



Explanatory Material on Potential for Growth

November 2024

Mission

With the power of the semiconductor laser, Expanding the "Can Do" of Humanity.

What was once thought to be impossible is now a reality;
we have become the only company in the world to successfully mass produce
Quantum Dot LASERs.

We make the impossible possible, and we also create new "can do" that
doesn't yet exist.

This year, we will update our mission with a view to further expanding our
business areas.

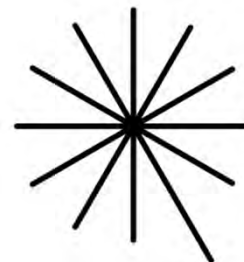
Our laser technology will enable dramatic improvements in our ability to
process information, support visually impaired people, prevent eye diseases,
and enhance vision, continually pushing the boundaries of human possibility.

Company Profile

Spin-off venture from Fujitsu. Feb. 2021 TSE Mothers (currently Growth) listing (Securities code: 6613)

Two businesses: semiconductor laser devices and visual information device (laser retinal projection)

Company Name	QD Laser, Inc.
Foundation	April 24, 2006
Fiscal year-ended	March 31
Representative	Osamu Nagao, President and CEO
Number of Persons *1	47
Location	Headquarter: 1-1 Minamiwatarida-cho, Kawasaki-ku, Kawasaki-shi, Kanagawa
Business	<ul style="list-style-type: none">• Semiconductor Laser Device business• Commercialization of state-of-the-art semiconductor lasers for communication, processing, and sensors.• Development and commercialization of quantum dot lasers for silicon photonics• Laser Retinal Projection business• Commercialized the world's first "RETISSA" utilizing laser retinal projection technology• Entrustment, joint development and commercialization of prototypes utilizing our technology and know-how
Licenses	<ul style="list-style-type: none">• Class II Marketing License for Medical Devices• Registration of medical equipment manufacturer• ISO 9001• EN ISO 13485



QD LASER

Company History

Listed on the TSE Mothers market in February 2021 (Securities code: 6613)

Start mass production of quantum dot lasers for optical wiring in 2023

Started shipment of new retinal projection products
(NEOVIEWER, ON HAND, MEOCHECK)

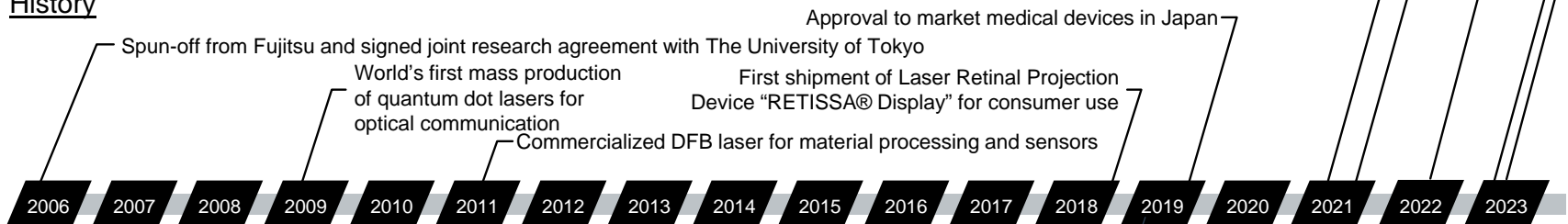
Started mass production of quantum dot lasers for optical wiring

Started shipment of new retinal projection products
Optometry service started by MEOCHECK

Medical device "RETISSA Medical" shipment started

Listed on the TSE Mothers market

History



Major Awards

- Won the METI (Minister of Economy, Trade & Industry) Award at the Green IT Awards 2010
- PRISM AWARDS Winner (the first Japanese company to win the award twice)
- PRISM AWARDS Winner (the first Japanese company to win the award twice)
- 9th Medtec Innovation Award
- Nikkei Excellent Product / Service Award Best Product Award
- International award given for outstanding innovations in the optics field

Company Highlights

- 1** Business Overview
- 2** FY2023 Results, FY2024 Forecast & Medium- to Long-Term Vision
- 3** Semiconductor Laser Devices' Vision & Strategy
- 4** Visual Information Devices' Vision & Strategy
- 5** ESG Initiatives
- 6** Appendix

01



QD LASER

Business Overview

Expected Role of QD Laser, Inc.

Semiconductor Laser History and Our Position in the 3rd Phase

1st phase

Proposals of Scientific Principles and Invention of Laser (1960s)

Laser

A technology used in recording, communication, processing and sensing.

Applied in various industries such as medicine, home appliances, automobiles, manufacturing and entertainment.

2nd phase

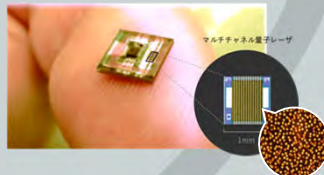
Invention of Semiconductor Lasers, Building out Optical Communication and the Internet (1995~)

3rd phase

Accelerating the Integration of Humans and Information(2020s~)

Nanotechnology of QD laser to generate and control laser light

Image of quantum dots taken by an atomic force microscope and a quantum dot laser equipped on fingertip-sized silicon chip as 100Gbps optical transceiver



Quantum Dot Laser:

A semiconductor laser adopting a quantum dot structure which has a semiconductor nano-sized microcrystal in its active layer. Compared with existing semiconductor lasers, these lasers are superior in temperature stability, temperature resistance, and low noise.

Semiconductor lasers and packaging



Semiconductor laser:

A small element with a length of about 1 mm that causes a laser to oscillate by passing a current through a semiconductor. Compared with other lasers, possesses excellent properties such as ultra-small size, high-speed modulation characteristics reaching several 10s of GHz, high power-to-light conversion efficiency (in several 10s of %), and wavelength controllability, etc.

Fields where our lasers are applied (being Developed or Commercialized)

- 5G base station
- Supercomputer
- Visual Aid
- Smart Glass
- Optical Interconnect
- Facial recognition
- Fundus photography
- Micromachining
- In-Vehicle communication
- LiDAR for autonomous cars
- Biophotonics
- Visual field testing

New Era for Semiconductor Lasers

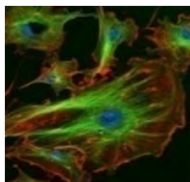
We are developing products for all applications shown below and have launched a part of them.

- Optical interconnect ⇒ enhancing the computing and data processing power



- Sensor ⇒ Precise detection of human and material (shape, position, velocity)

Biomedical



Face recognition



LiDAR (Automotive, Robotics, Drone)



- Display ⇒ AR/VR/XR
Smart Glasses



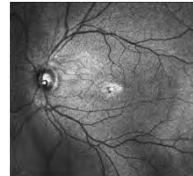
Head-up display



Motion recognition



Fundus, Sight, Field of view

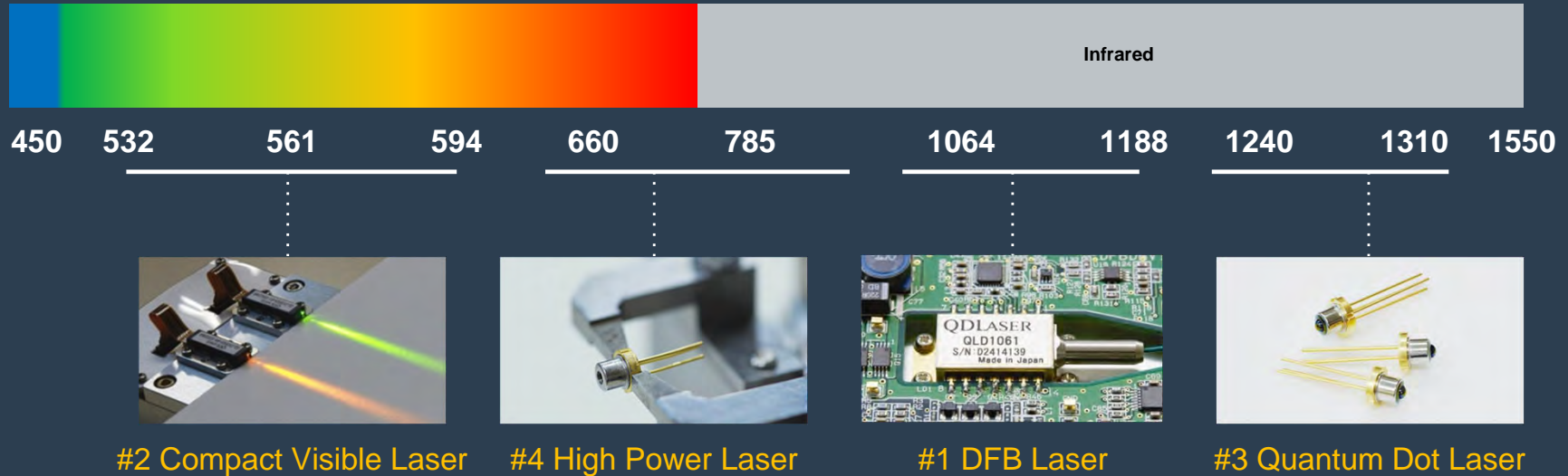


- Micromachining
⇒ Highly functional/high precision device manufacturing



Variations on semiconductor lasers developed and sold by QD Laser

QD Laser provides a wide range of semiconductor lasers with wavelengths suitable for each application



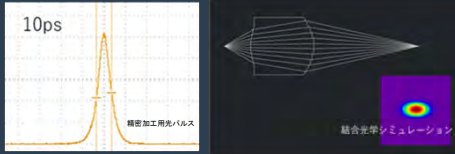
Our Core Technologies and Competitive Advantages

Material Creation, Design, and Control

Cutting Edge Semiconductor Laser Technology with Several Unique Features

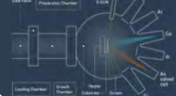
Laser Design

A technology to design lasers suitable for each use.
World's fastest (10ps)^{*3} semiconductor laser for precision material processing utilizing optical communication technology,



Semiconductor Crystal Growth

Technology to grow each atomic layer of semiconductor crystals on a semiconductor substrate



Quantum Dot

Succeeded in the mass production of quantum dot lasers with **world's highest operating temperature**^{*1} and developed **world's smallest silicon-based optical transceiver**^{*2}



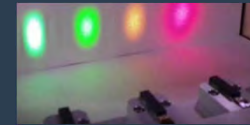
Small Module

A technology to make DFB lasers ultra compact.
 Our yellow/orange laser modules led us to become one of the finalists at the Prism Awards 2014.



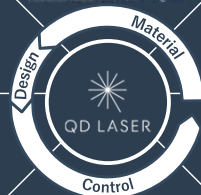
Diffraction Grating

Technology to form periodic refractive index change inside the laser enabling arbitrary wavelength control.
World's first^{*5} commercialization of yellow/orange semiconductor laser



VISIRIUM Technology

A technology to project images directly on the retina through ultra small laser projectors.
World's First Commercialization^{*4}



*3:
*4:
*5:

2017 PRISM Award in Industrial Lasers - QD Laser (2nd Feb 2017)
 Prism Awards honour photonic innovations at Photonics West 2019
 Japan/U.S. PATENT JPS362301/US896911

*1: "Extremely high temperature (220°C) continuous-wave operation of 1300-nm-range quantum-dot lasers", Published in 2011 Conference on Lasers and Electro-Optics Europe and 12th European
 *2: Developed the world's smallest 5mm square ultra-high-speed, low-power-consumption optical transceiver—Achieved the world's best, 25Gbps / ch transmission speed—

QD Laser's Strengths: Barriers to Entry for Other Companies

For other companies to catch up with QD Laser, they would need to secure highly specialized talent leading the laser industry, invest **4 billion yen**¹ in development, and spend over **15 years**.



+



→



World-leading researchers and engineers with advanced expertise

15 years of research and development.
Total development investment of 4 billion yen

Numerous Only1 and No.1 technologies, including around 100 registered patents

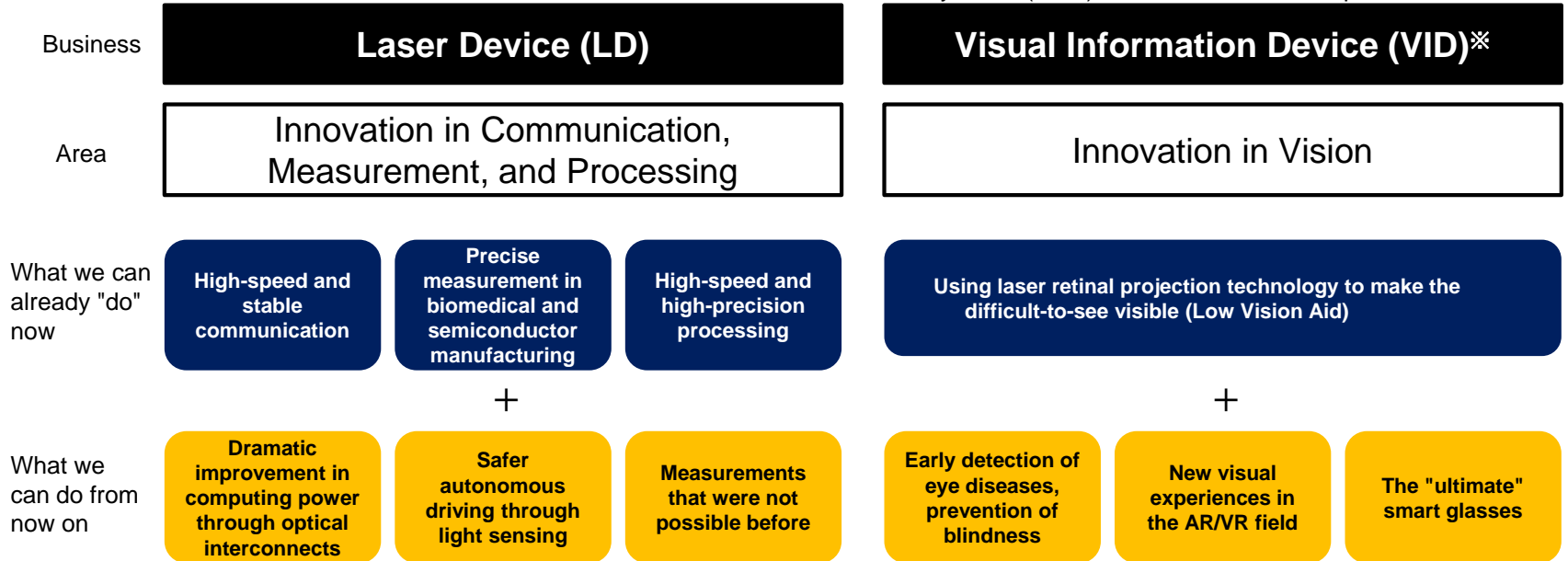
Qualitative Barriers to Entry: Due to our technological superiority accumulated through years of know-how, it is difficult for late entrants to catch up.

Quantitative Barriers to Entry: For global leaders, the investment cost does not match the market size, making entry difficult.

Two Businesses to Expand Human Capabilities

Increasing "abilities" with the power of semiconductor lasers, contributing to the improvement of overall human happiness.

*Note: The name has been changed from the Laser Eyewear (LEW) business due to the expansion of business



Our Major Laser Device Products, Wavelengths, Features, and Uses

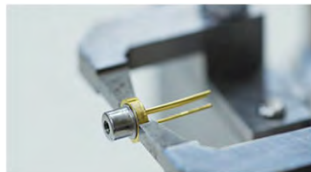
Compact visible lasers

High power laser

DFB laser

Quantum dot laser

Products



Wavelength

532, 561, 594 nm

640-940nm

1030, 1053, 1064, 1080, 1120, 1180nm

1200-1330nm

1020-1120nm provided 1nm by 1nm

Features

- Miniature size, low power consumption, stability, short pulse generation, and high-speed modulation, etc.
- World's first current injection yellow-green and orange lasers

- High power Fabry Perot laser
- Providing products and solutions according to applications.
- Supports various wavelengths, small quantities, and custom production.

- Precise control of wavelength with stable operation under continuous, nanosecond, and picosecond modes.
- High beam quality, small size, lightweight, high electricity-light conversion efficiency, and long life compared to existing solid-state lasers.
- Extensive product lineup that meets the various needs of customers.

- Quantum dots are used for the active layer (light-emitting part) of semiconductor lasers.
- Excellent temperature stability, high-temperature resistance, and low noise performance compared to existing semiconductor lasers.

Use

Measurement

Bio.

Processing

Communication

Silicon photonics



Laser Device (LD) Division: Cases of QD laser product adoption

QD Laser products are integrated into devices that support various industries, contributing to economic activity and the development of various manufacturing industries and businesses that society focuses on.

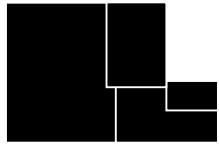
Biomedical

As a light source for inspection and analysis equipment, Contributing to drug discovery and other medical research



Flow cytometer

An analytical device for counting cells. Adopted as its light source.



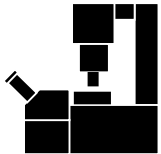
Light source size

1

3

STED Microscope

A microscope capable of observing much smaller objects than conventional microscopes. Adopted as its light source.



Spatial resolution
50nm

Light source size

1

3

Micromachining

Used in the processing of bodies, electronic board, and substrates of precision electronic devices, contributing to miniaturization and higher functionality of the micromachining apparatus.



Ultrashort-pulse laser processing machine

Capable of fine processing with minimal thermal effects. Adopted as its light source

Maintenance frequency

1

3

Surface roughness

1

4

Throughput

X 2^{*1}

By adopting QD laser products, it becomes possible to create small, high-precision, and high-performance devices

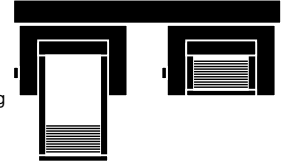
Semiconductor Processing

Incorporated into various manufacturing process equipment, contributing to the entire semiconductor industry



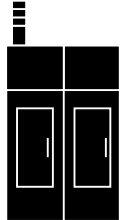
Semiconductor wafer transfer machine

A device for transporting plate-shaped semiconductors. Adopted as a collision prevention sensor



Semiconductor inspection equipment

Inspection equipment to ensure semiconductor quality. Adopted as a sensor to detect abnormalities



Time resolution

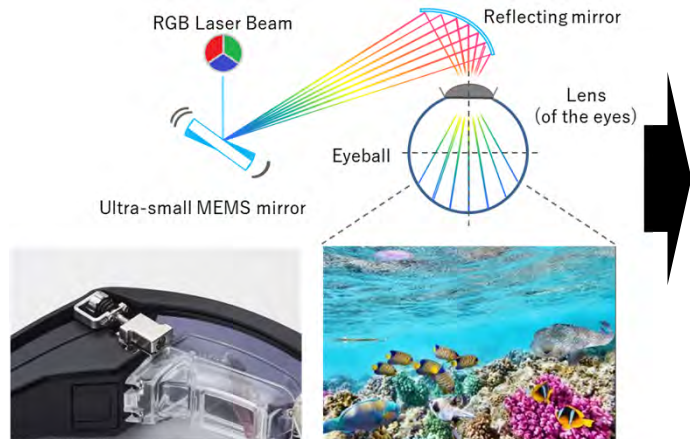
10ps

Visual Information Device (VID) Division: Business Overview




Technology and products that project images directly onto the retina using lasers, bringing innovation to human vision.

World-leading laser retinal projection technology

VISIRIUM TECHNOLOGY®



Three business areas expanding possibilities:

3. Expanding the visible world Augmented Vision	
Creating the ultimate 'smart glasses' that are indispensable	
2. Extending healthy vision lifespan Vision Health Care	
Ability to provide peace of mind to eye disease patients through eye health check services	
1. Making the hard-to-see visible Low Vision Aid	
Enabling those with low vision to accomplish tasks	
	

02



QD LASER

FY2024 Forecast & Mid-Term Vision

Forecast for FY2024

While the LD business is steadily growing, the VID business is undergoing business restructuring aimed at FY2026, resulting in a decline in companywide sales.

Full-year earnings forecast

(Million JPY)	FY2024 Forecast ^{*1}	FY2023 Actual	YOY	FY2024 Previous Forecast ^{*2}
Sales	1,155	1,247	△7% (△92)	1,245
(LD)	1,054	934	+13%	1,000
(LEW)	100	312	△68%	244
Operating Profit or Loss (△)	△605	△604	△1	△589
(LD)	83	41	+41	8
(LEW)	△405	△375	△30	△290
Ordinary Loss (△)	△592	△600	+7	△592
Net Loss (△)	△596	△642	+45	△596

【LD business】

- Sales increased 13% YOY to 1,054 million yen due to growth in DFB lasers and small visible lasers.
- SG&A expenses increased 20% YOY to 327 million yen due to factors such as securing highly skilled human resources, increasing depreciation costs due to a shortened depreciation period for the current base due to base relocation, and an increase in development items centered on DFB lasers and compact visible lasers.
- Operating income was 83 million yen, an increase of 101% YOY.

【VID business】

- FY 2024 is positioned as a period for business restructuring targeting 2026, and sales are 100 million yen, down 68% YOY.
- SG&A expenses are expected to be 344 million yen, down 9% YOY, due to a decrease in development items and a review of advertising.
- Operating loss was -405 million yen, worsening by 30 million yen YOY due to inventory write-downs for MEOCHECK and ON HAND.

【Company-wide】

- Operating loss was -605 million yen, worsening by 1 million yen YOY.
- Ordinary loss improved by 7 million yen YOY, and net loss improved by 45 million yen YOY, which is larger than the improvement in ordinary loss due to the impairment of fixed assets in the previous fiscal year.

Major Business Target for FY2024

Updating business for early company-wide operating profit and subsequent explosive growth

Laser Device Division

Operating profit

consecutive **10** years

Operating profit: 83 million yen
Sales: 1.05 billion yen (13% increase compared to the previous term)
Increased costs for new product development and amortization^{*1}

Expansion of certified mass production

98⇒**108** products

Compact visible lasers: from 13 to 18 companies
DFB laser applications: 9 applications^{*2}
New product development and commercialization

Solution product launch^{*3}

The world's smallest
Compact Visible Laser Unit

Product name: Lantana Planned sales volume for the first year (field test): 16 units

Visual Information Device Division

November 2024 revised plan

Sales 100 million yen
(-68% YOY)

Operating loss
-405 million yen
(-8% YOY)

Reorganization of business with an eye on the next fiscal year and beyond^{*4}

Strengthening corporate collaboration

Consideration of joint venture through alliance with other companies
Prepare products that meet user needs, including technology licenses and products from other companies

Vision Health Check Service

Business expansion

Horizontal expansion in the transportation industry^{*5}
(taxis, trucks, buses)

^{*1}: Due to the shortening of the useful life associated with the decision to relocate the business unit

^{*2}: Wafer inspection, precision machining, flow cytometry, microscopy, LIDAR, mask inspection, axial length measurement, inter-satellite communication, brain examination

^{*3}: Contributing to the enhancement of product competitiveness for customers through miniaturization and improved design flexibility of biomedical equipment

^{*4}: Changed items in line with the policies of the mid-term business plan

^{*5}: Due to a review of the business model, the description of subscription-type business has been removed.

Mid-Term Business Plan (FY2024 – FY2026)

Achieving Profitability and Growth Potential

—Toward Realizing Our Vision: “Illuminating Human Possibilities”

■ Achieving Overall Profitability by FY2026 = “Baseline Plan”

A highly achievable plan based on a combination of businesses with predictable revenues, costs, and expenses.

→ **FY2026: Net Sales of 1,948 million yen, Operating Profit of 7 million yen**

■ Pursuing “Growth Potential”

Securing future growth potential through measures such as **partnerships with other companies** to reduce our current burden.

Additionally, we will pursue **novel activities** such as new businesses, products, or M&A initiatives alongside the implementation of the Baseline Plan.

Mid-term business target (3 years)

Laser Device Division

Operating profit

consecutive **12-13** years

Operating profit : over 340 million yen
(gross profit margin improved to 45%)
Increase in number of authorized customers
Optimize prices, reduce outsourcing costs,
improve yields

Global niche new products

Sales over **400 million** yen

Contribution from new products in FY2025^{*5}
• Compact visible laser unit/new wavelength
• For semiconductor testing/micro machining/brain testing DFB laser

Mass production order of QD lasers for silicon optical wiring.

^{*1} 60,000units → **100,000**^{*2} units

Moved to new Totsuka base in March 2026
Establishing a system to respond to increasing demand in the silicon photonics market due to mass production at joint development partners

Visual Information Device Division^{*3}

Return to surplus in FY2026

Operating profit

0.2 million yen

The minimum goal for the low vision aid and eye health check service business is to meet user needs with four products and services, including products developed by other companies, and aim for sales of 347 million yen in FY2026

Eye health check service

11,000 people^{*4}

We will focus on expanding the "eye health check service" using MEOCHECK, which is attracting a high level of interest
The main targets are over 2,000 truck operators, approximately 1,000 taxi operators, and approximately 350 bus operators

Commercialization of laser retinal projection technology **Strengthening corporate collaboration**

Regarding smart glasses and medical applications in vision healthcare, we have secured future growth potential through partnerships with other companies, while reducing the current burden and achieving zero impact on our profit and loss.

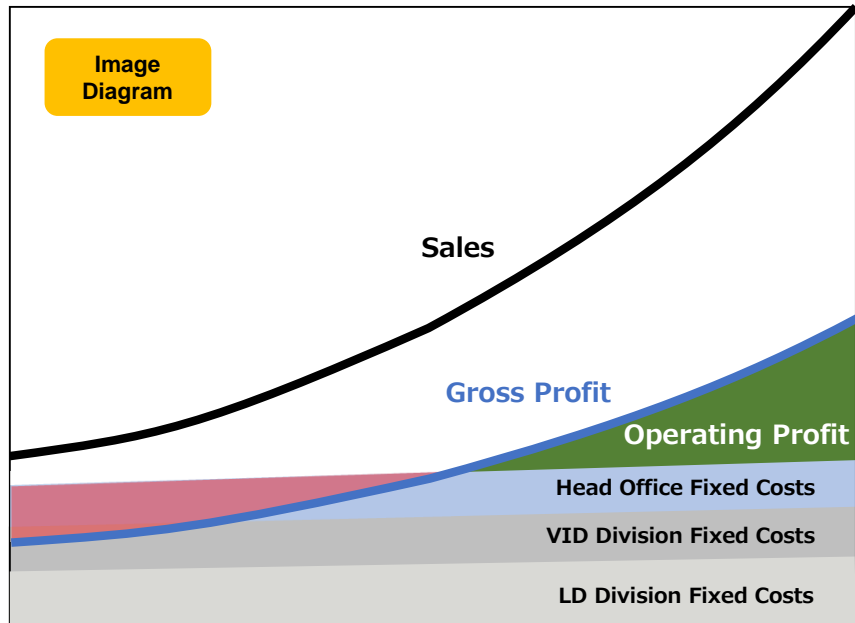
Medium-term profit and loss plan ^{*1} (FY2024-FY2026)

(Million JPY)	FY2023 Actual	FY2024 Forecast	FY2025 Plan	FY2026 Plan
Sales	1,247	1,155	1,314	1,948
(LD)	934	1,054	1,274	1,601
(LEW)	312	100	40	347
Operating Profit or Loss	△604	△605	△382	7
(LD)	41	83	133	338
(LEW)	△375	△405	△196	0
Ordinary Profit or Loss	△600	△592	△385	4
Net Profit or Loss	△642	△596	△387	0

Features of Our Company's Revenue Model

Variable cost conversion of fixed costs through Semi-Fabless Model.

Stable growth and break-even point surpassing through product diversification, large-scale mass production, and gross profit expansion



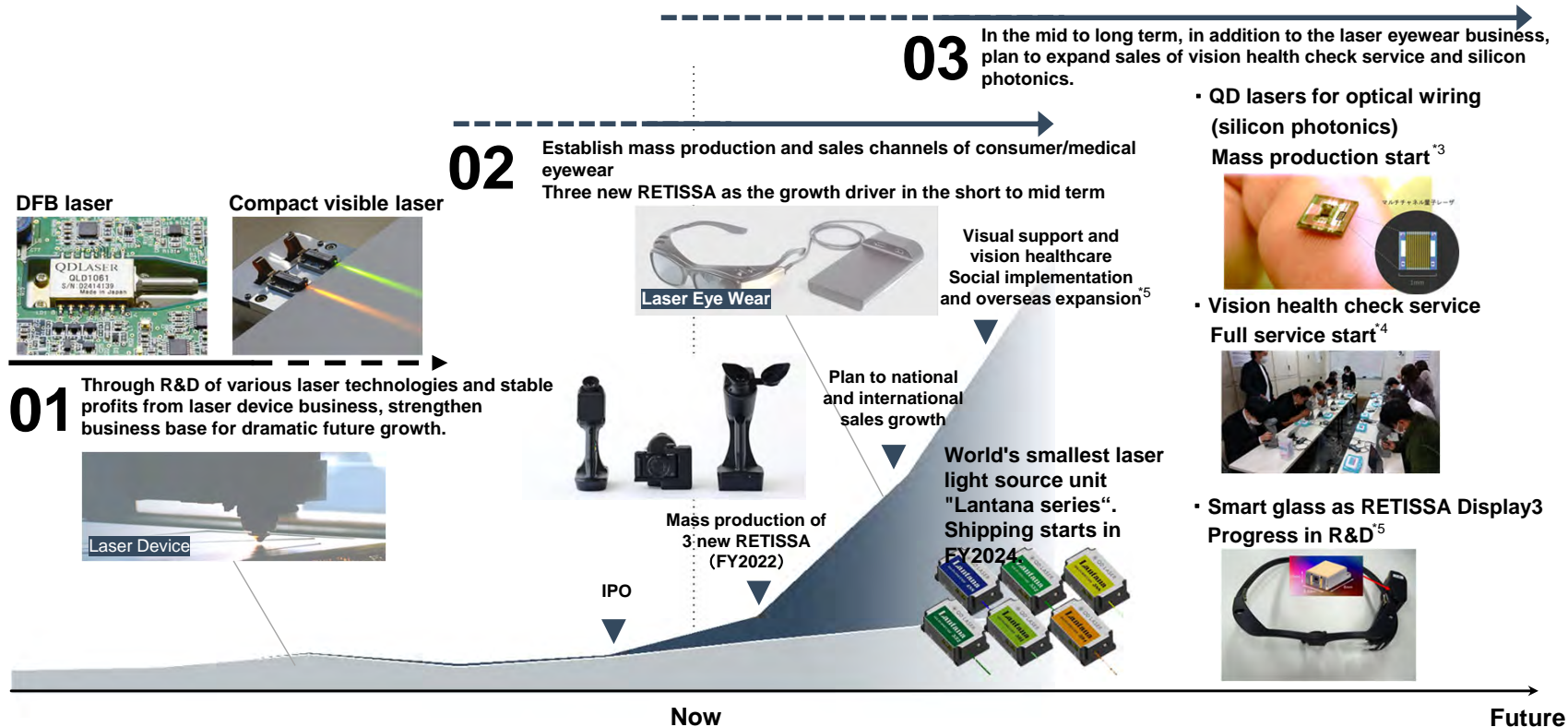
Target Gross Profit Margin of 50%

Profit Expansion Once Break-Even Point is Surpassed

Fixed Costs Slightly Increase at a Constant Rate Due to Semi-Fabless Model

Fiscal Year Ending
March 2024

Expected growth potential in mid to long term



*1 : The graph is shown as an image.

*2 : We are reconsidering the target market based on sales activities for FY2023 and are re-developing it, so we have withdrawn the description of specific sales targets.

*3 : Mass production and shipment starts in FY2023.

*4 : Service business starts in 2023.

*5 : In order to promote commercialization in collaboration with other companies, we will withdraw the information regarding the launch date..

03



QD LASER

Vision and Strategy for
the Laser Device Division

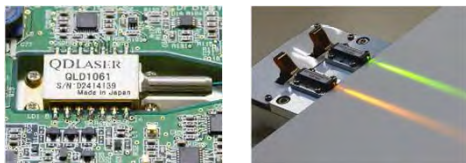
Mid- to Long-term Vision: Laser Device Division

Up until now

Present

From now

01 Investment in R&D

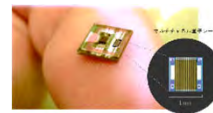


"Strengthening the management foundation for future significant growth through research and development of various laser technologies and securing stable revenue"

02 Expanding Applications

Wafer inspection	Brain test	Precision work
Intersatellite communication	Flow cytometer	Microscope
Lidar	Mask inspection	Axial length measurement

Steadily expanding sales by promoting the installation of QD laser products into various application devices



03-B
New Pillar
Sales Expansion in
Silicon Photonics

Sales of 2 billion yen

Sales of 1 billion yen

Break even

IPO

9 companies in mass production (Over 20 million yen each)

20 companies in mass production (Over 20 million yen each)

03-A
New Applications +
Solution Products

3次元造形

遠隔操作・医療



Compact visible laser BOX with built-in electronic circuits

2024

2026

2030

03-A Launch of new applications and solution products

Expansion of the wavelength lineup

Laser Wavelength



FY2023: 532, 561, 594 nm

Fy2024: 488, 552, 588 nm

FY2025 and beyond: 405 – 660 nm

Gradual expansion across the entire visible light spectrum



Launch of solution products

Achieving plug-and-play functionality

Compact visible laser unit with built-in drive circuit: "Lantana Series"

Compact visible laser with built-in TEC: "Lantana mini Series"

- Expansion of customers and applications: By expanding the wavelength lineup, the target market size will increase 6.4 times¹ by 2027, reaching 25,000 units.
- Expansion of the customer base: By improving the usability of compact visible lasers, we will promote introduction to emerging countries and research institutions.
- Increasing added value: Achieving cost reduction and miniaturization of devices in customers' product development, thereby sharing added value with customers.

Growth Strategy of Compact Visible Laser

● Current product sales volume and market share

Wavelength (nm)	Color	FY2022 Sales in units	FY2023 Planned Sales in units	FY2023 Actual Sales in units	Number of customers FY2022 →FY2023	Market share
532	green	24	24	36	2 → 3	※
561	Yellow green	1,438	1,697	945	6 → 12	36%
594	Orange	10	10	3	1 → 1	※
Total		1,472	1,731	984	8 → 13	18%

※less than1%

● Aiming for annual growth of 30% from FY2023 ⇒ 3 measures ⇒ Market share 44% @ FY2027^{*1}

1. Promotion

- Increase in client companies: 8 ⇒ 13 companies@FY2027 13 companies@2024/6
- Increase of introduced equipment: 9 ⇒ 26 models@FY2027 19 models@2024/6

2. New laser development

- New wavelengths (488nm, 552nm): Market of 11,500 units → Development in progress
- High output power (30 ⇒ 50mW): Market of 3,800 units → Development completed

3. Solution

- Box module : Market of 10,600 units → To be launched in fall 2024
Photonics West 2024 exhibited^{*2}



- Multicolor light sources : Market of 12,500 units

IOCore™ with Quantum-Dot Laser Launched for Mass Production

- Installed in IOCore's silicon photonics chip for optical wiring "IOCore™" (commonly known as NPO *1)
- Implementation of optical wiring technology contributes to dramatic improvements in computer information processing capabilities essential for AI and the Metaverse

100Gb/s Silicon photonics chip named IOCore™
of AIO Core Co., Ltd. with QD Laser's 4-channel quantum dot lasers

Quantum dot laser

Quantum dots

Optical eye diagrams at 25Gbps

ch1
ch2
ch3
ch4

25°C 1.05°C

Device to device

Board to board

LSI to LSI

Connections to transmission equipment such as large scale router and switch, and broad cast equipment

Courtesy of AIO Core Co., Ltd.
Note: Yellow squares show 100Gb/s transceiver Silicon chip

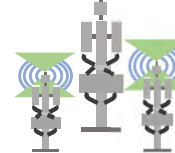
Data center, Server,
Super Computer



Demonstration of immersion cooling by AIO Core Co., Ltd.



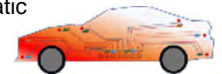
5G/6G



FA, Medical



Automatic Driving



Tangible Silicon Photonics Market as Electronic / Optical Integrated Circuit Technology Platform

Received orders of 60,000-unit quantum dot lasers for mass production.

Customizing quantum dot lasers for Japan/US/EU silicon photonics vendors.

Development and production

2010

World's first mass production of quantum dot laser for optical communication

2012

Started development of quantum dot laser for silicon photonics

2017

Established mass production system of quantum dot lasers for silicon photonics (supplied to AIO Core Co., Ltd.)

2019

Our products installed in the "Ultra-thin connector integrated active optical module (I-PEX EOM)" developed by I-PEX

2023

Received orders of 60,000pcs quantum dot lasers for mass production. Start shipment in May 2023.

Working on joint development with silicon photonics vendors around the world.

- quantum dot crystal

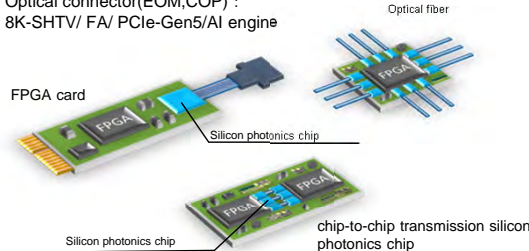


100 nm

- 100Gb/s transceiver silicon chip with quantum dot laser



- Optical connector(EOM,COP) : 8K-SHTV/ FA/ PCIe-Gen5/AI engine



Roadmap of mass production

Phase 1: Lower production cost (2023-2024)

2023

Started mass production of quantum dot lasers for AIO Core Co., Ltd.
Lower cost of back-end process

2024

Increase wafer diameter of quantum dot lasers

Phase 2: Increase production capacity (2024-)*¹

2024

LD division starts construction of new base

2026

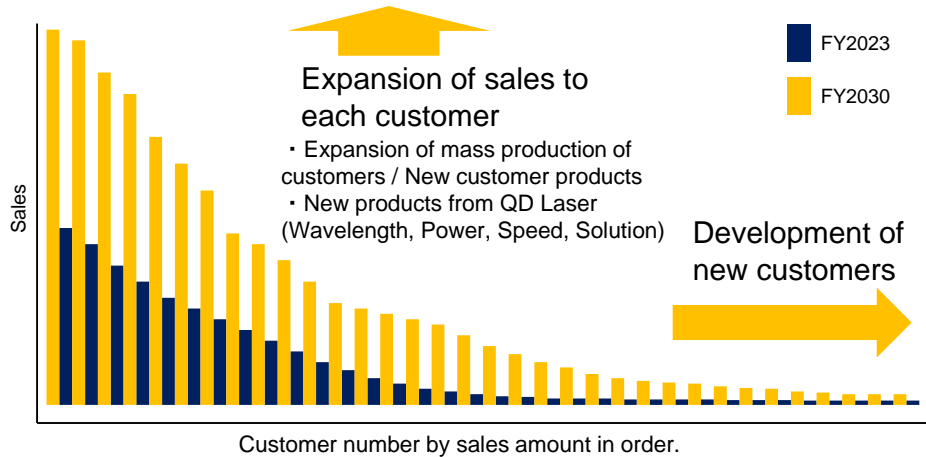
LD division relocated
Strengthen manufacturing facilities and build a system to ship 1 million units per year

2028 onwards

MBE#3 starts operation
Quantum dot wafer production system to two units

LD Business: Sales Strategy Initiatives

We have already established a base of more than 100 existing customers. Shortly, new major customers will emerge from the long tail, expanding sales. Additionally, the number of new customers and new applications will increase.



Sales Strategy:

- Thorough management of customer project stages to drive customer mass production and to achieve stable supply in response to increasing demand.
- While aiming at the growth of major customers from the existing customer base, efficiently find and develop new customers through agents, exhibitions, etc., on a necessary and sufficient scale.
- Web marketing, i.e., opening product sites and SEO^{*1} measures, to discover and capture potential customers and needs.

Anticipating future innovations in various fields and the subsequent surge in demand for semiconductor lasers, QD Laser has already established a customer base of over 100 companies. We are now seeing major customers emerging even from the long-tail customer group with small sales. In response, we are focused on ensuring stable supply and promoting gross profit increase, with the goal of achieving significant sales expansion over the next 10 years.

Laser Device Business Strategy

Based on the technology and products that have established our position in the industry, we will 1) expand across customers and develop new applications, 2) expand globally, and 3) develop module & solutions to realize significant growth.

		Estimated market size of the final product*1					Estimated market size of QDL products	
DFB • World's fastest speed of 15ps • High-speed electronic circuit	Measurement	Wafer test	Mask test	Topographic survey	Brain monitor	Axial length	1,480 billion-yen@2032 CAGR 10%*2	14.8 billion-yen
	Micro machining	Electronic circuits	Composite materials	Emerging countries for nano and pico-second machining			652 billion-yen@2027 CAGR 7.3%*3	6.5 billion-yen
Compact Visible • World's smallest size • World's minimum power consumption • World's fastest 50ps	Bio-analysis	Flow Cytometer	Cell sorter	Total solution with 1)All wavelength (405nm~635nm) 2)World's smallest modules			1,129 billion-yen@2030 CAGR 7.2%*4	11.3 billion-yen
	Microscope	Confocal microscope	STED microscope				990 billion-yen@2030 CAGR 9.0%*5	9.9 billion-yen
High Power • World's highest nanosecond peak power • High reliability	Leveler	Construction site	Manufacturing plant	DIY	Measurement		555 billion-yen@2032 CAGR 4.3%*6	5.6 billion-yen
	Sensors	Wafer transport	Spatial communication	Machine vision	Particle counter		233 billion-yen@2030 CAGR 10.1%*7	2.3 billion-yen
Quantum dots • High temperature stable operation • High reliability • Low noise	Optical wiring	Super computer	Medical · FA	5G/6G	Self-driving		1,219 billion-yen @2030 CAGR 25.8%*8	12.2 billion-yen
	LiDAR	Drone	Self-driving	Robotics				
						Total 6 trillion-yen	Total 62.6 billion-yen	

*1 : Please note that it is indicative of the overall size of our potential target market and is not a predictor of our performance. Calculated at the exchange rate of JPY/USD=150 yen/dollar.
 *2 : Future Market Insights 「Wafer Inspection Market by Technology, Defect Type & Region - Forecast 2022 - 2032」
 *3 : Grand View Research 「Micromachining Market Size & Share Report, 2020-2027」
 *4 : Grand View Research 「Global Flow Cytometry Market Size Analysis Report, 2030」

*5 : Grand View Research 「Super-resolution Microscopes Market Size Report, 2022-2030」
 *6 : Global Market Insights 「Construction Laser Market」
 *7 : Marketysers Global Consulting 「Laser Sensor Market」
 *8 : Grand View Research 「Silicon Photonics Market Size, Share & Trends Analysis Report」

04



QD LASER

Vision and Strategy for
the Visual Information Device Division

Mid- to Long-term Vision: Visual Information Device Division

Cultivating three pillars towards the commercialization of ultimate smart glasses



Augmented
Vision

Expanding the world of "seeing"
Target: Approximately 50-80% of the population*3



Vision
Healthcare

Extending the healthy life of "seeing"
Target: Approximately 30-40% of the population*2



Low Vision
Aid

Transforming "difficulty seeing" into "seeing"
Target: Approximately 1-2% of the population*1

01

Steady and continuous progress
- Expanding recognition and implementation cases
Steady progress

02

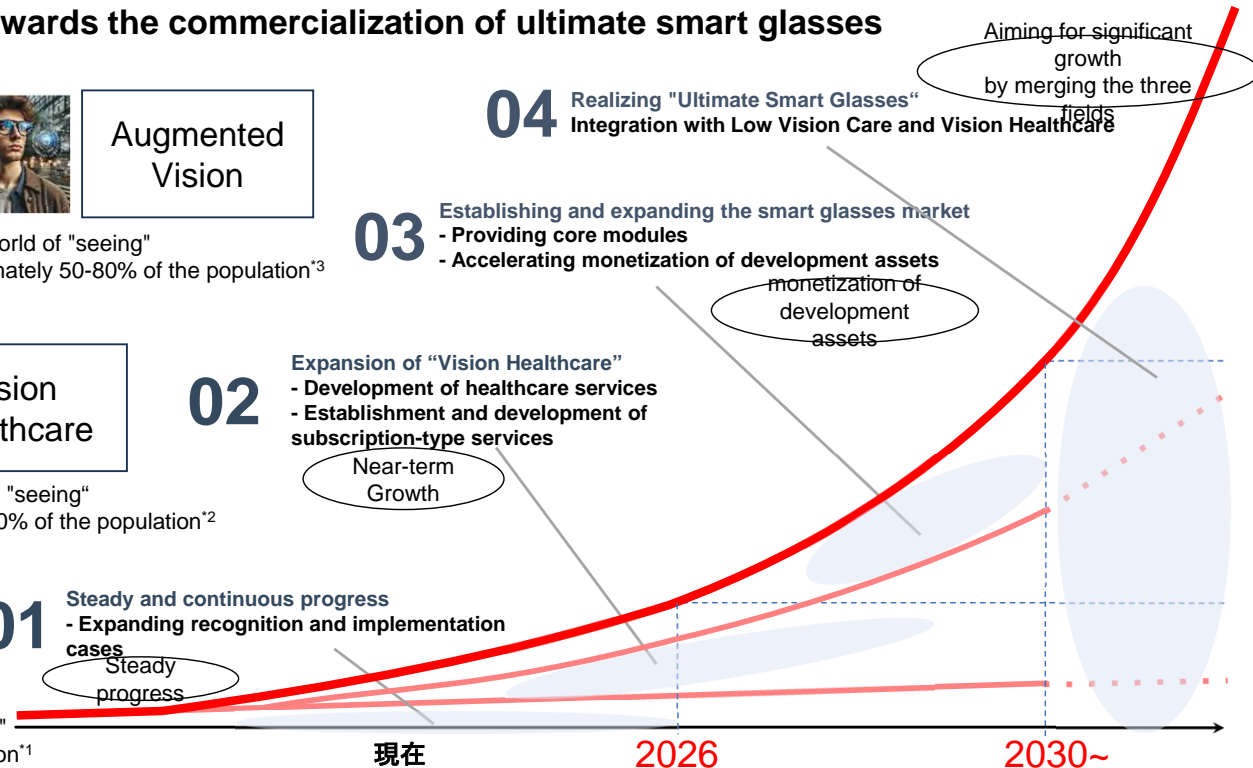
Expansion of "Vision Healthcare"
- Development of healthcare services
- Establishment and development of subscription-type services
Near-term Growth

03

Establishing and expanding the smart glasses market
- Providing core modules
- Accelerating monetization of development assets
monetization of development assets

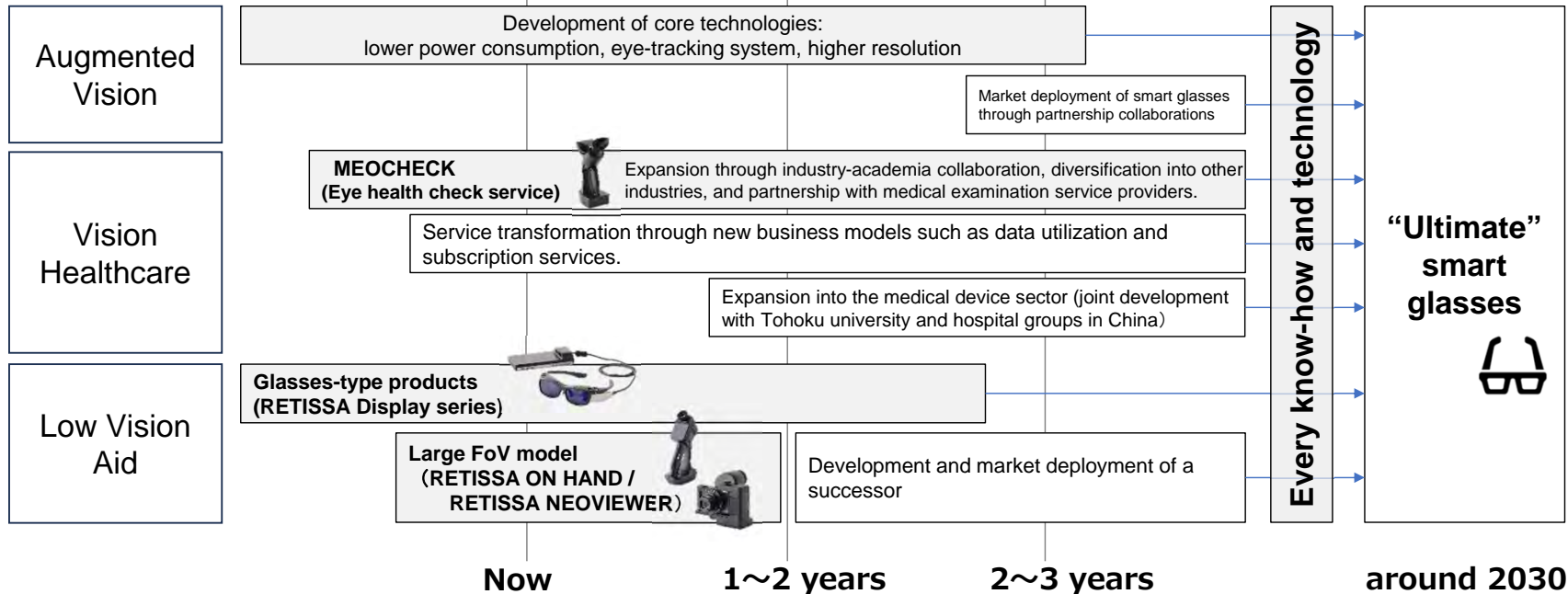
04

Realizing "Ultimate Smart Glasses"
Integration with Low Vision Care and Vision Healthcare
Aiming for significant growth by merging the three fields





Products and Service Strategy

Continuing technology development, product development, and business development, expand sales and accessible markets and achieve significant growth. (Further strengthening collaboration with other companies regarding the development of smart glasses and medical devices in the vision healthcare field)



Low Vision Aid: Improving Recognition and Steady Adoption

Creating value by "enjoying real content through events at cultural facilities," and increasing recognition through information dissemination. Promoting participation in "cultural and artistic activities" aimed at an inclusive society.

	FY2023 Clarification of value, initial introduction	FY2024/2025 Information dissemination, cultural project implementation, expanding introduction	FY2026~ Domestic and international adoption, contribution to GDW ^{*1}
RETISSA ON HAND 	<ul style="list-style-type: none"> - Experience events (15 times) - Trial introduction begins (19 units) Tokyo Metropolitan Art Museum, etc. - Tohoku University COI-NEXT collaboration Realizing an inclusive society from "seeing" in Miyagi Prefecture 	<ul style="list-style-type: none"> - Financial support such as subsidies and donations - Overseas sales - Information dissemination enhancement through website <i>Organizing issues towards realizing an inclusive society</i> <i>Experiences, implementation processes, and case studies</i> 	Introduction to art museums, museums, zoos, aquariums, racecourses, libraries, theaters, travel and tourist facilities Domestic: 5,738 facilities Worldwide: >10 million facilities Sales of subsequent models and global sales
RETISSA NEOVIEWER 	<ul style="list-style-type: none"> - Launch in Japan and US - Release of new "With My Eyes" episodes - Start of experience rental service - Donation to blind schools and facilities nationwide (about 200 units) - α-compatible model verification experiment 	<ul style="list-style-type: none"> - Creation of cultural projects - Formation of user communities - Photo exhibition held in conjunction with GAAD*2 - Events in collaboration with donation recipients - Increased sales accompanying recognition expansion - Diversification of business models 	- Active interest groups (photography, travel, art appreciation, astronomy, sports, gourmet, railways, fashion, pets...) Along with all creativity

Vision Healthcare: Eye Health Check Service MEOCHECK

Simple operation, short-time self-check including peripheral vision for "recognition", "judgment", and "operation."
Provided mainly for transportation businesses as a "driver health management" service aimed at ensuring safe driving and extending driving life



- Quick and time-saving:
Both eyes measured in under 5 minutes, stress-free
- Self-check:
No need for specialist assistance, can be performed anytime
- Early detection:
Early treatment to prevent vision loss, extending driving life
- Compact:
Not cumbersome, easy to set up and transport

Main customers: Automobile transportation businesses



[Implementation Examples]

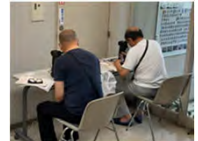
- Nihon Kotsu

Implemented in conjunction with regular health checkups



- Tsubame Kotsu

In addition to regular health checkups, installed at business locations



- Waki Logistics

Implemented in self-service format at bases nationwide

Vision Healthcare: Eye Health Check Service MEOCHECK

Advancing preparations for business expansion, aiming to expand through horizontal development of previous implementation examples.

Implementing concrete measures for business expansion:

- Introduced self-service method (completed)

Realized a self-service method that can be implemented on a flexible schedule.

Can be introduced even for customers with small numbers and multiple locations.

- Built digital platform (completed)

Developed web services that allow viewing results through the web.

Improved customer convenience and can expand future functions.

- Secured operational expansion capability (completed)

Enhanced on-site support through partnerships with other companies.

Can provide services on a nationwide scale.

- Establishing medical evidence (in progress)

Correlation with diseases like glaucoma and retinopathy, correlation with existing devices.

Big data analysis, epidemiological research.

- Contributing to safe driving (in progress)

Linking with accident data, drive recorders, etc.

Continuing, expanding, and horizontally developing previous cases:

Expanding to 1.3 million professional drivers nationwide (Responding to the manual issued by MLIT.)

Also for drivers of company cars, vehicle operations, etc.

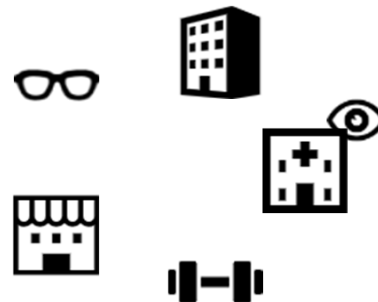


Further developing into permanent service:

Installing in commercial facilities, health facilities, etc.

Expanding from B2B to B2B2C.

Aiming to increase customer visits and customer loyalty.



Vision Healthcare: Connecting MEOCHECK to Smart Glasses

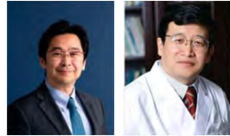
Through data accumulation, establishing medical evidence, and integration with cutting-edge technology, we can provide added value beyond early disease detection, develop services for more people, and realize the ultimate smart glasses.

Data Accumulation with MEOCHECK



- Already accumulated data from approximately 10,000 individuals.
- Screening leads to disease detection and treatment in subsequent medical examinations.

Medical and Public Health Evidence/Supervision



Prof. Nakazawa

Prof. He Wei

- Tohoku University COI-NEXT "Vision to Connect" (Prof. Nakazawa)
Relationship between check results and diseases
- China He Vision Group (Prof. He Wei)
Visual function, cognitive function, disease diagnosis algorithms (using AI)

Integration with Advanced Medical Device Development Areas



- SLO and fundus cameras
- Eye tracking (measuring eye movement, pupil size, etc.)
- Wide-angle field of view, high-resolution imaging

Early detection of eye diseases

Retinopathy, glaucoma, macular degeneration, etc.

Understanding eye health conditions

Eye strain, dry eye, presbyopia, etc.

Assessing overall health through eyes

Cognitive function, stress, concentration, fatigue level, blood flow state, headaches, stiff shoulders, etc.

"Ultimate" Smart Glasses



Augmented Vision: The Potential of "Smart Glasses"

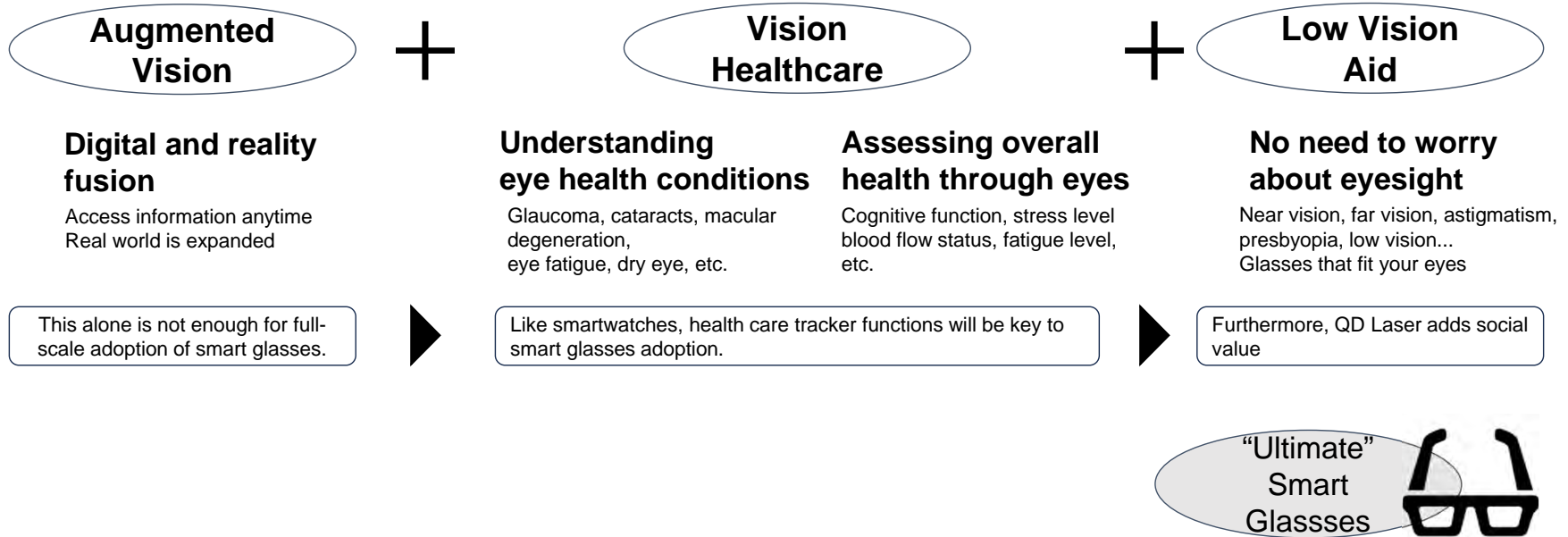
In a situation where the smartwatch market is catching up and rising to challenge the smartphone market, the next market to rise will be the smart glasses market.



Market Size	Recent	USD 450~500 billion ^{*1}	USD 25~30 billion ^{*2}	USD 15~20 billion ^{*3,4}
	Future,2030	~ USD 800 billion ^{*1}	~USD 80 billion ^{*2}	USD 35~50 billion ^{*3,4}
Market Growth Rate (CAGR)		7.3% ^{*1}	14.84% ^{*2}	15~30% or more ^{*3,4}
Market Evaluation		Mature large market	Rapidly growing market	Market expected to grow significantly from now on
Overview and Insights		Has become a "necessity" to the point of being called indispensable. On the other hand, social issues such as smartphone addiction and presbyopia are emerging.	<u>Not just a second display</u> for smartphones, but its role as a <u>health care tracker</u> is driving market expansion	A <u>wearable device</u> that represents the most natural form for the act of viewing a display. However, it is still in a <u>transitional phase</u> in terms of technology and applications.

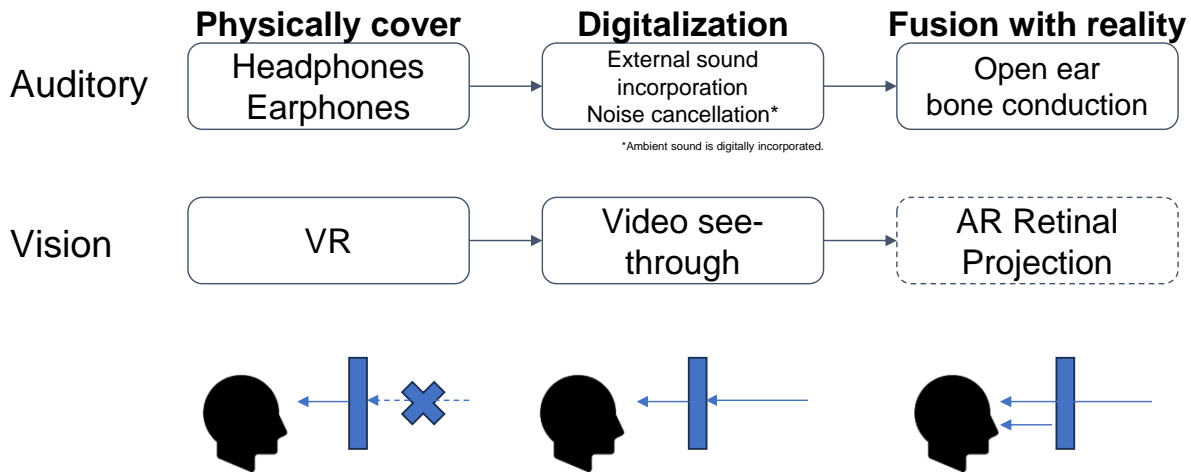
Augmented Vision: Smart Glasses as the Ultimate "Eyewear" Powered by QDL

Three "arrows" are necessary for the full-scale adoption of smart glasses, and by combining QD Laser's technologies, we can provide the ultimate form of smart glasses.



Augmented Vision: (Reference) Fusion of Five Senses and Digital

For auditory devices like headphones and earphones, types that don't completely shut out environmental sounds have been gaining attention in recent years, after progressing from isolation from ambient noise to digital incorporation. For visual devices, video see-through is becoming mainstream, evolving from fully immersive VR. The future will bring an era of AR and retinal projection that realize fusion with reality.



Augmented Vision: Element Technology Development for Smart Glasses

Laser Direct Retinal Projection (DRP) technology is a unique QD LASER technology that can only realize the ultimate AR/MR glasses.

Unique Features : 1) No need for visual acuity adjustment, 2) Ultra-miniaturization possible (projection device placed inside the glasses), 3) Suppression of myopia (axial length expansion)

Small, low power consumption
integrated light source
standardization module^{*1}

Unprecedented high image
quality (1080P) for direct retinal
projection (under development)

Eye-tracking drive system
(patent registered)

Eye tracking technology unveiled
for the first time at CEATEC2024
(Makuhari Messe in October)



05



QD LASER

ESG Initiatives

Business Development Directly Linked to Sustainability

Using the power of semiconductor lasers to increase what's possible, contributing to the improvement of well-being for all humanity.

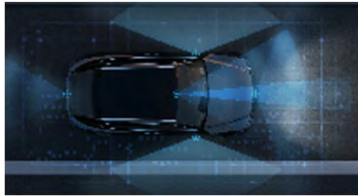
[Laser Device Division]

Advanced Sensing Using Laser Light Sources

New inspection methods using laser light sources

Contribution to innovation through data utilization

Accident reduction in advanced autonomous driving



2024 ————— to —————> 2030

[Visual Information Device Division]

Laser Retinal Projection Technology

Early detection of eye diseases using MEOCHECK

Expanding social implementation of low vision aid

Resolving various inconveniences related to vision



2024 ————— to —————> 2030

Contributing to medical examinations and research, extending healthy life expectancy through the development of preventive medicine, and realizing an inclusive society.

The expansion of QD LASER's technology and business directly leads to the realization of a happier society.

06

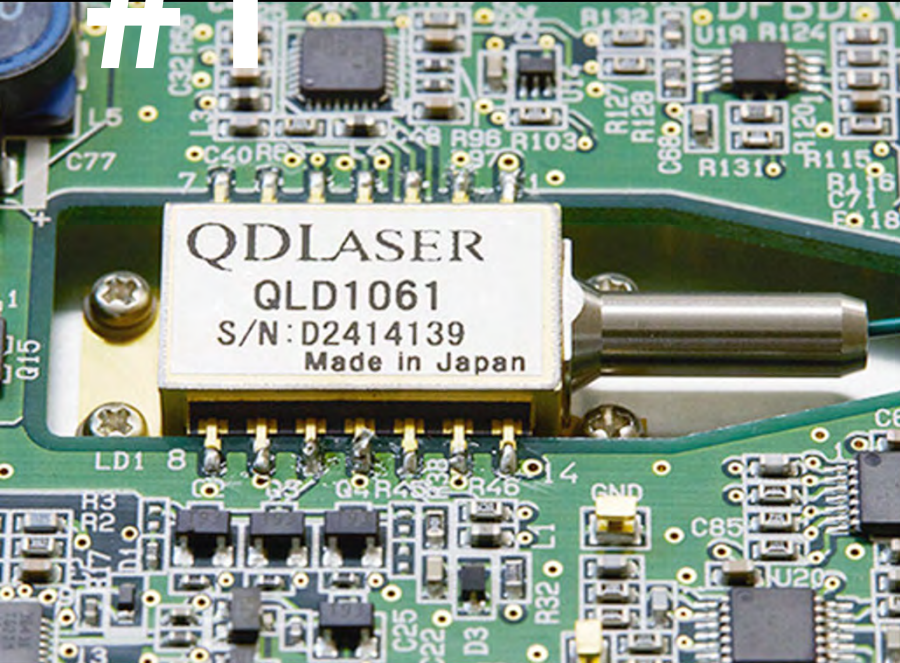


QD LASER

Appendix 1

Main product introduction

#1



DFB Laser

- Applications: Laser processing, measurement, and LiDAR.

Amplifies only the wavelength selected by the diffraction grating. **High output power, high stability, and low noise.** Provides the optimum wavelength for a wide range of applications and required performance.

- **Wavelength lineup of** 1030, 1053, 1064, 1080, 1120, 1180nm
- **Provided in 1nm unit**
- **Non-heated processing is possible by short-pulse operation in picoseconds.**
- **Highly stable and low noise** enables high-precision machining and measurement.
- **Only a few companies worldwide can manufacture DFB lasers in this wavelength band.**

#2

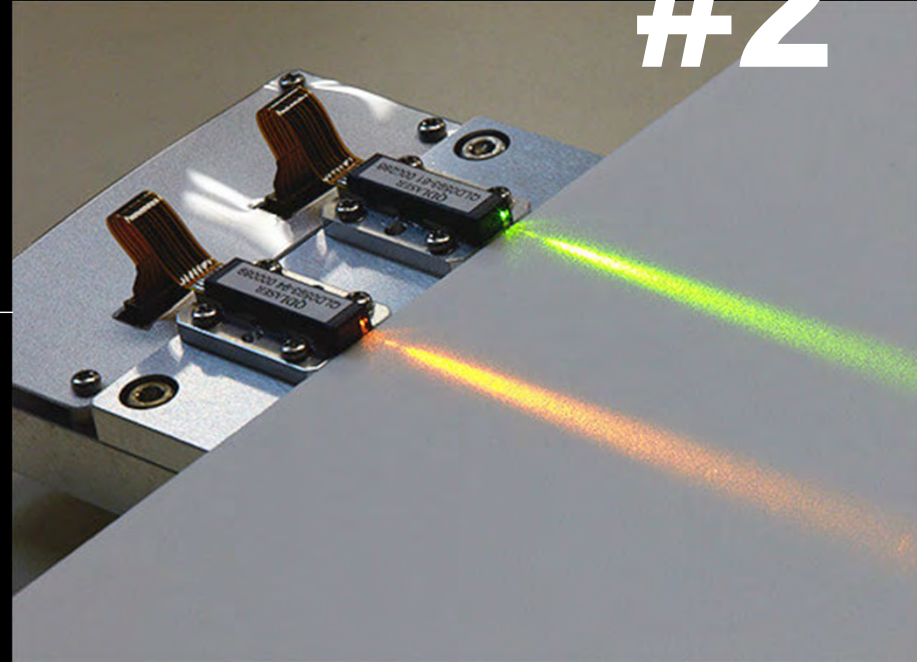
Compact Visible Laser Small Multi-Color Laser Light Source

- Application : Biomedical

Green, Yellow-Green, and Orange visible laser

The **patented technology** * 1 realizes a **small device that other companies cannot manufacture.**

- Wavelength lineup of **532, 561, and 594nm.**
- Used for **"flow cytometer", "cell sorter", "laser microscope", "fundus diagnostics"** etc.
- Wavelength range where there is no direct emitting semiconductor lasers.
- Wavelength doubling with a nonlinear optical crystal.
- Unique semiconductor laser chip and wavelength conversion crystal package achieves miniaturization.
- **Low noise and excellent pulse stability.**



Launch of Palm-Sized Multi-color Compact Laser Light Source for Biomedical Equipment

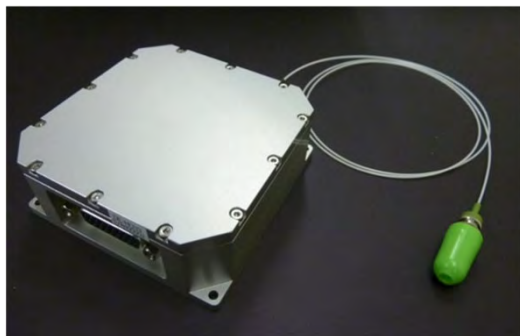
High value-added solution for biomedical equipment *1

- This light source provides manufacturers with all laser wavelengths required for any biomedical equipment in one palm-sized compact module *2 with stable output power and plug-and-play operation.
- This product enables manufacturers to miniaturize their equipment and shorten the development and production period as a new solution.
- Under testing by equipment manufactures.
- QD Laser aims for an industry share of *3 20% in light sources for biomedical equipment in five years.

Compact Visible Lasers



Integrated
into



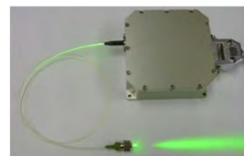
**Palm-Sized Multi-color
Compact Laser Light Source
(80 x 80 x t30mm)**



488nm



660nm

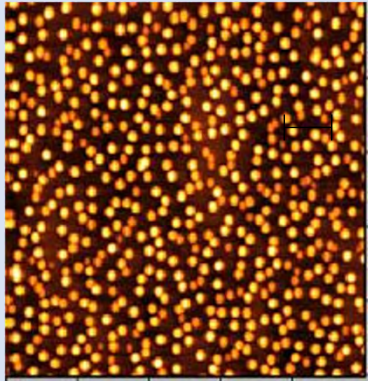


561nm

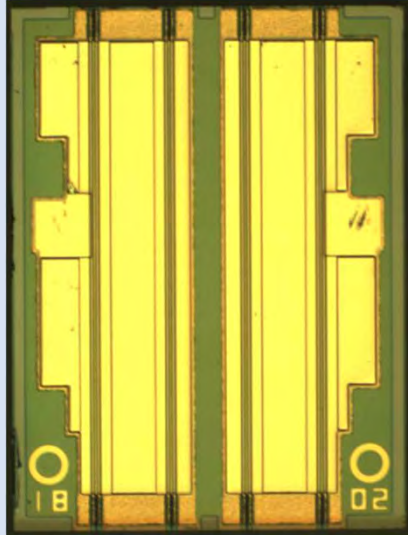


785nm

#3



100
nm



Quantum-dot laser

- Application : Optical communication, LiDAR, and Silicon photonics.

Mass-produced by our world's only technology.

Achieved the **world's highest operating temperature** with excellent temperature stability at 1300nm.

- The wavelength lineup is **1200-1330nm**.
- **Silicon photonics (optical connector-chip communication, LiDAR)** is evolved by quantum dot laser.
- Can operate even in a high temperature environment of **150-200 ° C** . The operating limit temperature of a normal semiconductor laser is 80-100 ° C.
- Can be used in **high-temperature environments such as servers, wireless base stations, and automobiles**.
- **Excellent reflected return light resistance**, leading to miniaturization by eliminating isolators.

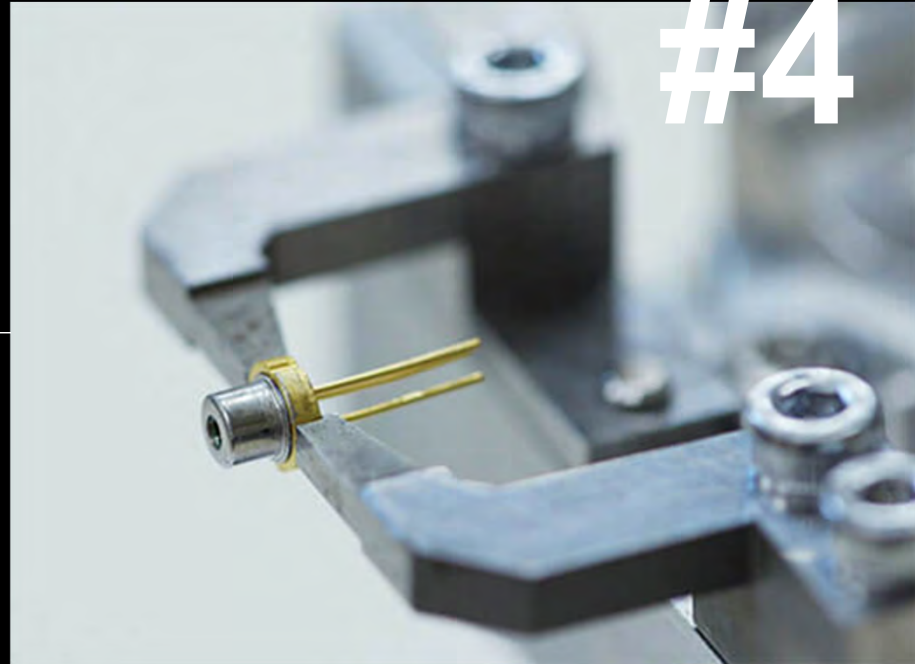
High Power FP Laser

- Applications : Particle Counter, Leveler, Machine Vision and Factory LiDAR.

Highly reliable and high-quality CW / nanosecond pulse high power laser.

Providing services that meet customer requirements, such as usage conditions and small-quantity support.

- The wavelength lineup is **640-940nm**.
- CW and high-power nanosecond pulse drive for a wide range of sensor applications.
- Hearing customer needs on pulse, optical output, reliability, wavelength, and control method to propose optimal products and solution.
- **Small quantity production** possible.

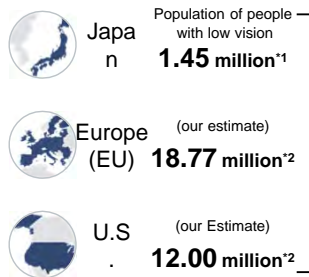


Low Vision Aids: Total Addressable Market (※Anterior eye disease patients only : Ametropia and corneal opacity)

JPY 900 bn (USD 6 bn) Market in Japan, U.S. and Europe

Plan to Expand into Other Countries like China further behind in Ophthalmic Technologies

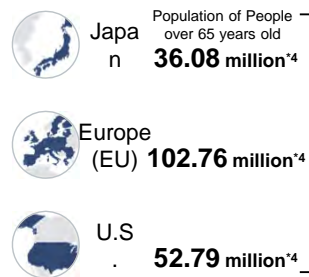
Low Vision Market



Estimated percentage of applicability (our estimate)^{*3} × **11%** × Product Price per Unit (our assumption)^{*6} × **JPY 200k (USD 1.9k)**

Total market size of advanced countries (Our estimate)
JPY 708.7 bn
(USD 6.7 bn)

Senior Citizens Market



Estimated percentage of applicability (our estimate)^{*5} × **1%** × Product Price per Unit (our assumption)^{*6} × **JPY 100k (USD 950)**

Total market size of advanced countries (our estimate)
JPY 191.7 bn
(USD 1.8 bn)

JPY 900 bn (USD 6 bn)

*1: Japan Ophthalmologists Association "Social costs of visual impairment in Japan"

*2: Calculated by multiplying the ratio of persons with low vision sourced from WHO "Visual Impairment and Blindness 2010" by the current population in each region (Europe: Eurostat "Population on 1 January", U.S.: United States Census Bureau "Annual Estimates of the Resident Population for the United States")

*3: According to the survey by Santen Pharmaceuticals, the number of keratoconus patients in Japan is estimated to be 60,000 to 120,000; also, as the data on p.39 shows that the prevalence per 100,000 people of keratoconus is almost the same as that of corneal opacity, it is assumed that the number of corneal opacity patients in Japan is similar to that of keratoconus patients. Assuming the number of patients suffering from each of these diseases to be an intermediate value of 80,000, the total is calculated to be 160,000; then, we apply the estimated percentage of applicability of 11%, calculated by dividing 160,000 by the population of persons with low vision (1,450,000), to each country's population of low vision persons. This percentage only takes into account anterior eye diseases; therefore, if our product is also effective for patients with retinal disease, the estimated percentage of applicability is expected to increase.

*4: Assuming that all the elderly aged 65 and over use near-sighted, presbyopic or bifocal glasses, we can estimate that each country's population aged 65 and over can be the potential population of persons with gap vision (Japan: Statistics Bureau of Japan "Population Estimates May 2020", EU: Eurostat "Population on 1 January by broad age group and sex", U.S.: United States Census Bureau "Population by Age and Sex: 2019").

*5: Due to the products' similarity in characteristics to hearing aids (used by the elderly on a daily basis, wearable equipment, sold at glasses stores, etc.), the hearing aid market is used as a reference to estimate the percentage of applicability. Given that the number of hearing aids shipped in Japan in 2017 numbered 562,747 (Japan Hearing Instruments Manufacturers Association "2018 Shipment Volume of Hearing Aids"), this number divided by the number of elderly people in Japan will give us an estimate that 1.7% of the elderly purchased a hearing aid, which we then adjust conservatively to assume an estimated percentage of applicability of 1.0% which can then be applied to each country's population of gap vision persons.

*6: Expected price per unit after the mass production is realized.

Laser Retinal Projection: Diseases and Applicable Rate

Parts of Eye	Major diseases	# of patients per 100k people*1	Total per eye part*1	Possible Efficacy*2	Estimated applicability*3	Future Outlook	
Anterior eye	Cornea	Corneal angiogenesis	4,000	4,104	◎ Effective on astigmatism and moderate opacity	50%	<ul style="list-style-type: none"> • May not be applicable in cases of severe opacity • Focused on obtaining the approvals to marketing medical devices by targeting diseases for which high efficacy can be expected. • Plan to expand the scope of application with RDII and RDIII on page 25 and the wide-angle viewfinder on page 27.
		Keratoconus	54				
		Corneal opacity	50				
	Crystalline lens	Cataract	47,800	52,900	◎ Effective on near/far-sightedness, astigmatism, opacity, etc. and as the technology does not depend on the function of the crystalline lens	40%	
		Aphakia	5,100				
		Phacocele	<50				
Uvea	Uveitis	714	714	△ Effective on astigmatism developed as a complication	10%		
	Choroidal neovascularization	<50					
Vitreum	Vitreous opacity	NA	-	○ Effective on low to moderate opacity	20%		
Retina	Epiretinal membrane	28,900	55,614	○ Enlargement and black and white inversion features are effective on macular diseases Some efficacy is seen in cases where anterior eye disease is also present AE camera feature is exceptionally effective on photophobia, night blindness, etc.	30%	<ul style="list-style-type: none"> • Adaptable to central scotoma by changing the projection position and increasing magnification • Adaptable to tunnel vision through wide-angle imaging • May not be applicable in cases with severe symptoms 	
	Lattice degeneration of retina	10,600					
	Hypertensive retinopathy	9,100					
	Age-related maculopathy	3,900					
	Diabetic retinopathy	3,114					
	Retinitis pigmentosa	<50					
Optic nerve	Glaucoma	3,550	3,865	△ Image downsizing feature is effective on tunnel vision	10%	<ul style="list-style-type: none"> • May not be applicable in cases with severe symptoms 	
	Optic nerve head drusen	200					
	Optic neuritis	115					
Other	High myopia	3,000	3,000	◎ Exceptionally effective	50%	<ul style="list-style-type: none"> • Can improve by processing images taken by camera 	
	Color amblyopia, color blindness	2,500	2,500	○ -	20%		

07



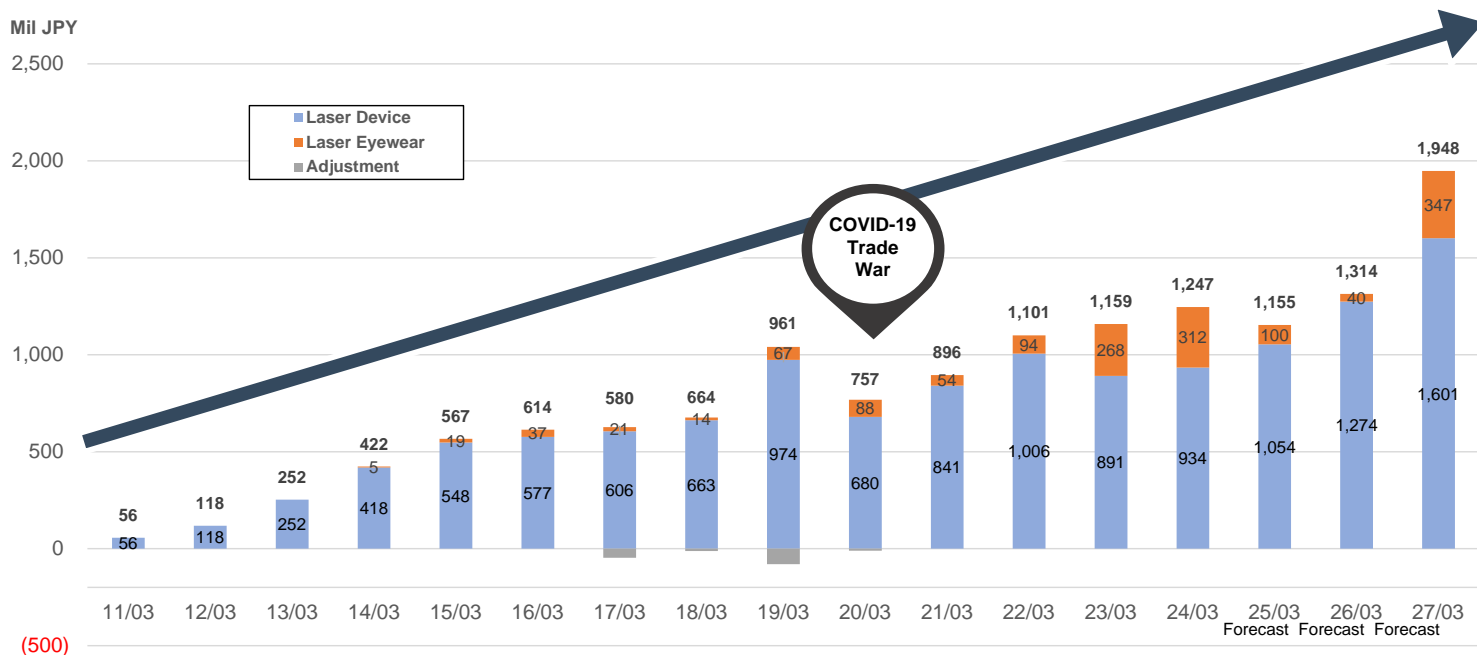
QD LASER

Appendix 2

Performance trends, glossary, etc.

Sales Trend

Exceed one billion yen for the first time in FY2021, Record high sales in FY2023, forecasting company-wide profitable sales in FY 2026.



Laser Device Business Sales Trend

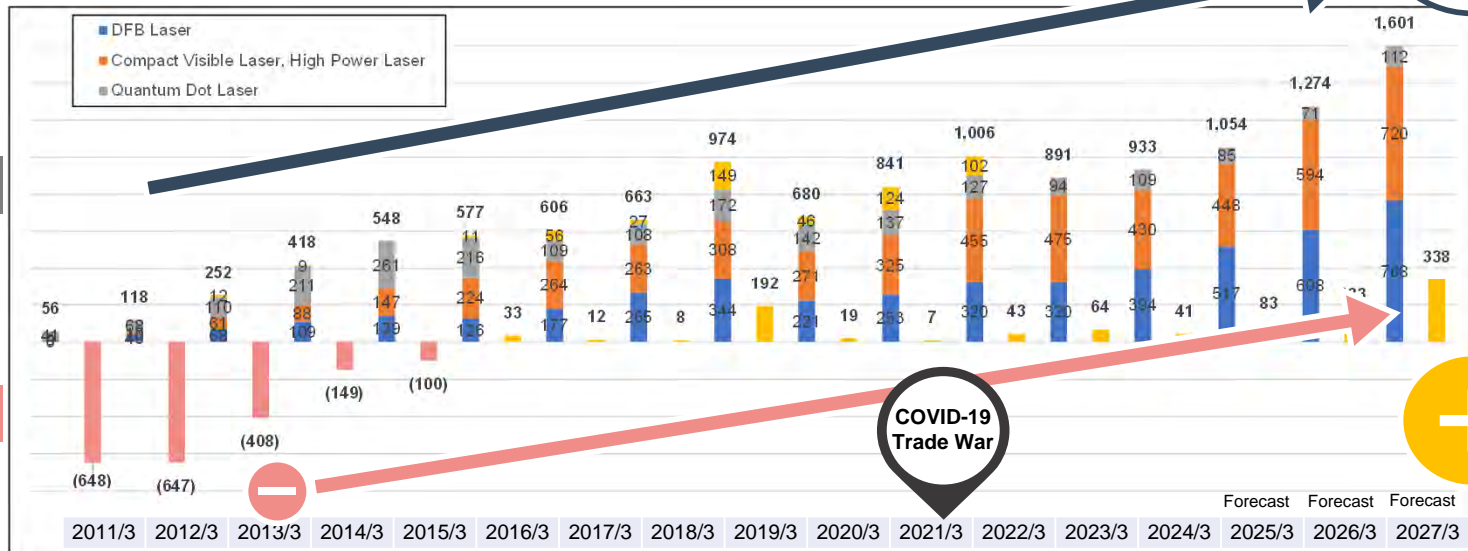
Growth of the semiconductor laser market and expansion of applications.
Sales are expected to be 1 billion yen in FY2024, 1.6 billion yen in FY2026.

16yrs CAGR*1

23%

Revenue

Operating Profit



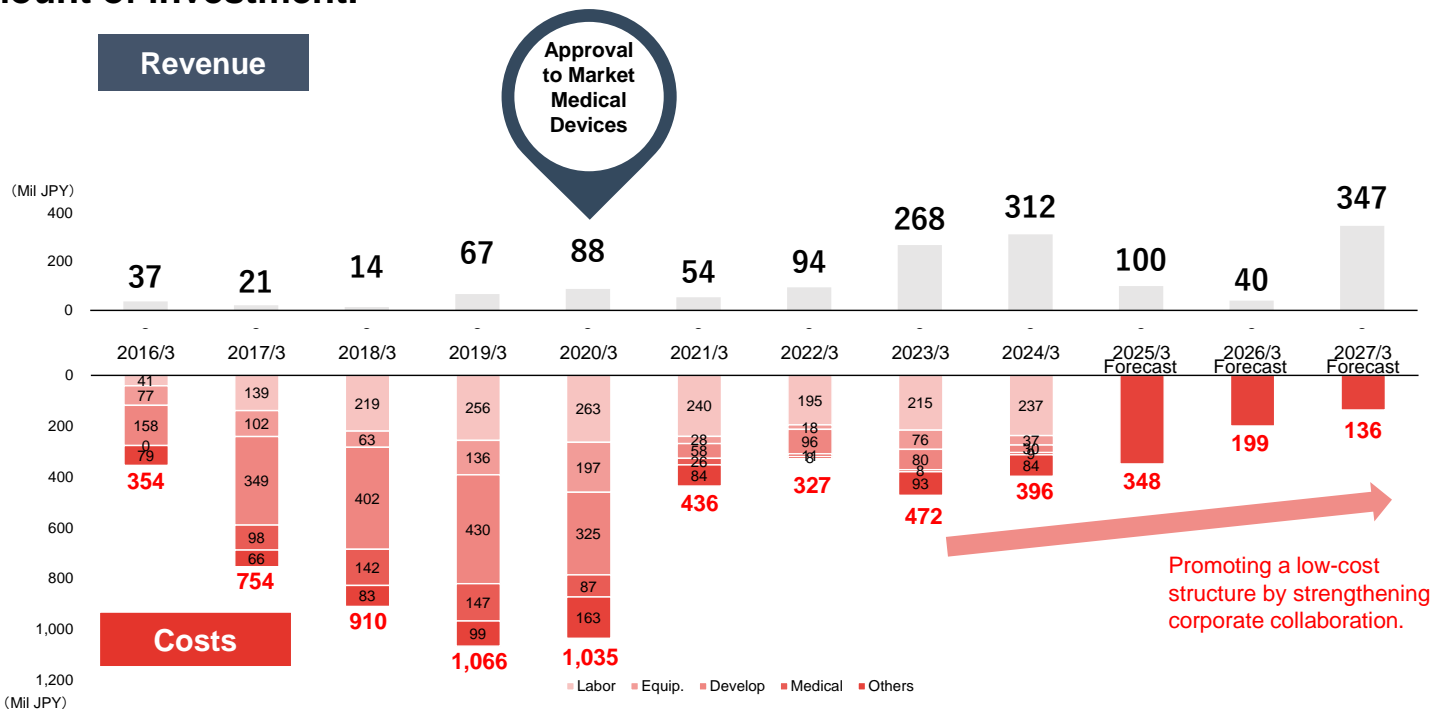
COVID-19 Trade War



	2011/3	2012/3	2013/3	2014/3	2015/3	2016/3	2017/3	2018/3	2019/3	2020/3	2021/3	2022/3	2023/3	2024/3	2025/3	2026/3	2027/3
Sales of Segment	56	118	252	418	548	577	606	663	974	680	841	1,006	891	934	1,054	1,274	1,601
Adjustment	0	0	0	0	0	0	(47)	(13)	(80)	(11)	0	0	0	0	0	0	0
Sales of Segment after adjustment	56	118	252	418	548	577	559	650	894	669	841	1,006	891	934	1,054	1,274	1,601

Visual Information Device (Laser Eyewear) Business: Profit Structure

Preparing for increased sales of future smart glasses, eye health check services, etc. with a fixed amount of investment.



Fund allocation plan

Main purpose of raised fund by IPO and stock acquisition rights

- (1) Manufacturing costs for retinal projection products and working capital for the VID business and head office labor costs, rent, IP costs, etc.
 (2) Expenses for increasing production capacity and capital and business alliances in the LD business.

内容	Raised Amt ² (Spent Amt) ³	FY2021	FY2022	FY2023	FY2024	FY2025 onwards
Manufacturing cost for the mass production in the VID business	1,342					
	(682)					
Development cost in the VID business	63					
	(0)					
Labor costs, rent, IP costs, etc. in the VID business and Head office	1,528					
	(0)					
Production capacity reinforcement in the LD business	2,927					
	(198)					
Labor costs	175					
	(0)					
Advertising expenses	100					
	(5)					
M&A, capital and business alliance investment	300					
	(0)					
Total	6,428					
	(885)					

Management Profiles



- 1982: Joined Mitsui & Co., Ltd.
- 2005: President & CEO, MVC Corporation
- 2006: Outside Director, QD Laser Inc. (to 2009)
- 2012: Senior Vice President of Mitsui & Co. (U.S.A.), Inc.
- 2018: President & CEO, Infomart Corporation
- 2022: Chairman and Director, Infomart Corporation
- 2024: Outside Director, Infomart Corporation (current role)
President & CEO, QD Laser, Inc. (current role)



Outside Director
Tsutomu Yoshida

- 1980: Joined Mitsui & Co., Ltd.
- 2013: Assumed the role of Director of QD Laser (current role)
- 2024: Executive Advisor , Strategy, at Mitsubishi Chemical Holdings Corporation (current role)



Outside Director
Kaoru Hatano

- 2001: Joined Semiconductor Energy Laboratory Co., Ltd.
- 2022: Assumed the role of Director of QD Laser (current role)
- 2023: Assumed the role of R&D department, at Cardio Intelligence Inc.(current role)



Founder & Technology Superintendent
Mitsuru Sugawara

- 1984: Joined Fujitsu Ltd.
- 2006: Launched QD Laser Inc.; assumed the role of President and CEO
- Notable awards:
 - Science and Technology Award from the Minister of MEXT
 - Prime Minister's Honorary Award for Achievement in Industry-Academia- Governmental collaboration



Technical Advisor
Yasuhiko Arakawa

- Serves as Head of Institute for Nano Quantum Information Electronics, and Director of Center for Photonics Electronics Convergence, Institute of Industrial Science, University of Tokyo
- Notable awards:
 - Reona Esaki Award
 - Prime Minister's Honorary Award for Achievement in Industry-Academia- Governmental collaboration
 - Medal with Purple Ribbon

Possible Risks

The main business risks we are aware of and their countermeasures are as follows.

<Business Risks*1>

Economic trends

- The laser-related market in which we are entering is expected to continue its growth trend, mainly for industrial and medical equipment such as precision processing equipment and bio medical equipment. If market growth slow down due to economic trends and the accompanying decline in capital investment motivation, our business performance and financial position may be affected.

Management deterioration of manufacturing contractors and quality accidents

- We have a fables manufacturing policy, so we outsource manufacturing to an external partner company. Considering the characteristics of each company, we decide the manufacturing items to each company according to the manufacturing capacity of our products.
- For each company, we carry out quality inspections and confirmation of business conditions. If the management of the contractor deteriorates or a quality accident occurs, it is possible to easily change the contractor, but it will affect our business performance and financial position until the new production system is rebuilt.

Cash flow and financing

- With the progress of our R&D activities, a large amount of R&D expenses have been recorded in advance. It is expected that the demand for working capital, R&D investment, capital investment, etc. will continue to increase as the business progresses. We will continue to strengthen our financial position in the future. But depending on the status of profits or raising funds, it may affect our business performance and financial position.
- In addition, regarding the use of funds raised through the public offering, we plan to allocate it to the manufacturing cost of LEW business, R&D cost of LEW business and working capital such as personnel expenses, rent, IP expenses of LEW business and head office, etc. but due to sudden changes in the business environment, etc., it may be used for purposes other than the originally planned use of funds and the return on investment may not be as expected. In addition, regarding the use of funds raised through the stock acquisition rights with exercise price amendment clauses, we plan to mainly use them for increasing the production capacity of the LD business and for M&A, but due to sudden changes in the business environment, etc. it may be used for purposes other than those specified, and the investment effect may not be as expected.

Partnership with other companies in laser eyewear business

- Each device in the laser eyewear business is sold to end users through sales agents such as optical stores, pharmaceutical and medical device manufacturers, and specialized trading companies, as well as EC sites operated by agents. In addition, we provide equipment, parts, and modules to business partners, who commercialize or package them for sale.
- The sales plan for the laser eyewear business is created based on the sales targets of these partners and the agreements that have already been concluded. These sales targets were set based on marketing activities, etc., prior to market launch. However, retinal projection devices are almost unprecedented products in the market. Any changes, etc., may affect our business performance.

<Possibility/
Time>

» Middle/
Medium to
long term

» Low/
Medium to
long term

» Middle/
Medium to
long term

» Middle/
Medium to
long term

<counter-measure>

» Promote the construction of a business model that is resistant to economic fluctuations by entering a wide range of markets

» Disperse risks by securing multiple outsourcers

» Secure financing means by promoting the establishment of bank credit lines such as commitment lines and overdrafts

» Disperse risks by diversifying alliances

Terminology

Semiconductor laser	A compact device with an approximate length of 1mm that causes laser oscillation by passing an electric current to a semiconductor. In comparison with a solid-state laser or gas laser, more micro-miniature in size; higher speed modulation characteristics up to 10GHz; higher photoelectric conversion efficiency achieving several tens of percent and better controllability of wavelength, among other things. Became widely used in the 1980s as a light source for communication systems and optical recording media, such as CDs and DVDs, etc.
Quantum dot laser (QDL)	A semiconductor laser using a quantum-dot structure comprising nanocrystalline semiconductors in its active layer. QD Laser is the only firm in the world to mass-produce QDLs for optical communications and silicon photonics. In comparison to existing semiconductor lasers, it is superior in temperature stability, high-temperature endurance and low-noise properties.
DFB laser	Distributed Feedback Laser: QD Laser's DFB laser is equipped with a diffraction grating which enables laser oscillation at a single wavelength. It is suitable for applications where the light output needs to be concentrated into a narrow wavelength range, such as the seed light of a fiber laser.
Silicon photonics	A technology which integrates an optical circuit with a silicon electronic circuit that has signal processing and memory functions, thus enabling a breakthrough in the processing capacity limitation of the conventional electronic circuit system (achieving 100 times faster processing speed and lower power consumption) and high-capacity data transmission between LSI chips (10Tb/s).
VISIRIUM technology	A technology that projects images onto the retina using precise optical systems, creating different colors flexibly from the three primary laser light colors - red, green and blue.
Diffraction grating technology	A technology that freely and precisely controls the wavelength of semiconductor lasers to fit into various applications by forming periodic irregularities inside the laser.
Ultrashort pulse	A laser with a very short pulse width (duration). It is used for microfabrication and other processes as it can prevent shape distortion due to thermal effects.
Multi color laser	A module that mounts up to four different wavelength lasers in one small package. Main application is biomedical equipment.
Retinal projection	To project images onto the retina
Flow cytometer	A device capable of measuring certain properties of cells. By irradiating a cell suspension in a tube with a laser beam, it can measure the number and size of a large volume of cells over a short period of time using fluorescence and scattered light parameters. It is used in various fields including molecular biology, pathology, immunology, plant biology and marine biology.
LiDAR	LiDAR (Light Detection and Ranging) is a technology which irradiates an object and uses a light sensor to detect the reflection to measure the distance. It is expected to be used in autonomous driving systems in the future.

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