

# Business Overview by Segment

## ICs

We will address market needs by further advancing miniaturization, efficiency, and functionality in our products

**Sumihiro Takashima**  
Corporate Officer, Director of LSI Business Unit



In April 2024, ROHM completed an absorption-style merger with LAPIS Technology Co., Ltd., a wholly owned subsidiary engaged in IC planning and development. Through this action, we strengthened the management structure of the Group as a whole to enhance competitiveness.

ROHM's IC business has developed products with a focus on analog ICs that serve as the entrance and exit points of electronic equipment systems, along with power supplies that support the systems as a whole. As the analog portion entails application-specific issues, pinpointing the needs of customers is vital. This is an area of advantage for ROHM, with its culture of deep communication with users. Through our integration with LAPIS Technology, which holds MCU-related and other digital processing technologies, we will develop high-value-added products through the fusion of analog, power, and digital technologies and will strive to provide customers with even greater ease of use.

At the same time, ROHM faces the following major challenges: environmental issues exemplified by decarbonization, boosting

the efficiency of the industry through DX to address the decline in the younger population, and ensuring the businesses resilience required to withstand geopolitical risks. Looking at our business environment, electrification and higher performance in the automotive market, which accounts for half of our sales, are major trends pushing up demand for semiconductors. Under these circumstances, we must respond to market needs through further miniaturization, efficiency improvement, and performance improvement in our products. As for consumer products, our motor control technologies contribute to greater efficiency in air conditioners and heat pumps. We plan to roll out original products that achieve both high efficiency and miniaturization through the practical application of new technologies utilizing GaN devices.

To attain the status of a major global player by FY2030, we will engage in selection and concentration and will expand our business domains by enhancing added value. I see my role as tackling new challenges to create a vibrant group led by front-line staff members.

**Key Products**

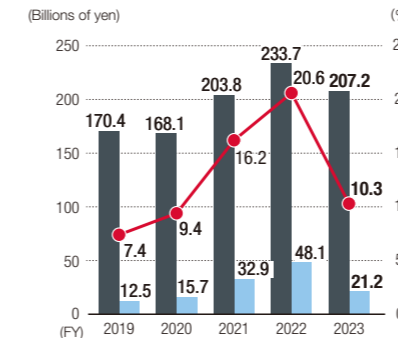
**Isolated gate driver ICs**  
Controlling power devices, such as those in the drive units of electric vehicles. ROHM's unique microfabrication technology contributes to miniaturization and higher efficiency of inverters for automobiles.

**Power management/Power supply ICs (PMICs)**  
We have a diverse lineup of application-specific system power supplies to meet various uses and specifications. In addition to consumer products, we are expanding the product lineup of various PMICs for each electronic control unit (ECU) for automotive use.

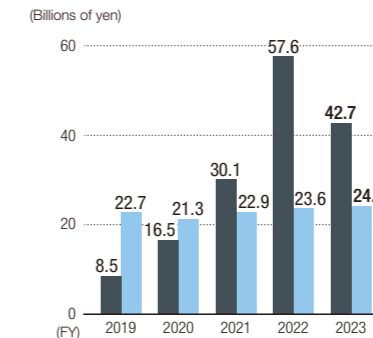
**Microcontrollers (MCUs)**  
We offer high-performance MCUs that control the power and analog devices that are ROHM's strength, achieving high-efficiency motor and power supply solutions.

## Performance Highlights

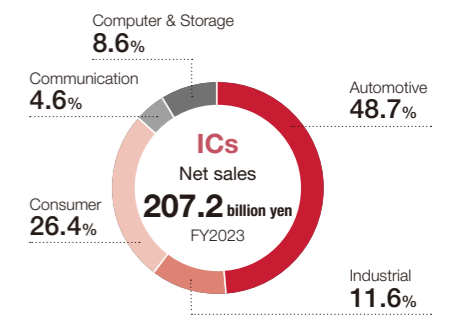
Net sales/Operating profit/Operating profit margin



Capital expenditures/R&D expenses



Sales by Application



Legend: Net sales (dark blue), Operating profit (light blue), Operating profit margin (red line), Capital expenditures (dark grey), R&D expenses (light blue)

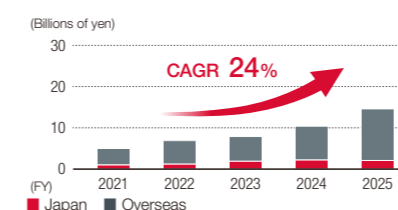
## Progress of the Medium-Term Management Plan

### Improving the sales ratio of the ASSP strategic TOP 10 products

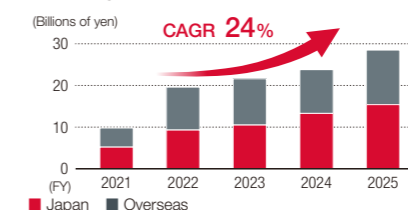
To further increase sales and profits in ICs over the five-year period of the Medium-Term Management Plan, we aim to strengthen the automotive field overseas as well as in Japan, home appliances in the consumer products field, and the PC and server field. Sales of isolated gate driver ICs, LED driver ICs, and ADAS\* solutions are growing steadily in the automotive market, which is expected to grow under the advancement of electrification, and adoption is expanding among both Japanese and overseas customers.

We aim to raise the average unit price of ICs and improve the profit margin of the business overall by positioning high-sales-growth and high-added-value areas as strategic TOP 10 areas and by increasing the sales composition ratios of those areas. In FY2023, performance in ICs overall struggled under sluggish demand and customer inventory adjustments, but the sales ratio of the strategic TOP 10 rose to 31% from 27% in the previous fiscal year. By introducing products with high added value, we will work to continuously improve the sales ratio of the strategic TOP 10 and expand sales and profit in the medium and long terms.

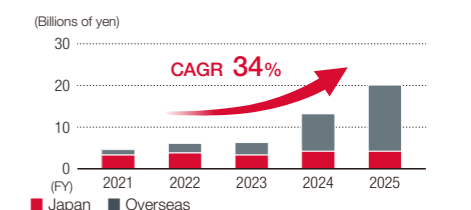
LED driver ICs



Isolated gate driver ICs



ADAS solutions (SerDes+AFE+PMIC)



\* Forecast based on an exchange rate of 145 yen to the US dollar

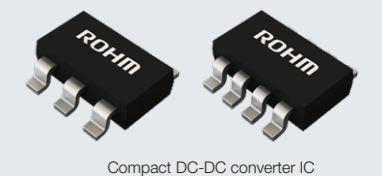
\* Explained in the Glossary

## Column

### Toward the Realization of a Sustainable Society

#### Development of small, energy-saving DC-DC converter ICs using the SOT23 package

The increase in semiconductor applications in consumer and industrial equipment in recent years has created demands for space-saving substrates, and the adoption rate of small DC-DC converter ICs is increasing. As reduction of standby power is also a key issue, DC-DC converter ICs also face demands for higher efficiency under low power use (under light load). ROHM has responded to these market demands by developing four compact DC-DC converter IC models that achieve higher efficiency in a smaller package than the existing SOP-J8 package, and began mass production in March 2024. These products are ideal for consumer and industrial equipment applications including refrigerators, washing machines, PLCs, and inverters. All four models are able to reduce component footprint by approximately 72% compared to the general SOP-J8 package, greatly contributing to the miniaturization of power supplies. The models use wireless structure packages, reducing wire impedance (the cause of resistance in wiring) and achieving high-efficiency operation. ROHM will continue to focus on the development of products that fully leverage our analog design technologies, and will contribute to miniaturization and energy saving in consumer and industrial equipment applications.



## ROHM's Position (2023)

### Worldwide analog IC manufacturer sales ranking

Rank	Company name	Sales (Millions of U.S. dollars)
1	Texas Instruments	12,785
2	Analog Devices	10,837
3	Qualcomm	8,067
4	STMicroelectronics	5,117
5	NXP	4,235
...		
17	<b>ROHM</b>	<b>939</b>

Source: Competitive Landscaping Tool CLT, Annual 2Q24

### Worldwide analog IC market

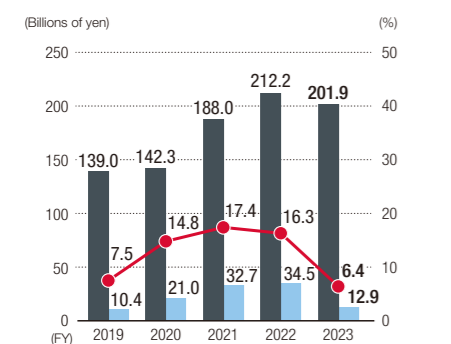
<b>Total market</b>	<b>83,336 million U.S. dollars</b>	<b>ROHM's share</b>	<b>17th 1.1%</b>
<b>Automotive-Analog ASSP, Automotive-Analog ASIC</b>	<b>Total market 14,168 million U.S. dollars</b>	<b>Industrial &amp; Other-Analog ASSP, Industrial &amp; Other-Analog ASIC</b>	<b>Total market 4,906 million U.S. dollars</b>
<b>ROHM's share</b>	<b>12th 2.6%</b>	<b>ROHM's share</b>	<b>16th 1.1%</b>

## Business Overview by Segment

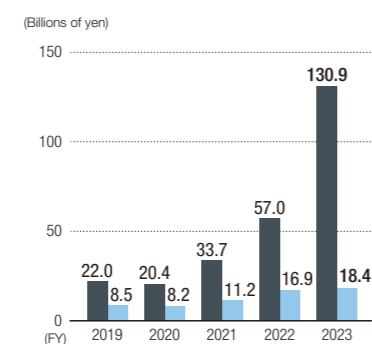
### Discrete Semiconductor Devices

#### Performance Highlights

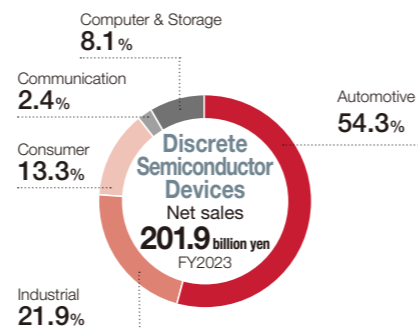
Net sales/Operating profit/Operating profit margin



Capital expenditures/R&D expenses



Sales by Application



■ Net sales ■ Operating profit ● Operating profit margin ■ Capital expenditures ■ R&D expenses

### Power Devices

Making ROHM synonymous with power devices through fifth-generation SiC MOSFET development and making molded modules the de facto standard

**Tsuguki Noma**  
Corporate Officer, Director of Power Devices Business Unit



Whereas CPUs and memory associated with semiconductors can be compared to the “brain” in applications, power devices can be compared to “muscles.” Power devices contribute to enhanced efficiency in power conversion throughout daily life.

ROHM offers a diverse lineup of products. In addition to IGBTs, SJMOSs, power transistors, power diodes, and other Si-based products, ROHM is focusing on SBDs and MOSFETs made of SiC. We have also begun mass production of HEMTs made from GaN. There are also IPMs and power modules that are mounted with multiple devices including these products.

Optimal power devices for each customer differs depending on the power, frequencies, system costs, and other factors on the customer side. The reason we are able to expand our market share in power devices despite ROHM being a latecomer to the market is because we hold an application-based perspective that lets us propose the optimal combinations of devices and operating conditions matched to the customer’s topology (circuit configurations). To solve

customer issues, we collaborate with the System Solutions Engineering Headquarters and FAEs in Technical Centers around the world.

The SiC power device market is continuing to grow, despite the influence of conditions in the xEV traction inverter market, which is predicted to account for about 70% of the SiC power device market. Winning in this market will require that we continue to lead in technology as well as in customer support and cost competitiveness. Our fifth-generation MOSFET will enter mass production in FY2025. Our TRC DRIVE PACK™ molded module offers value to customers through its enhancement of power density and ease of installation. Its high compatibility with mass production, in the same manner as discrete semiconductor devices, is another strength of the product, which we aim to make a de facto standard.

While we will naturally pursue sales and market share, we also aim to make the name ROHM synonymous with power devices, and intend to earn a position of trust among customers through our technology, human resources, quality, and supply.

#### Key Products



##### SiC power devices

We offer a broad lineup of bare chips, discrete products, and modules that contribute to miniaturization and efficiency in high-power applications. (Details of strategy are described on p. 50)

##### Power MOSFETs and IGBTs

These products are used in power electronics equipment including solar power generation equipment and power supply systems, and can achieve energy saving by reducing power consumption.

##### Power diodes

Through overwhelming production volume and an extensive lineup, these products meet the requirements of numerous applications in areas including consumer, industrial equipment, and automotive.

#### ROHM's Position (2023)

##### Worldwide power device manufacturer sales ranking

Rank	Company name	Sales (Millions of U.S. dollars)
1	Infineon Technologies	7,399
2	onsemi	3,166
3	STMicroelectronics	2,798
4	Mitsubishi Electric	1,553
5	Fuji Electric	1,386
...		
9	ROHM	913

Source: Competitive Landscaping Tool CLT, Annual 2Q24

##### Worldwide power device market

Total market **30,026 million U.S. dollars**  
ROHM's share **9th 3.0%**

**Power transistors**  
Total market **25,713 million U.S. dollars**

**Power diodes**  
Total market **4,313 million U.S. dollars**

ROHM's share **10th 2.3%**  
ROHM's share **5th 7.3%**

#### Progress of the Medium-Term Management Plan

##### Expanding the sales of power devices and developing them into a core business

In FY2021 through FY2027, we aim to achieve a CAGR of 24.7% in the power device business, a rate that exceeds growth in the market. Sales in FY2023 increased only 6% from the previous year amid sluggish market conditions, but SiC power devices continue to grow rapidly. We have also begun cooperation on manufacturing with Toshiba Electronic Devices & Storage. The appeal of this collaboration is that both companies can benefit from economies of scale in mass production. Through focused investment by ROHM in SiC and by Toshiba Electronic Devices & Storage in Si, we aim to enhance our cost competitiveness.

##### An SiC business leading the industry through innovative technologies and cost competitiveness

To remain a technology leader, ROHM is engaged in simultaneous development of multiple generations of products. Our fifth-generation SiC MOSFET, slated to enter mass production in FY2025, is expected to improve specific on resistance per unit area by 30% under high temperature compared to the fourth generation, and achieve the highest performance in the world. We are also undertaking development of the sixth and later generations, with support from the Japanese government's Green Innovation Fund.

At the same time, we are making a shift to 8-inch wafers and are increasing our cost competitiveness. We will begin shipping devices made at our Chikugo Plant in FY2025, while our Miyazaki Plant No. 2, acquired in 2023, is scheduled to begin wafer production from FY2024. (→P. 50 Special Feature)

##### Start of mass production of GaN devices

GaN is capable of higher-frequency operation than SiC, making it suitable for applications that demand miniaturization such as AI-related server power supplies and AC adapters. As GaN devices are more difficult to drive than SiC, however, it is important to offer GaN devices as sets with analog ICs. In addition to mass production of GaN devices in 2023, we have also begun mass production of “System in Package” that combines dedicated high-frequency ICs with GaN devices into a single unit. This product is able to contribute to reduced development time for customers’ power supply systems overall. We are also accelerating our collaboration with Delta Electronics, the world’s top manufacturer of power supplies. This has resulted in the adoption of our EcoGaN™ GaN device into the “C4 Duo,” a 45W-output AC adapter in Delta Electronics’ Innergie line. (→P. 61 Example of environmentally friendly product development: GaN devices)



## Business Overview by Segment

### General-Purpose Devices

Aiming to secure share in the Japanese automotive market and expand into overseas markets through miniaturization and high-productivity technologies

**Tsuguru Ariyama**  
Corporate Officer, Director of  
General Purpose Device  
Business Unit



ROHM's general-purpose device business has continued for over 50 years since the company's foundation, maintaining a top-level market share for many years and growing into a competitive, steady business. We believe that this has been possible because we lead the market through a comprehensive product portfolio that spans SBDs, TVSSs, bipolar transistors, MOSFETs, FRDs, and RECs, miniaturization, high-productivity technologies, securement of an overwhelming share in the Japanese automotive market that demands high quality and service, and a strength in flexible production capacity increases through IDM.

In initiatives based on our Medium-Term Management Plan, we increased high-efficiency production lines and switched from old lines to secure the production capacity for achieving targets. We are also developing next-generation automated lines for mass production by utilizing technologies developed for our flexible lines. In addition, we have completed the development of manufacturing technologies that use no gold (Au) or other expensive precious metals, further strengthening our cost competitiveness.

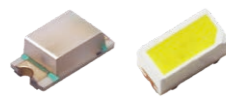
While the general-purpose device business is a mature one, its market is expected to grow slowly over the medium to long term as the shift to electrification and digitalization progresses. However, we cannot ignore the emergence of semiconductor competition characterized by low prices under national policies in China. Accordingly, I believe that the challenges that we face in achieving the status of a major global player by FY2030 are securing a supply chain with various risks considered, expansion of market share in overseas markets where demand is expected to grow, the development of human resources with global perspectives regarding culture, sense of values, and business style, understanding of appropriate quality for regions and markets, and enhancement of cost competitiveness. My role is to enhance employee engagement and psychological safety, create an organization where one is able to innovate without fear of failure, and, to make the most of company-wide resources, strengthen cooperation with other headquarters and promote "ONE ROHM." I hope to enhance the sense of unity within the organization overall and build a foundation for working as one to achieve targets.

#### Key Products



#### Small-signal devices

Small-signal transistors (less than 1W)  
Small-signal diodes (less than 500mA)  
Used universally in a variety of applications.



#### Light-emitting diodes (LED)

Discrete semiconductor devices which emit light when voltage is applied. Used for lighting and status indications, etc. in all kinds of electronic devices.



#### Laser diodes

ROHM's laser diodes boast the industry's leading production volume. They are used in laser printers and multifunction printers, and in recent years in laser ranging devices and as a light source for LiDAR, etc.

#### ROHM's Position (2023)

##### Worldwide small signal device (SSD) manufacturer sales ranking

Rank	Company name	Sales (Millions of U.S. dollars)
1	onsemi	654
2	Nexperia	637
3	ROHM	406
4	Diodes	336
5	Vishay Intertechnology	274

Source: Competitive Landscaping Tool CLT, Annual 2Q24

##### Worldwide SSD market

Total market  
**3,948 million U.S. dollars**

ROHM's share  
**3rd 10.3%**

##### Small signal transistors

Total market  
**1,673 million U.S. dollars**

ROHM's share  
**4th 10.5%**

##### Small signal diodes

Total market  
**2,275 million U.S. dollars**

ROHM's share  
**4th 10.1%**

### Progress of the Medium-Term Management Plan

#### Maintaining a top-class market share as a cash cow business

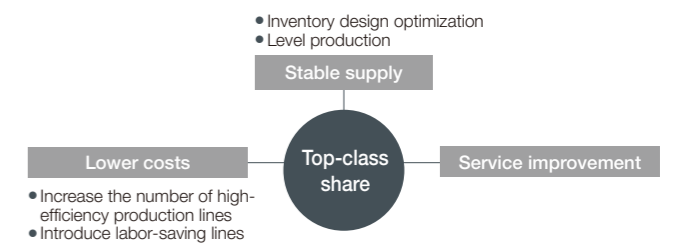
When it comes to semiconductors, power devices tend to attract attention, but the demand for small-signal general-purpose devices is also increasing due to the electrification trend. For example, as more electronic components are used in automobiles, the demand for transistors and diodes is increasing as essential components. These components are small-signal general-purpose devices that handle power of 1W or less and are used in control circuits, and ROHM boasts a high market share due to our expertise in development, manufacturing, and sales accumulated over many years. The General Purpose Device Business' theme for the Medium-Term Management Plan is to contribute to ROHM's growth as a cash cow business while maintaining this high market share.

Because general-purpose devices are highly versatile products used in large quantities for all kinds of applications, we are required to provide a stable supply at low costs to customers. At ROHM, we have increased our production efficiency and capacity to achieve a stable supply, low costs and service

improvements by introducing high-efficiency production lines and labor-saving lines. In addition, because semiconductors for automobiles require a particularly high level of quality, we apply our strengths as an IDM to implement thorough quality control. While sales growth in FY2023 was negative, through such initiatives we will steadily meet customers' demands and contribute to the growth of medium- and long-term earnings.

#### Small-Signal Device Business

##### Maintain the top share as a cash cow business

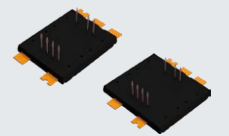


### Column

#### Toward the Realization of a Sustainable Society

##### Development of a new 2-in-1 SiC molded module

Equipped with features including high power density and a unique arrangement of terminals, TRCDRIVE pack™ contributes to solving major issues in the miniaturization, high efficiency, and man-hour reduction required for traction inverters. The module adopts ROHM's unique structure that maximizes heat dissipation area and is equipped with the latest SiC MOSFET, achieving an industry-leading power density 1.5 times that of general products. The control signal terminals at the top of the module, equipped with press-fit pins, enable connection simply by pressing the gate driver board from the top, and greatly reduce installation man-hours. The module further maximizes the current path in the main current wiring and achieves low inductance (5.7nH) through a two-layer wiring structure, contributing to low losses during switching. Although the product is a module, we have established a mass production system like that of a discrete product. Production capacity of the module is about 30 times that of conventional, general SiC case-type modules.



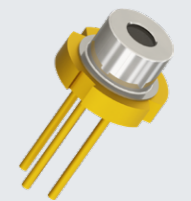
TRCDRIVE pack™  
2-in-1 SiC molded module

##### Development of a 120W high-power laser diode for LiDAR

LiDAR, a technology capable of accurate distance measurement and spatial recognition, has recently been seeing increased adoption in a wide range of applications requiring the automation of operation, including AGVs, robot vacuum cleaners, and autonomous automobiles. ROHM has established proprietary patented technology that achieves narrower emission width in lasers which contributes to longer range and higher accuracy in LiDAR applications.

ROHM released a 25W laser diode in 2019 and a 75W laser diode in 2021. In response to growing market demand for even higher output, in September 2023 ROHM developed a new infrared 120W high-output laser diode, aimed at LiDAR used for distance measurement and spatial recognition in 3D ToF systems.

Utilizing proprietary device development technology, the diode reduces the temperature dependence of the laser wavelength by 66% from that of general products and contributes to narrowing the bandpass filter to extend the detection range of LiDAR. It also achieves a uniform light intensity in over 97% of its emission width to enable more precise detection, despite having the smallest width in the industry. Its high power conversion efficiency (PCE) enables high-efficiency optical output that contributes to lower power consumption in LiDAR applications.



RLD90QZWB8  
high-power laser diode

## Business Overview by Segment

### Modules and Others

Meeting detailed customer needs and contributing to solving social issues through “energy saving” and “miniaturization”

**Tetsuhiro Tanabe**  
Corporate Officer, Director of Module Business Unit



Products supplied by our business unit contribute to tackling carbon neutrality and other social issues. Resistors, ROHM's founding product, have become an essential component in automotive equipment as the shift to EVs advances. We offer a wide lineup of high-reliability products for current detection applications and the automotive and industrial equipment fields. In the printhead business, we have leveraged our proprietary semiconductor process technologies to successfully develop thermal printheads that enable high-definition printing while realizing the speediest ultra-fast printing in the industry. We are now expanding our lineup of products for barcode label printers and are providing high-value-added products to the industrial equipment market.

Miniaturization of these products and enhancement of performance in module products lead to reductions in power consumption, component count, and mounting space in end equipment. We will constantly improve performance through continuous technological development and will contribute to “energy saving” and “miniaturization” for

our customers, as outlined in our Management Vision.

Specifications for resistors required in fields such as the space industry will become increasingly strict, and the enhancement of performance and quality will become critical. Accordingly, for general-purpose products such as resistors, we must anticipate and grasp the needs of customers and must act ahead of other companies to tackle product development and bring new products to markets. At the same time, for highly customizable module products, we must also build relationships with customers and attentively address their needs. We believe in the need to advance business from an outward-facing perspective so that each of our organizations is always perceptive to even slight changes in markets.

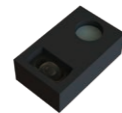
To attain the status of a major global player, we will continue contributing to society by delivering better new products to the world, drawing on the spirit of challenge that we have built up since our founding and placing priority on quality, which is stated in ROHM's Company Mission.

#### Key Products



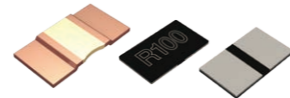
##### Thermal printheads

These use ROHM's proprietary semiconductor technology, thick-film printing and thin-film deposition technologies which achieve small-sizes, energy saving, high image quality and high quality.



##### Sensor modules

ROHM can propose total solutions by combining the world's top-level sensor variations with ROHM's core technologies.



##### Shunt resistors

Resistors for current detection applications which detect the circuit current. We have a broad lineup to support everything from mobile devices such as smartphones to automobiles, industrial equipment, and other applications which require high reliability.

#### ROHM's Position (2023)

##### Worldwide thermal printhead manufacturer sales share ranking

ROHM's share **2nd 22.8%**

Rank	Company name	Share of sales
1	Kyocera	33.6%
2	<b>ROHM</b>	<b>22.8%</b>
3	SHEC	20.0%
4	Toshiba Hokuto Electronics	8.3%
5	AOI ELECTRONICS	5.6%
6	KAITONG	4.6%

Source: CHUNICHISHA Co., Ltd.

##### Worldwide resistor manufacturer sales share ranking

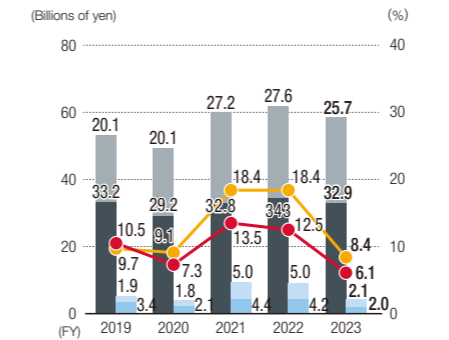
ROHM's share **4th 9.6%**

Rank	Company name	Share of sales
1	Company A	21.0%
2	Company B	13.0%
3	Company C	11.9%
4	<b>ROHM 21.288 billion yen</b>	<b>9.6%</b>
	Other	44.5%

Source: Researched by ROHM

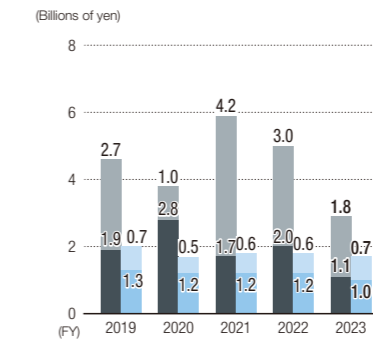
### Performance Highlights

#### Net sales/Operating profit/Operating profit margin



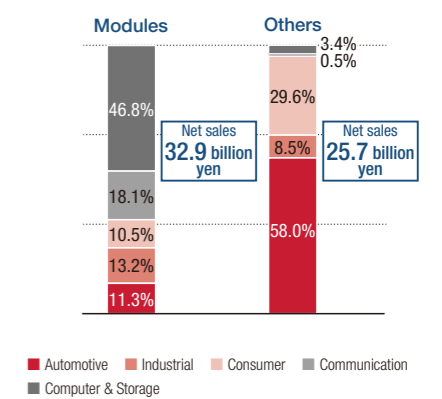
Modules: Net sales, Operating profit, Operating profit margin  
Others: Net sales, Operating profit, Operating profit margin

#### Capital expenditures/R&D expenses



Modules: Capital expenditures, R&D expenses  
Others: Capital expenditures, R&D expenses

#### Sales by Application (FY2023)



### Progress of the Medium-Term Management Plan

#### Achieving high added value in modules and working toward qualitative transformation

We have set qualitative transformation of our module business, such as higher added value and a shift to overseas sales, as a major goal in our Medium-Term Management Plan. In FY2023, sales declined in printheads for payment terminals, but remained strong in printheads for industrial equipment and grew in sensor modules for smartphones. We will focus on expanding our support modules for autonomous driving and sensor modules for security (authentication). The practical application of low-speed, compact delivery robots has accelerated due to labor shortages in recent years, and demand for modules with laser diodes for sensor applications is also growing. Through achievements such as superior high-temperature properties, we will work to differentiate our products from those of competitors and will seek to increase our revenue.

#### Expanding our lineup of special resistors

By application, automotive applications account for over half of our sales of resistors, which have earned the trust of numerous customers. In FY2023, sales in the industrial equipment market were sluggish, yet resistor sales grew due to increasing adoption of high-value-added, high power low ohmic shunt resistors for the automotive market, which is expected to grow rapidly. High-density mounting is expected to increase as the number of motors and ECUs mounted grows in line with the shift to higher performance in automobiles. By enhancing our lineup of shunt resistors and other special resistors adaptable to small sizes and high electrical power, we will contribute to miniaturization and higher reliability in customer applications.

#### Sales ratio of printheads for industrial equipment

FY2023 Results **37%** → FY2025 Forecast **43%**

#### Sales ratio of high value-added special resistors

FY2023 Results **55%** → FY2025 Forecast **57%**

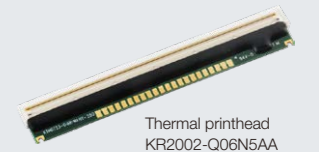
### Column

#### Toward the Realization of a Sustainable Society

##### Development of a thermal printhead capable of high-speed, clear printing on a single lithium-ion battery

In recent years, mobile label printers for logistics have grown in importance with the advancement of logistics, as have payment terminals with the proliferation of electronic money payments. Mobile thermal printers driven by two lithium-ion batteries have been the main type used, for reasons of printing speed and quality. However, the use of a single battery would make these printers more compact and lighter while also enabling energy saving. In December 2023, ROHM developed a thermal printhead that uses just one lithium-ion battery yet is capable of the print output of a two-battery unit.

In addition to radically revising the structure and optimizing the design of the heat storage layer, glaze, we adopted a special low-resistance heating element and changed the protective film structure on the heating element. This enables efficient transmission of generated heat to the thermal paper, transfer ribbon, or other printing media. Through improvements to the driver IC and wiring structure, we also enhanced the efficiency of the conversion of power supplied to the device to thermal energy, along with printing efficiency. Through simultaneous improvements to thermal transmission and power efficiency, we have achieved energy saving as well.



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