Quarterly Financial Results Briefing
First Quarter of FY2024

QD Laser, Inc.
August 2024

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Remarks from Osamu Nagao, President & CEO

I am pleased to present QD Laser, Inc.'s financial results briefing for the first quarter of Fiscal Year 2024 (April to June 2024).

First Quarter profit and revenue declined compared to the same period last year; I observe, however, when reviewed in light of the initial budget, the results were, by and large, in line with expectations (development contract sales, which account for a large portion of the Visual Information Device sales budget, were lower than planned, but this is due to some delay in the timing of prospective projects).

Based on preliminary figures, cumulative sales through July are expected to exceed the same period last year; we will continue to take measures to promote growth.

It has been a little more than a month since I accepted the CEO role. I have been working on a three-year medium term business plan ending Fiscal Year 2026, which marks the 20th anniversary of QD Laser's founding. As regards business areas for which substantial time and resources will be required to achieve a good amount of success, we are exploring alliance possibilities with third parties, as well as trying on our own; we will need some more time before we can show you its approximate outlines. As I am attempting to formulate a viable path to profitability and further growth, I would appreciate your patience for a while.

Thank you for your continued support.

Osamu Nagao
President & CEO

Mission

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

Contents

01 Financial Results for FY2024-Q1

02 Semiconductor Laser Devices

03 ESG Initiatives

04 Terminology

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.

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

Company Profile

Spin-off venture from Fujitsu.
IPO in February 2021 at TSE Mothers (currently Growth): securities code: 6613

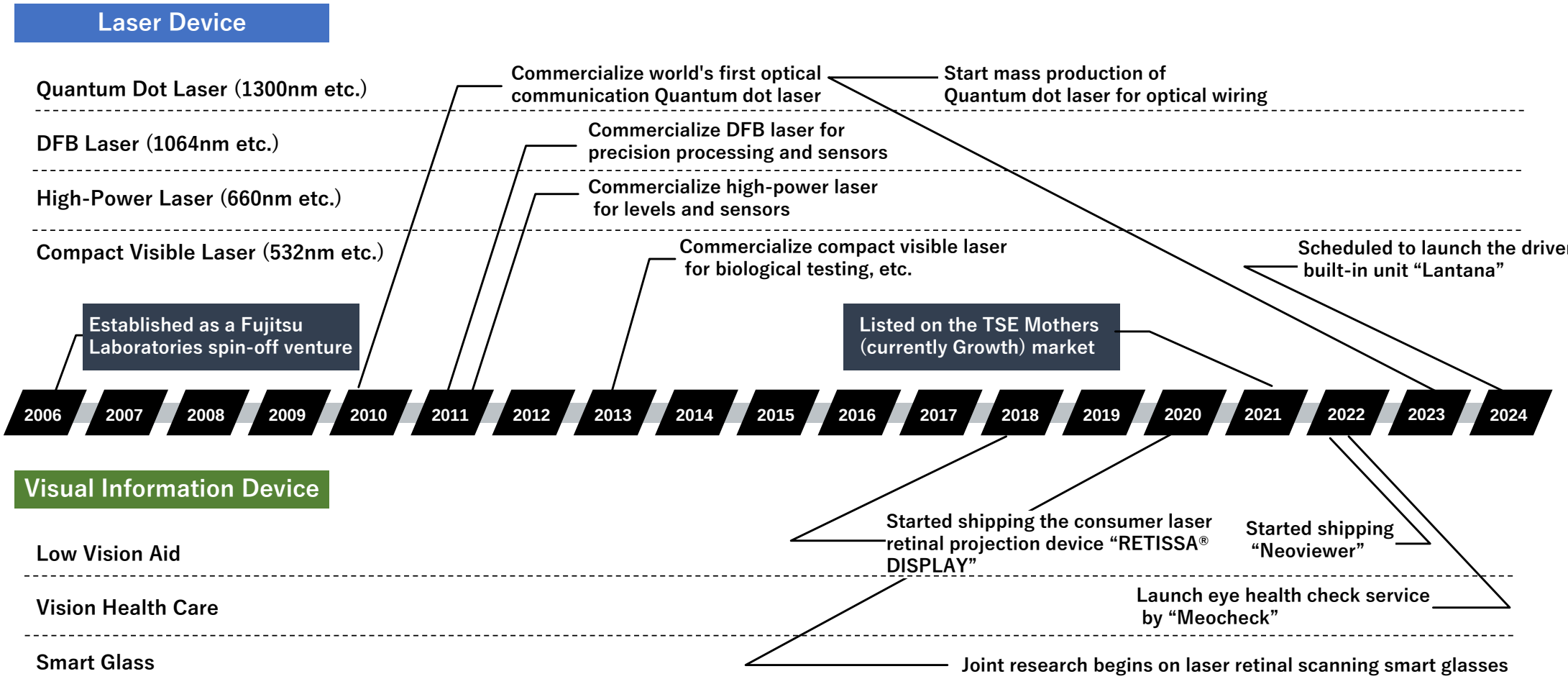
Company Name	QD Laser, Inc.
Foundation	April 24, 2006
Fiscal year-ended	March 31
Representative	Osamu Nagao, President and CEO
Number of Persons *1	47
Location	Headquarters: 1-1 Minamiwatarida-cho, Kawasaki-ku, Kawasaki-shi, Kanagawa
Business	・Semiconductor Laser Device business ・Commercialization of state-of-the-art semiconductor lasers for communication, processing, and sensors. ・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	• Class II Marketing License for Medical Devices • Registration of medical equipment manufacturer • ISO 9001 • EN ISO 13485



Osamu Nagao, President &CEO

*1: As June 30, 2024. Excluding 14 dispatched employees.

History of product expansion



Q1

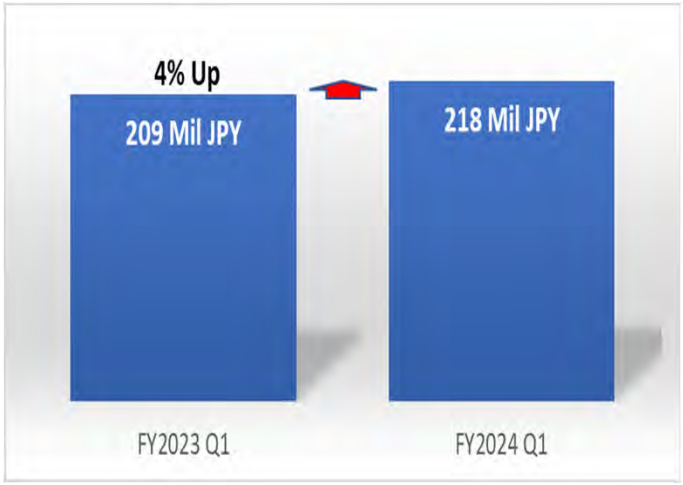
Financial Results for FY2024-Q1

Financial Results Highlights for FY2024-Q1 vs FY2023-Q1

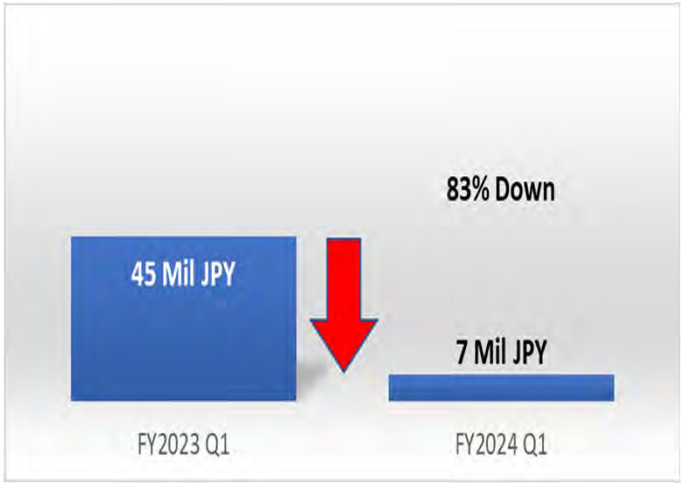
01 **Laser Device (LD) business sales increased 4% YOY to 218 million yen, Visual Information Device (VID)[*1] business sales decreased 83% YOY to 7 million yen, and company-wide sales decreased 12% YOY to 226 million yen.**

The LD business increased by 4% due to an increase in DFB lasers and small visible lasers, although sales of high-power lasers and quantum dot lasers decreased. The VID business decreased by 83% due to the elimination of RETISSA NEOVIEWER sales in the U.S. from the same period last year, and delivery dates for development contracts were weighted toward the second half.

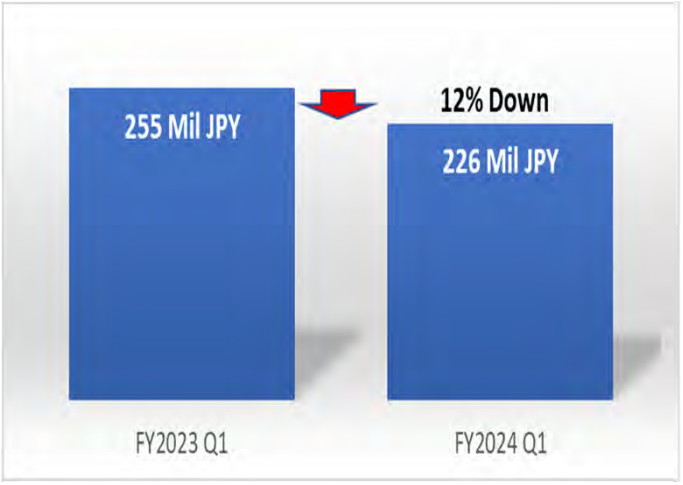
LD sales



VID sales



Company-wide sales



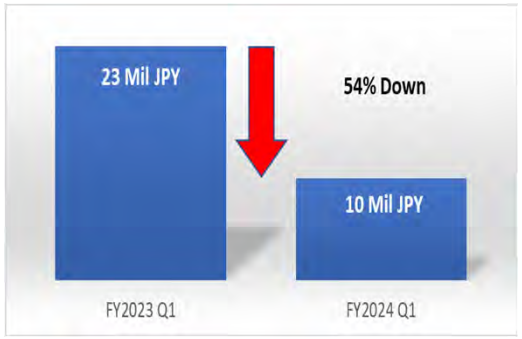
*1 : Name changed from laser eyewear (LEW) due to expansion of business area.

Financial Results Highlights for FY2024-Q1 vs FY2023-Q1

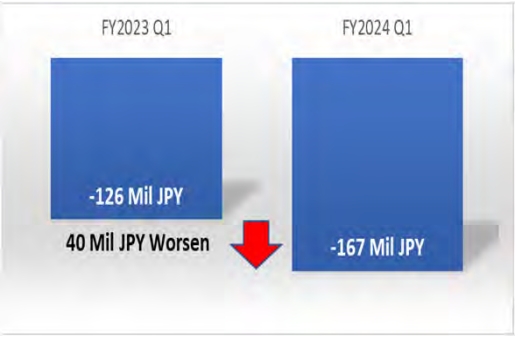
02 LD business operating income decreased 54% YOY to 10 million yen, and company-wide operating loss worsened by 40 million yen (32%) YOY.

In the LD business, although sales increased, operating income decreased by 54% compared to the same period of the previous year due to an increase in SG&A, including personnel expenses and recruitment fees due to increased staff, brokerage fees for relocating to a new base, and development expenses due to development progress. The amount was 10 million yen. The VID business was greatly affected by the decline in sales, and operating loss was 92 million yen, a worsening of 24 million yen from the same period last year. As a result, the operating loss for the entire company was 167 million yen, a worsening of 40 million yen from the same period last year..

LD operating income



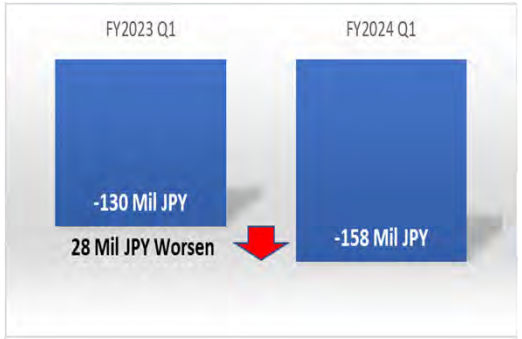
Company-wide operating loss



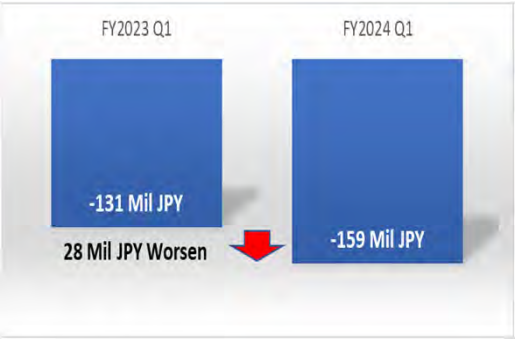
03 Ordinary loss worsened by 28 million yen (22%) compared to the same period last year, and quarterly net loss worsened by 28 million yen (22%) compared to the same period last year.

Ordinary loss was 158 million yen, worsened by 28 million yen compared to the same period last year, which was less than the deterioration in operating income because there were no expenses associated with the exercise of stock acquisition rights that occurred in the same period last year. Net loss also worsened by 28 million yen, the same as ordinary loss, to 159 million yen.

Ordinary loss



Net loss



Financial Results Highlights for FY2024-Q1 vs FY2023-Q1

Sales decreased and losses increased compared to the same period last year

Sales increased by 4% YOY in the LD business and decreased by 83% YOY in the VID business, resulting in a 12% YOY decrease in sales for the entire company. Operating income decreased by 54% year on year in the LD business to 10 million yen, and in the VID business it worsened by 24 million yen compared to the same period last year, and company-wide operating loss worsened by 40 million yen (32%) compared to the same period last year.

Performance Summary

(Million JPY)	FY2024 Q1	FY2023 Q1	YOY
Sales	**226**	255	△12% (△29)
(LD)	**218**	209	+4%
(VID)	**7**	45	△83%
Operating Profit or Loss (△)	**△167**	△126	△40
(LD)	**10**	23	△12
(VID)	**△92**	△67	△24
Ordinary Loss (△)	**△158**	△130	△28
Net Loss (△)	**△159**	△131	△28

Sales by Product Group

(Million JPY)	FY2024 Q1	FY2023 Q1	YOY
DFB Laser	**113**	77	+45%
Compact Visible Laser	**66**	41	+60%
High-Power Laser	**38**	46	△17%
Quantum Dot Laser	**0**	44	△100%
LD Total	**218**	**209**	**+4%**
Products	**4**	30	△85%
NRE	**0**	11	△92%
Health Check Service	**2**	4	△44%
VID Total	**7**	**45**	**△83%**
Grand Total	**226**	**255**	**△12%**

Balance Sheet

Total assets decreased by 340 million yen due to a decrease in cash and deposits, total liabilities decreased by 175 million yen due to decreases in accounts payable and other accounts payable, and the equity ratio was 94.8% (92.1%[*1] at the end of the previous fiscal year). became.

Balance Sheet

(Million JPY)	**End of June 2024**	End of March 2024	YOY
Current Assets	5,389	5,762	△373
Fixed Assets	417	384	＋32
Total of Assets	**5,806**	**6,146**	**△340**
Current Liabilities	271	444	△172
Fixed Liabilities	31	34	△2
Total of Liabilities	**303**	**478**	**△175**
Net Assets	**5,502**	**5,667**	**△164**
Total Liabilities and Net Assets	**5,806**	**6,146**	**△340**

*1 : Calculated by deducting subscription rights of 6 million yen from net assets

Order Status

As of the end of the first quarter, sales + order backlog (planned sales within the fiscal year) accounted for 43% of expected annual sales.

Net sales for FY2024-Q1 and order backlog as of the end of the FY2024-Q1



*1 : Expected sales within this fiscal year

DFB Lasers[*1]：Sales in FY2024-Q1

113 million JPY sales, increased by 45% YOY.

- **Measurement(semiconductor wafer inspection): 0%**[*2]

•Europe: Light sources for inspection equipment in the semiconductor wafer process. Expected to receive orders again in the second half of the year due to inventory adjustment.

- **Micromachining: 49%**[*2]

•North America: Sales of 20,272K yen due to orders for lasers for processing equipment.

•China: Sales of lasers for processing equipment increased by 36% YOY.

- **Measurement(Sensor system): 26%**[*2]

•Europe: Sales of 6,786K yen due to orders for light sources for LiDAR.

•China: Sales of 16,406K yen due to orders for light sources for sensors.

•North America: Sales of 8,614K yen due to orders for light sources for sensors.

- **Medical equipment: 23%**[*2]

•Japan: Sales of light sources for ophthalmic diagnosis increased by 34% YOY.

•Europe: Sales of 5,632K yen for light sources for medical inspection due to samples orders for mass production certification.

Sales of Q1 in FY2022, 2023 and 2024





DFB lasers
Left：for 15 ps pulsed operation
Right：for 50 ps pulsed,
ns pulsed, and CW operations

*1 : Classified for convenience according to application, including some FP lasers, etc.
*2 : Percentage in DFB laser sales.

Compact Visible Lasers：Sales in FY2024-Q1

66 million JPY sales, increased by 60% YOY.

- **Blood/cell analysis(Flow cytometer/cell sorter[*1]): 72%[*3]**

•China: Sales of light sources for biomedical equipment increased by 163% YOY due to end of inventory adjustment.

・China: Sales of 2,499K yen for light sources for biomedical equipment due to samples orders for mass production certification.

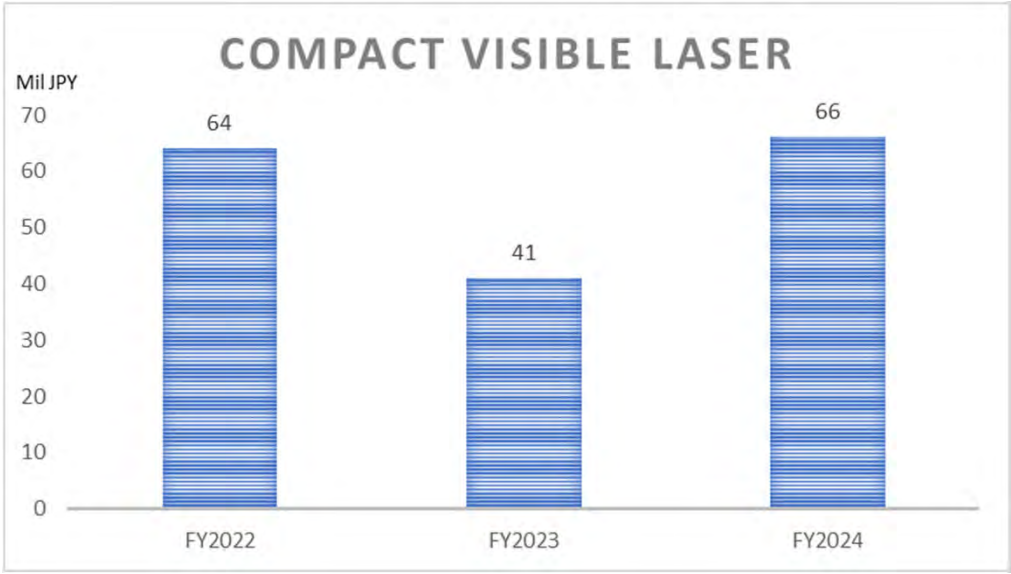
- **Microscope: 25%[*3]**

•Europe: Orders for 2Q already received from a biomedical STED microscope[*2] manufacturer.

•Europe: Sales of 2,180K yen for light sources for biomedical equipment due to samples orders.

•Japan: Sales of 6,424K yen for light sources for biomedical equipment due to samples orders for mass production certification.

Sales of Q1 in FY2022, 2023 and 2024



Compact visible lasers
Left: green,
Middle: yellow-green, and
Right: orange.



*1 : A type of flow cytometer to separate specific cells.
*2 : STED: STimulated Emission Depletion microscopy. A type of fluorescence microscope.
*3 : Percentage in compact visible laser sales.

High-Power Lasers：Sales in FY2024-Q1

38 million JPY sales, decreased by 17% YOY.

- **Leveler for construction/DIY and sensor: 48%**[*1]

•China: A light source for sensors and levelers. Sales decreased by 24% YOY due to the impact of the suspension of factory operations.

•North America(USA): Sales of light sources for sensors decreased by 56% YOY due to inventory adjustment.

•North America(Canada): Sales of 2,170K yen due to orders for light sources for sensors.

- **Sensor in semiconductor factories: 28%**[*1]

•Japan: Sales of light sources for sensors of wafer transfer machines to be used in semiconductor factories for 2 companies decreased by 48% YOY due to low orders.

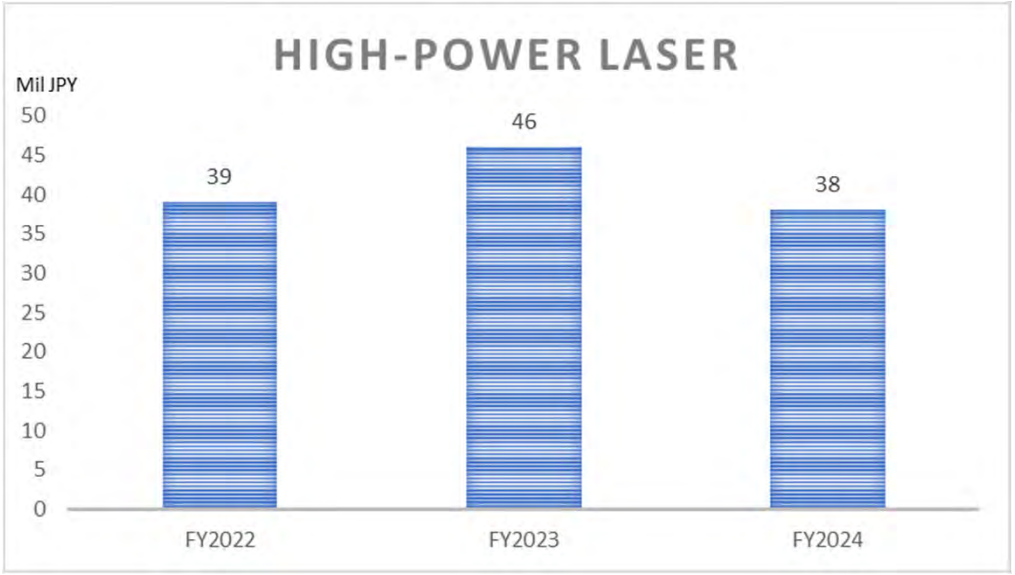
•North America: Sales of 1,844K yen due to orders for light sources for particle counters.

- **Machine vision and data communication in factories: 20%**[*1]

•Japan: Sales of 2,556K yen due to orders for light sources for machine vision.

•North America: Sales of light sources for machine vision decreased by 18% YOY due to low orders.

Sales of Q1 in FY2022, 2023 and 2024





High-power lasers
TO package

*1 : Percentage in high-power laser sales.

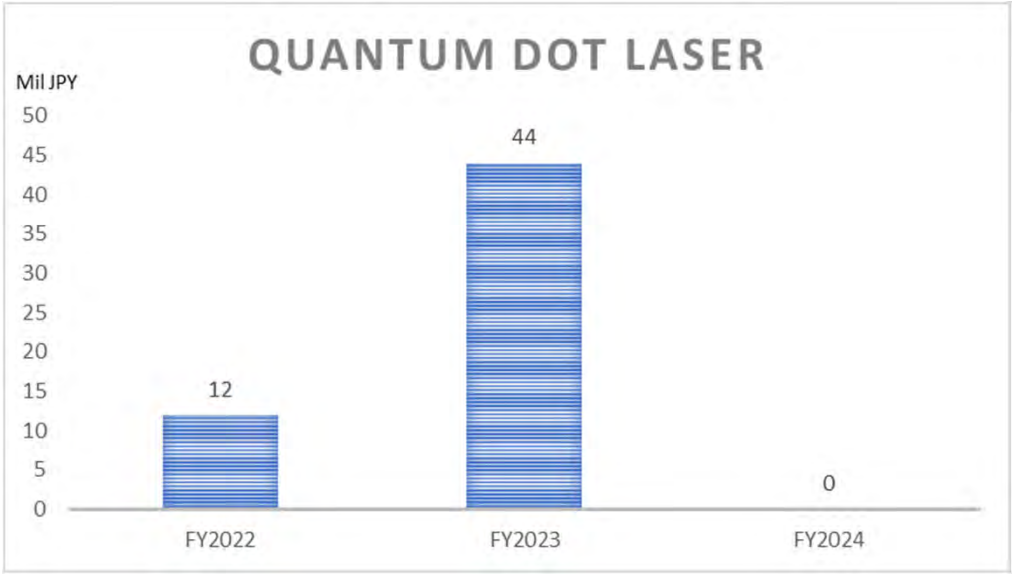
Quantum Dot Lasers[*1] : Sales in FY2024-Q1

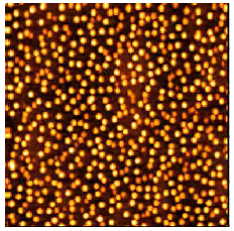
No sales in FY2024-Q1.

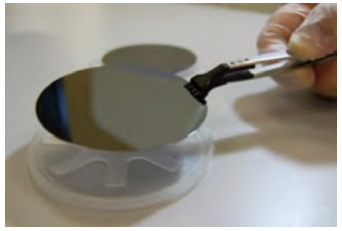
Working on quantum-dot lasers for silicon photonics with nine customers in Japan, the US, and Europe.

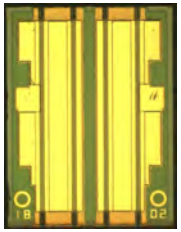
•Japan: Shipped chips for optical connector and chip-to-chip communication. Continuing cost-reduction activities. Mass production started in 2023, and 60,000 units were ordered from 2023 to 2024. 18,000 units will be shipped in the second half of 2024. The forecast after 2025 is currently being confirmed.
•North America: Under discussion about next order of wafers for optical connector and chip-to-chip communication.
•North America: Under discussion about repeat orders of wafers for optical connector and chip-to-chip communication.
•Six universities and research institutes in Japan, North America and Asia: Inquiries about quantum dot wafers for research and under discussion about new orders.

Sales of Q1 in FY2022, 2023 and 2024




Quantum dot


Quantum dot wafer


Quantum dot laser chip

*1 : Classified for convenience according to application; includes some quantum well lasers, etc.

Visual Information Device (VID)[*1] : Sales in FY2024-Q1

7 million JPY sales, decreased by 83% YOY.

・RETISSA MEOCHECK
- Currently selling through the “NIHON GANKA IRYOCENTER CO.,LTD” as the sole agent
- Expanding the “eye health check service” to the transportation and logistics industry

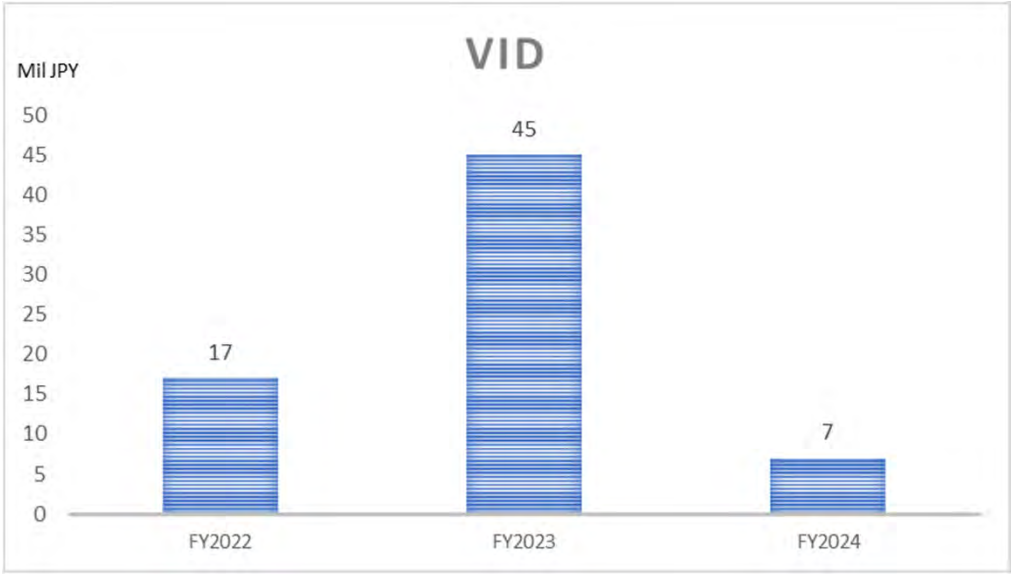
・RETISSA NEOVIEWER
- Released by Sony as a bundle with a digital camera, the "DSC-HX99 RNV kit"
- Available at five Sony stores in Japan and on the US website
- Additional shipments have been made domestically

・RETISSA ONHAND
- Sold through a domestic general agent in the administrative and welfare fields
- Promotion activities in collaboration with public facilities
- "New ways to watch soccer" initiative begins
- Registered as a gift in return for Kawasaki City’s hometown tax donation
- Certified by the Ministry of Health, Labor and Welfare as an item for the physically disabled, and tax-exempt from April 2024

・RETISSA Display II + RD2CAM
- Continued sales through agents and various EC channels
- Registered as a gift in return for Kawasaki City’s hometown tax donation

・Development
-We are currently working on developing various elemental technologies, including eye tracks, for next-generation Retinal Projection Laser Eyewear (smart glasses), aiming to receive development orders in the second quarter.

Sales of Q1 in FY2022, 2023 and 2024





RETISSA ON HAND　RETISSA MEOCHECK
RETISSA NEWOVIEWER

*1 : Name changed from laser eyewear (LEW) due to expansion of business area.

02

Business Summary

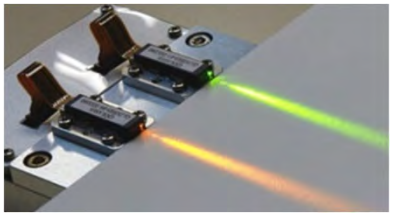
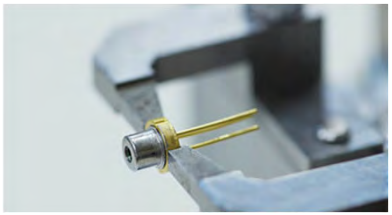
Two Businesses to Expand Human Capabilities

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 areas.

Business	**Laser Device (LD)**	**Visual Information Device (VID)※**
Area	Innovation in Communication, Measurement, and Processing	Innovation in Vision
What we can already "do" now	**High-speed and stable communication** **Precise measurement in biomedical and semiconductor manufacturing** **High-speed and high-precision processing**	**Using laser retinal projection technology to make the difficult-to-see visible (Low Vision Aid)** **Eye health check using laser retinal projection technology (Vision Health Care)**
What we can do from now on	**Dramatic improvement in computing power through optical interconnects** **Safer autonomous driving through light sensing** **More detailed analysis and measurement**	**New visual experiences in the AR/VR field** **The "ultimate" smart glasses**

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

	Compact visible lasers	High power laser	DFB laser	Quantum dot laser
Produccts				
Wavelength	**532, 561,594 nm**	**640-940nm**	**1030, 1053, 1064, 1080, 1120, 1180nm** **1020-1120nm provided 1nm by 1nm**	**1200-1330nm**
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	Measurement Processing	Measurement Communication Silicon photonics
			Bio.	

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

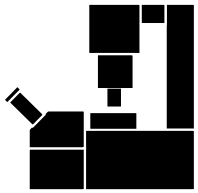




Flow cytometer

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.

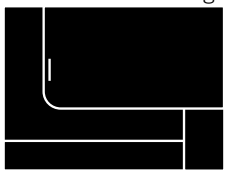
Spatial resolution 50nm

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

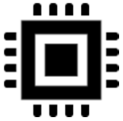
Surface roughness 1/4

Throughput X 2*1

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

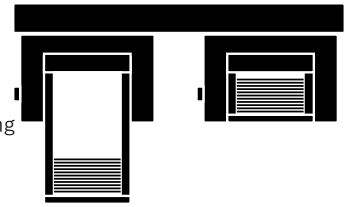
Semiconductor Processing

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



Semiconductor wafer transfer machine

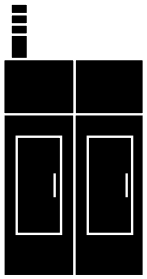
A device for transporting plate-shaped semiconductors.
Adopted as a collision prevention sensor



Semiconductor inspection equipment

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

Time resolution 15ps



1: Comparison with the same pulse energy. Versus 1064nm nanosecond laser. Our calculation based on Gregory Eberle and Konrad Wegener, Physics Procedia 56 (2014) 951-962.

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~)

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.

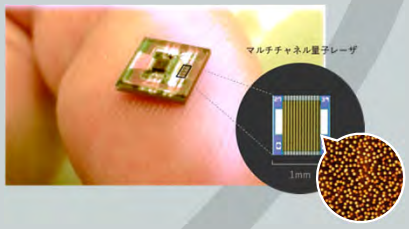
3rd phase
Accelerating the Integration of Humans and Information(2020s~)

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
- Visal field testing

Nanotechnology of QD laser to generate and control laser light

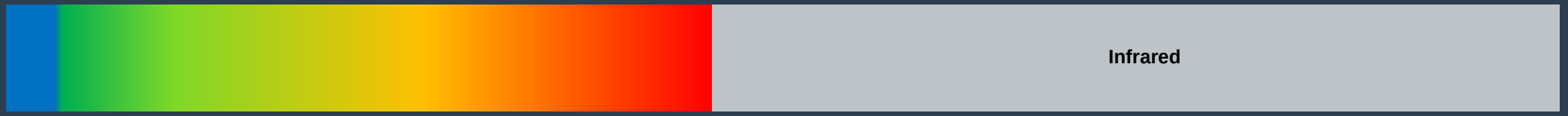
Image of quantum dots taken by an atomic force microscope and a quantum dot laser equipped on fingertip-sized silicon chip as 100Gbps optical transceiver

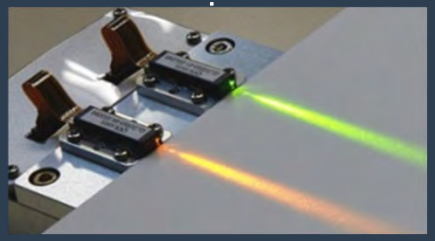


Quantum Dot Laser:
A semiconductor laser adopting a quantum dot structure which has a semiconductor nano-sized microcrystal in its active layer.
Compared with existing semiconductor lasers, these lasers are superior in temperature stability, temperature resistance, and low noise.

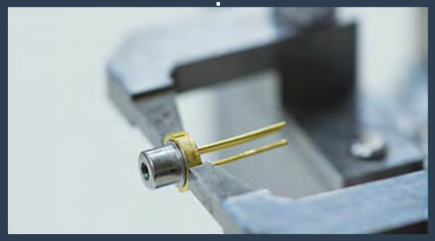
Variations on semiconductor lasers developed and sold by QD Laser

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





#2 Compact Visible Laser



#4 High Power Laser



#1 DFB Laser



#3 Quantum Dot Laser

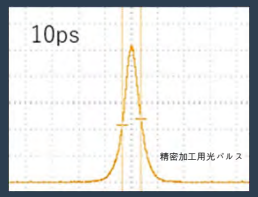
Our Core Technologies and Competitive Advantages

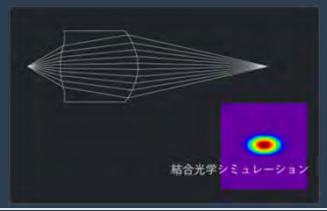
Material Creation, Design, and Control

Cutting Edge Semiconductor Laser Technology with Several Unique Features

Laser Design

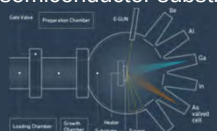
A technology to design lasers suitable for each use.
World's fastest (10ps)*3 semiconductor laser
for precision material processing
utilizing optical communication technology,





Semiconductor Crystal Growth

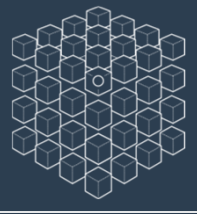
Technology to grow
each atomic layer of semiconductor crystals
on a semiconductor substrate

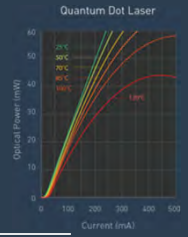


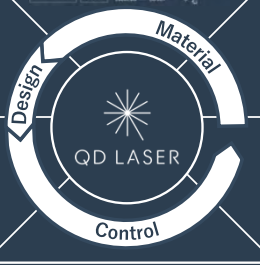
Quantum Dot

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









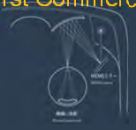
Small Module

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.



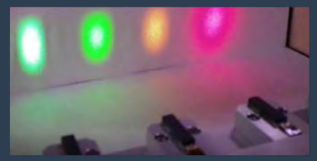
VISIRIUM Technology

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



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



*3: 2017 PRISM Award in Industrial Lasers - QD Laser (2nd Feb 2017)
*4: Prism Awards honour photonic innovations at Photonics West 2019
*5: Japan/U.S. PATENT JP5362301/US8896911

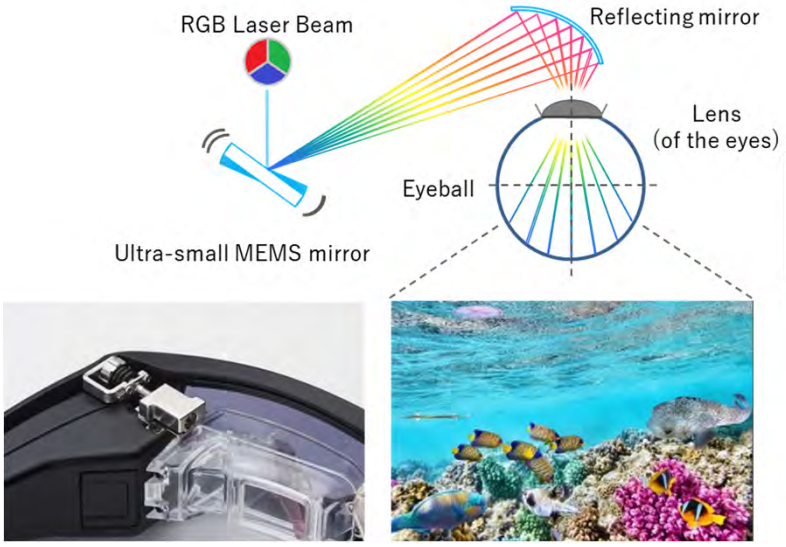
*1: "Extremely high temperature (220°C) continuous-wave operation of 1300-nm-range quantum-dot lasers", Published in 2011 Conference on Lasers and Electro-Optics Europe and 12th European
*2: Developed the world's smallest 5mm square ultra-high-speed, low-power-consumption optical transceiver - Achieved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

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





03

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.

04

Terminology

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	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.
Compact visible laser	A small module that generates visible light (green, yellow-green, and orange) by combining our unique semiconductor laser and wavelength conversion element.
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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- The materials and information provided in this presentation include forward-looking statements.
- These statements are based on expectations, forecasts and risk assumptions as of this presentation's publishing, and contain uncertainties that could lead to results that are substantially different from these statements.
- These risks and uncertainties are present in any transaction, and are applicable to general industry and market conditions as well as general domestic and international economic conditions, including fluctuations in interest rates and currency exchange rates.
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