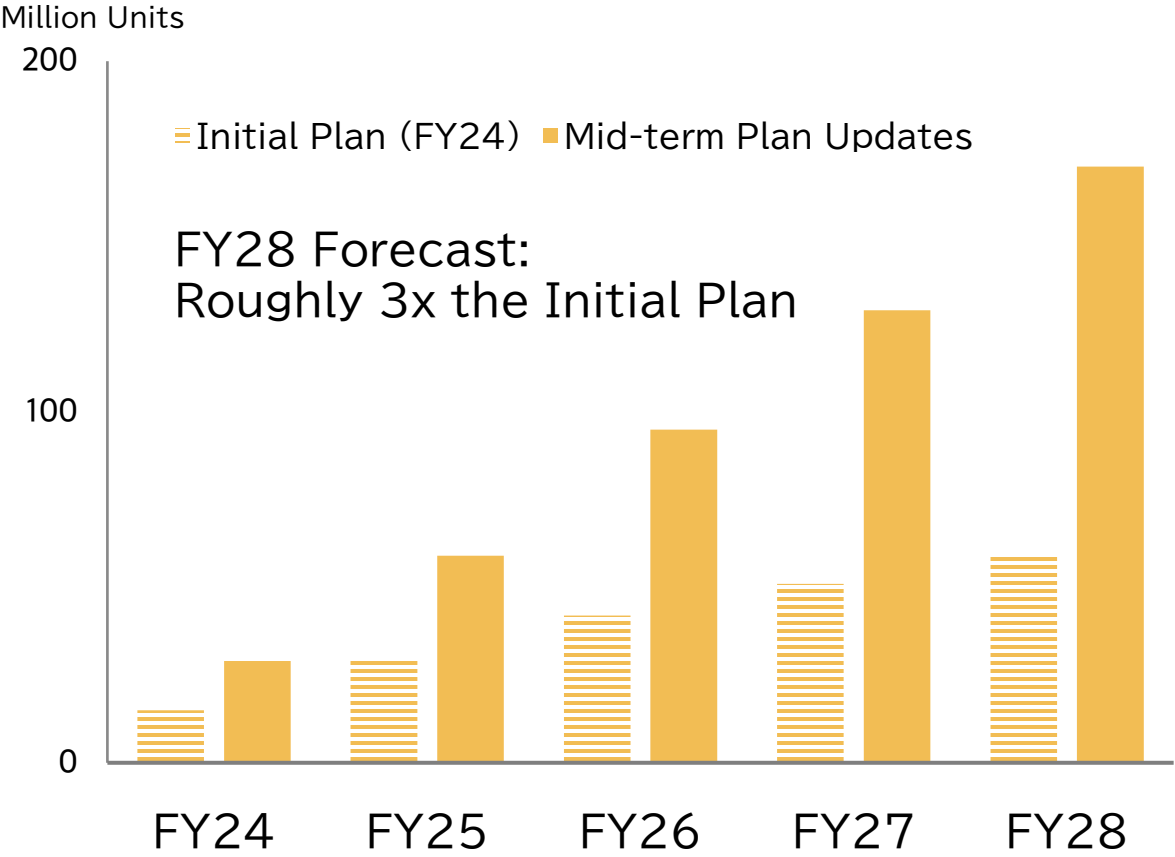


Devices that use lasers and photodiodes to amplify and relay optical signals

Co-Packaged Optics(CPO) Optical network switches

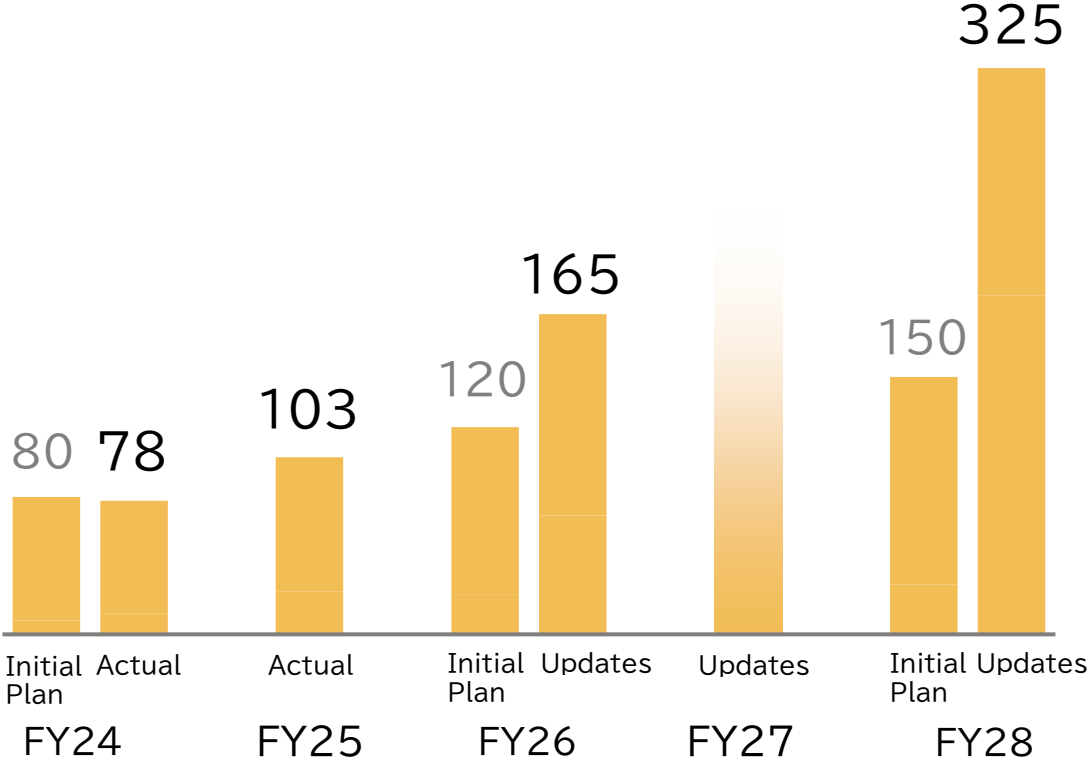
Data Center Optical Transceiver Demand Is Doubling, Driving a Major Upward Revision to the Sales Plan
We Aim to Become the Global Leader in High-speed Response Photodiodes

Optical Transceiver Unit Forecast



Note: We estimate based on market analysis by LightCounting

Photonics Business Sales Plan (JPY 100 million)

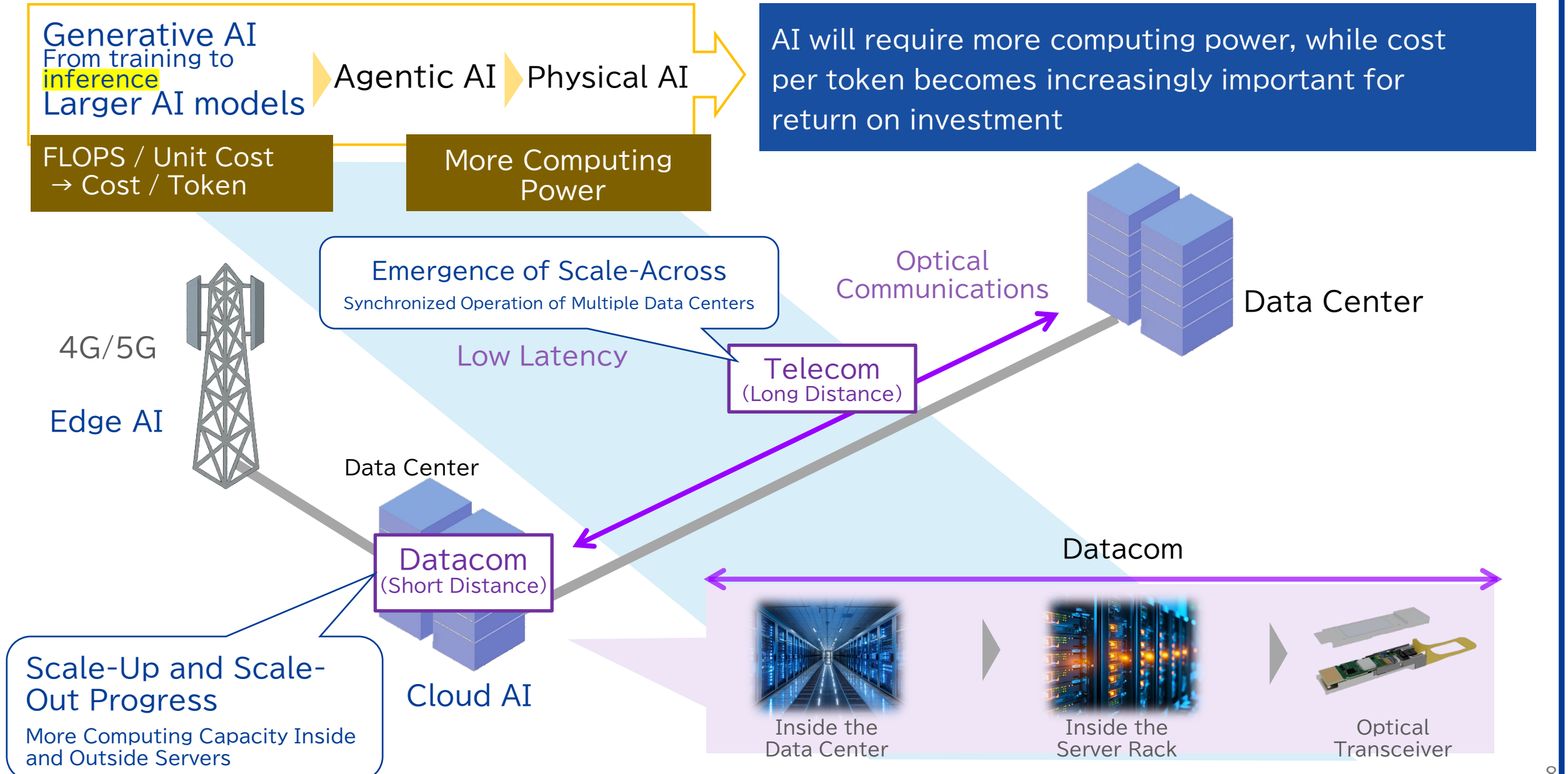


InP Advantages in High-Speed Response PDs: Superior Performance

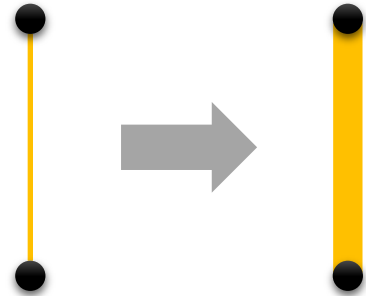
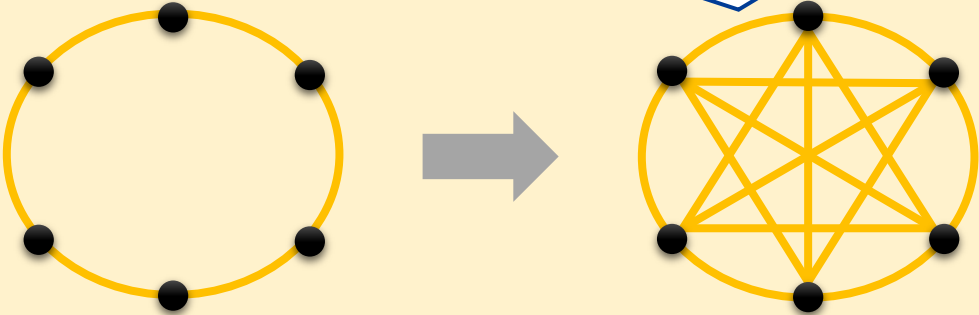
Material	InP Indium phosphide	SiGe Silicon germanium	GaAs Gallium arsenide
Detection wavelength	Long wavelengths (1310 nm / 1550 nm bands)	Near-infrared to long wavelengths (850 nm-1550 nm bands)	Short wavelengths (850 nm band)
Features and strengths	• Developed as an emitter/receiver material for optical communications • The material's high carrier mobility enables high-speed operation. • InP is considered the only option for 3.2T optical transceivers • Roadmap for heterogeneous integration of InP receivers with silicon photonics	• Can be integrated directly on silicon • Low-cost fabrication on the same chip as IC circuits • Compatible with silicon photonics • Lower absolute performance than InP • Growing adoption in medium-distance links, with gradual share gains	• LEDs have established ecosystems in specialized lighting and sensing applications • VCSELs and PDs have established ecosystems in communications • Short wavelengths limit use to short distances • Lower cost than InP-based materials; a strong candidate for high-speed, short-reach communications within data centers
In brief	Superior Performance	Compact integration, relatively low cost	Short-reach applications, low cost

We use InP for our high-speed response PDs

AI Evolution Is Reshaping Data Center Networks



What Low Latency Means for Scale-Across

Item	High Speed	Low Latency
Road Analogies	Number of lanes (traffic carried at once)	Time for a vehicle to reach its destination
Main Units	Gbps (gigabits per second)	ms (milliseconds)
Key Use Cases	Transfer of very large files 4K/8K video streaming - Large file downloads	Real-time applications - Online gaming, videoconferencing, autonomous driving, and telemedicine - Synchronized AI processing (Processing stops while waiting for data)
Main Constraints	- Limited frequency bandwidth - Network congestion and interference	- Physical distance and router processing time - BER (Bit Error Rate)
Solutions	Increase Bandwidth (Add More Lanes) 	Shorter Distances and Fewer Hops → Increase Optical Link Counts 

From Scale-Across to Scale-Out, Scale-Up, and Scale-In?

The development race has already begun

Category	Typical Distance	Full-scale Adoption (Our forecast)	Representative Equipment / Technology
Scale-In	25 cm	2030 onward?	• In-package interconnects (silicon/glass interposers, silicon photonics, UCIe, CPO, CoWoS, etc.)
Scale-Up	7 m	Release from 2028 Full-scale adoption from 2029	• NVIDIA “Feynman” GPU NVLink 8 protocol with CPO • Direct GPU connections shifting from copper cable to optical fiber
Scale-Out	50 m-2 km	Full-scale network switch adoption from 2027	• InfiniBand Switch (Quantum-X) • Ethernet Switch (Spectrum-X) • Optical transceivers (pluggable optics / CPO)
Scale-Across	10 km-600 km	DCI from 2024 Evolution into Scale-Across from 2026, latency below 5ms Full-scale adoption around 2028-2029	• DCI switches and coherent optical transceivers • DWDM • (ZR/ZR+) 800G/1.6T Coherent Optical Transceiver
Long-Haul	300 km-10,000 km+	Growth from 2023	• Long-haul optical transport (WDM / ROADM) • Submarine cable systems • Coherent long-haul optical equipment • Raman amplifiers and EDFAs

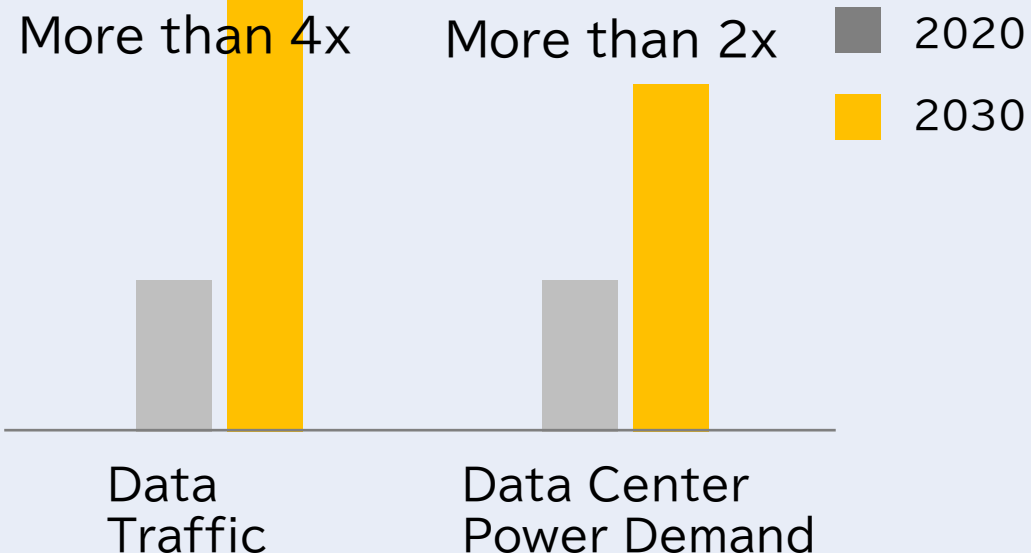
Why Is Optical Communication Replacing Electrical Communication?

- Sustainability of Growth and Physical Limits

Reason 1: Technology Progress Is Not Sustainable

Global Forecast

High Potential to Become
a Major Social Challenge



Reason 2: Physical Limits of Electricity

Transmission Speed

Optical communication is at least **10x** faster.



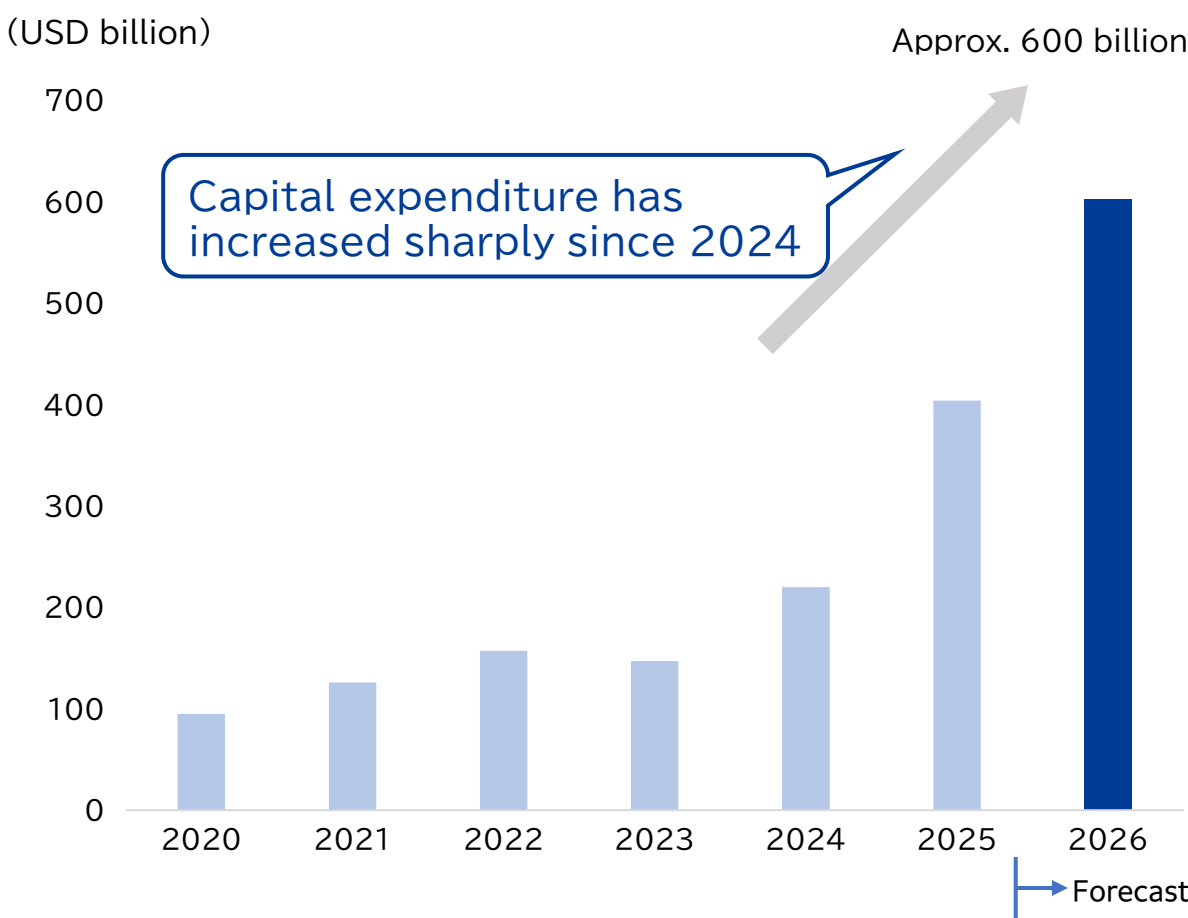
Energy per Unit of Transmission Speed

Optical communication is **100x** more efficient
It can transmit data using 1/100
the power of electrical communications

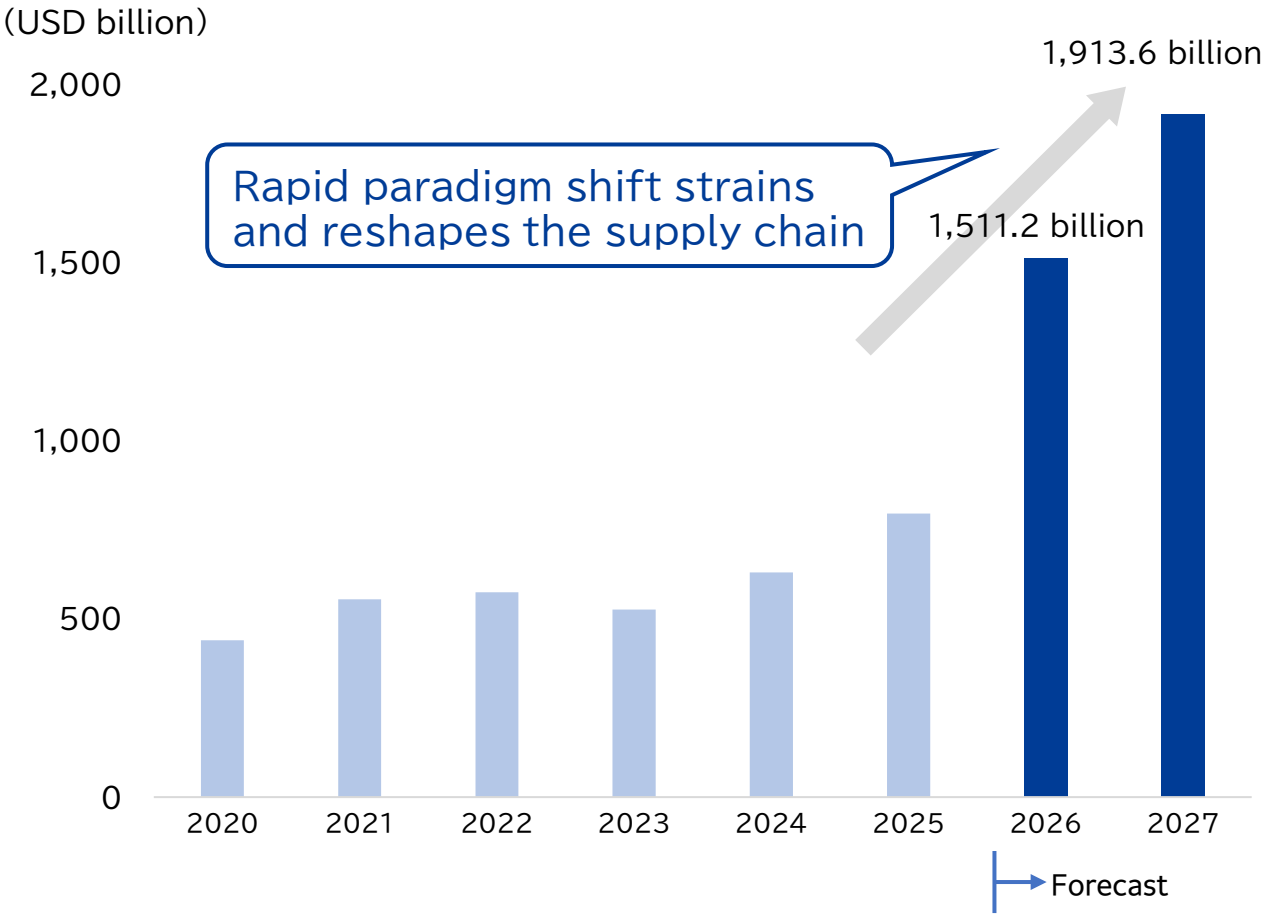


Business Environment – Major Hyperscalers’ Capital Expenditure Trends

Capital Expenditure of Five Major Hyperscalers



Global Semiconductor Market Size

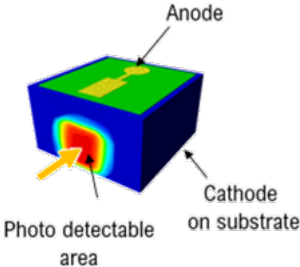


Left: Our compilation based on company disclosures and other publicly available information.
Right: Our compilation based on the WSTS Spring 2026 Semiconductor Market Forecast.

Business Environment: Photoelectronic Fusion Creates New Opportunities

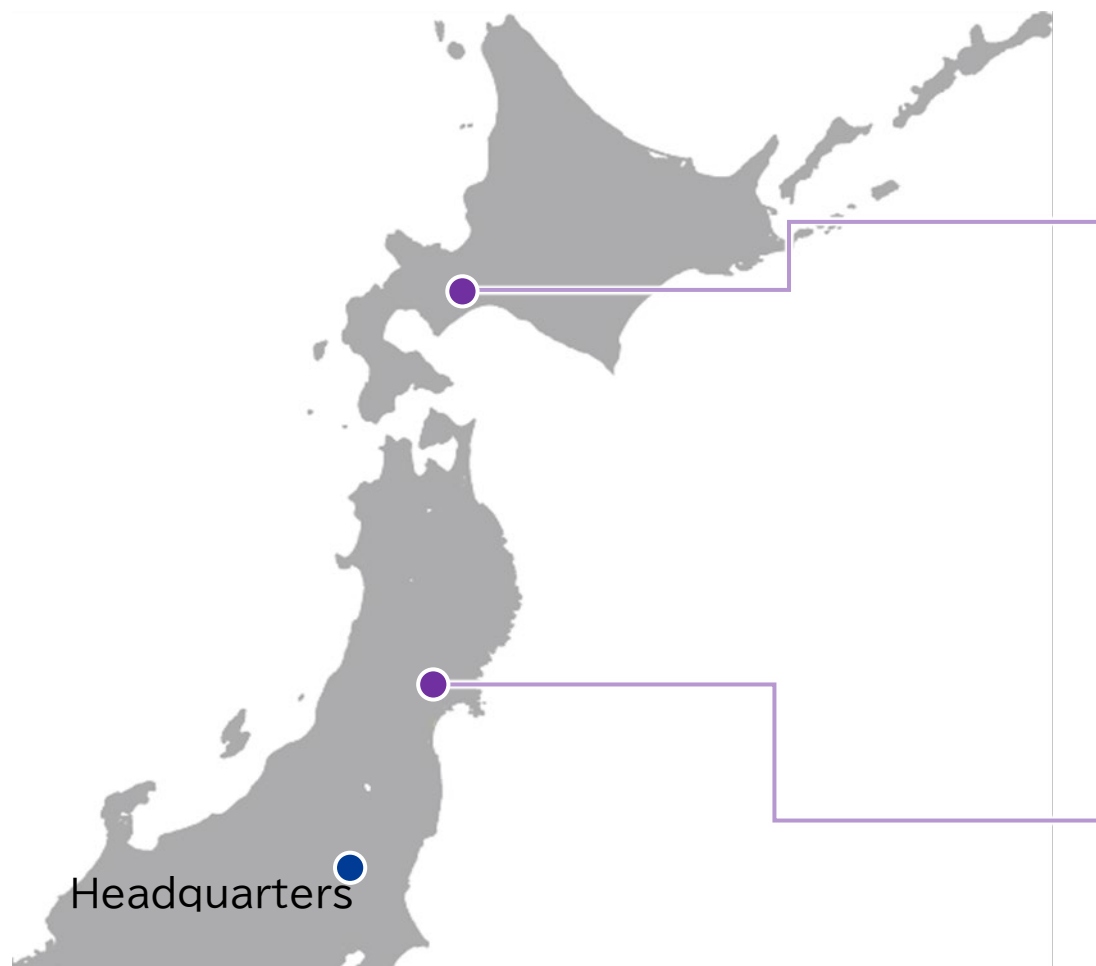
	Telecom		Datacom		
	Up to 600 km Between Data Centers	Up to 10 km Between Clusters	Up to 2 km Rack to Rack	Up to 100 m Board to Board	1 cm-10 m Chip to Chip
1980s-2000s	Voice Communications → Emergence of the Internet				
2000s-2020s	Music and Video Streaming → Growth of Mobile Networks				
2023 onward	Cloud Adoption + Generative AI → Next-generation AI		Progress in Photoelectric fusion Technology		
Network Evolution	1. A transformation once every 20 years	2. New Business Opportunities for us	3. Demand Expected to Increase by Tens of Times		
	Scale-Across Synchronized operation of multiple data centers: high speed and low latency More Optical Links	Scale-Out Higher speed, lower power, and low latency between clusters and racks Speeds Increasing Shift to Optical Communication/ More Optical Links	Scale-Up and Scale-In Higher speed, lower power, and low latency inside racks Shift to Optical Communication/ More Optical Links		
Our Initiatives	PICs for Silicon Photonics (Development on track)	High-speed Response PDs for Optical Transceivers (The current Core business domain)	Monitor PDs for CPO (Expected to grow from FY27)	Development of Photoelectric fusion Solutions (Bonding, adhesives, optical control, etc.)	

Business Overview: Three Main Product Groups

Product Group	1. High-speed Response PDs		2. Edge-illuminated Monitor PDs	3. Monitor PDs and Assemblies	
Product	High-speed Response PD chips	High-speed Response PD assemblies	Edge-illuminated monitor PD chips	Surface-illuminated monitor PD chips	Mini-can packages and assemblies
Form	100G/lane (4-channel array)  200G/lane (single channel)   Front side With backside lens	CoC (Chip on Carrier) 		Front side 	
Use Features	- Optical transceivers for high-speed communications within data centers - Optical signal reception with ultra-high-speed response - Designs tailored to customer needs		- Can be placed coaxially with the laser - Real-time optical power monitoring - Products tailored to customer needs	- Low dark current / low capacitance - Real-time optical power monitoring - Customization available	- Sealed packages for long-term reliability - Compatible with various standard connectors - Products tailored to customer needs
Use Cases	Scale-Out Scale-Across	Scale-Across	Scale-Out	Scale-Across	Scale-Across

Business Overview: Sites and Main Products

Dexerials Photonics Solutions Sites



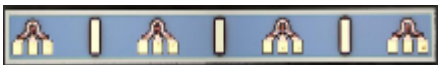
Eniwa Operation
Existing Production of Optical
Semiconductors
(formerly Kyoto Semiconductor)



Tome Operation
New optical semiconductor production
(operations began in April 2026)

Main Products

- High-speed Response PDs
- Edge-illuminated monitor PDs
- Monitor PDs and assemblies

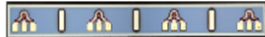
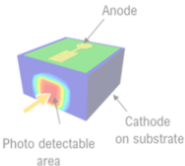


- High-speed Response PDs
- Inorganic optical components



1. High-speed Response Photodiodes (PDs)

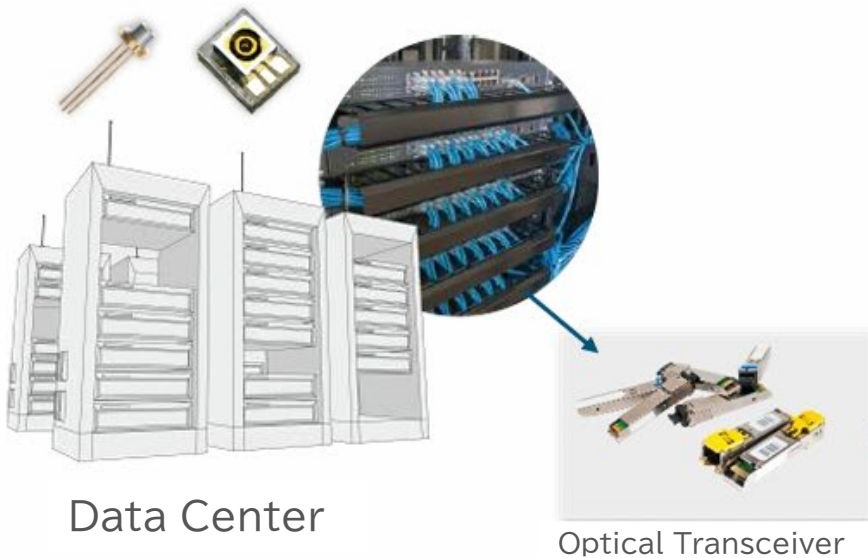
- Production outlook for Tome and Eniwa operations
- Procurement initiatives
- Business expansion: 200G collaboration with TIA manufacturers
- Next-generation 400G initiatives

Product Group	1. High-speed Response PDs		2. Edge-illuminated Monitor PDs	3. Monitor PDs and Assemblies	
Product	High-speed Response PD chips	High-speed Response PD assemblies	Edge-illuminated monitor PD chips	Surface-illuminated monitor PD chips	Mini-can packages and assemblies
Form	100G/lane (4-channel array)  200G/lane (single channel)  Front side  With backside lens  CoC (Chip on Carrier)	 Anode Cathode on substrate Photo detectable area		Front side 	
Use Features	• <u>Optical transceivers for high-speed communications</u> within data centers • Optical signal reception with ultra-high-speed response • Designs tailored to customer needs		• Can be placed coaxially with the laser • Real-time optical power monitoring • Products tailored to customer needs	• <u>Low dark current / low capacitance</u> • Real-time optical power monitoring • Customization available	• Sealed packages for long-term reliability • Compatible with various standard connectors • Products tailored to customer needs
Use Cases	Scale-Out Scale-Across	Scale-Across	Scale-Out	Scale-Across	Scale-Across

1. Applications of Our High-Speed Response PDs

[Application Example]

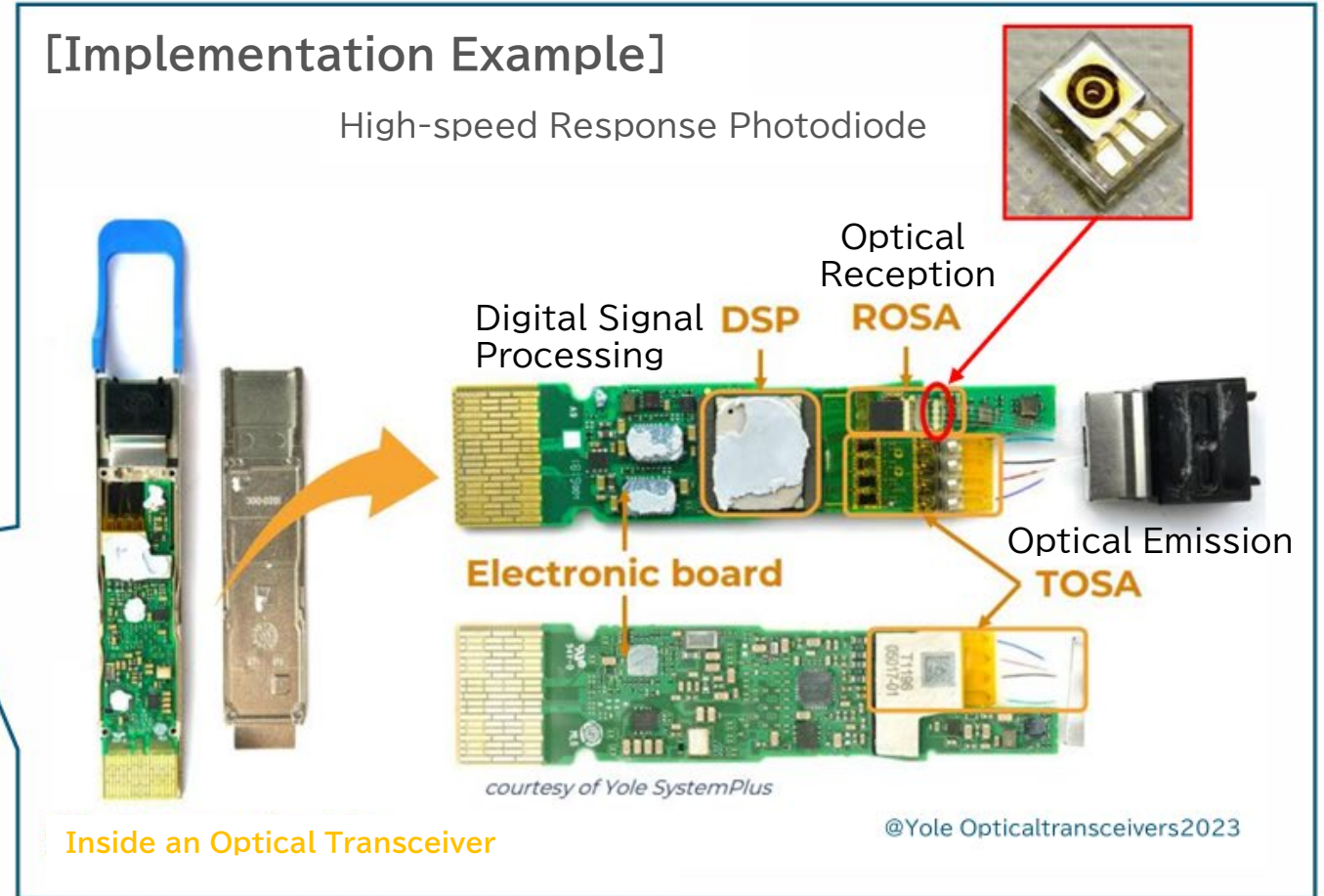
Optical Semiconductor Devices



Optical semiconductors convert electrical signals into light and optical signals into electricity. Devices that incorporate these components are called optical semiconductor devices. Our products are used in optical transceivers for data centers and other applications.

Photodiodes for Optical Transceivers

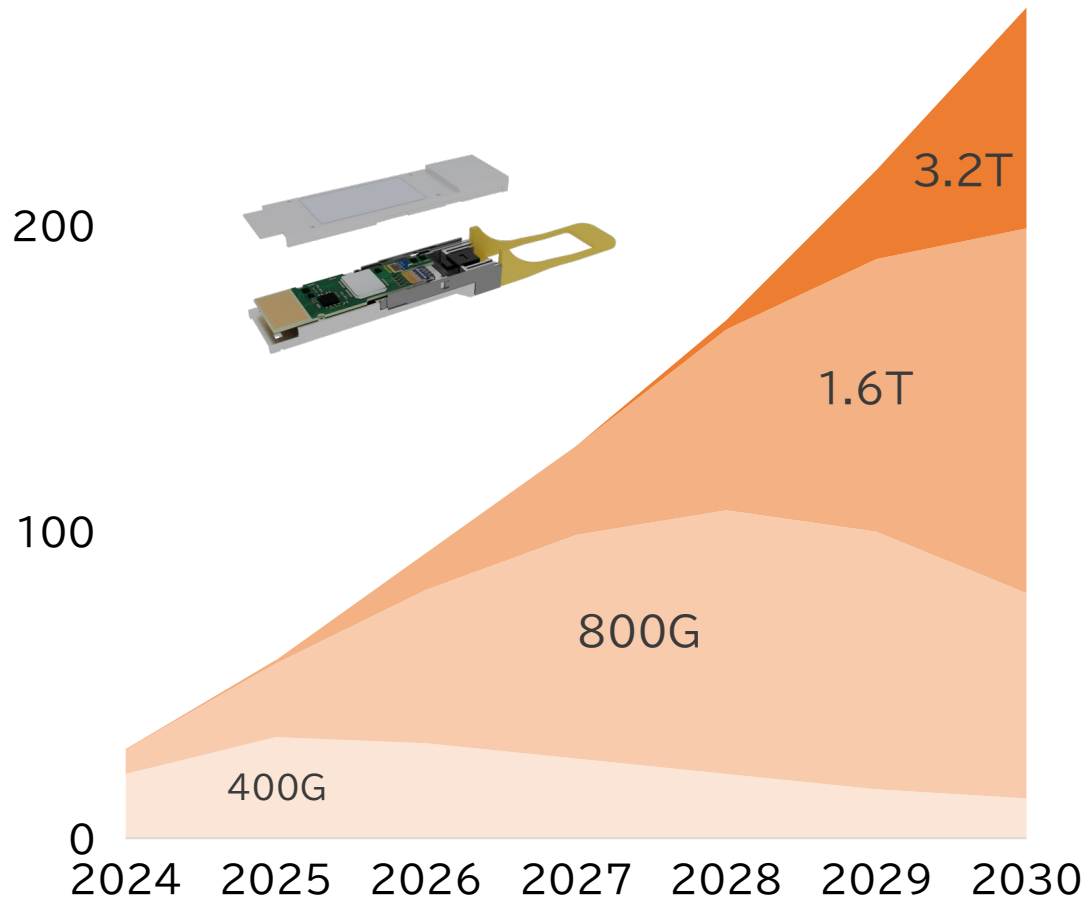
[Implementation Example]



1. Optical Transceiver Market and Types – Our Products and Development Pipeline

Optical Transceiver Market Forecast

Million Units
300



Note: We estimate these figures based on market analysis by LightCounting

Optical Transceiver Types

- By distance : 7 types from short to long distance
- By speed : 4 types from 400G to 3.2T (3200G)
 - 4 or 8 channels per optical transceiver (4 or 8 PDs per transceiver)
 - Example: 100G/lane PD $\times$ 4 channels = 400G
 - Example: 400G/lane PD $\times$ 8 channels = 3.2T

Our Products and Development Pipeline

Optical Transceiver PDs

- Waveguide 400G/lane PDs: Development on track
- Back-illuminated 200G/lane PDs: Preparing for mass production (Sales scheduled to begin in FY26)
- Surface-illuminated 100G/lane PDs: In mass production and commercially available

PICs for Silicon Photonics
(Development on track)

100G/lane (4-channel array)



200G/lane (single channel)



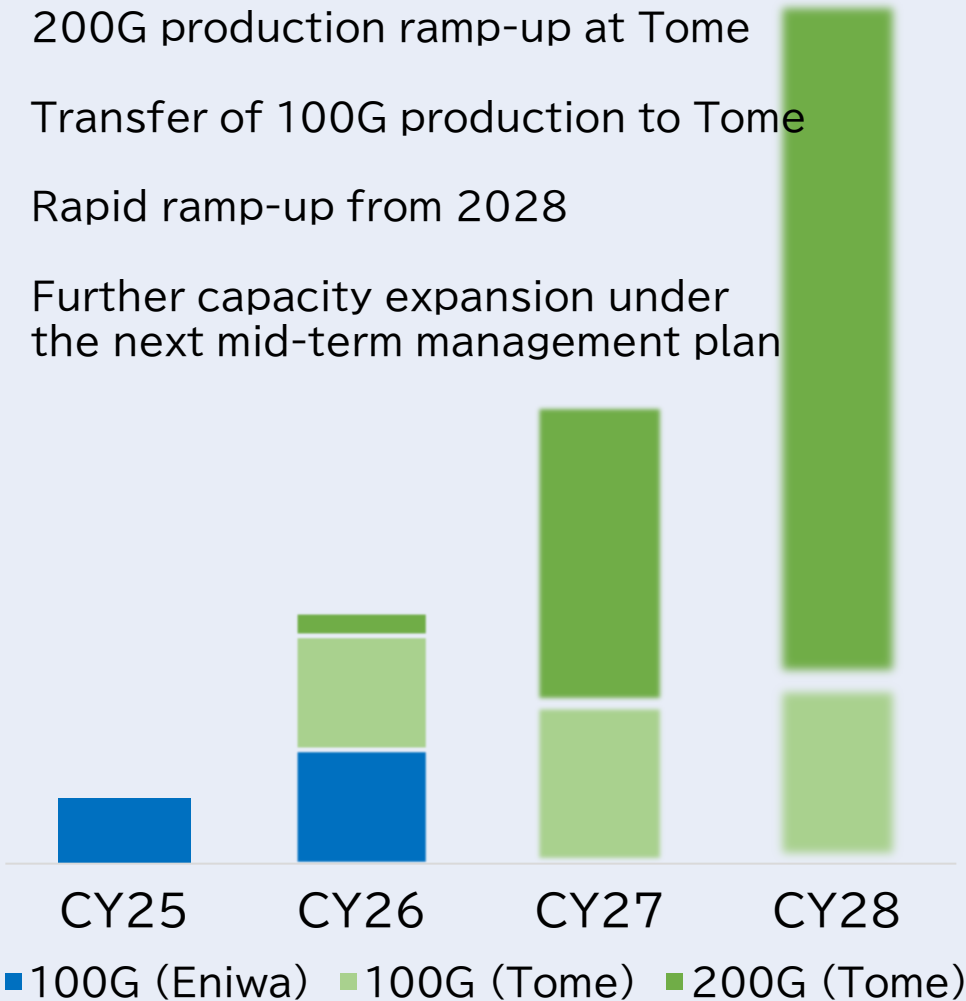
Front side

With backside lens

1. Production Capacity Outlook for Tome and Eniwa Operations

High-speed Response PD Production Sites and Capacity

- 200G production ramp-up at Tome
- Transfer of 100G production to Tome
- Rapid ramp-up from 2028
- Further capacity expansion under the next mid-term management plan



Eniwa Operation (DXPS)
Existing optical semiconductor production site



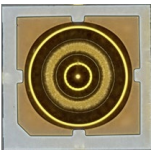
Tome Operation (DXPS)
New optical semiconductor production site
(operations began in April 2026)

Main Products

- High-speed Response PDs
➔ Transfer to Tome
- Edge-illuminated monitor PDs
- Monitor PDs and assemblies



- High-speed Response PDs
- Inorganic optical components



1. Production Sites Strategy to Meet Growing Demand

- Further capacity expansion under the next mid-term management plan
- We will flexibly meet growing demand by considering options such as using available space at other sites and outsourcing production to external partners, while anticipating changes in the business environment.

● Eniwa Operation

Maximizing Growth Opportunities
through Company-wide Efforts

● Tome Operation

Kanuma Plant

●● Headquarters and Tochigi Technology Center

Dexerials Photonics Solutions



Eniwa Operation

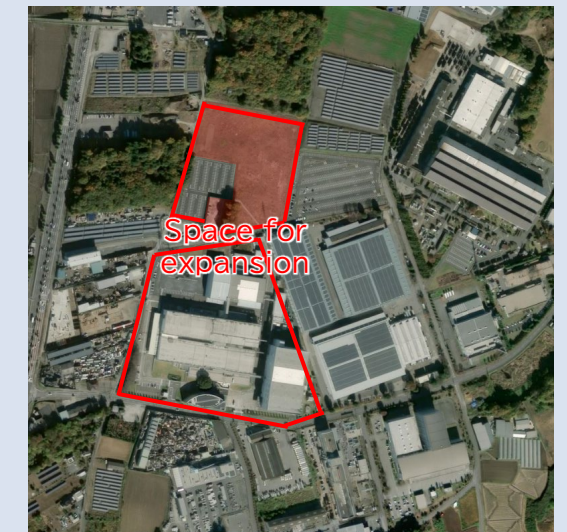


Tome Operation

Dexerials

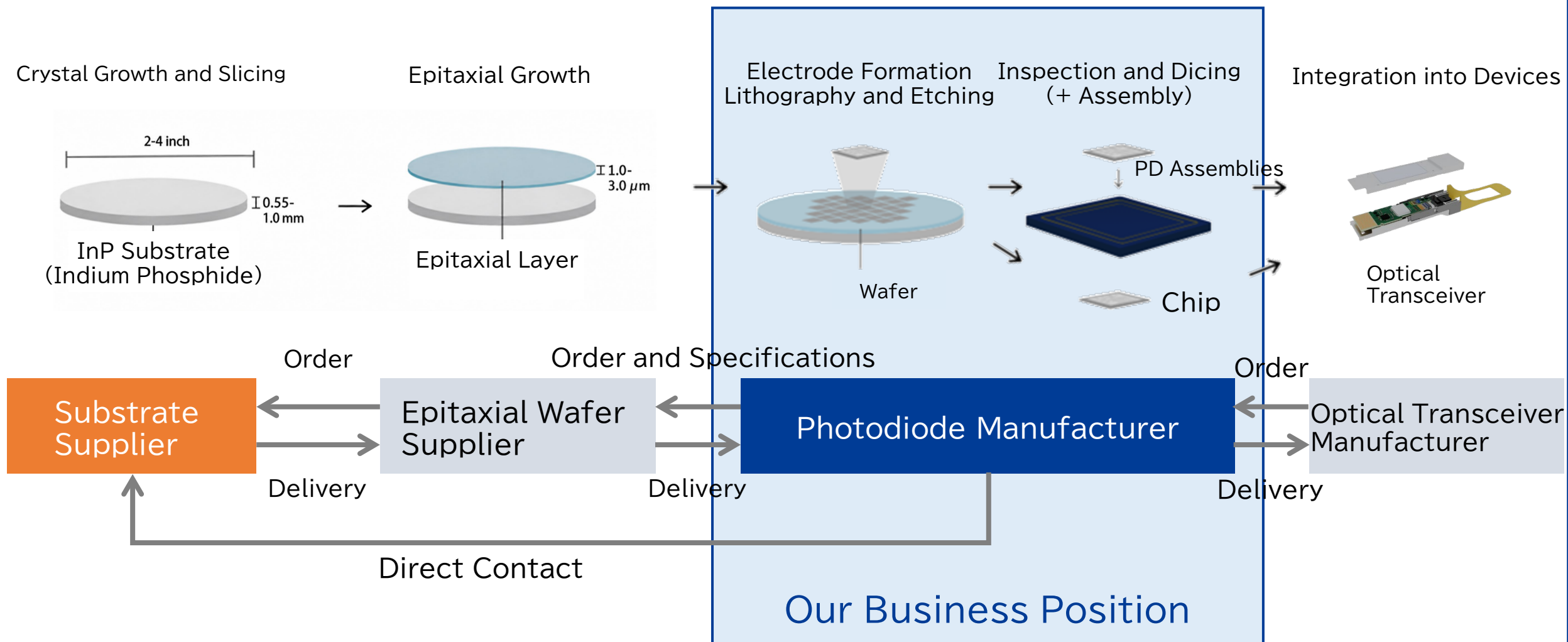


Kanuma Plant



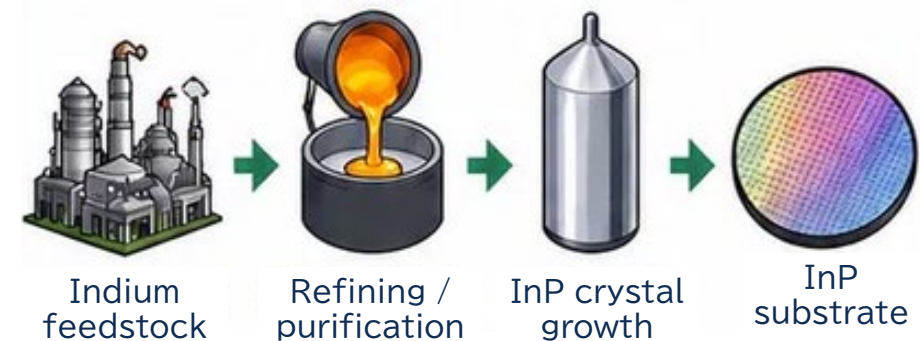
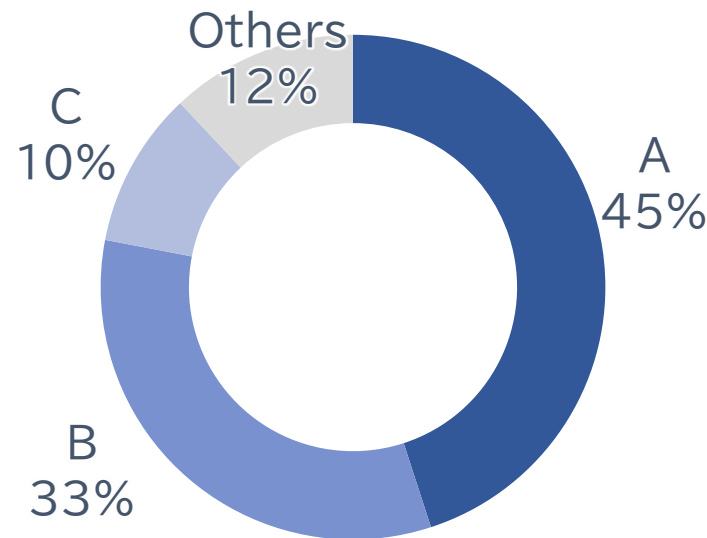
Headquarters
and Tochigi Technology Center

1. InP Substrate Procurement – Our Position in the Optical Semiconductor Business



1. InP Substrate Procurement – Our Assessment of Current Market Conditions

- **Supply shortage (supply-demand imbalance)**
 - The global InP substrate market is estimated at approximately USD 220 million in 2026.
*Only a few percent of the silicon substrate market, which exceeds USD 10 billion
 - The market is expected to grow at a CAGR of approximately 11–12% over the next 10 years.
The market size is projected to reach approximately USD 600–700 million in 2036.
- **The top three suppliers account for 70–80% of the market**
- **Technical complexity and high entry barriers limit rapid capacity expansion**



Hard, brittle InP requires specialized processing expertise and equipment.

1. InP Substrate Procurement – Our Medium- to Long-Term Procurement Strategy

Minimize near-term shortages, introduce an alternative source into mass production in FY27, and establish a robust multi-source supply base from FY28 onward

Major Suppliers

Near-term supply base

Key sources for FY26–FY27

- Stabilize procurement and supply terms
- Secure required volumes
- Manage dependence as multi-sourcing advances

Secure

Customer-referred Suppliers

Bridge to the medium- to long-term

Key candidates to reduce dependence on major suppliers

- Obtain samples and begin evaluation
- Aim to introduce substrates from these suppliers into mass production in FY27
- Manage the entire process from evaluation to mass production

Bridge

Japanese Suppliers

Long-term supply base

Secure future capacity in advance
(Reduce dependence on China)

- Track suppliers' expansion plans
- Build supplier relationships and negotiate supply allocations with a 2–3-year outlook

Prepare

European Suppliers

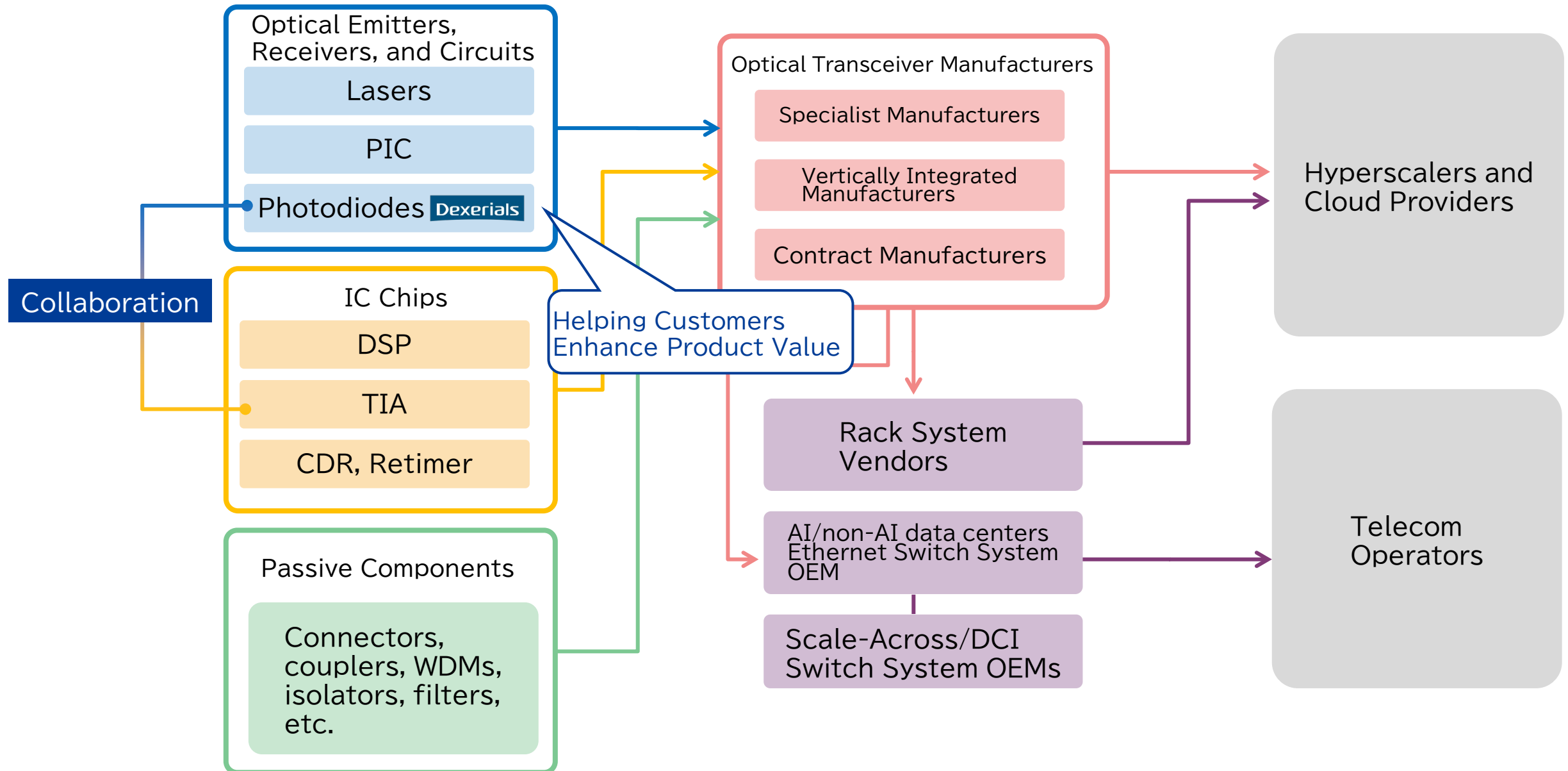
Supplement current supply and expand future supply

Increase supply volumes
(Reduce dependence on China)

- Secure small near-term volumes based on track record
- Assess early whether investment can secure priority supply

Expand

1. Business Expansion: Creating Value for Customers



1. Business Expansion: Creating Value for Customers

Our Competitive Advantages

- High-Sensitivity, Low-Noise Technology
- High reliability and a long track record
- Inorganic thin-film processes and optical design expertise
- Design-in
- One of a limited number of InP PD suppliers

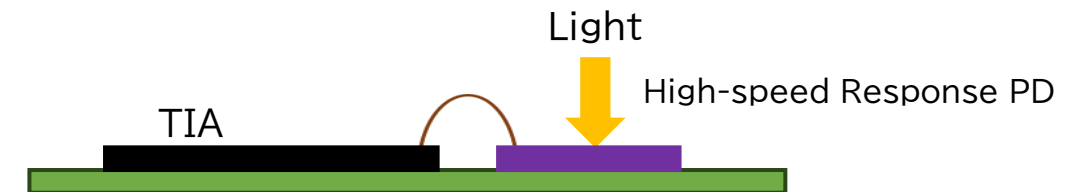
*Low BER (Bit Error Rate)

Example: Compare transmitted and received bit sequences

Tx bits	1	1	1	1	1	1	1	0	0	0	0	1	1	0	0	1	0	1	0	0
Rx bits	1	1	1	1	0	1	1	0	0	0	0	0	1	0	0	1	1	1	0	0

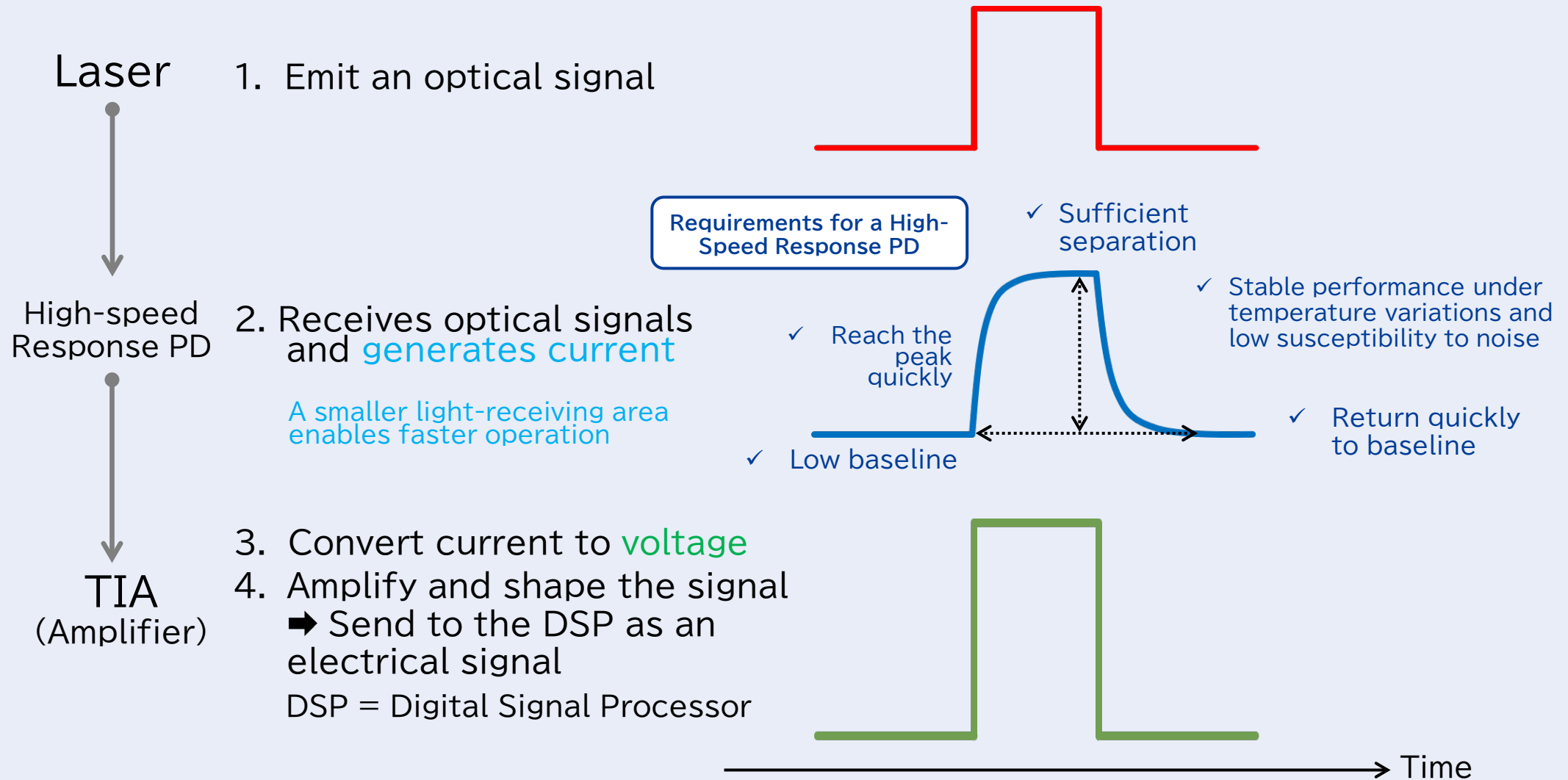
Errors $N_e = 3$, total bits $N_t = 20 \rightarrow \text{BER} = N_e/N_t = 0.15$

Electrical signals are generated through the following process:
Light $\rightarrow$ High-speed Response PD $\rightarrow$ TIA
Further improvements in BER require collaboration.



*BER (Bit Error Rate): The ratio of incorrectly received bits to all transmitted bits. Many optical systems require physical-layer BER 10^{-9} or lower (one error per billion bits), and ultra-high-speed systems 10^{-12} or lower.

1. Business Expansion: Optical-to-Electrical Signal Conversion



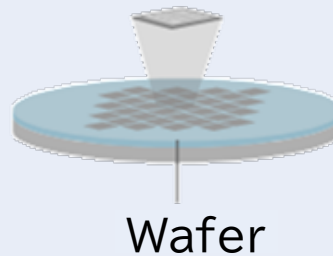
1. Business Expansion: 100G/lane vs. 200G/lane PDs

- 100G/lane
(4-channel array)



Only front-side processing is required, but all four channels must pass inspection.

Electrode formation
Lithography / etching



Inspection and
Dicing(+ assembly)



Chip

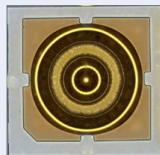


A smaller receiving area enables faster speeds

- 200G/lane
(single channel)



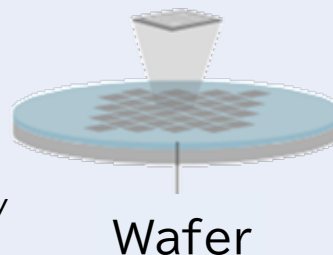
Front side



With backside lens

A lens is formed on the back surface to efficiently focus light onto the smaller light-receiving area.

Electrode formation
Lithography / etching



Flip over

Backside lens
processing



Inspection and dicing
(+ assembly)

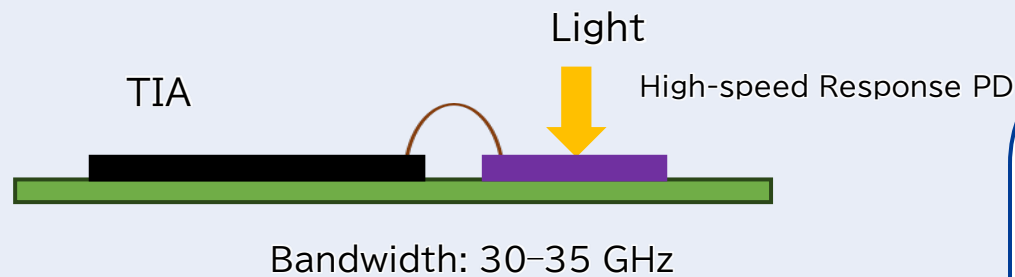


Chip

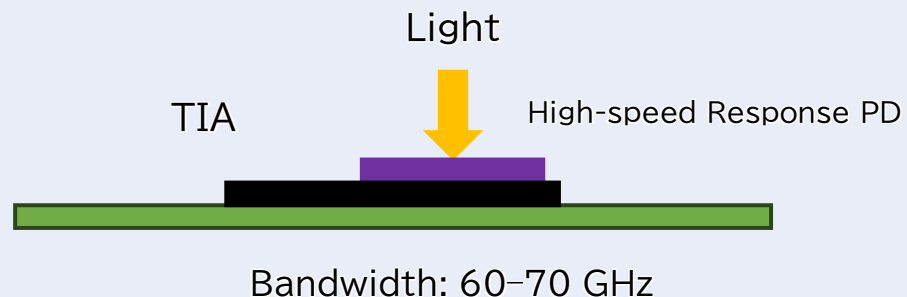
Applying production expertise from across the company

1. Business Expansion: Transition from 100G to 200G High-Speed Response PDs and Advances in Mounting Methods

- 100G/lane = Wire bonding (Copper wiring)



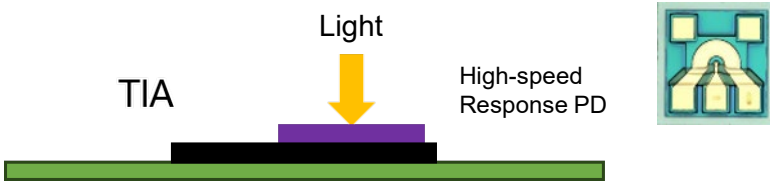
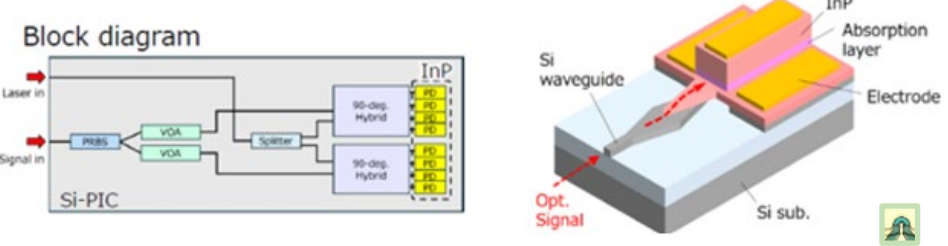
- 200G/lane = PD on TIA
Shorter interconnects support faster speeds



Benefits of Collaboration

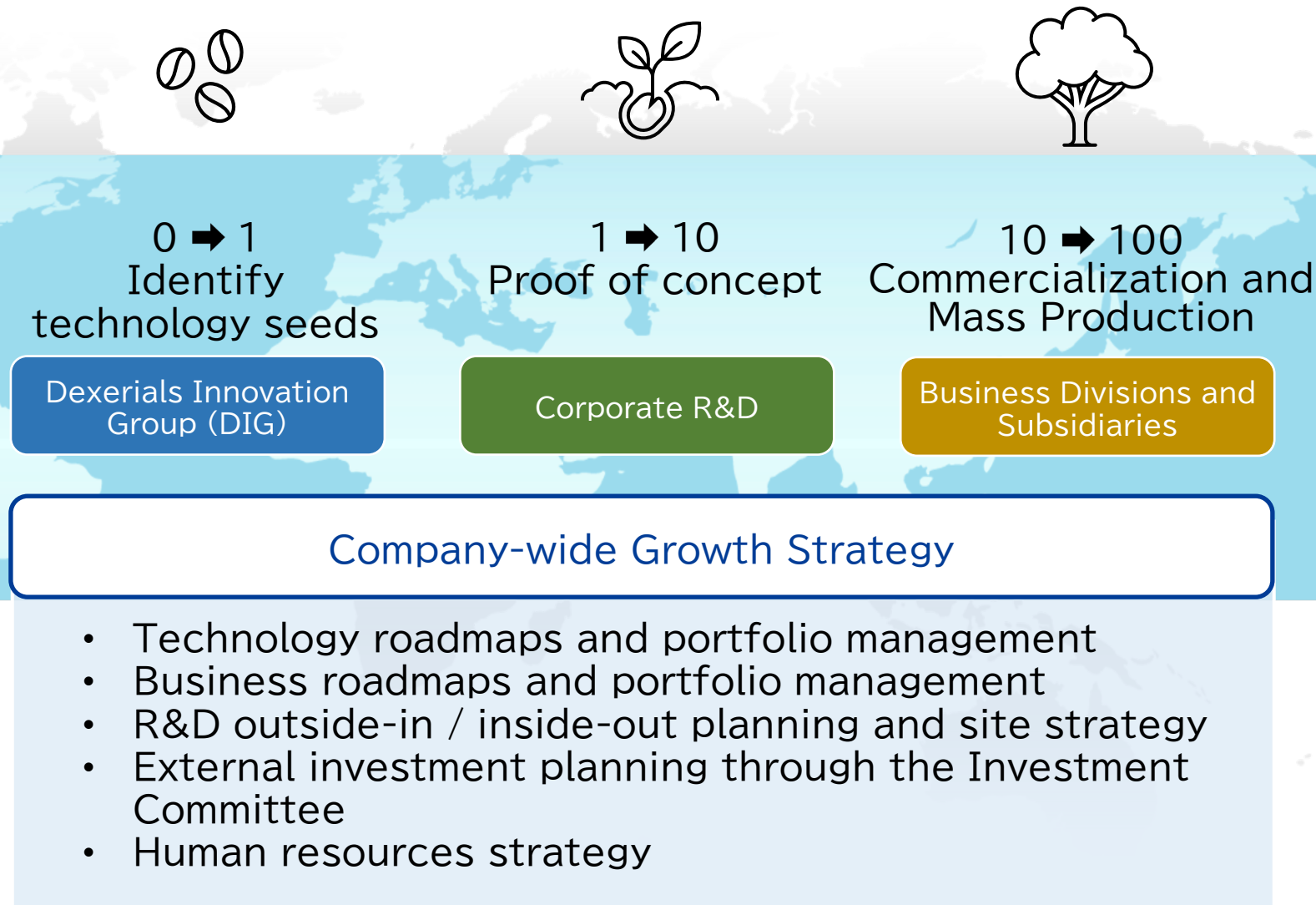
- ✓ Enables joint performance evaluation of next-generation products (An advantage in expanding our customer base)
- ✓ Particularly beneficial for differentiation in BER (bit error rate)
- ✓ Enables bonding interface information to be incorporated into our design specifications in advance
- ✓ Available only to collaboration partners (limits competitors' access)

1. Next-generation High-speed Response PDs: Higher Speeds for Existing PDs + Innovation through New-Generation Technologies

	Scale-Out	Scale-Across
Timing	Ramp-up: from 2028 Mass production: from 2029 Depends on progress in 400G/lane PD development (Also subject to market demand)	Ramp-up: from 2029 Mass production: from 2030 InP High-speed Response PDs will be essential (SiGe initially, then InP as speeds rise)
Application	3.2T optical transceivers	3.2T optical transceivers
Receiving Structure	InP backside lens	InP waveguide (silicon photonics + heterogeneous InP integration)
Assembly Method	 Active alignment PD on TIA, as with 200G	 Passive alignment Self-alignment using positioning structures
Bandwidth	80-95 GHz	90-110 GHz
Our Initiatives	Back-illuminated 400G/lane PDs: Prototype development under consideration	Waveguide 400G/lane PDs: Under development PICs for silicon photonics: Under development

1. From Next-Generation Standalone PDs to Solutions: Our Value Creation Framework

Photonics business growth is the top priority in our company-wide growth strategy, with activities underway globally.



1. High-speed Response PDs: Our Development Roadmap

Enhancing the Value of Customers' Products

100G/lane (4-channel array) 200G/lane (single channel)

In Production

Ramping Up



Surface-illuminated

Back-illuminated

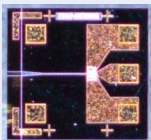
High-speed Response PDs: 100G–200G/lane

Following last year's 100G launch, we are steadily launching 200G and aim to lead the market with **superior BER** performance.

400G/lane (single channel)

In Development

Flexible support for customers' product designs



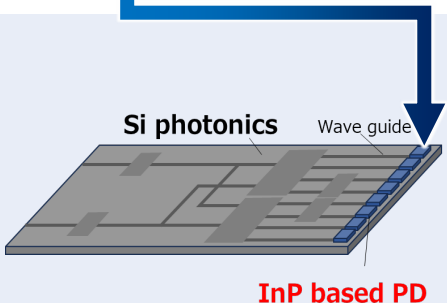
Waveguide

Back-illuminated

High-speed Response PDs: 400G/lane

We are **preparing** to launch back-illuminated and waveguide High-speed Response PDs to support higher speeds **in both** conventional and silicon photonics architectures.

(Launch of all-silicon PICs without InP waveguide PDs)



In Development

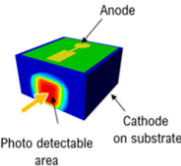
Comprehensive support for customers' product designs

PICs for Silicon Photonics

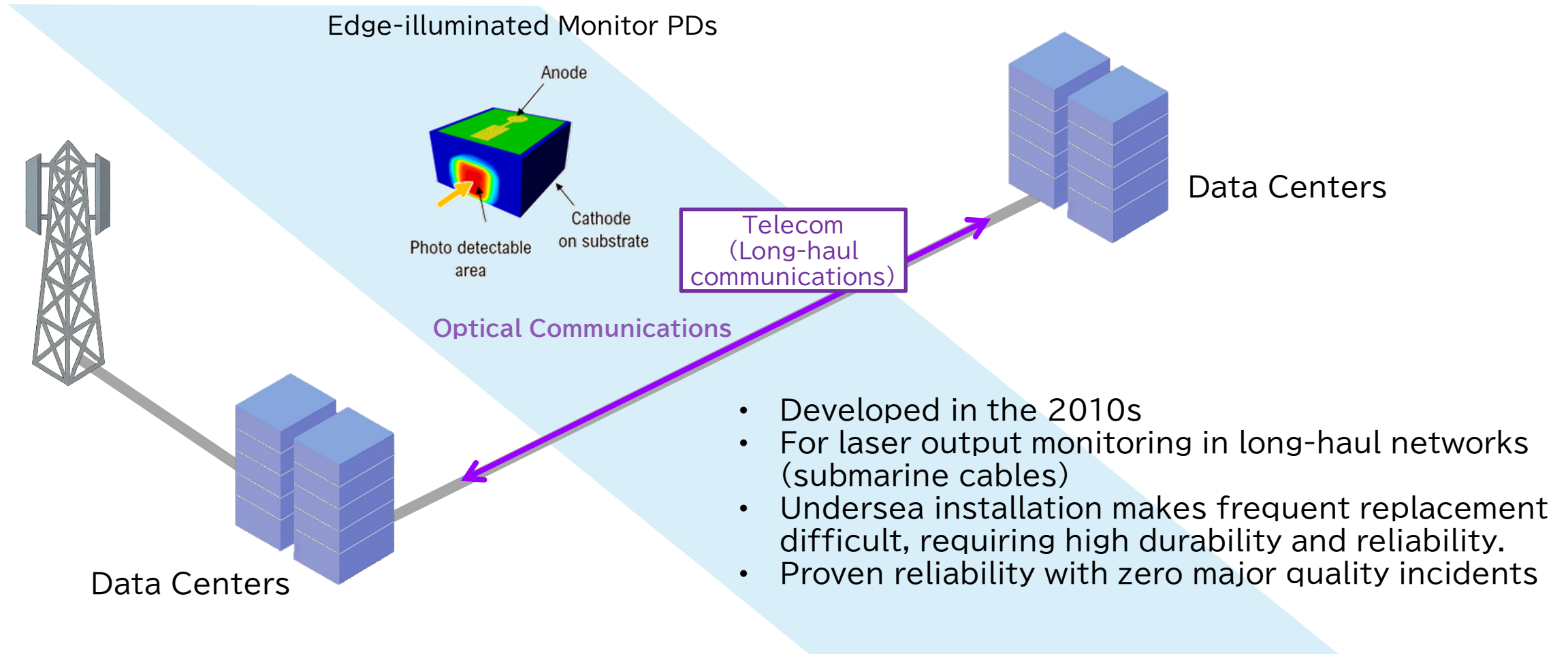
We are developing coherent **solutions** for silicon photonics that integrate InP waveguide PDs, heterogeneous integration, high-performance modulators, and hybrid filters.

2. Edge-illuminated Monitor PDs

- Business Expansion initiatives: Maximize sales opportunities with chip sizes tailored to laser light source use cases

Product Group	1. High-speed Response PDs		2. Edge-illuminated Monitor PDs	3. Monitor PDs and Assemblies	
Product	High-speed Response PD chips	High-speed Response PD assemblies	Edge-illuminated monitor PD chips	Surface-illuminated monitor PD chips	Mini-can packages and assemblies
Form	100G/lane (4-channel array)  200G/lane (single channel)  Front side  With backside lens	CoC (Chip on Carrier) 		Front side 	
Use Features	- Optical transceivers for high-speed communications within data centers - Optical signal reception with ultra-high-speed response - Designs tailored to customer needs		- Can be placed coaxially with the laser - Real-time optical power monitoring - Products tailored to customer needs	- Low dark current / low capacitance - Real-time optical power monitoring - Customization available	- Sealed packages for long-term reliability - Compatible with various standard connectors - Products tailored to customer needs
Use Cases	Scale-Out Scale-Across	Scale-Across	Scale-Out	Scale-Across	Scale-Across

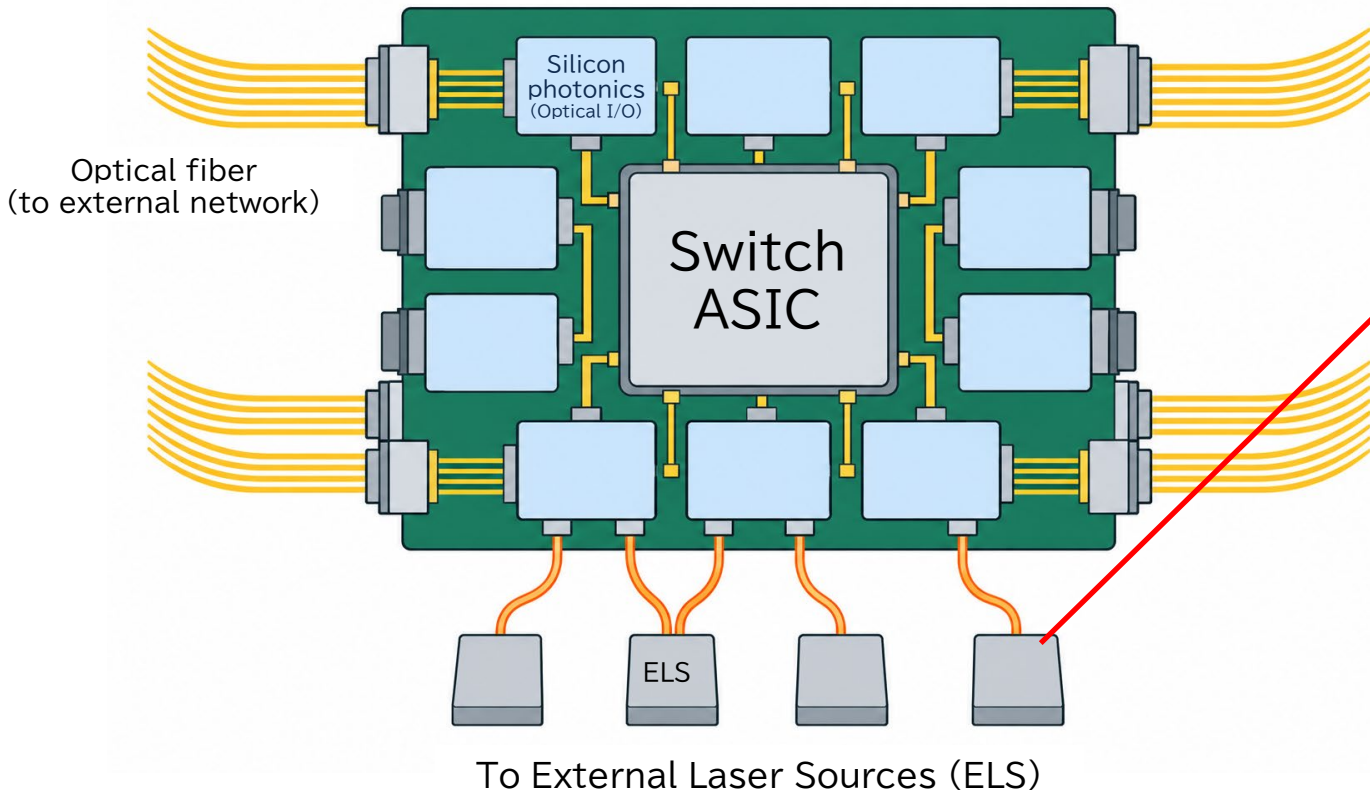
2. Edge-illuminated Monitor PDs: Product Origins



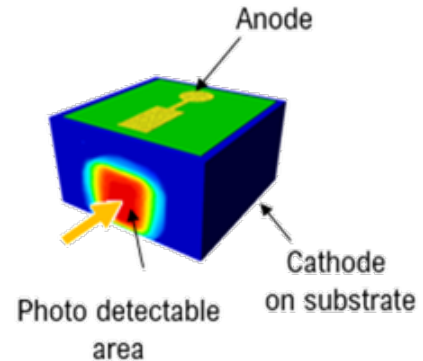
2. Edge-illuminated Monitor PDs: New Applications

Selected for use in next-generation optical network switches due to its high durability and reliability

CPO (Co-Packaged Optics): Simplified Architecture



Adopted as monitor PDs for ELS (External Laser Sources)



Current: $450 \times 450 \mu\text{m}$

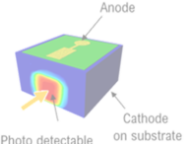
Smaller chip (medium)

Smaller chip (small)

Expanding the lineup to meet customer needs
Preparing to increase production to meet growing demand

3. Monitor PDs and Assemblies

- Profit growth initiatives: Cost reduction and productivity improvements to support sales growth in Scale-Across and Scale-Out

Product Group	1. High-speed Response PDs		2. Edge-illuminated Monitor PDs	3. Monitor PDs and Assemblies	
Product	High-speed Response PD chips	High-speed Response PD assemblies	Edge-illuminated monitor PD chips	Surface-illuminated monitor PD chips	Mini-can packages and assemblies
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Use Features	- Optical transceivers for high-speed communications within data centers - Optical signal reception with ultra-high-speed response - Designs tailored to customer needs		- Can be placed coaxially with the laser - Real-time optical power monitoring - Products tailored to customer needs	- Low dark current / low capacitance - Real-time optical power monitoring - Customization available	- Sealed packages for long-term reliability - Compatible with various standard connectors - Products tailored to customer needs
Use Cases	Scale-Out Scale-Across	Scale-Across	Scale-Out	Scale-Across	Scale-Across

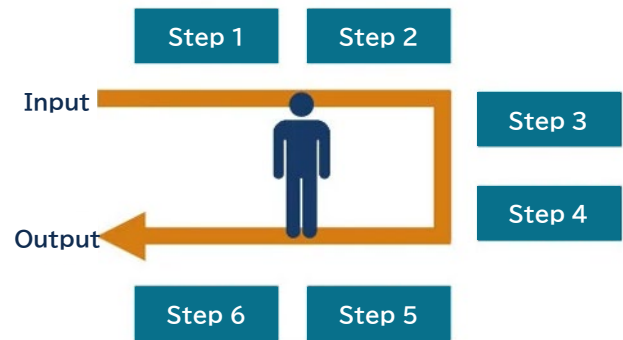
3. Monitor PDs and Assemblies: Production Innovation for Scale-Across Growth

Mainly telecom and factory automation equipment (stable long term, with limited growth)

High-mix, low-volume production, including semi-custom products



Cell Production



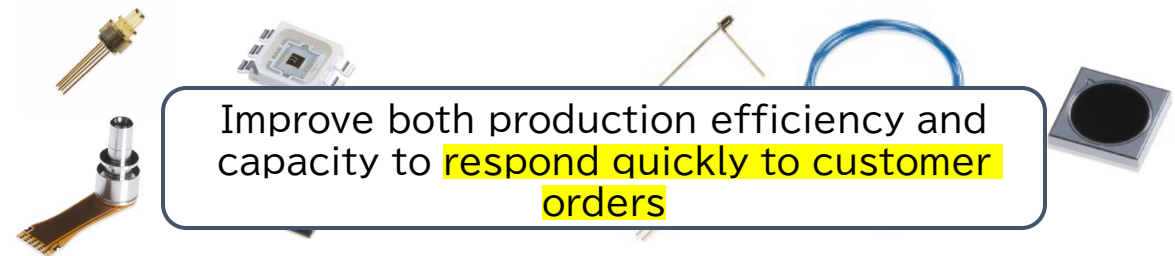
Expansion into major accounts and high-volume markets (Entering datacom to drive growth)

High-volume production for global customers

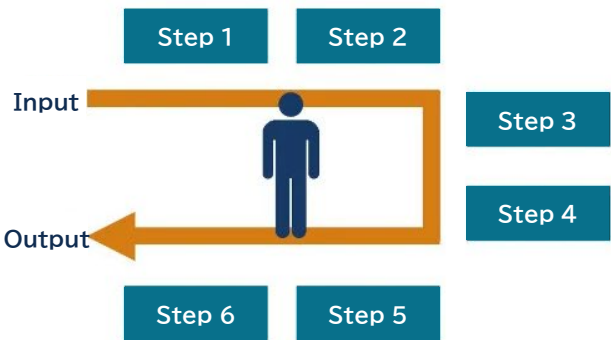
Higher production efficiency

Shift high-volume products to line production

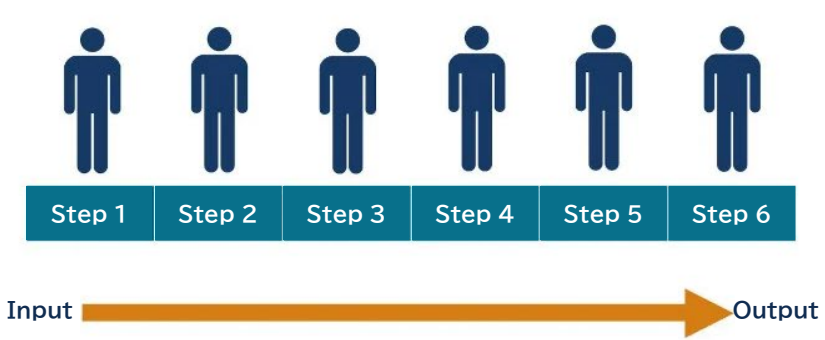
Improve both production efficiency and capacity to respond quickly to customer orders



Cell Production



Line Production



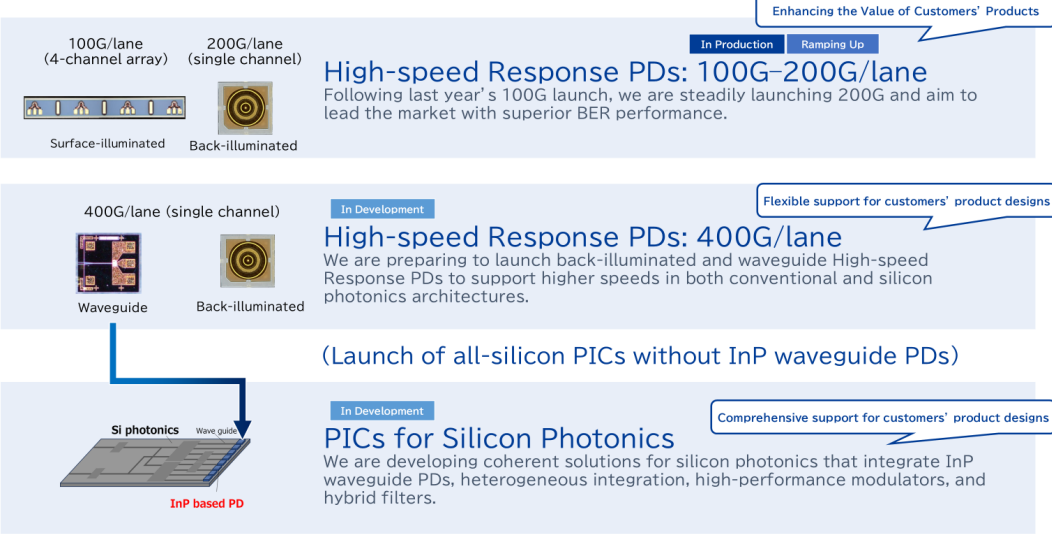
Photonics Business Briefing Summary – Value Creation and Business Expansion

Business Environment: Photoelectronic Fusion Creates New Opportunities

	Telecom		Datacom			
	Up to 600 km Between Data Centers	Up to 10 km Between Clusters	Up to 2 km Rack to Rack	Up to 100 m Board to Board	1 cm-10 m Chip to Chip	
1980s-2000s	Voice Communications ➔ Emergence of the Internet					
2000s-2020s	Music and Video Streaming ➔ Growth of Mobile Networks					
2023 onward	Cloud Adoption + Generative AI ➔ Next-generation AI		Progress in Photoelectric fusion Technology			
Network Evolution	1. A transformation once every 20 years		2. New Business Opportunities for us		3. Demand Expected to Increase by Tens of Times	
	Scale-Across Synchronized operation of multiple data centers: high speed and low latency More Optical Links		Scale-Out Higher speed, lower power, and low latency between clusters and racks Speeds Increasing Shift to Optical Communication/ More Optical Links		Scale-Up and Scale-In Higher speed, lower power, and low latency inside racks Shift to Optical Communication/ More Optical Links	
	Our Initiatives PICs for Silicon Photonics (Development on track)		High-speed Response PDs for Optical Transceivers (The current Core business domain)		Monitor PDs for CPO (Expected to grow from FY27)	
					Development of Photoelectric fusion Solutions (Bonding, adhesives, optical control, etc.)	

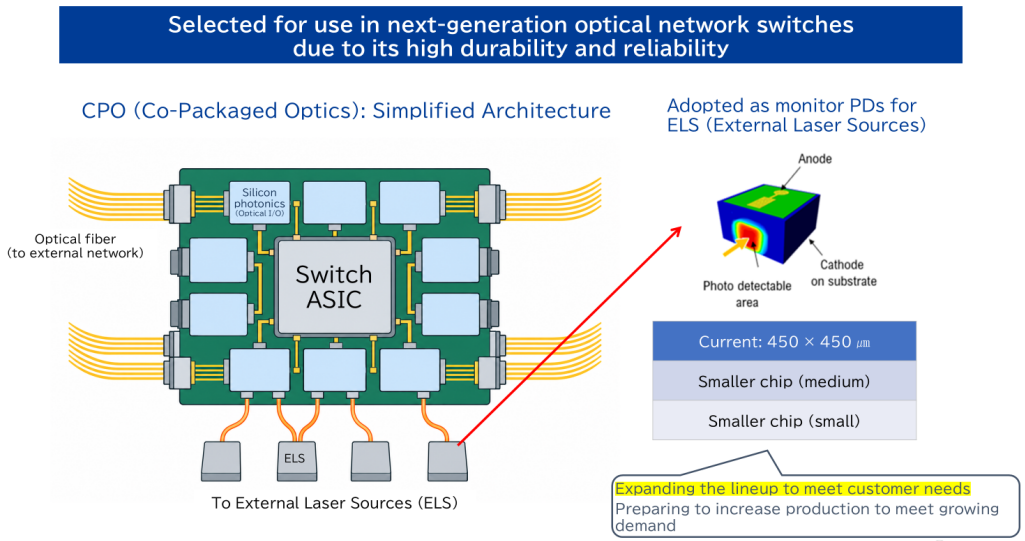
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1. High-speed Response PDs: Our Development Roadmap



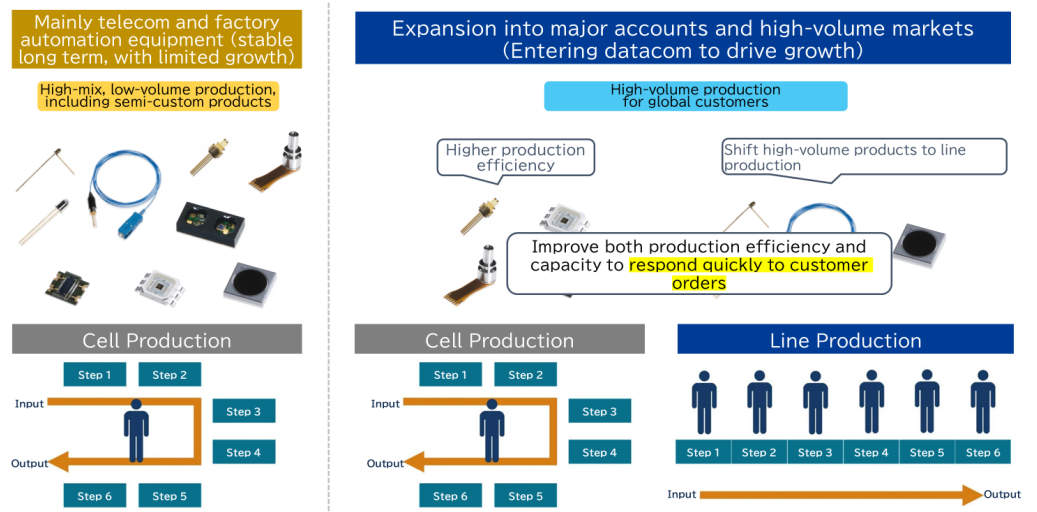
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2. Edge-illuminated Monitor PDs: New Applications



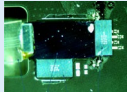
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3. Monitor PDs and Assemblies: Production Innovation for Scale-Across Growth



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Photonics Business Briefing Summary – Value Creation and Business Expansion

Our Products	Application	Representative Products and Products in Development	Laser Source	Scale-Up Up to 10 m	Scale-Out 10 m-10 km	Scale-Across 10 km-100 km	Long-Haul 600 km- 1,000 km
Development of Photoelectric Fusion Solutions (Bonding, Adhesives, Optical Control, etc.)				●	●	●	
2. Edge-illuminated Monitor PDs	Network Switch ELS(External Laser Sources)	Edge-illuminated Monitor PDs 	DFB		●		
1. High-speed Response PDs	800G Optical Transceiver	100G/lane PDs 	EML		●		
	1.6T / 800G Optical Transceiver	200G/lane PDs 			●	●	
	3.2T / 6.4T Optical Transceiver	400G/lane PDs Waveguide PD 			●	●	
	DCI Optical Transceiver	800G ZR PIC (All SiPh) 1.6T ZR PIC (H-PIC) 	ITLA			●	
3. Monitor PDs and Assemblies	Multi-Rail EDFA	Surface-illuminated Monitor PDs/Assemblies 	ITLA			●	
2. Edge-illuminated Monitor PDs	Cable Repeater	Edge-illuminated Monitor PDs 	Pump				●

Empower Evolution.

Connect People and Technology.

