Dexerials

Dexerials Investor Guide

Dexerials Corporation



Our history



Transistor radio

Formerly known as Sony Chemicals, the company has been providing new value to the world for over 60 years.

1962
Established as Sony Chemicals
Cu foil + Adhesive
Organic Materials

1977
Anisotropic Conductive Film (ACF)
第1位 異方性導電膜 (ACF)*1

2007
Optical elastic resin (SVR)
第1位 光学弾性樹脂 (SVR)*3



2012
Dexerials Corporation begins operations
Dexerials

2016
Full-scale entry into the automotive business

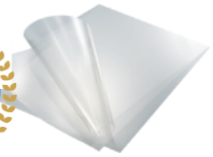
2022
Enters the photonics field with the acquisition of Kyoto Semiconductor
Optical Semiconductors



Global top share products

1972
Magnetic heads and ferrite cores for home tape recorders begins
Inorganic Materials

2002
Anti-reflection film (ARF)
第1位 スパッタリング技術で製造された反射防止フィルム (ARF) *2



2008
Inorganic polarizing plates for projectors
Inorganic Optical Components
Microfabrication

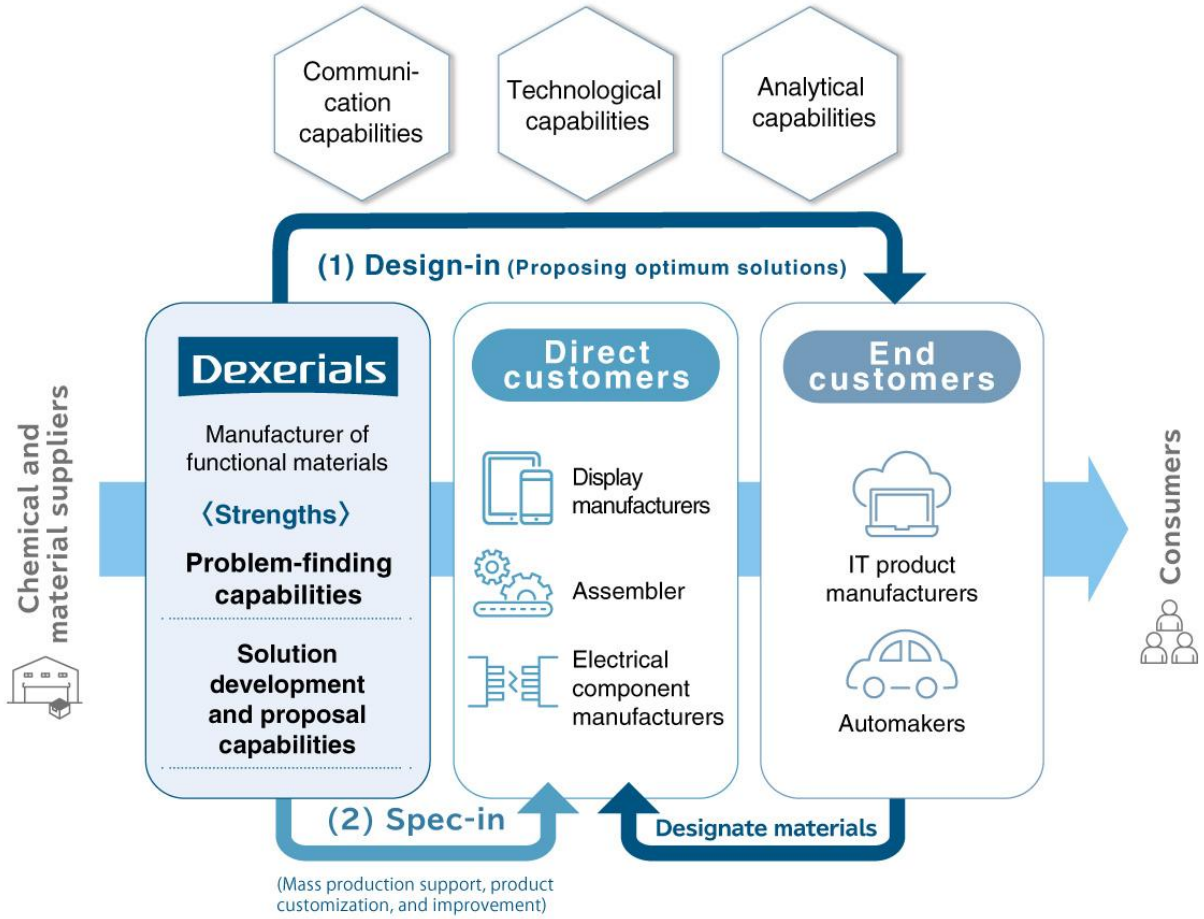


2024
Dexerials Photonics Solutions Co., Ltd., a wholly owned subsidiary leading the photonics field, is established
Optical Semiconductors

*1: The 2025 share for value amount of Anisotropic Conductive Film (ACF) for large-sized and small-to medium-sized displays according to the “Reality and Future Prospect of Display Related Market 2026” issued by Fuji Chimera Research Institute, inc.
*2: The 2025 share for value amount of surface treatment film(dry coating) according to the “Reality and Future Prospect of Display Related Market 2026” issued by Fuji Chimera Research Institute, inc.
*3: The 2025 share for value amount of optically clear adhesives (OCR/LOCA) according to the “Reality and Future Prospect of Display Related Market 2026” issued by Fuji Chimera Research Institute, inc. Optical elastic resin (SVR) is the product name for Dexerials’ optically clear adhesives

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Dexerials' Business Model – Creating Single-Sourced Products



Our Unique Approach: Design-In

Directly approaching the final customers close to the market, develop and propose optimal solutions based on customer insights into future technology trends

Designated as Single-Sourced Products

Expansion of Single-Sourced Products

Creating new markets, and maintaining strong pricing power by building high barriers to entry through technological capabilities and patent acquisitions

Maintain high market shares in the niche markets and high profitability

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Design-In Examples – ACF Driving Display Evolution –



Spread of mobile phones



Rise of the smartphones



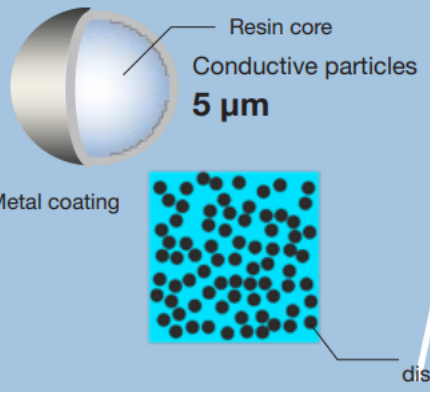
Smartphones mature

1990s | 2000s | 2010s

ACF Technological Innovations

Advent of particles for mobile phone wiring connections

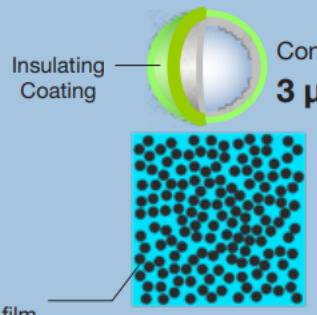
The development of conductive particles with metal coating on a resin core makes it possible to connect fine wiring



Innovation

Small particle size contributes to higher pixel density

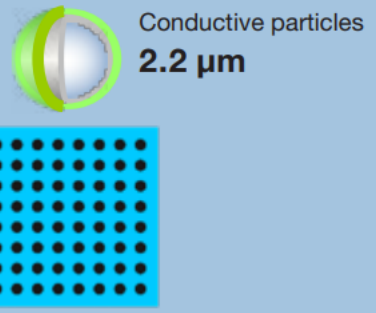
Diameter of conductive particles has been reduced by approximately 40%. Further, the application of an insulation coating on the surface makes it possible to prevent short circuits between wiring even when the number of particles increases, which contributes to higher pixel counts.



Innovation

Advent of Particle-arrayed ACF

This revolutionary technology was developed to uniformly arrange and fix conductive particles, solving the problem of short circuits and facilitating ultra-fine wiring connections, contributing to the development of ultra-high pixel density smartphones.



Further reduced in size and arrayed uniformly

© Dexerials Corporation

High Market Share in the Niche Markets

Mainstay products with Global No.1 share in the niche markets.

Functional materials with top global market share are the source of stable growth.

79.4%
Anisotropic Conductive Film (ACF)*1



Anisotropic Conductive Film (ACF)

95.4%
Anti-reflection Film (ARF) produced utilizing sputtering technology*2



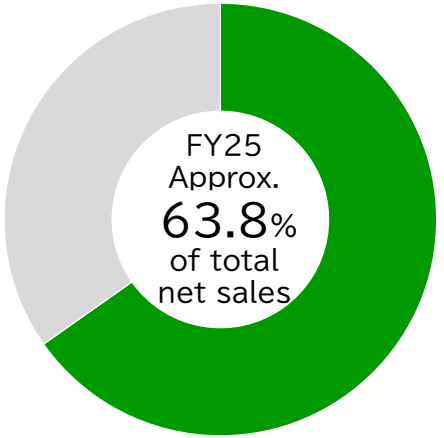
Anti-reflection film (ARF)

54.3%
Optical elastic resin (SVR)*3



Optical elastic resin (SVR)

Sales of 3 mainstay products



*1: The 2025 value share of Anisotropic Conductive Film (ACF) for large-sized and small-to-medium-sized displays, according to "Reality and Future Prospects of the Display-Related Market 2026" issued by Fuji Chimera Research Institute, Inc.
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*3: The 2025 value share of optically clear adhesives (OCR/LOCA) used in display lamination, according to "Reality and Future Prospects of the Display-Related Market 2026" issued by Fuji Chimera Research Institute, Inc. Optical elastic resin (SVR) is Dexerials' product name for optically clear adhesives.

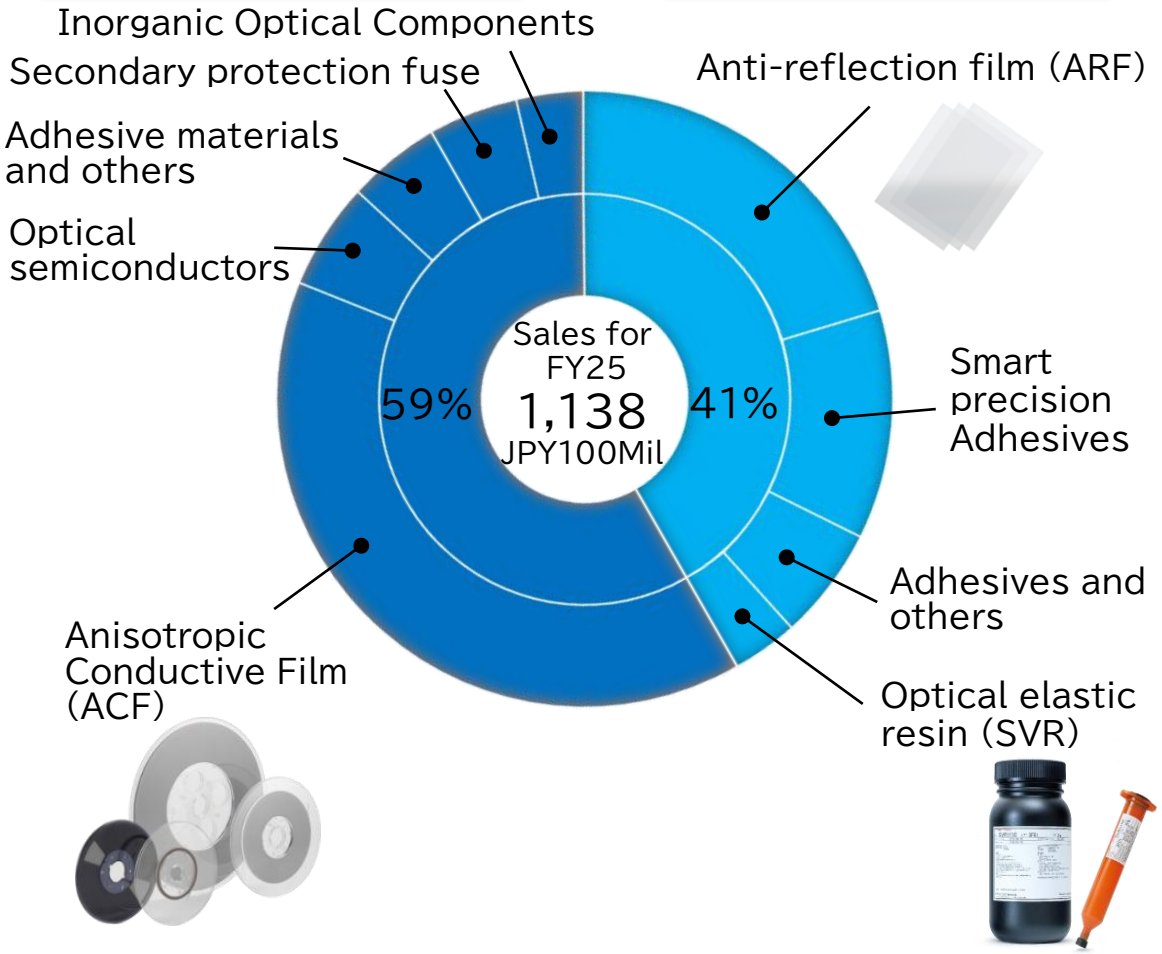
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Sales Composition

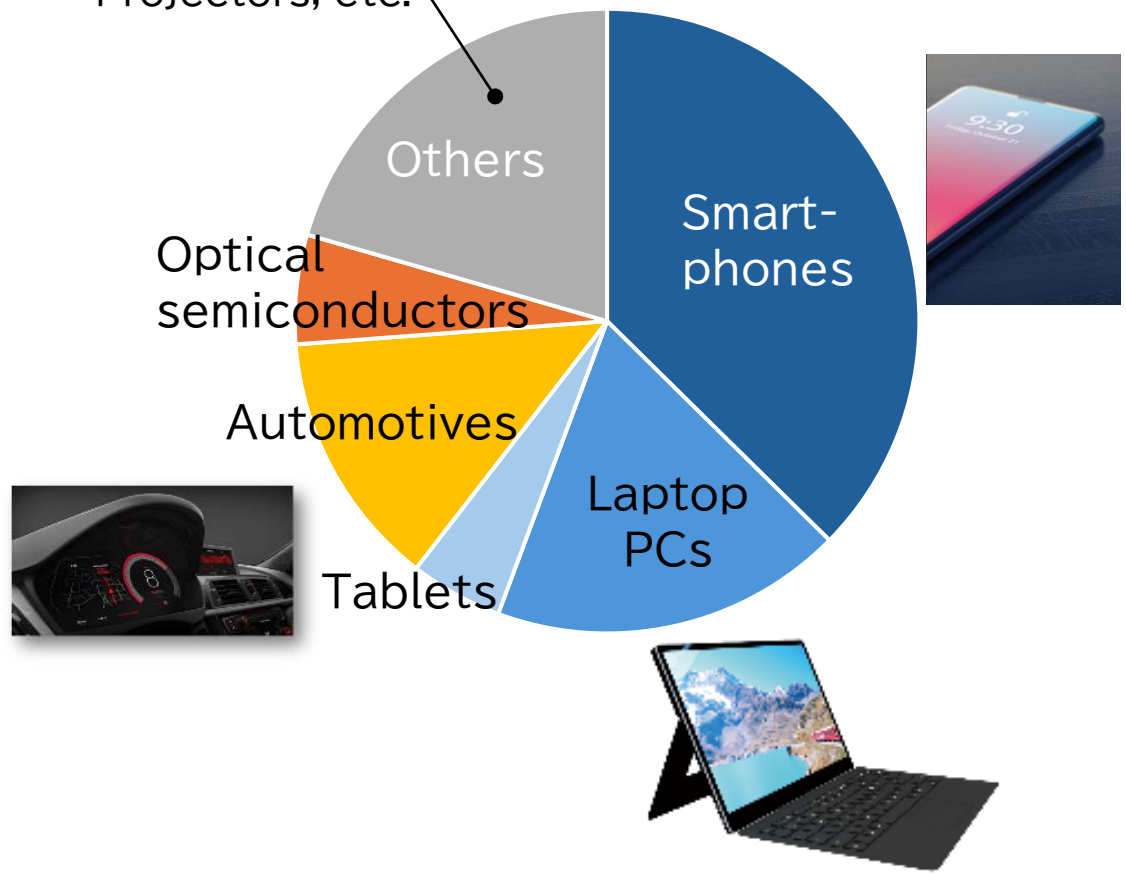
■Sales by Category(FY25)

Electronic Materials and Components Segment

Optical Materials and Components Segment



■ Sales by Application(FY25)



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Photonics Business:
Background of Entry and Business Overview

Presentation Materials: Photonics Business Briefing Session(Slide Presentation)

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Acceleration of Portfolio Transformation through Growth of the Photonics Business into a Third Pillar

Qualitatively change businesses in the existing domains

Pre-cut and particle-arrayed ACF
ARF for foldable displays

New Technologies

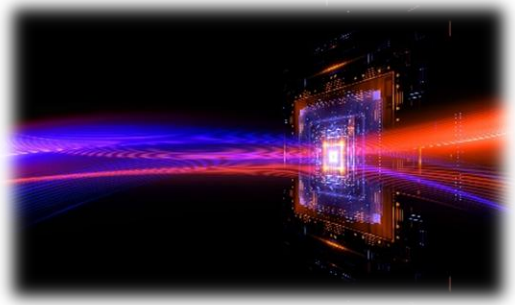
Acquire New Technologies

Enter New Domains



Third Pillar

Photonics





First Pillar

Mobile IT



Existing Technologies

Enter New Markets with Existing Technologies



Second Pillar

Automotive



Existing Markets

New Markets

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Identifying Growth Domains: Establishing a Mission Specialist Group

New business exploration by the Dexerials Innovation Group, bringing together internal and external experts

Inside-Out: What can we achieve with our technologies and resources?
Outside-In: How can we help solve social challenges?

Dexerials Technologies

- Optical design technology
- Materials technology
- Wafer process technology

Social Challenges

- Growth in communications and data volume
- Increasing power consumption
- Physical limits of electrical communications

Photonics selected as the next growth domain

Combining Inside-Out and Outside-In perspectives to solve social challenges

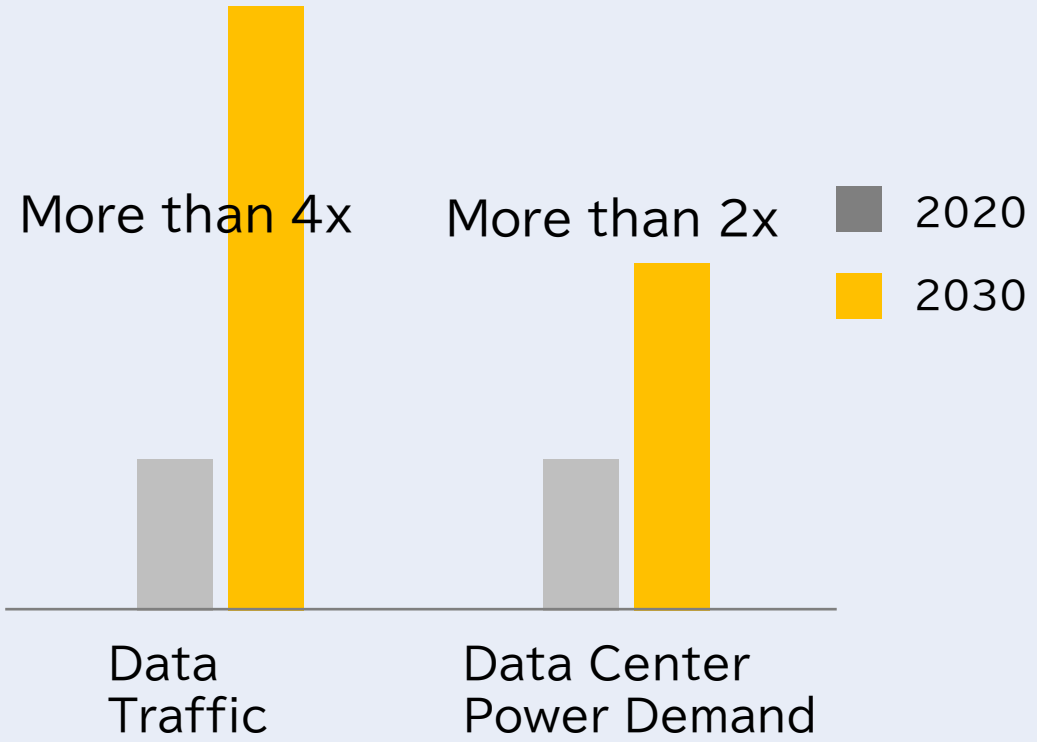
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Why Is Optical Communication Replacing Electrical Communication?
Sustainability of Growth and Physical Limits

Reason 1:
Technology Progress Is Not Sustainable

Global Forecast

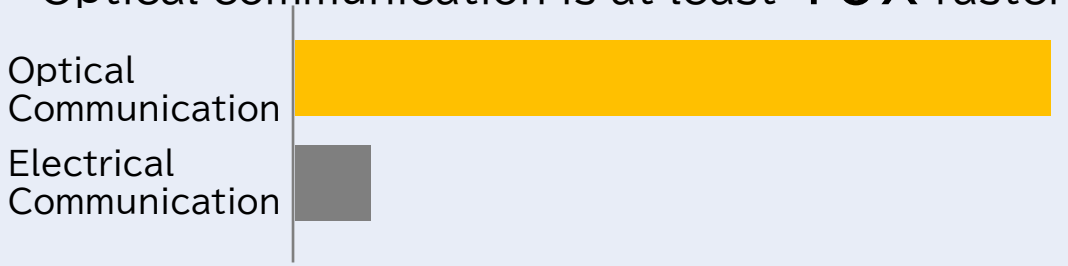
High Potential to Become
a Major Social Challenge



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



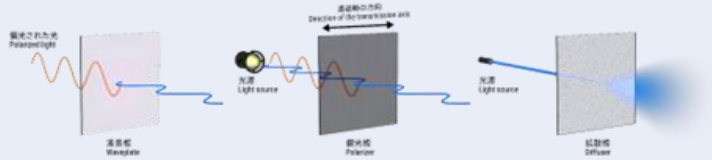
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Dexerials Photonics Solutions Corporation (Operations began in April 2024)

Dexerials

Technology to Control Light





Phase Conversion　Polarization　Diffusion

Inorganic optical components　Quartz Wafer

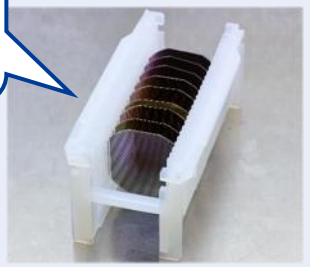
Kyoto Semiconductor Co., Ltd.

Optical Semiconductor Technology

One of a limited number of InP photodiode manufacturers



Photodiodes (Receiving Devices)



InP Wafer (Compound Semiconductor)

Optical Design

Microfabrication

Wafer Process

Strong Manufacturing Technology Synergies

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(PDs)
(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





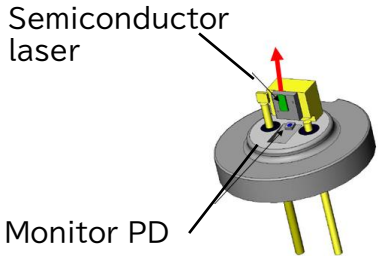


Photodiodes (PDs)



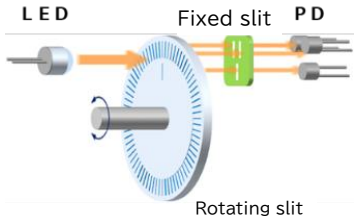
Inorganic optical components

Monitor PDs for telecom (long-distance communications)



Laser output monitoring

For factory automation equipment



Optical encoders

High-speed Response PDs for datacom



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

Optical transceivers

Monitor PDs for datacom



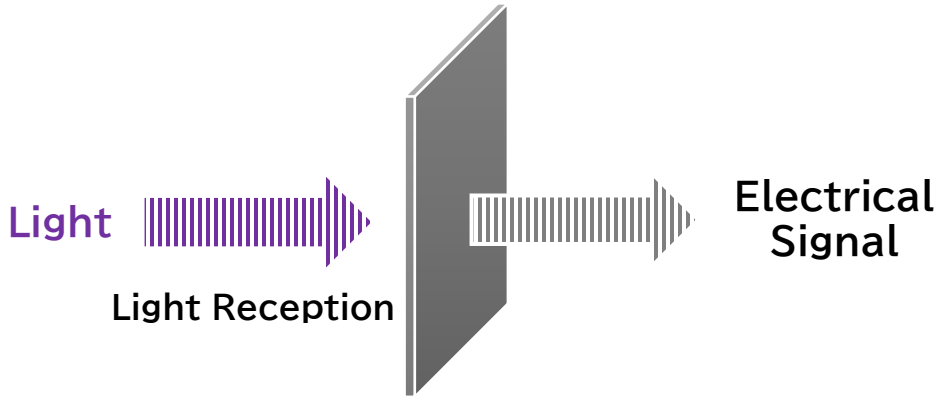
Devices that use lasers and photodiodes to amplify and relay optical signals

Key Features of Our Photodiodes

Our photodiodes use InP-based compound semiconductors to deliver high-speed response and support wavelengths suitable for long-distance optical communication.

What Is Photodiodes?

Converts light into an electrical signal



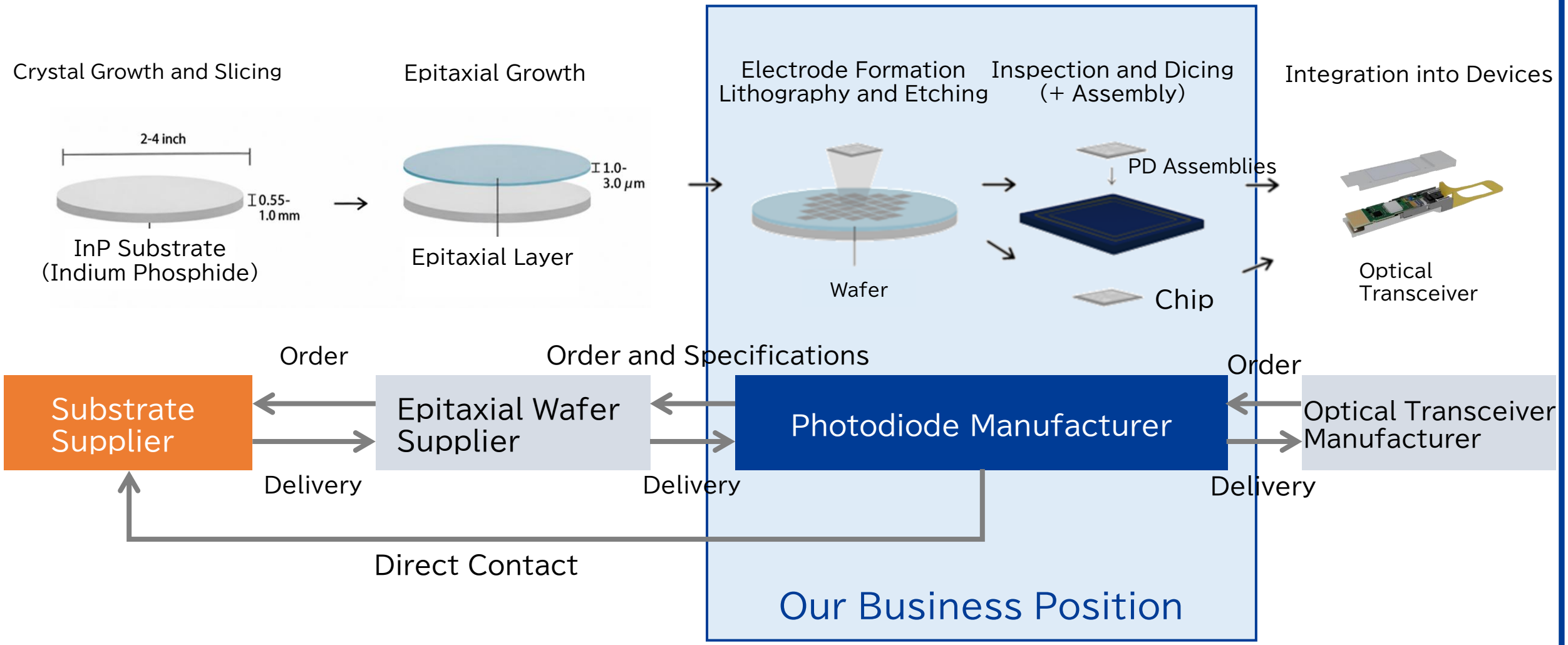
Photodiodes

InP Advantages

Material	Detection wavelength	Features and strengths
GaAs	Short wavelengths (850nm band)	• 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
SiGe	Near-infrared to long wavelengths (850nm–1550nm bands)	• Can be integrated directly on silicon • Low-cost fabrication on the same chip as IC circuits
InP	Long wavelengths (1310nm / 1550nm bands)	• Developed as an emitter/receiver material for optical communications • The material's high carrier mobility enables high-speed operation

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Our Position in the Optical Semiconductor Business



AI Evolution Is Reshaping Data Center Networks

Generative AI
From training to inference
Larger AI models

Agentic AI

Physical AI

FLOPS / Unit Cost
→ Cost / Token

More Computing Power

AI will require more computing power, while cost per token becomes increasingly important for return on investment

Emergence of Scale-Across
Synchronized Operation of Multiple Data Centers

Low Latency

Optical Communications

Data Center

Telecom
(Long Distance)

4G/5G

Edge AI

Data Center

Datacom
(Short Distance)

Cloud AI

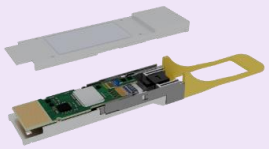
Datacom



Inside the Data Center



Inside the Server Rack



Optical Transceiver

Scale-Up and Scale-Out Progress
More Computing Capacity Inside and Outside Servers

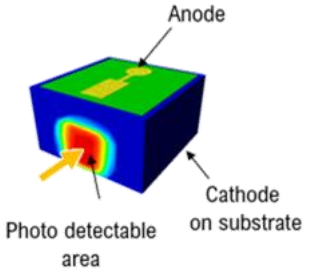
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Business Environment: Photoelectronic Fusion Creates New Opportunities

Optical Communications
Electrical Communications

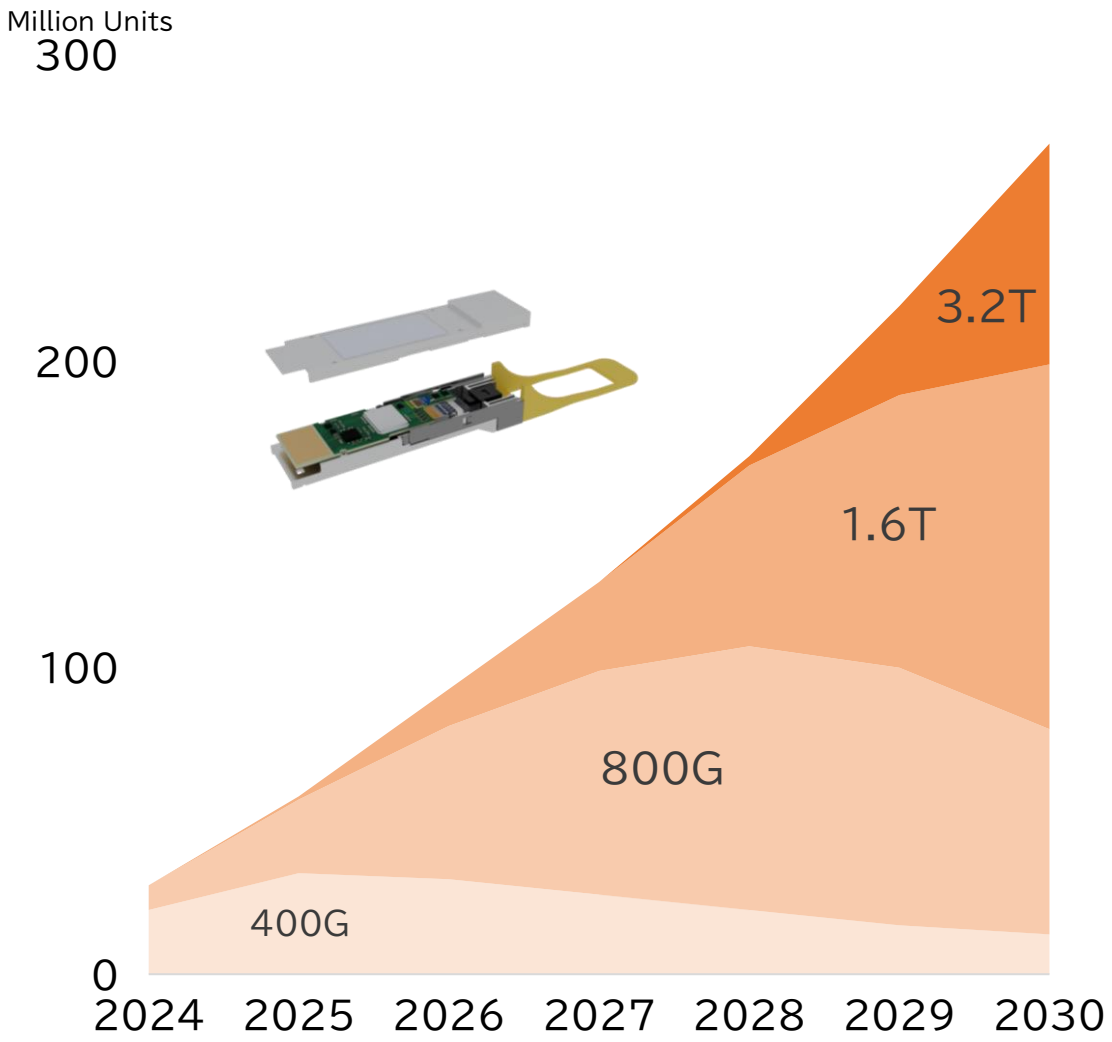
	Telecom	Datacom			
	Up to 600 km Between Data Centers	Up to 10 km Between Clusters	Up to 2 km Rack to Rack	Up to 100 m Board to Board	1 cm-10 m Chip to Chip
1980s-2000s	Voice Communications ➡ Emergence of the Internet				
2000s-2020s	Music and Video Streaming ➡Growth of Mobile Networks				
2023 onward	**Cloud Adoption + Generative AI ➡ Next-generation AI**		Progress in Photoelectric fusion Technology		
	1. A transformation once every 20 years	2. New Business Opportunities for us		3. Demand Expected to Increase by Tens of Times	
Network Evolution	**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

Optical Transceiver Market and Types – Our Products and Development Pipeline

Optical Transceiver Market Forecast



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 Photodiodes(PDs) per transceiver)
  - Example: 100G/lane PD × 4 channels = 400G
  - Example: 400G/lane PD × 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

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Our Products



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Final Products Incorporating Dexerials' Products

Anti-reflection film (ARF)

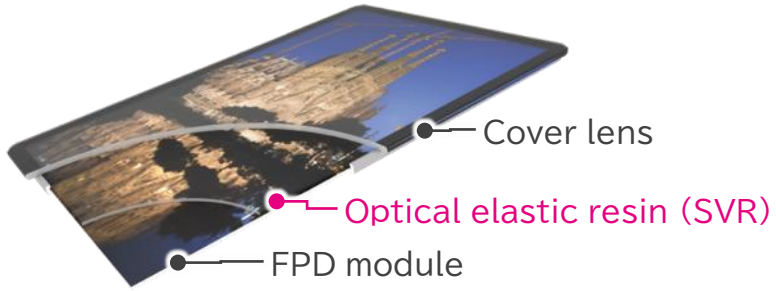




These are optical films designed to prevent the deterioration of visibility by suppressing the reflection of light on the surfaces of optical devices such as laptop PC displays.

Optical elastic resin (SVR)





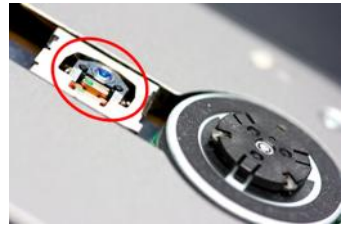
This is a UV-curable elastic resin that fills the air gap inside the displays of smartphones, tablets, and laptop PCs, suppressing light refraction and reflection.

Smart precision Adhesives





Camera module



Optical pickup

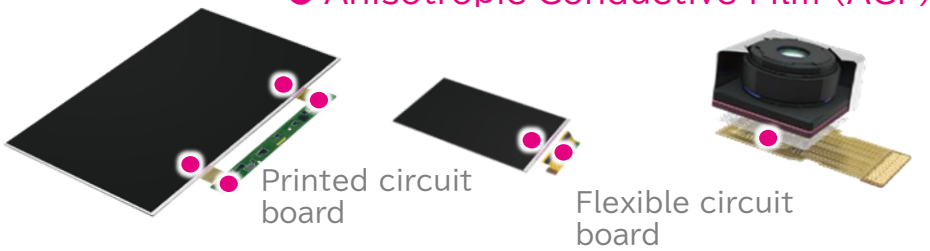
Adhesives cured with UV, heat, and UV heat accomplish low-temperature fast curing and low shrinkage and are ideal for precision affixing during assembly.

Final Products Incorporating Dexerials' Products

Anisotropic Conductive Film (ACF)



● Anisotropic Conductive Film (ACF)



This is a de facto standard adhesive material used for almost all the flat panel displays. This is a conductive adhesive film with conductive particles dispersed in thermo-curable resin. It conductively connects driver ICs or sensor modules to circuit boards.

Secondary protection fuse





These are secondary protection fuses for the safe operation of electronic devices equipped with lithium-ion batteries. In the event of overcurrent, overcharging of lithium-ion batteries, the fuse element melts. This improves the safety of the batteries.

Final Products Incorporating Dexerials' Products

Anisotropic Conductive Film (ACF)



Optical elastic resin (SVR)



Anti-reflection film (ARF)



Smart precision Adhesives



Automotive displays



Boasting high anti-reflection and stain-resistant performance, Dexerials' Anti-reflection film (ARF) is increasingly being adopted amid the trend towards electronic displays and larger, higher-resolution screens. In addition, sales of Optical elastic resin (SVR), Anisotropic Conductive Film (ACF) and others increased for automotive display applications.

Sensors for Automotives

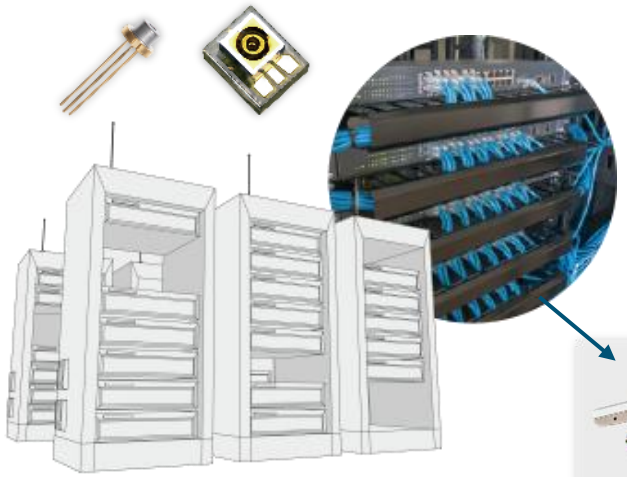


With the sophistication of advanced driver-assistance systems (ADAS), more and more automotive sensors are being mounted on vehicles. Dexerials' Smart precision Adhesives are finding increasing application for sensor modules.

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Final Products Incorporating Dexerials' Products

Optical semiconductor elements and modules



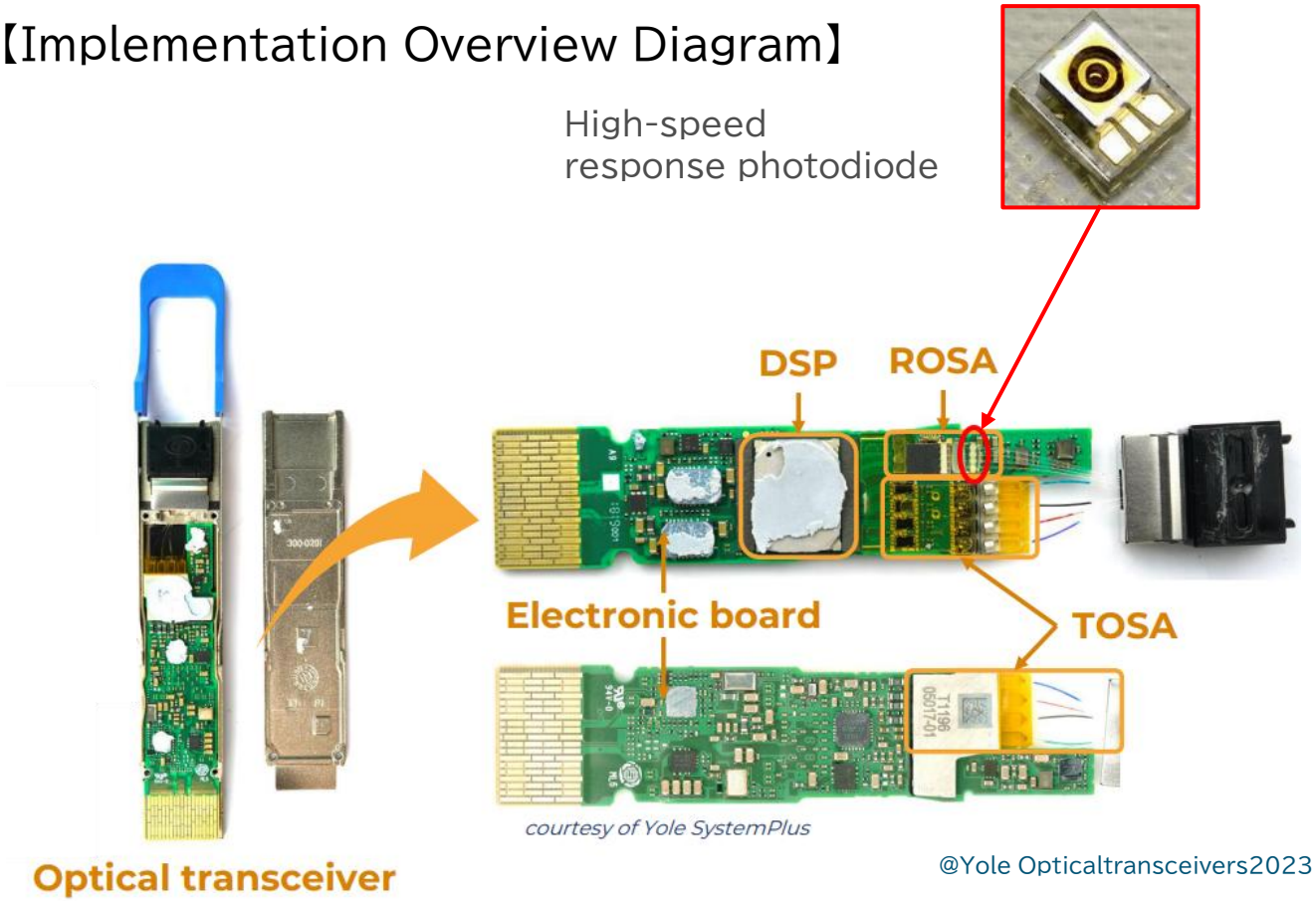
Data centers



Optical transceivers

Semiconductor elements that convert electricity into light and vice versa are generically referred to as optical semiconductors. Electronic parts incorporating these elements are optical semiconductor devices. Dexerials' products are adopted in optical transceivers for data centers.

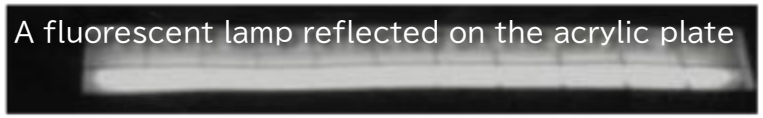
【Implementation Overview Diagram】



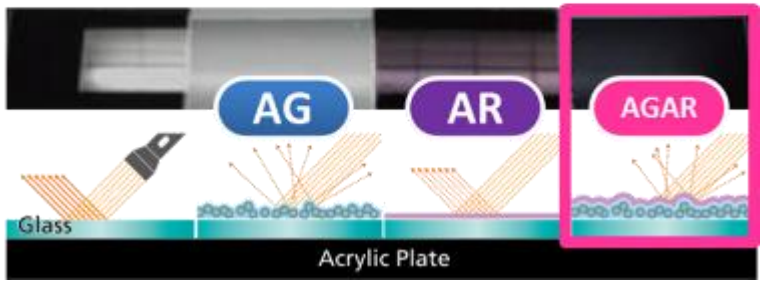
Anti-reflection film (ARF)

Feature 1: AGAR

- Reflection of external light is suppressed by combining diffused reflection and low reflection functions.
- Comparison of reflection



A fluorescent lamp reflected on glass, AG, AR and AG-AR

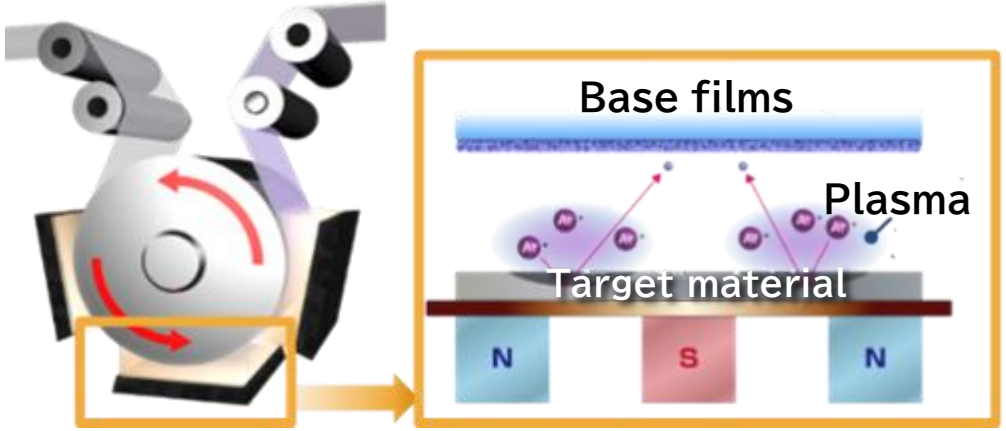


Feature 2: Dry method*

- Superior low reflectivity and scratch resistance is achieved using the dry method using sputtering technology.
- It produces anti-reflection performance that is about five times as high as the wet method.
- High productivity and high quality achieved with the roll-to-roll method.

* The technology is called the dry method because it uses no liquid.

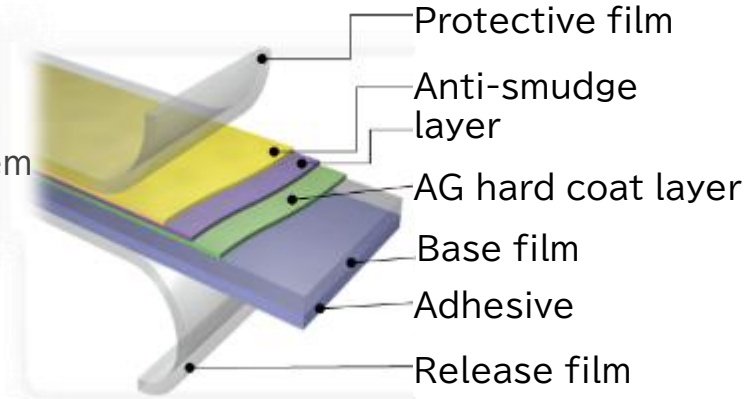
Conceptual diagram of the sputtering equipment used in the dry method



Dexerials owns equipment that provides multiple anti-reflective layers in a single process and that performs continuous production.

Product structure

- An anti-smudge coating rejects fingerprints and makes it easy to wipe them off.
- Excellent scratch resistance with an anti-shattering function



Optical elastic resin(SVR)

UV-curable optically clear elastic resin that fills air gaps in displays of smartphones, tablet PCs and laptop PCs



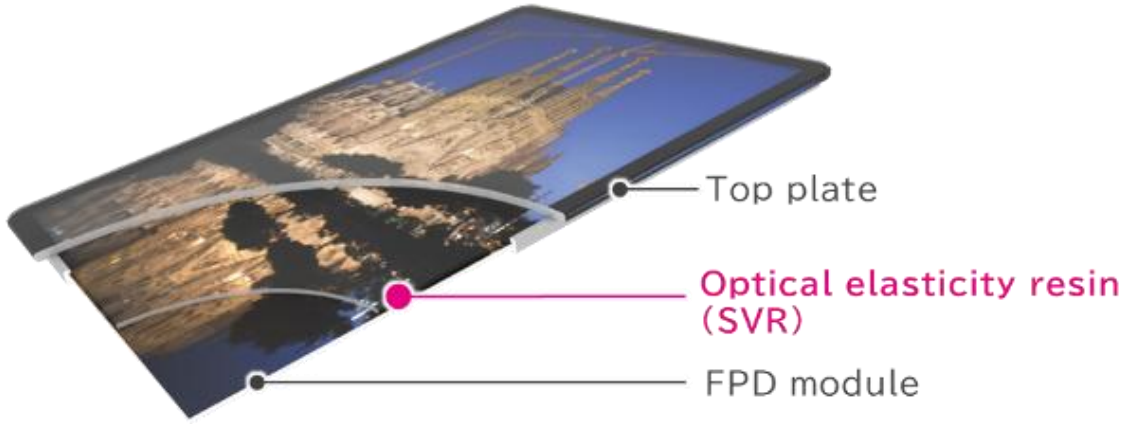
Applications

Bonding the FPD module and the top plate of a smartphone, a tablet PC and an automotive display



Point

We provide optimal products by customizing resin characteristics according to various needs such as top-plate materials (glass or plastic) and shapes.



*Photos and images are for illustrative purposes only.

Smart precision Adhesive

With fast curing at low temperatures and little shrinkage, this adhesive is ideal for precise fixing and bonding of components.



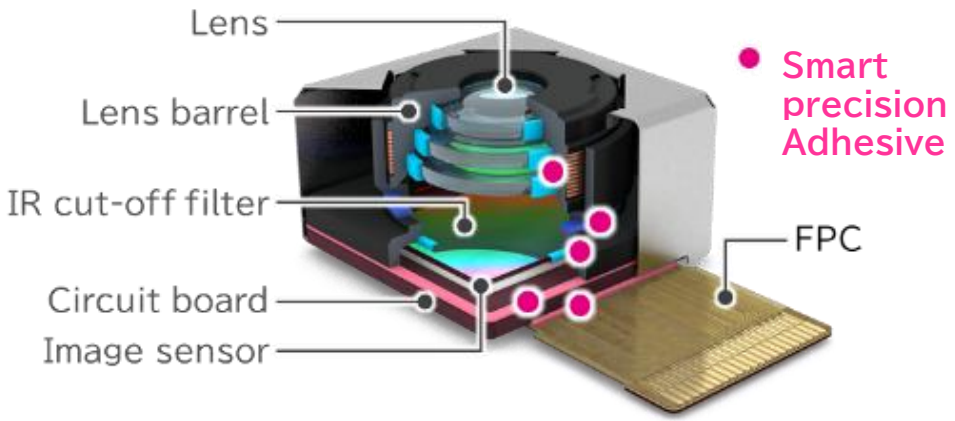
Applications

Fixing optical pickups and camera module components



Point

Curable resin series are available to suit the application, such as UV-curable, thermosetting and UV-and thermo-curable resin.



Camera module
(cross-sectional illustration)

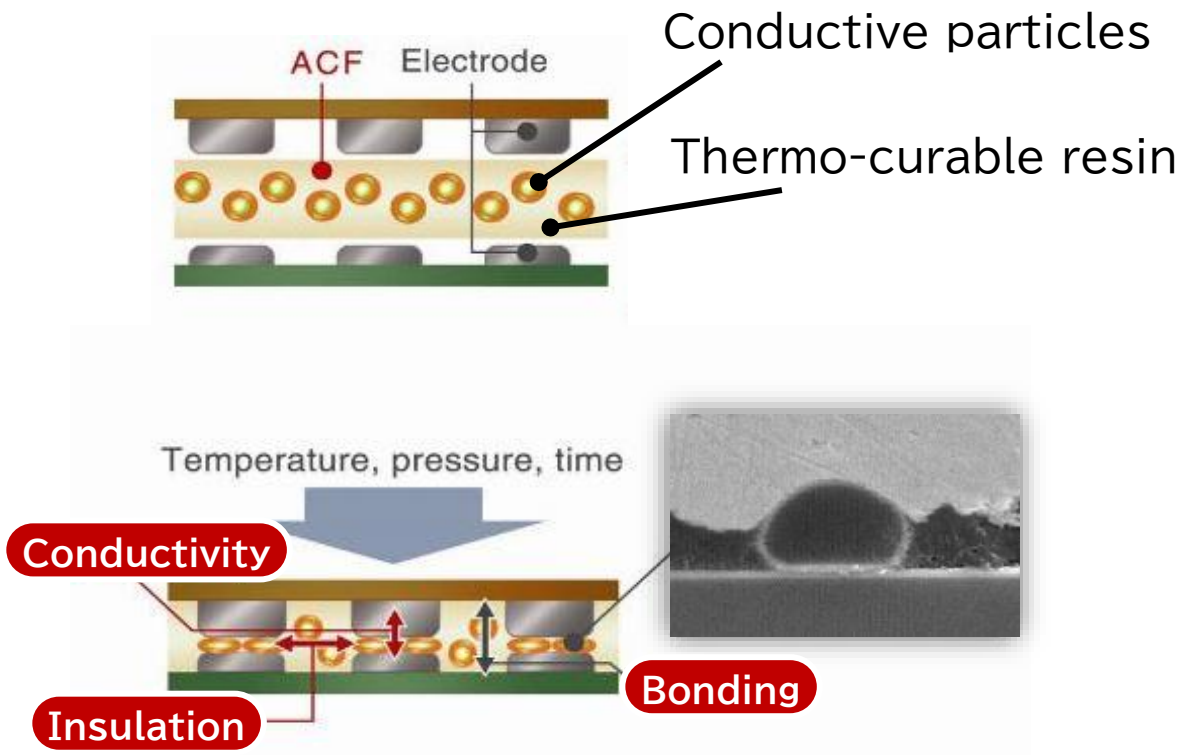
*Photos and images are for illustrative purposes only.

Anisotropic Conductive Film (ACF)

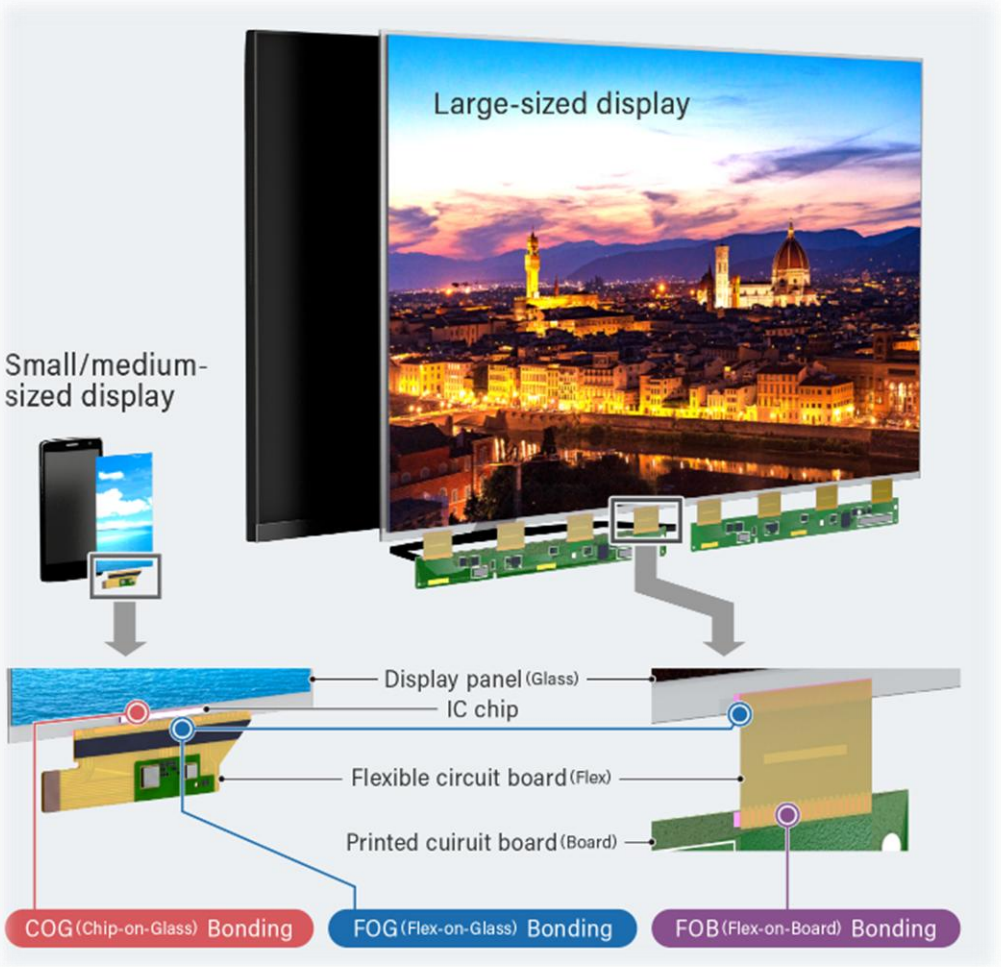


A de facto standard adhesive material used in almost every flat panel display (FPD).
Providing conductive connection of driver ICs and sensor modules with circuit boards.

◆ACF Structure & Function

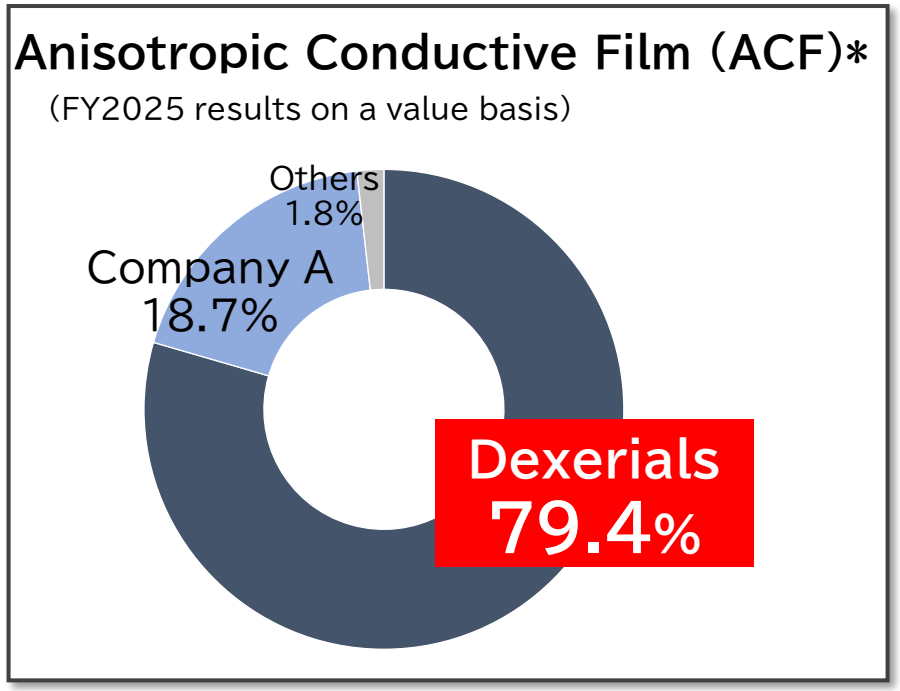


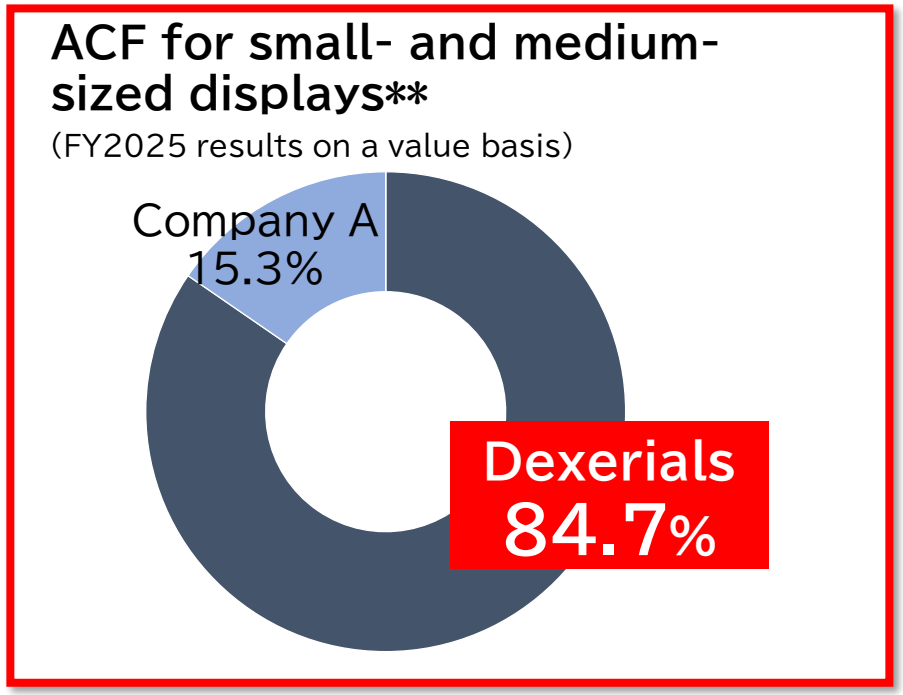
◆ACF Usage



*Photos and images are for illustrative purposes only.

The global market share of ACF





Dexerials focuses on small- and medium-sized models.

Use	Large-sized FPDs (for LCD TVs and others)
	Small- and medium-sized FPDs (for smartphones, tablets and others)

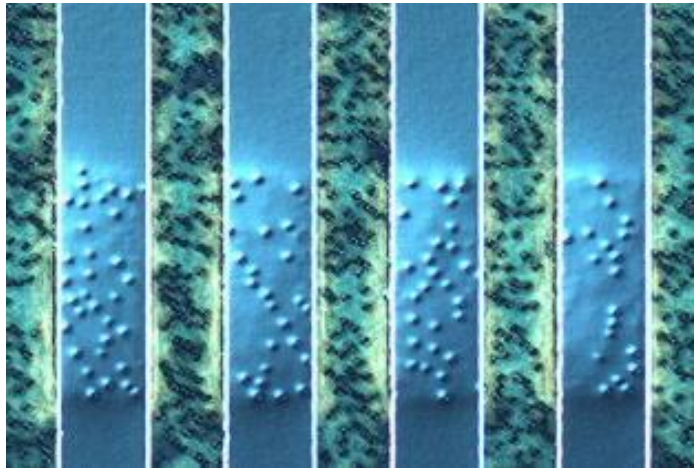
* 2025 total market share in monetary terms for ACF for large-, medium-, and small-sized displays from 2026 Display-kanren shijo-no genjo to shorai tembo (current conditions and future prospect of the display-related market in 2026) published by Fuji Chimera Research Institute, Inc.

** 2025 market share in monetary terms for ACF for medium- and small-sized displays from 2026 Display-kanren shijo-no genjo to shorai no tembo (current conditions and future prospect of the display-related market in 2026) published by Fuji Chimera Research Institute, Inc.

Ⓒ Dexerials Corporation

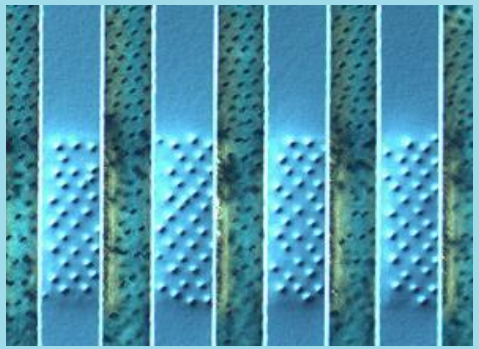
Particle-arrayed ACF

Conventional ACF



Particle-arrayed ACF

A smaller gap between terminals ↔



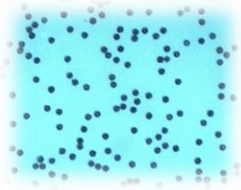
A smaller connection area

Particle-arrayed ACF is compatible to a smaller gap between terminals and a smaller connection area given a finer pitch

＊The image is for illustrative purposes only.

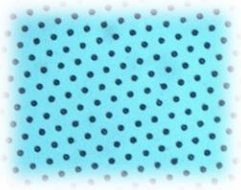
General specifications of conventional ACF

- Area density of conductive particles : 60,000 pcs/mm^2
- Minimum connection area : 1,300 μm^2
- Minimum distance between terminals : 12 μm



Specifications of particle-arrayed ACF

- 28,000 pcs/mm^2 (down 53%)
- 300 μm^2 (down 77%)
- 10 μm (down 17%)



Meet the needs of display technology trends and achieve high connection reliability

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Pre-cut ACF

Initiatives for expanding new applications in ACFs

Many components are installed in mobile IT devices to enable them to be multifunctional, leading to higher-density mounting on circuit boards. To effectively use the space, the layout of connection terminals has become complicated.

Issues

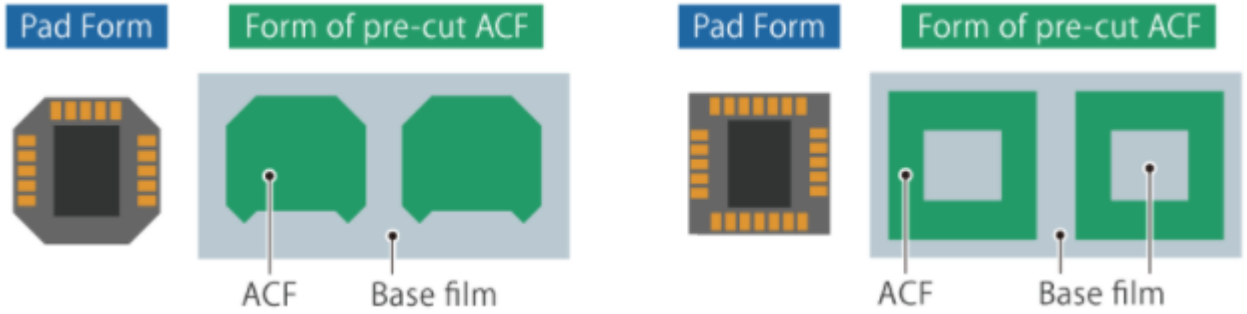
- Heat and pressure damages components in mounting using linear ACF that place components in areas other than the areas for components.
- Production efficiency is reduced due to changes in angle or position.

Developed and commercialized a technology that can continually and accurately form the same shape pattern
Commercialized Pre-cut ACF

■Conventional ACF



■Pre-cut ACF



- ✓ Pre-cutting ACF to fit unique pad layouts
- ✓ It can be mounted in diverse forms, enabling efficient mounting with minimum damage to the component

Efficient mounting enabled by pre-cutting ACF to fit the pad layout or form of the circuit board

Mid-Term Management Plan Updates

Presentation Materials: FY2024 to FY2028 Mid-Term Management Plan “Achieving Evolution” Updates(1,472KB)

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Our Purpose & Sustainability

Purpose

Empower Evolution.

Connect People and Technology.

Materiality

Strengthening
Technology and Human Capital

What we want to be in ten years

- Contributing to the evolution of digital technologies in a wider range of domains
- Achieving sustainable growth by creating social value and economic value

Connecting people and technology.
Connecting community and hope.
We craft the materials, devices,
and solutions that advance
digital technology, and we will continue to
embark on a journey to change the world.

Together with our partners,
we at Dexerials envision the future
and solve every issue with innovation.
Masterfully leveraging the combination
of people and technology,
we open new paths to evolution.

Every day, we embrace the challenge,
for a society that's more prosperous and
efficient. Our aim is to strive for a world
where all stakeholders can enjoy sustainable
and comfortable lives.

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Disclaimer with respect to earnings and other forecasts

The forward-looking statements including earnings forecasts contained in this document are based on information currently available to us and certain assumptions that we believe are reasonable. Accordingly, we can give no assurance that such statements will prove to be correct. Actual results may differ from the results anticipated in these forward-looking statements due to a variety of factors.

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