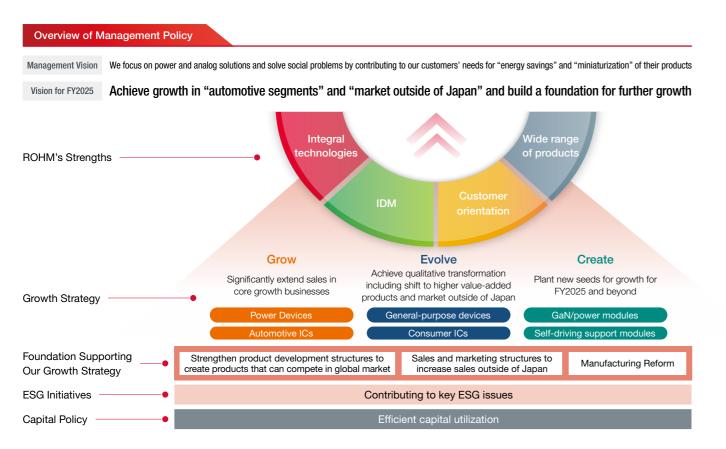
## Progress on the Medium-Term Management Plan "Moving Forward to 2025"

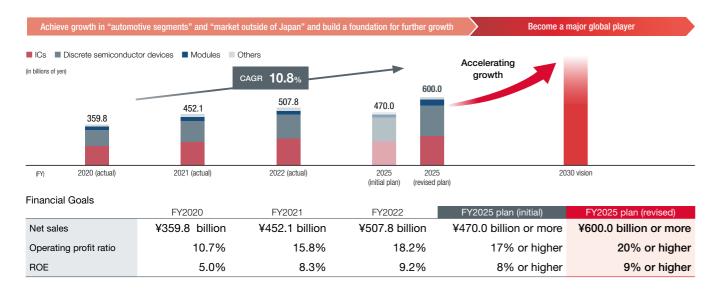
ROHM announced its first Medium-Term Management Plan, "Moving Forward to 2025," in FY2021. The management theme for the period up to FY2025 is to achieve growth in "automotive segments" and "market outside of Japan" and build a foundation for further growth, with the aim of becoming a major global player by 2030.



## Positioning and Goals of the Medium-Term Management Plan

In the 1990s, ROHM achieved significant sales growth thanks to the spread of IT throughout society. In the 2000s, however, the market structure changed dramatically with the bursting of the dot-com bubble, and ROHM has been implementing structural reforms to respond to market changes. We substantially shifted our business, which had been focused on the Japanese consumer products market, to the automotive and industrial

equipment markets, not only for Japanese consumers but also for overseas consumers. As such, we are now developing power and analog semiconductor products that contribute to energy conservation and miniaturization of customer products, achieving positive results. This Medium-Term Management Plan has been formulated as a five-year plan to build a solid business foundation with an eye toward dramatic growth up to FY2030.



## Progress on the Growth Strategy

## Expand sales and profit by enhancing strategic products

In the past, we achieved results by providing custom products specialized for each customer, mainly for the consumer products market, but from the standpoint of development efficiency, it is necessary for some products to have a certain degree of versatility. We are promoting a strategy of investigating market needs and then developing ASSPs that realize common needs at a high level in the EV and other markets ahead of other products.

## Discrete Semiconductor Devices Business **P**42

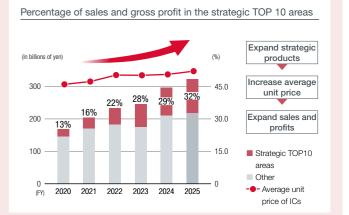
## Raise the top line and grow into a core business

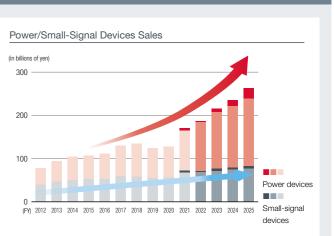
ROHM is engaged in two businesses related to discrete semiconductor devices: power devices and small-signal devices. Power devices are expected to grow in the future as they can contribute greatly to saving energy and miniaturization. In particular, in the SiC power device business, which can contribute to a decarbonized society, we are aiming to build a system that can provide products from wafer materials to achieve the top share in the industry. In the small-signal device business, we will continue to secure further earnings and maintain the top market share by further improving productivity through measures such as the introduction of flexible lines.

## Progress on Non-Financial Goals

	Goals	Main Initiatives in FY2022	Main Results in FY2022
	• Reduce GHG emissions by 50.5% by FY2030 (vs. FY2018 levels)	<ul> <li>Upgraded to highly efficient chiller at plant in Thailand</li> <li>Reduced heavy fuel oil use by upgrading once- through boiler at LAPIS Semiconductor's Miyazaki plant</li> </ul>	GHG emissions: 8,921,000 t-CO <sub>2</sub> (21.8% reduction vs. FY2018)
Environment ►P62	Advancement toward 100% implementa- tion of renewable energies by FY2050	Achieved 100% renewable energy use at our mainstay manufacturing site in Thailand	Renewable energy ratio: 24% (18 percentage point increase vs. FY2021)
	Zero waste emissions	Effective use of sulfuric acid waste liquid	Domestic consolidated: Zero emissions, Overseas consolidated: 95.9% (Domestic and overseas con- solidated: 98.5%)
	<ul> <li>Reach global female manager ratio of 15% or higher</li> <li>Increase the ratio of executives who are female and/or foreign nationals to 10%</li> </ul>	Promoted career development for women	Global female manager ratio: 12.6%     Female and/or foreign national executives at ROHM head office: 23%
Diversity and Employees ►P56	Reach employee engagement score above industry average	<ul> <li>Conducted engagement surveys at domestic and overseas Group companies</li> <li>Promoted organizational culture reform and work style reform</li> </ul>	Completed group-wide implementation of engage- ment survey, achieving score above industry aver- age (91% of employees responded positively to the question about "high willingness to contribute toward achieving goals and a strong sense of belonging to the organization.")
Customers PS	• Customer quality satisfaction score: 10% improvement (vs. FY2020)	Provided face-to-face feedback on survey results to some customers	Customer quality satisfaction score improved by 3.1% (vs. FY2020)

### IC Business ▶P40





## **Financial Strategy**

We aim to improve corporate value over the medium to long term by improving our ability to generate cash so that we can continue to actively invest for further growth.

Kazuhide Ino

Member of the Board, Managing Executive Officer, CFO

I was appointed Chief Financial Officer (CFO) in April 2023. Previously, I held concurrent positions as Chief Strategy Officer (CSO) and Director of Accounting & Finance Headquarters, overseeing accounting from a business strategy perspective. Now however, I have an added financial

strategy perspective being involved in the planning and execution of Group-wide strategies. Not only will I further refine our strategies for cash allocation, balance sheet management, and other matters going forward, but I will also actively share information.

## Looking Back on the Second Year of the Medium-Term Management Plan

FY2022 marked the second year of our Medium-Term Management Plan "Moving Forward to 2025." Throughout the year, the automotive market experienced adjustments to production owing to shortages of some semiconductors and components following disruptions to global supply chains caused by the pandemic. Meanwhile, demand for automotive semiconductors continued to grow due to the promotion of electrification toward a decarbonized society. The industrial equipment market remained strong thanks to decarbonization moves at plants in each country and greater investment in improving production capacity, automation, and digitalization. In addition to these factors, net sales increased due to the yen's depreciation, resulting in record high sales of

507,882 million yen (up 12.3% year-on-year), the highest sales for the second consecutive year. Operating profit also increased by 29.2% from the previous year to 92,316 million yen, and the operating profit ratio increased by 2.4 percentage points from the previous year to 18.2%, achieving significant increases in sales and profits. The percentage of overseas sales grew by 2.9 percentage points from the previous year to 43.1%, while EBITDA, a key metric for ROHM, increased by 30.8% from the previous year to 148,456 million yen.

In FY2023, there is still a strong sense of uncertainty about the future due to factors such as inflation, interest rate hikes, and rising energy costs. Overall growth in the semiconductor

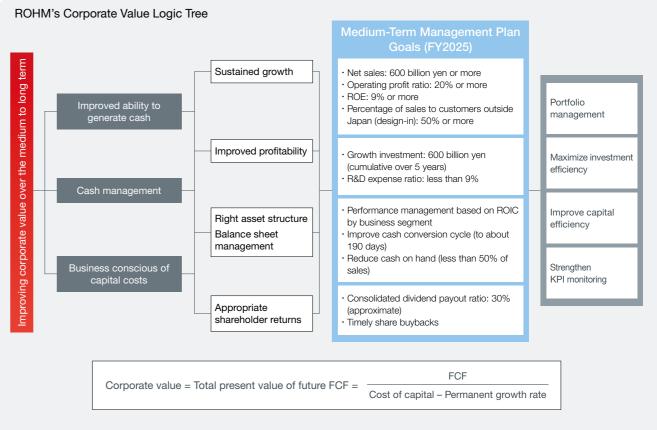
## **Financial Position**

	FY2018	FY2019	FY2020	FY2021	FY2022
Total assets (millions of yen)	874,427	848,873	926,240	1,029,132	1,123,283
Shareholder's equity (millions of yen)	766,266	714,990	768,972	839,817	914,912
Cash and deposits + Securities (millions of yen)	289,745	315,723	319,430	342,400	329,247
Equity ratio (%)	87.6	84.2	83.0	81.6	81.4
Dividend per share (yen)	150	150	150	185	200
Payout ratio (%)	34.8	60.6	39.9	27.2	24.4
ROE (%)	6.0	3.5	5.0	8.3	9.2

market is therefore expected to slow down somewhat. Meanwhile, the electrification of automobiles is progressing faster than initially predicted. As such, demand for semiconductors in the automotive field is expected to increase at an annual rate of more than 10% to roughly double by FY2027 compared to FY2021. We believe ROHM's target market will continue to be strong due to an expanded automotive

## Initiatives to Improve Corporate Value

ROHM's idea for improving corporate value is how much free cash flow (FCF) can be generated in the future. In other words, a business that is conscious of capital costs, cash management, and an improved ability to generate cash, is the basis for increasing corporate value. We will improve profitability while achieving sustained business growth to find



Target metrics have been set in the current Medium-Term Management Plan to achieve an ROE of 9% or more and an operating profit ratio of 20% or more by 2025, the final year of the plan. Our ROE in FY2022 was 9.2%, achieving our target. In terms of improving profitability, the Group continues to semiconductor market from further vehicle electrification. Accordingly, by continuing to work on the development and stable supply of products that match the needs of society, centered on power and analog semiconductors, we will achieve medium- to long-term growth and make greater social contributions through our business.

the right asset structure. The results will be visible in our ROE and sales growth, and we will also provide appropriate shareholder returns. To create this cycle, the specific details which management needs to focus on while maintaining the right balance is shown in the Medium-Term Management Plan as targets and items for implementation.

work on improving the product mix, increasing development and investment efficiency, and reducing costs.

In managing our business portfolio, we divide our business into about 20 categories, and conduct annual business evaluations from the perspective of market growth in each

business segment, our own market position, profitability based on ROIC by business segment, and consistency with our management vision. We then assess and carry out what we need to focus on, maintain or pull out from over the medium-term. Additionally, in each of our business segment, with a focus on ICs, we have been working to transform our portfolio at the product level in preparation for a shift from the consumer market to the automotive and industrial equipment markets. Using IDM and integral technologies, the source of our competitiveness, we are expanding our lineup of products that provide high added value by making proposals for solutions to customer problems as well as for stable supply and long-term supply. By concentrating resources on development and customer support to increase the sales ratio of products that bring real value, we aim to build win-win relationships with customers to improve our profitability. In the automotive market, we are beginning to see some results thanks to a tailwind from increased electrification and more electronics in vehicles, and we are now also working to expand in the industrial equipment field. The industrial equipment field is characterized for having customers widely dispersed across various industrial fields and for long demand lifetimes, while at the same time entry into the market takes time. As such, we have organized a dedicated department that specializes in responding to such market characteristics. We are working to accelerate development that matches market demands by selectively allocating development resources to key areas and setting KPIs for man-hours spent on development with regard to planned sales target for new products.

We felt that there were issues with the efficiency of traditional capital investments, so we began evolving our own decision-making process. In addition to the payback period method used as a standard for investment decisions, we started to use the net present value (NPV) and internal rate of return (IRR) methods, setting hurdle rates that take into account capital costs and business risks. We then make decisions based on a comprehensive review of our profit advantage based on a clear forecast of future cash flows for each investment project. In addition, we are implementing initiatives to improve the accuracy of future decisions by enhancing monitoring after investments are made to manage the contribution to sales growth relative to invested capital as well as estimated and actual cash inflow for each investment project.

In terms of cost reductions, our development, manufacturing, and procurement divisions work together to promote initiatives that take full advantage of the strengths of our vertically integrated model. In addition to reducing costs by increasing the diameter of wafers, primarily by increasing the size of IC production to 300 mm and SiC to 8 inches, we are standardizing materials across internal and external supply chains, working to reduce procurement costs by taking advantage of mass advantages and reduce inventory costs by using standardized materials. Additionally, we are working to improve fixed costs by contributing to production through the latest fully automated lines launched in Japan and by applying this technology to existing mass production lines.

## Growth Investment and Cash Management

Regarding investments in FY2023, more than 80% will be allocated to our key areas of power and analog solutions. To further accelerate investment in growth businesses, we have increased growth investment from 500 billion yen to 600 billion yen over a five-year cumulative period. We had set a goal for SiC sales of over 270 billion yen and a market share of over 30% by FY2027, but as demand has been brought forward, we have accordingly revised our investment plans upward. To reduce mass production costs, we are working on increasing the diameter of SiC wafers in both wafer manufacturing and front-end processing. As such, equipment that can convert 6-inch wafers to 8 inches has been installed at ROHM Apollo Co., Ltd.'s Chikugo Plant. Regarding wafers, we will begin supplying 8-inch wafers in 2023. Consequently, we are quickly expanding our facilities and increasing production in order to respond to fast growing demand. We will also expand the 12-inch Bi-CDMOS production line for ICs. Furthermore, in addition to investing in current growth businesses to improve permanent corporate

value, we are also constantly considering capital investments and M&As with an eye to expanding business opportunities in the future, with a focus on strengthening our distinctive IDM capabilities and potential to strengthen the power and analog fields.

The investment funds necessary for current business growth are basically covered by operating cash flow, and we will also efficiently utilize cash on hand with proper cash management. Specifically, we anticipate approximately 650 billion yen in operating cash flow over the five years from FY2021 to FY2025, which will cover growth investments of 600 billion yen. Additionally, in order to provide funds for further growth investments in the future, we have been working on improving our cash conversion cycle since FY2022, working to generate cash internally. Based on this, our policy is to flexibly raise funds as needed when M&A or capital alliances arise for business expansion or technology acquisition.

Furthermore, we plan to gradually reduce cash on hand to less than 50% of annual sales by FY2025.

## Shareholder Returns

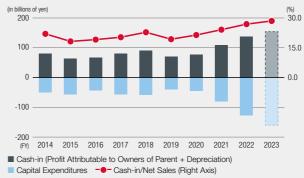
Our policy is to implement shareholder returns with a consolidated dividend payout ratio of 30%. In addition, our policy is to acquire treasury stock in a timely manner, and we have decided to buy back shares worth up to 20 billion yen in November 2022.

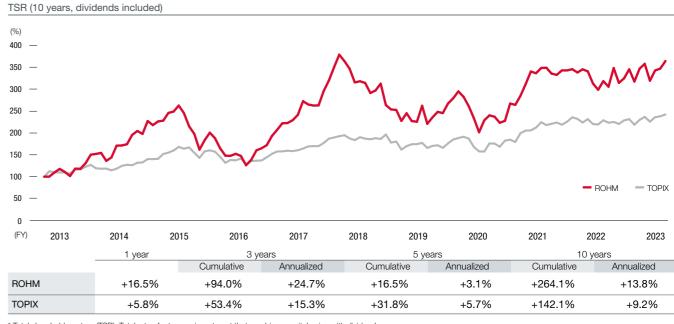
For the past few years, we have been in a phase of active investment aimed at business growth and strengthening our future ability to generate cash, but we will review the balance between investment and shareholder returns as appropriate, depending on how well our business grows. To increase our

## Investment for growth and returns to shareholders

- Increased growth investment from 500 billion yen to 600 billion
- Further accelerate investment in growth business and actively return
- profits to shareholders
- Reduce cash on hand gradually over 5 years to less than 50% of annual sales by FY2025







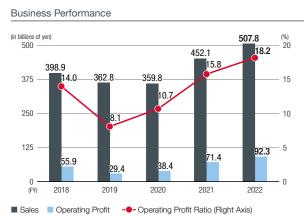
\* Total shareholder return (TSR): Total rate of return on investment that combines capital gains with dividends
 \* TSR for ROHM is calculated based on cumulative dividends and stock price fluctuations. TSR for TOPIX is calculated with a stock price index including dividends. (Created by ROHM using Bloomberg data and other sources.)

\* TSR values in the graph are indexed to market prices as of March 31, 2013 as 100 (assuming the stock was held until March 31, 2023).

corporate value, we will continue to strike a balance between shareholder returns and investment in human capital as well as capital expenditure to further expand our ability to generate cash. Our policy is to promote business operations around the two pillars of our power device business and analog IC business, aiming to achieve the growth and profit expansion indicated in the Medium-Term Management Plan, and to become a major global player in the future. We hope that our shareholders will look forward to ROHM's future growth.

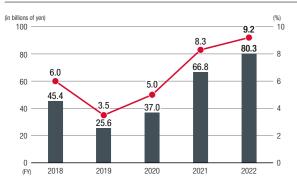


## Financial Highlights (Consolidated)



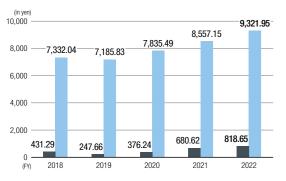
Although demand for some semiconductors entered a correction phase in the second half of FY2022, record sales were achieved due in part to the effects of a weaker yen. In the automotive market, strong demand for in-vehicle semiconductors continued due to the promotion of electrification and more extensive use of electronic components in vehicles for a decarbonized society. In addition, the industrial equipment market remained steady thanks to moves to decarbonize plants as well as increased investment in improving production capacity, automation, and digitalization.

#### Profit Attributable to Owners of Parent and ROE



Due to the increase in operating income and foreign exchange gains, profit attributable to owners of parent increased by 13,548 million yen from the previous year to 80,375 million yen. As a result, ROE improved by 0.9 percentage points from the previous fiscal year to 9.2%.





Earnings per Share Net Assets per Share

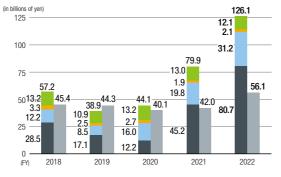
Both earnings per share and net assets per share increased significantly from the previous fiscal year due to an increase in profit attributable to owners of parent.

### Shareholders' Equity and Total Assets



■ Shareholders' Equity ■ Total Assets -●- Equity Ratio (Right Axis) Total assets increased by 94,151 million yen from the end of the previous fiscal year due to increases in property, plant and equipment, and inventories, while shareholders' equity increased by 75,095 million yen to 914,912 million yen. The equity ratio was 81.4%, almost the same level as the end of the previous fiscal year.

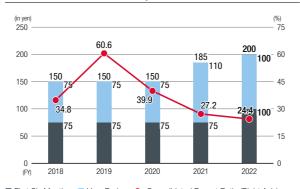
#### Capital Expenditures and Depreciation



Production Capacity Expansion
 Land and Buildings
 Quality Improvement
 Others
 Depreciation

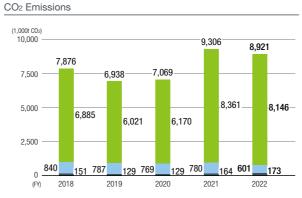
ROHM continues to actively invest in its plants and equipment. In FY2022, capital expenditures increased by 46,131 million yen from the previous fiscal year to 126,116 million yen as a result of greater capital investment to expand production capacity primarily for power devices including ICs and SiC.

Dividends and Consolidated Payout Ratio



■ First Six Months ■ Year-End -O- Consolidated Payout Ratio (Right Axis) ROHM's basic policy is to pay stable dividends, with a target consolidated dividend payout ratio of 30%, and is working to increase dividends by improving business performance. The annual dividend was set at 200 yen, an increase of 15 yen from the previous fiscal year.

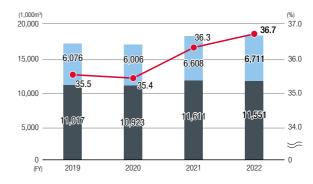
## Non-Financial Highlights (Consolidated)



#### Scope 1 Scope 2 Scope 3

To realize the ROHM Group Environmental Vision 2050, which aims to achieve net zero GHG emissions by FY2050, our medium-term environmental goal is to reduce GHG emissions (Scope 1 and 2) by more than 50.5% by FY2030 compared to FY2018 levels. In FY2021, we achieved a 6.2% reduction compared to FY2018, while in FY2022 we achieved a 21.8% reduction.

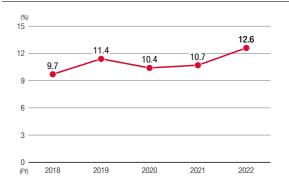
#### Water Intake and Recovered/Reused Water at Production Bases



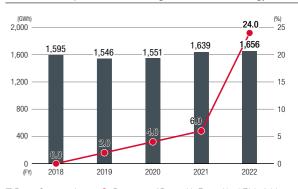
Water Intake Volume of Water Recovered/Reused
--- Percentage of Water Recovered/Reused (Right Axis)

As part of our resource recycling efforts in the ROHM Group Environmental Vision 2050, we are aiming to improve our water recovery and reuse rate by 5.5% or more by FY2030 compared to FY2019 levels. In FY2022, we improved the rate by 1.2% compared to FY2019, proceeding to systematically install water recycling equipment in our manufacturing sites.

### Percentage of Women in Management Positions

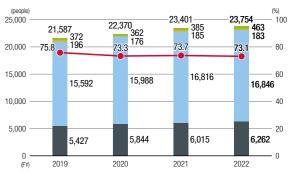


As stated in the Medium-Term Management Plan, our aim is to increase the percentage of women in management positions in the ROHM Group to 15% by FY2025 and to 20% by FY2030. We will make every effort to achieve our goals by continuing to enhance training opportunities, revising existing systems, and implementing new systems.



### Power Consumption and Percentage of Renewable Energy Used

■ Power Consumption -- Percentage of Renewable Energy Used (Right Axis) We have announced a plan which calls for 100% of electricity used in all business activities in Japan and overseas to be derived from renewable energy sources (hydro, geothermal, solar power, etc.) by FY2050. In FY2022, 100% of the power used at our mainstay manufacturing site, the Thailand plant, came from renewable energy sources, bringing the total renewable energy use across the Group to 24%.

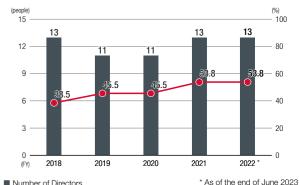


#### Employees by Country and Percentage of Foreign Employees

🔳 Japan 🔲 Asia 📒 USA 📕 Europe

--- Percentage of Foreign Employees (Right Axis)

As we aim to become a major global player by FY2030, we are actively recruiting human resources around the world who can take the Group forward. We will continue to promote human resource policies and initiatives to increase the diversity of our employees.



Number of Directors and Percentage of Outside Directors

Number of Directors

-- Percentage of Outside Directors (Right Axis)

In FY2021, we achieved our goal of increasing the proportion of outside directors to more than half, as stated in our Medium-Term Management Plan. We are still maintaining this percentage.

## Special Feature

# Helping to Solve Social Issues Through **Technological Innovation in SiC Power Devices**

Material issues

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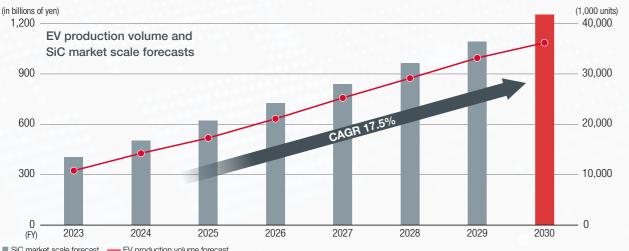
 Evolution of Technologies to Contribute to the Advancement and Progress of Culture • Stable Supply of High-quality Products

 Strengthening Sustainable Technologies Developing and Supplying Innovative Products Mitigation of Climate Change

## Contributing to the electrification of automobiles with SiC power devices

The trend of automobile electrification is accelerating to realize a decarbonized society. Most importantly, the ratio of EVs is significantly rising. In 2022, EV sales were approximately 7.74 million units, roughly 10% of global sales, and the shift to EVs is rapidly advancing. To curtail increases in EV battery capacity and extend the cruising range, the adoption of low power loss SiC power devices in inverters is essential. Because SiC power devices have

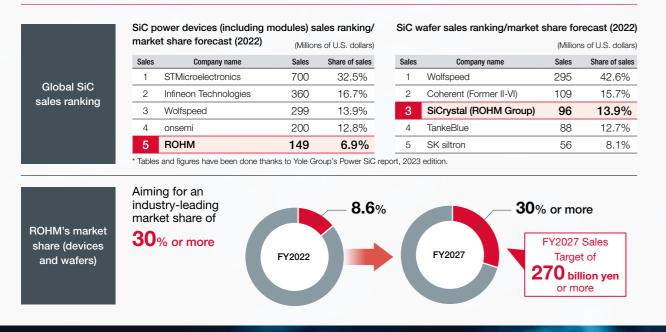
a lower specific ON resistance compared to Si devices and they demonstrate high performance even under high-temperature, high-frequency, and high-voltage environments, their adoption especially for EVs is accelerating, and it is expected that they will come into wide use. At ROHM, we are further increasing our production capacity and cost competitiveness to respond to additional increases in the demand for SiC power devices.



SiC market scale forecast — EV production volume forecast

Source: SiC Market Scale Forecast Created by ROHM EV production volume forecast GlobalData Plc (forecast as of July 31, 2023) \* Foreign exchange rate: \$1 = 130 yen

## ROHM's position within the SiC market



## ROHM's strengths in SiC power devices

## Construction of an integrated production system

ROHM is aiming for the top market share of 30% of the rapidly growing SiC market and aggressively investing in this area. After acquiring German SiC wafer manufacturer SiCrystal GmbH in 2009, we established a high-quality SiC substrate procurement system, which is essential for the stable manufacturing of SiC power devices, while also working to increase the diameter and production capacity. Moreover, the production building

### Integrated SiC power device production system



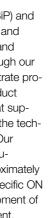
## Industry-leading technological capabilities

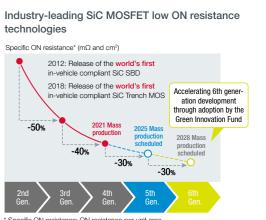
In addition to Si-based transistors (MOSFET, IGBT, SJMOS, and BiP) and diodes (SBD and FRD), ROHM is developing SiC-based MOSFET and SBD products. We have realized the development of high-quality and high-performance SiC power devices which lead the industry through our in-house integrated production covering everything from SiC substrate production to power module and other packages as well as new product design, manufacturing processes, and quality control methods that support those processes in an internal system which batch manages the technologies that are essential to the evolution of SiC power devices. Our fourth generation SiC MOSFETs have evolved ROHM's original double-trench structure to reduce the specific ON resistance by approximately 40% compared to conventional products to achieve the lowest specific ON resistance in the industry. We are currently working on the development of the fifth generation which aims for further characteristic improvement.

## Solution proposal ability

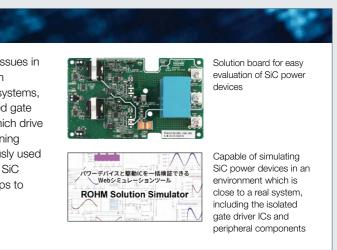
To date, ROHM has offered various solutions which help resolve issues in each customer development flow. FAEs and AEs from the System Solutions Engineering Headquarters, who understand customer systems, contribute to the realization of user functions by proposing isolated gate driver ICs, diodes, resistors, and other peripheral components which drive SiC power devices in combination. For example, products combining Insulated Gate Bipolar Transistors (IGBTs) and FRDs were previously used in power devices for EVs. However, not only replacing those with SiC MOSFETs but also proposing isolated gate driver IC solutions helps to make inverters smaller and extend the vehicle cruising range.

dedicated to SiC power devices which was newly established at the ROHM Apollo Co., Ltd.'s Chikugo Plant (Fukuoka Prefecture) began operation in FY2022. It is currently producing 6-inch wafers, but equipment has been pre-installed for the switchover to 8-inch wafers. In conjunction with strengthening the BCM system, we are building a production system which can respond to medium- to long-term increases in demand.



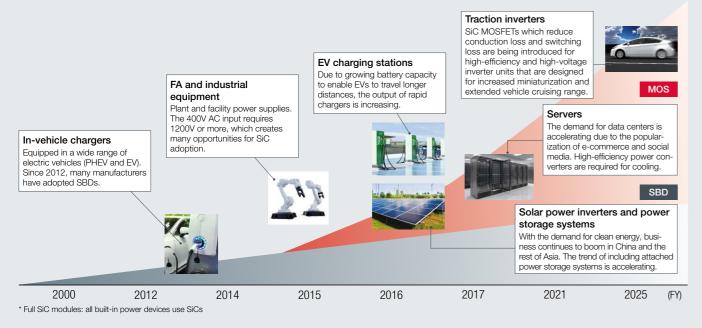


Specific ON resistance: ON resistance per unit are



## SiC application examples

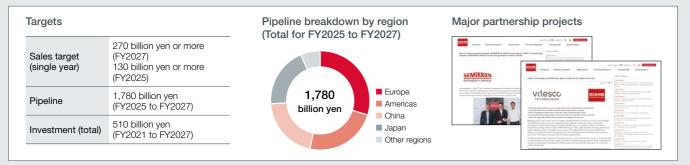
ROHM started basic research on SiC power devices in 2000 and subsequently expanded the range of products to include diodes (SiC SBD) and transistors (SiC MOSFET), etc. In 2012, we started mass production of the world's first SiC MOSFETs and full SiC modules\*.



## SiC sales targets and pipeline status

In the SiC business, we are aiming for the top market share with sales targets of 130 billion yen or more in FY2025 and 270 billion yen or more in FY2027.

Our total pipeline (business discussions with customers) for FY2025 to FY2027 is approximately 1.8 trillion yen, and we are receiving solid inquiries without depending on a specific region such as China, Europe, the Americas, or Japan. In order to build a supply system that can effectively respond to the brisk demand, we are planning to invest a total of 510 billion yen from FY2021 to FY2027.



## Signed a joint agreement to develop inverters for EVs with Mazda Motor and Imasen Electric

In November 2022, ROHM signed a joint agreement with Mazda Motor Corporation and Imasen Electric Industrial Co., Ltd. to develop inverters and SiC power modules installed in the electric drive units of EVs including e-Axle. e-Axle integrates a motor, reduction gearbox, and inverter into a single unit, which makes it an important component in determining the driving performance and power conversion efficiency of EVs. ROHM will participate in a "cooperative framework for the development and production of the electric drive units" and jointly develop inverters with a focus on the entire e-Axle through co-creation with its partner companies. Moreover, ROHM will contribute to the creation of miniature and high-efficiency electric drive units by developing and supplying the advanced SiC power modules to support those performance improvements.



Ichiro Hirose, Director, Senior Managing Executive Officer and CTO, Mazda Motor Corporation (left), Katsumi Azuma Director and Senior Managing Executive Officer and COO, ROHM Co., Ltd. (right)

#### VOICE

## Accurately assessing hidden customer needs and providing the optimal solution

Group Leader, Traction Inverter Group 1, FAE Division 3, Power Device Application Department System Solutions Engineering Headquarters

## ROHM's proposal ability helps solve customer issues

To realize carbon neutrality, the demand for SiC power devices, which contribute to miniaturization and energy saving, is increasing especially among EVs. The usability of SiC power devices, which incorporate new materials, differs in some respects from conventional Si devices, and problems can occur which customers have never experienced before. We propose products based on an understanding of customer needs including the power device characteristics, how it will be used in the application, and the driving method, etc. so that even customers who are adopting an SiC power device for the first time will be able to successfully conduct an evaluation. ROHM has a lineup of many products which includes not only power devices but also ICs which drive devices and general-purpose components. We are proud of our strength which lies in the ability to combine those products and technologies to propose a solution.

## Becoming a major global player

What becoming a major global player means to FAEs such as myself is that when customers confront an issue, they will immediately think of ROHM. Our goal is to raise the awareness of ROHM in overseas markets and become the semiconductor manufacturer that is indispensable to customers. Therefore, we are focusing our efforts not only on device proposals but also proposing references and solutions which assist customers with design and evaluation. Furthermore, we aim to become a major global player as the leading SiC power device company by expanding such activities globally while planning new products based on a thorough understanding of market trends and application needs.

## Initiative to increase the wafer diameter

Currently, ROHM's production is centered on using 6-inch SiC wafers, but we are developing process and manufacturing technologies using large-diameter wafers (8-inch), which can be expected to lower the cost of SiC power devices for further technological innovation. We are accelerating the development and mass production of next-generation SiC MOSFETs utilizing 8-inch wafers, and this project has been selected by the state-sponsored "Green Innovation Fund Projects." ROHM is preparing to ship devices using 8-inch

Along with SiC, there are high hopes for gallium nitride (GaN), with its excellent high-frequency properties. as a new material for power devices that will improve efficiency in various power supplies. ROHM envisions applications that will take advantage of the properties of GaN, such as power supplies for communication base stations and data center servers, motors for industrial equipment, and AC adapters. As such, we have expanded our lineup with the EcoGaN™ series, and in April 2023, we began mass production of the 650V GaN HEMT which has become one of the leading products in the industry in terms of device performance.

## Ryo Fuchizaki

SiC wafers in FY2025. Our goal is to promote the adoption of these devices in a wide range of equipment and facilities including EVs and industrial equipment by improving the manufacturing technologies for next-generation power devices

6-inch







# **ICs**

Strengthening our automotive business while also expanding overseas markets and our industrial equipment business to become a major global player

In the IC business, we develop products with a focus on analog ICs such as power supplies, motors, analog front ends, and amplifiers. In particular, we are focusing on Application Specific Standard Products (ASSP) in which our Product Marketing Engineers (PMEs) accurately identify our customers' development trends so that we can proactively develop products that fulfill our customers' needs. In addition to engaging in close communication with the customers, the PMEs value customer feedback, which can be applied to product development, and are characterized by meticulous attention to detail ranging from support during the product launch to follow-up at the time of mass production.

Naturally, in addition to product development, we also recognize the reduction of GHG emissions as a priority social issue. Because motors and power supplies account for the majority of power consumption around the world, ROHM's ICs enable a reduction in power consumption by motors and power supplies. With the advance of electrification and



automation in every field and the growing need for device energy saving and miniaturization, we hope to help solve environmental issues by expanding our lineup of high value-added IC products to meet such needs.

Moreover, one of our future tasks is to develop not only the domestic but also overseas markets, and we are focusing our efforts on industrial equipment in addition to automobiles. The current sales ratio of IC products for automobiles is growing steadily at just over 40%, but we are strengthening our product development and sales promotion to achieve a sales ratio of 30% in industrial equipment as well. By utilizing our strengths of close customer contact, coordination, and the proposal of total solutions, the IC business provides comprehensive "technologies" and "services" to gain the absolute trust of customers and aims to become a key figure in the realization of becoming a major global player.



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



LED driver ICs With the spread of LED lighting and lower current consumption in automobiles, the number of LEDs installed has increased. We have dedicated drivers suitable for various applications, such as headlamps



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.

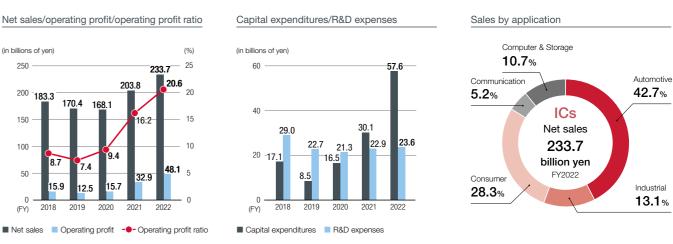
## **ROHM's Position**

## Worldwide analog IC manufacturer sales ranking (2022)

	(Millions	of U.S. dollars)
Rank	Company name	Sales
1	Texas Instruments	13,168
2	Analog Devices	11,142
3	Qualcomm	10,302
4	STMicroelectronics	4,800
5	Renesas Electronics Corporation	4,584
:		
17	ROHM	1,001
Source:	Omdia Competitive Landscaping Tool (CLT) 2022	

Norldwide analog IC market	
Total market (2022)	ROHM's share
90,887 million U.S. dollars	17th 1.1%
Automotive–Analog ASSP, Automotive–Analog ASIC	Industrial & Other–Analog ASSP, Industrial & Other–Analog ASIC
Total market (2022)	Total market (2022)
13,880 million U.S. dollars	4,313 million U.S. dollars
ROHM's share	ROHM's share
12 <sub>th</sub> 1.7%	13th 2.7%

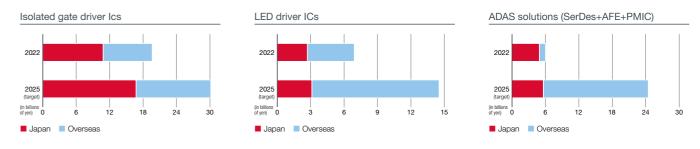
## Performance Highlights





## Progress of the Medium-Term Management Plan

Improving the sales ratio of the ASSP strategic Top 10 To further increase sales and profits in ICs, we aim to strengthen the automotive industry overseas as well as in Japan, home appliances in the consumer products field, and the PC and server field over the five-year period of the Medium-Term Management Plan. Most importantly, the sales of isolated gate driver ICs, LED driver ICs, and ADAS solutions, are steadily growing in the automotive market, which is expected to show further growth due to the progress of electrification of vehicles and more extensive use of electronic components in vehicles, and adoption is expanding not only



## Column Toward the Realization of a Sustainable Society

## Development of isolated DC-DC converters which aid in miniaturization and the reduction of the number of manhours spent on reducing noise in the design process for EV applications

EVs are equipped with applications such as traction inverters which drive the motors, electric compressors for the air conditioner, and PTC heaters which increase the temperature of the vehicle interior. Since these components are driven at high voltages, the primary side circuit with the battery must be isolated from the secondary side circuit with the motor, to ensure safety. Meanwhile, the noise suppression man-hours for different switch frequencies were an issue in previous isolated circuit configurations due to the size of the mounting area and power consumption as well as the output current. ROHM developed an isolated flyback<sup>\*1</sup> DC-DC converter which is optimal for power supplies for driving the gate drivers installed in these applications. Our new products contribute to application miniaturization and reduced noise design man-hours by realizing a circuit configuration which does not require a photocoupler<sup>2</sup> and stable switching frequency characteristics \*1 Flyback: a type of circuit which is used in the configuration of an isolated power supply. It is suitable for applications up to 100W and is superior in terms of the number of components and cost.

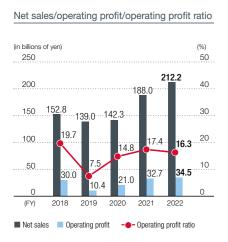
\*2 Photocoupler: an electronic component which converts an electrical signal input into light with light-emitting elements and then converts it back into an electrical signal with light-receiving elements.

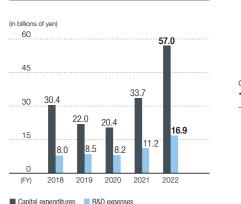
among Japanese customers but also overseas customers. Moreover, fields with sales growth and added value have been designated as strategic Top 10 fields, and our goal is to increase the average IC unit price and improve the profitability of the entire business by increasing the sales composition ratio of those fields. The sales ratio of the strategic Top 10 in FY2022 increased from 16% in the previous fiscal year to 22%, and profits for the overall IC segment were 48.1 billion yen, which represented an increase of 46% over the previous year. Going forward, we will strive to further expand sales and profits by continuing to introduce high value-added products.



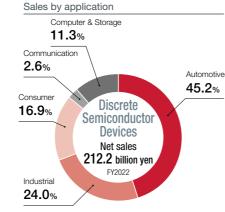
# **Discrete Semiconductor Devices**

## Performance Highlights





Capital expenditures/R&D expenses



## Key power device products



SiC power devices MOSFETs and SBDs convert power more efficiently than conventional Si material devices \* Details of the strategy on page 36



ROHM's Position				
	wide power device man ranking (2022)	(Millions of U.S. dollars)	<b>●</b> V Total	
Rank	Company name	Sales	2	
1	Infineon Technologies	5,480	2	
2	onsemi	2,645	● F	
3	STMicroelectronics	2,207		
4	Mitsubishi Electric	1,366	Total	
5	Fuji Electric	1,216	2	
:				
9	ROHM	824	ROHM	

Source: Omdia Competitive Landscaping Tool (CLT) 2022

## Progress of the Medium-Term Management Plan

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

Within discrete semiconductor devices, power devices are positioned as one of the most important products for driving ROHM's growth. In addition to power devices which use Si materials such as IGBTs, SJMOSs, MOSFETs, bipolar transistors, SBDs, and FRDs, ROHM possesses a broad lineup of SiC-based products including SBDs and MOSFETs. We can propose the optimal device combination and operating conditions as a solution according to the customer's circuit configuration. It is our goal to apply these strengths to achieve a CAGR of 29.8% for the power device business from FY2021 to FY2027. In FY2022, we achieved a year-on-year increase of 59% for sales. ROHM was originally strong in small-signal general-purpose devices and was a newcomer to power device development. However, with our entry into the high growth potential automotive and industrial equipment markets, we aim to further expand the power device business.

## Power devices

Aiming for "ROHM of Power" with products that contribute to a decarbonized society

In addition to power devices using Si and SiC as materials, ROHM has also started mass production of GaN devices, and our strength lies in our diverse lineup including power modules, equipped with several of these devices, and our ability to propose solutions which integrate sales promotion, support, and planning.

Power devices significantly contribute to the realization of carbon neutrality. They improve power conversion efficiency and contribute to energy savings for solar power generation, data centers, and charging stations in industrial equipment, and EV in-vehicle chargers, DC-DC converters, and traction inverters in automobiles. In particular, for growing traction inverters, by replacing IGBTs with SiC MOSFETs, not only will battery costs decrease due to improvements in electricity consumption, but system cost reductions such as lighter wiring harnesses and smaller inductors and capacitors are also expected.

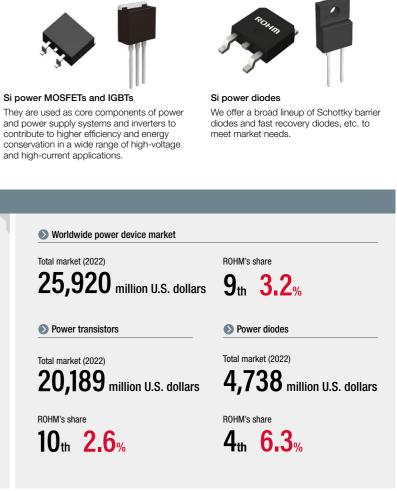
In addition, we believe it is necessary to strengthen not only our device competitiveness but also deepen our understanding of customer systems. It is important to enter the

ecosystem which includes automobile manufacturers and Tier 1 manufacturers. Going forward, we hope to build comprehensive relationships with each company and continue to be the power device manufacturer that is always chosen.

Tsuguki Noma Corporate Officer, Director of Power Devices Business Unit

There will likely be some fluctuations in the supply and demand balance for SiC due to market conditions, but since high growth will continue until around 2030, we will increase our production capacity and expand sales through active investment. Chinese companies are also gaining power, but we believe that ROHM's technological capabilities, solution proposal abilities, and supply capabilities which can produce everything from substrates to modules cannot be copied overnight. Because there is still more competition to come until we reach the physical limits which exhaust the capabilities of SiC, we hope to prevail in this field.

Power devices are expected to be a trump card for the revitalization of Japanese semiconductors, and we will achieve sustainable growth by establishing our position as a major global player that is recognized by customers and the industry as "ROHM as in power devices."



## Further accelerating the SiC business through the shift to 8-inch wafers

The demand for SiC power devices is growing significantly faster than forecasted. In addition to the product characteristics, securing capacity is also important for maintaining our competitive superiority. Not only did we start production in a new building at the Chikugo Plant at the end of 2022, but we also reached a basic agreement in July 2023 to acquire the Kunitomi Plant in Miyazaki formerly owned by Solar Frontier K.K. The aim of this deal was to expand our production capacity two years earlier through the acquisition of an existing plant instead of constructing a new building. At the same time, each company is trying to compete by improving production efficiency and reducing costs through the shift to a larger diameter wafer. Currently, 6-inch SiC wafers are mainstream, but each company is advancing its shift to 8-inch wafers. ROHM is advancing its development to be able to ship products which use 8-inch wafers in FY2025.

## General-Purpose Devices

Aiming to expand overseas market share with high technological capabilities that contribute to product miniaturization

General-purpose devices are essential products which are used in every type of electric and electronic equipment regardless of the market or application. ROHM's general-purpose devices are a business which has continued from the early years of the company. Through our diverse portfolio consisting of products such as SBDs, TVSs, bipolar transistors, MOSFETs, FRDs, and RECs, as well as our high quality, miniaturization and high productivity technologies, and stable production capacity, we have gained a high degree of trust from customers and maintained a top-class market share for many years. In particular, we have secured an overwhelming share in the Japanese automotive market which requires a high level of quality and service.

In general-purpose devices, we lead the industry and believe that we can help reduce the environmental impact by efficiently

Light-emitting diodes (LED)

Discrete semiconductor devices which

Used for lighting and status indications,

etc. in all kinds of electronic devices.

emit light when voltage is applied.

Key products in general-purpose devices



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



	I	(Millions of	of U.S. dollars
Rank	Company name		Sales
1	onsemi		834
2	Nexperia		792
3	ROHM		541
4	Diodes		367
5	Infineon Technologies		319



using limited power and proposing small packages which allow space for component mounting. Furthermore, as the industry focuses on power devices, we will contribute to the development of the electric and electronic equipment market by continuing to supply the market in perpetuity.

Going forward, we believe that we need to expand the business by increasing our share in overseas markets and promoting a product strategy which is globally tailored to the appropriate quality and cost. Specifically, we are realizing continuous cost reductions, productivity improvements, inventory design optimizations, and a stable supply and low costs through production leveling while also developing next-generation production lines with higher-efficiency. In this way, it will help us realize the goal of becoming a major global player by supplying products which are essential to the world in perpetuity.



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.

Total market (2022)	ROHM's share
4,782 million U.S. dollars	3rd 11.3%
Small signal transistors	Small signal diodes
Total market (2022)	Total market (2022)
2,155 million U.S. dollars	2,627 million U.S. dollars
ROHM's share	ROHM's share
3rd 11.0%	3rd 11.5%

## 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 and other 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 supply them to customers in a stable manner and at low cost. At ROHM, we have increased our production

## Toward the Realization of a Sustainable Society

### Vitesco Technologies and ROHM signed a long-term SiC power device supply partnership to contribute to the efficiency of EVs

In June 2023, ROHM signed a long-term supply partnership agreement regarding SiC power devices with Vitesco Technologies, a major manufacturer of modern drive technologies and electrification solutions. The transaction value is over 130 billion ven for the period from 2024 to 2030. The two companies have been conducting joint development since 2020, and as the initial result, Vitesco plans to start supplying its advanced inverters equipped with ROHM's SiC power devices in 2024. Two major automobile manufacturers have already decided to incorporate the inverters into their electric vehicles (EV). SiC power devices are an extremely important item in EV inverter development. They are an important key technology which is required to be high-voltage compatible, and they help extend the cruising range and reduce the battery size through the effective use of electric energy. ROHM and Vitesco are deepen ing their partnership to support high-efficiency EVs and rapid charging through SiC power devices.

### Developing MOSFETs which realize a compact size and industry-leading<sup>\*1</sup> low power loss to contribute to high efficiency and the safe operation of small devices

In recent years, small devices have become more highly functional, and the component mounting space has decreased due to larger battery sizes for increased power requirements. Moreover, to efficiently use the limited battery power, the equipped components need to reduce power loss to a greater degree. To meet such requirements, ROHM developed the "RA1C030LD," a compact and high-efficiency Nch MOSFET<sup>2</sup> with a 20V withstand voltage which is suitable for small and thin device switching. This new product adopts ROHM's own wafer-level chip size package"3 to realize low power loss as well as miniaturization. It reduces power loss by up to roughly 20% more than general products with the same package and achieves an industry-leading power loss value which significantly contributes to high efficiency and a reduction in the substrate component area for various small devices. Going forward, ROHM will continue to help solve social issues such as reducing the environmental impact through the development of products that contribute to the high efficiency of small devices.

### \*1 Researched by ROHM, as of November 10, 2022

\*2 Nch MOSFET A type of MOSFET which conducts when a positive voltage is applied to the gate with respect to the source. Because the drain-source ON resistance is smaller than with a Pch MOSFET, it can reduce the steady-state loss. \*3 Wafer-level chip size package

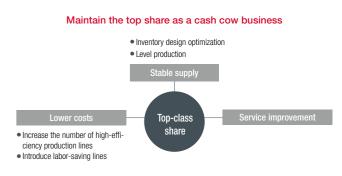
An ultra-compact package in which the formation of terminals and wiring are performed on the wafer which is then subse-quently divided into individual pieces.

## ROHM Co., I td.

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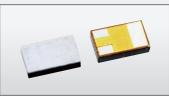
efficiency and capacity to achieve a stable supply, low costs and service improvements by introducing high-efficiency production lines and labor-saving lines. In addition, because semiconductors for automobiles require a particularly high level of quality, we apply our strengths as an IDM to implement thorough quality control. Such initiatives have helped us to steadily respond to customer requests and increase revenue.

### Small-Signal Device Business





Andreas Wolf (right) CEO. Vitesco Technologies Kazuhide Ino (left) Member of the Board, Managing Executive Officer, CFO, ROHM Co. Ltd



Nch MOSFET "RA1C030LD"

# **Modules and Others**

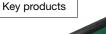
Helping to solve social issues by providing high added value

ROHM's thermal printheads and resistors are high market-share products with a global share ranked in the top 5 and we have a lineup of products for customers around the world to choose from. At the same time, we are developing products which contribute to "energy savings" and "miniaturization" for customers as stated in our Management Vision, and we are striving to help solve social issues. For example, in printheads, we are mass-producing energy-saving thermal printheads which can reduce the customers' drive battery from two cells to one. In resistors, we are strengthening our lineup of shunt resistors and other special resistors which support small sizes and high power with the increasing need for high functionality in automobiles. In addition, we are



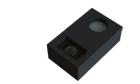
switching our product component materials to general-purpose materials that are easier to procure to contribute to energy conservation in society as a whole.

Moreover, we will build a family of products that can be supplied over the long term in a stable manner to expand our share of the industrial equipment market and achieve further growth. For long tail customers in industrial equipment, effectively balancing high-mix, low-volume production with mass production lines will be an issue in the future. Responding to detailed needs in each market and supplying products which constantly pursue high output, energy saving, miniaturization, and high reliability will help us become a major global player and grow together with our customers.





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 cir-

cuit 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**

Worldwide thermal printhead manufacturer sales share ranking (2022)

ROHM's share 2nd 23.8%

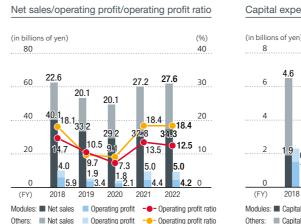
Rank	Company name	Share of sales
1	Kyocera	37.2%
2	ROHM	23.8%
3	SHEC	19.4%
4	Toshiba Hokuto Electronics	7.8%
5	AOI ELECTRONICS	5.8%
6	ALPS ALPINE	2.3%
Source: C	CHUNICHISHA Co., Ltd.	

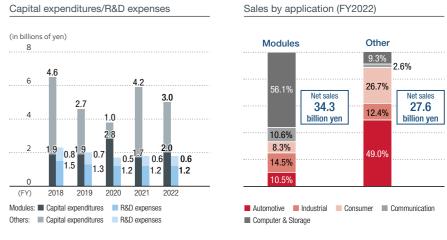
Worldwide resistor manufacturer sales share ranking (2022)

ROHM's share 4th 8.9%

Rank	Company name	Share of sales
1	Company A	19.7%
2	Company B	13.0%
3	Company C	11.4%
4	ROHM 21.2 billion yen	8.9%
	Other	47.0%
Source: F	Researched by ROHM	

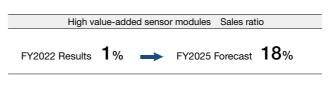
## Performance Highlights





## Progress of the Medium-Term Management Plan

Achieve high value-added modules and aim for qualitative transformation In the module business, our major goal during the Medium-Term Management Plan is to achieve qualitative transformation. In FY2022, sales of printheads for office equipment and optical modules for telecommunication equipment increased. Going forward, we will focus on expanding sales of sensing modules for autonomous driving support modules and security (authentication). In particular, the practical application of low-speed, small-sized automatic delivery robots has accelerated due to the labor shortage in recent years, and the demand for modules which combine laser diodes in various sensor applications is also increasing. We will work to differentiate our products from those of other companies, such as through superior high-temperature characteristics, and aim to increase revenue.



## Column Toward the Realization of a Sustainable Society

## Strengthening the "PSR Series" lineup of metal plate shunt resistors to contribute to the miniaturization and energy saving of automotive and industrial equipment

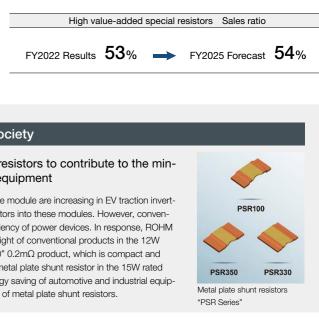
In recent years, thin power modules with cooling mechanisms on both sides of the module are increasing in EV traction inverters to miniaturize the housing, and there is a growing demand to build shunt resistors into these modules. However, conventional products are taller, and there is a risk that they may reduce the cooling efficiency of power devices. In response, ROHM developed the metal plate shunt resistor "PSR350," which has roughly half the height of conventional products in the 12W rated power class. In addition, the Company plans to commercialize the "PSR100" 0.2mΩ product, which is compact and detects even larger currents, and the "PSR330," which is the industry's smallest metal plate shunt resistor in the 15W rated power class. Going forward, ROHM will contribute to the miniaturization and energy saving of automotive and industrial equipment by strengthening and improving the performance of the "PSR Series" lineup of metal plate shunt resistors.



#### Sales by application (FY2022)

## Expand the lineup of special resistors

By application, automotive applications account for more than half of our sales of resistors, which are trusted by many customers. In FY2022, sales increased mainly due to high value-added high-power resistors and shunt resistors for the automobile market, which is expected to grow at a particularly high rate, and the adoption of these resistors also advanced. Because the number of equipped motors and ECUs will increase along with the component mounting density due to the shift to high functionality in automobiles, we will contribute to the miniaturization and high reliability of customer applications by enhancing our lineup of shunt resistors and other special resistors which can support small sizes and high power.





Contributing to sustainable growth through the realization of next-generation production lines.

> Katsumi Azuma Member of the Board Senior Managing Executive Officer, COO President of ROHM Apollo Co., Ltd.



## Competitive superiority through *Monozukuri* (Manufacturing) focusing on IDM

ROHM's stated corporate objective is "quality first." This objective originates from the founder's idea of creating compact and durable parallel lead fixed resistors to solve the problem of extremely fragile radio resistors at the time. To achieve quality and supply stability, it is important that we carry out integrated, in-house production (vertical integration), visualize processes, and improve traceability. Based on this IDM-oriented stance, ROHM also develops its own facilities and equipment. After starting from resistor manufacturing, ROHM expanded into

semiconductors, ICs, transistors, and silicon wafer manufacturing as an extension of that idea. These attempts to design, develop, and manufacture new products not only help to improve quality but also enable our engineers to fully demonstrate their capabilities, which leads to a sense of fulfillment. These efforts contribute to the realization of ROHM's stable supply, high product quality, and short lead times, etc. while also becoming a source of competitive superiority with respect to other companies.

## Promoting efficiency through organizational reform and human resource development across the entire Group

Over the past few years, the SiC power device market has rapidly taken off. ROHM also has a pipeline (business discussions with customers) of 1.78 trillion yen focusing on EVs over the three-vear period from FY2025 to FY2027. Due to an overwhelming lack of capacity with respect to demand, we are planning large-scale investments of over 500 billion yen in the SiC business alone from FY2021 to FY2027, and we are also systematically increasing the number of production operators as well. At the same time, it is important that we develop low-power consuming, high-efficiency fifth and sixth generation SiC MOSFETs. Engineers are needed in areas such as high voltage and high current products as well as thermal simulation. Luckily, since we have several engineers from our core generation of employees in their mid-40s, who have studied outside of their specialization to develop world-class products in power devices, if we reskill people with the right backgrounds, the training should be completed in a short period of time. Data scientists are another type of human capital which we need. As for the personnel to perform the practical work,

we could hire from the large pool of excellent IT human resources in India, but we need to increase the number of key members to provide guidance in Japan.

Furthermore. I was appointed as the head office COO and President of ROHM Apollo Co., Ltd. in June 2023. The reason the President of ROHM Apollo was appointed from the head office was to promote the "ONE ROHM" vision. Going forward. I would also like people at the plants to not only manufacture products according to instructions from the head office but to also understand the upstream ideas and have the autonomy to voice their opinions about design in some cases. Therefore, in addition to increasing the degree of interaction by having human resources at the section and division manager levels transfer back and forth to the head office, we are considering shifting some of the head office functions to mother plants. By promoting and streamlining the "ONE ROHM" vision in a manner which integrates the head office and the Group companies, we will expand our share of the power device market.

## Issues and initiatives in becoming a major global player

In aiming to become a major global player, we believe that it is essential to steadily improve quality, costs, and delivery terms (QCD) in manufacturing divisions. Moreover, we are developing flexible lines that can provide customers with the right amount of products when they need it. To realize work sites and management without human intervention, we are currently tackling the challenge of fully-automated operation at night, and our ultimate objective is to eventually expand this approach to our mass production lines. As for the

management structure, we believe it is necessary going forward to consider globalization through measures such as assigning Board members not only in Japan but also to each of our overseas business sites. The roles and social responsibilities which global companies fulfill for the world and the global environment are even greater. I hope that ROHM grows into the kind of company that the world needs by not only providing good products but also by improving the scale and nature of our ESG investments.

Material issues

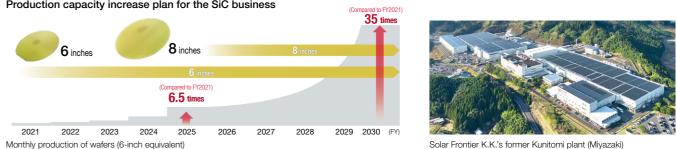
Stable Supply of High-quality Products

· Strengthen production systems through IDM activities Improve productivity by introducing flexible lines · Implement rigorous quality control and employee quality training

## Enhancing our production capacity around SiC power devices

The role of ROHM's mainstay semiconductor products in the realization of a decarbonized society is becoming bigger and bigger. In particular, technological innovation around electrification is advancing in the automotive and industrial equipment markets to reduce the environmental impact and achieve carbon neutrality, and the demand for semiconductors is running ahead of schedule with further expansion of the market anticipated. To achieve a stable supply of products, ROHM is seeking to expand its production capacity around SiC power devices through prior investment. ROHM's capital investments aimed at SiC power devices were approximately 10 billion yen in FY2021 and 20 billion yen in FY2022 and 80 billion yen is

#### Production capacity increase plan for the SiC business



## Flexible lines

In April 2021, ROHM started operation of its "flexible lines," which consolidate our independently developed technologies and automate the assembly process. Based on Failure Mode and Effects Analysis (FMEA), we improved product quality by increasing the capability of the processing itself, minimized the variation by automating production order tasks, transportation and supply of materials and products, tool changes, and manual tasks/operations, and doubled human productivity through manpower savings. In addition, the lead time shrank to 10% of the previous figure by implementing the process design from the planning stages. Because there are many customers who wish to have a stable supply of products over the long term despite the small volumes as in the automotive

### Flexible line implementation plan and outlook

STEP 2 Development and installation of a new IC line at the Yukuhashi Plant

STEP 1 Start of discrete semiconductor device mass production Expand the supported models

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ROHM Co., Ltd. 48

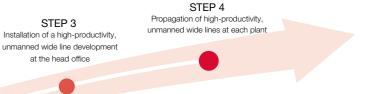
#### Strengthening Product Safety and Quality

· Establishment and entrenchment of a quality assurance system through front loading · Achieving appropriate guality by incorporating the customer's perspective

planned for FY2023. ROHM will invest a total of 510 billion yen from FY2021 to FY2027 with 400 billion yen being invested from FY2024 to FY2027 and plans to increase production capacity compared to FY2021 by 6.5 times in FY2025 and 35 times in FY2030. For the time being, we will build a system for increasing production at the Chikugo and Miyazaki plants, but new plants are also being acquired. In July 2023, we announced a basic agreement with Solar Frontier K.K. to acquire the assets at their former Kunitomi plant in Miyazaki. The acquisition is scheduled to take place in October of this year, and the plant will be utilized as the main production site for ROHM going forward.

Solar Frontier K.K.'s former Kunitomi plant (Miyazaki)

and industrial equipment markets, flexible lines satisfy the needs of such customers and enable high-mix small-lot production at high quality. We are currently carrying out various technical verifications while conducting mass production on these lines, and our mission for the time being will be to apply the elemental technologies obtained there to the fully-automated wide lines which will be developed in the future and deploy them to our overseas plants. In addition, we are planning to complete the "Manufacturing Innovation Center" as ROHM's new development technology site. We aim to achieve a stabler supply of products and strengthen our BCM system through comprehensive quality improvement, automation, and manpower savings.



## **Quality-Related Initiatives**

By thoroughly adhering to the Company Mission, which is based on Quality First, ROHM supports the manufacturing of products trusted by customers.



Quality https://www.rohm.com/company/about/ approach-to-quality Takashi Miki Corporate Officer, Director of Corporate Quality Headquarters

## Focus on Company Mission mindset training to achieve 100% quality

Touting "quality is our top priority at all times" in our Company Mission, we have set such policies as the Basic Management Policy, Basic Quality Assurance Policy, Basic Goals for Education and Training, and Basic Policy for Education and Training in order to achieve that mission. To provide employees with an understanding of and spread that understanding of these policies, we regularly conduct explanatory meetings that employ video and other material as mindset training.

We consider mindset training important because the reason for ROHM's existence is the advancement and progress of culture, and "quality first" is given as a strategy to achieve that. In other words, ROHM considers achieving the Company Mission through the quality of actions and quality of people who take such actions as integrally connected, and this shows the strength of our attachment to "quality first," which differentiates ROHM from its rivals. Offering a stable supply of high quality products and services is indispensable for our sustainable growth, and the "quality" in the Company Mission refers to the quality of not only services and products but also the processes, people, and companies that create those services and products.

For quality, it is important to be particular about 100%. All people behaving properly all the time makes it possible to provide products and services that satisfy customers. It is important to conduct regular mindset training because if even one person acts improperly just once, this can impact the quality we provide customers. Through our quality assurance system, we stipulate all the mechanisms and rules for ensuring quality, which includes development, sales, and customer service, and it is the responsibility of the Quality Assurance Division to optimize that.

## Working to achieve the quality demanded by customers by defining proper quality and front loading quality assurance

A major precondition for conducting quality assurance activities is defining proper quality. Of course, it is important to strive for zero defects, but if the goal is completely eliminating complaints and defective products, quality assurance activities become too focused on preventing the shipping of defective parts. There is no need to pursue excessive quality that customers do not expect. Therefore, we introduced a customer quality satisfaction survey to ascertain the optimal level of quality for customers and the level for proper quality. Based on the survey results, we set the proper quality that reflects the required quality taking into consideration costs and build a quality assurance system to ensure quality from a customer perspective. Quality assurance with front loading is indispensable for achieving proper quality. It is possible to improve design quality by thoroughly eliminating envisioned risks at the design stage and designing processes that take into consideration the ease of production. Other important activities for increasing design quality and production management precision are undertaking management based on production process data and analyzing that data. In addition to moving forward with various efforts, including automation and digitalization of processes and data collection, we are undertaking a DX for data analysis and quality control with predictive maintenance that leverages this information, and accelerating work to improve the precision of product quality maintenance and management.

## Toward quality befitting a major global player

For quality, too, being a major global player means being selected by all customers, both those in Japan and overseas, because ROHM products are reliable, and thus it is necessary to guarantee quality in order to be selected. However, it is the customer, not us, who decides whether the quality is good or bad. It is important, therefore, to continue to implement measures such as conducting customer quality satisfaction surveys, incorporating the opinion of customers, and providing products of the required quality. There is also a tendency for organizations to become bloated, vertically divided, and inefficient, such as with duplicate operations, as they grow into a major global player, and we are promoting efforts to accelerate decision-making and operations through seamless connections between in-house organizational units.

# Material issues

Stable Supply of High-quality Products

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## Quality Assurance System

Until recently, there was a tendency for there to be little overall optimization for the whole company despite efforts to optimize individual businesses because businesses were vertically divided. It was often the case that the needs of and feedback from customers were implicitly known only by the responsible staff and division. Therefore, the Corporate Quality Headquarters, one of the divisions directly under the supervision of the President, is working to conduct company-wide optimization through the horizontal construction of a

## Conducting a quality satisfaction survey

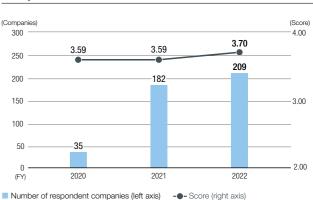
Since FY2020, we have conducted an annual quality customer satisfaction survey of customers' development, purchasing, and quality divisions that directly use our products. The initial survey in FY2020 targeted the Japanese automobile market, but since FY2021, the various overseas regions have been included, making it possible to survey customers in almost all industries. The FY2022 score rose 1.1 points (3.1%) due to improvement activities based on survey results. The results are indexed and shared within the Company and provided to customers. Our goal is not to simply raise the score. We will pursue the best quality for customers so that customers throughout the world will select ROHM with peace of mind.

Training human resources responsible for Quality First Because we consider the training of human resources who can implement "quality first," one element of our Company Mission, as necessary investments to "leverage quality to grow the Company and contribute to society," we have established a dedicated organization to handle the issue. For quality human resource training, we offer four programs targeting each of the topics of mindset, personal development, practical issues, and professional development, and provide the most appropriate training for employees' job and work history through a combination of face-to-face sessions with senior coworkers and experts, live online sessions, and on-demand sessions that can be accessed via the in-house intranet. Within those efforts, we have focused on training to instill the Company Mission and basic policy, and this involves analyzing the Basic Management Policy and Company Mission, which was set in 1966. As of FY2022, the cumulative total of employees (both in Japan and overseas) who have taken this training reached 17,316. By

#### Strengthening Product Safety and Quality

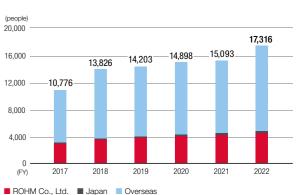
- Establishment and entrenchment of a quality assurance system through front loading
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company-wide cross-divisional quality management system, information sharing, and supervision of each business division's operations. As for new product development, evaluations are conducted at each stage: development review, design screening, initial production, and mass production. This is to meet the demands of customers and provide safe, reliable products in a timely manner. Information on improvements is provided to the source as feedback and introduced in future designs.



Quality Satisfaction Score

conducting an annual quality awareness survey of all employees, we confirm the awareness and behavior based on the Company Mission and Basic Management Policy.



Number of employees taking training sessions to instill Company Mission and Basic Management Policies (cumulative) Increasing investment efficiency by considering topics related to the people we want to help

rch and Development https://www.rohm.com/rd

Ken Nakahara Director of R & D Center



## Developing research topics and allocating resources from a perspective of who it is useful for

When conducting R&D, we place a greater focus on who can benefit from it and what issue it solves than novelty. Research topics tend to be proposed from a perspective of being "interesting" or "highly novel." However, this makes it difficult to thoroughly research technology and link that to product development. The purpose of corporate R&D should ultimately be to contribute to the solution of market issues. Therefore, we promote R&D that keeps in mind balancing the creation of new technologies and the practical use of those technologies for business.

Furthermore, for corporate R&D, a necessity for business growth, it is important to raise investment efficiency. In other words, it is important to increase the probability that an R&D topic can be commercialized. Of course, this requires considering not only the above market trends but also portfolio

management. Therefore, we break markets and technology into existing ones and new ones for ROHM, which creates four quadrants and makes visible the allocation of R&D resources (see following figure). Using the numerical figures in the diagram below as targets, we run the Company so that research topics are not skewed toward novelty.

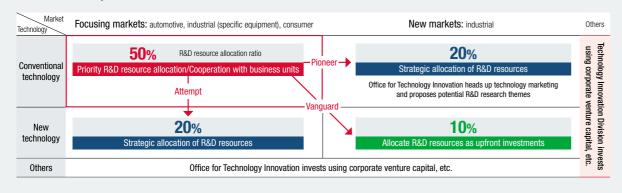
ROHM is not an extremely large semiconductor company as it is only about one-tenth the size of major global semiconductor companies. It is precisely because of this that we will increase the probability of R&D successes by concentrating resources on power and analog semiconductors, as is given in our Management Vision, and focusing on topics that contribute to solutions to social issues. In this way, we will steadily move forward in becoming a major global player.

## Mechanisms that promote innovation

ROHM's R&D emphasizes linking individual efforts to recognition. Whether we can successfully compete against rivals is partially determined by whether technology we develop can be commercialized, and there are times when we are not successful in commercializing a technology, which means we lose to our rival. Even so, there is no losing or winning with the development of technology itself. All efforts related to technology, including failures, provide knowledge, and this knowledge can be used laterally in the Company in some way. Efforts that do not result in commercialization can also be beneficial if that

technology is made public and wins high praise. Winning praise from outside the Company stokes the enthusiasm of engineers, and thus is likely a steppingstone on our path to becoming a major global player. We are working to strengthen our R&D abilities that generate sustainable growth over the long term by not only actively releasing papers and making presentations at academic conferences but also forming partnerships with universities through our open research solicitation system and creating an environment in which researchers can possess a broad perspective.

### ROHM's R&D System and Resource Allocation

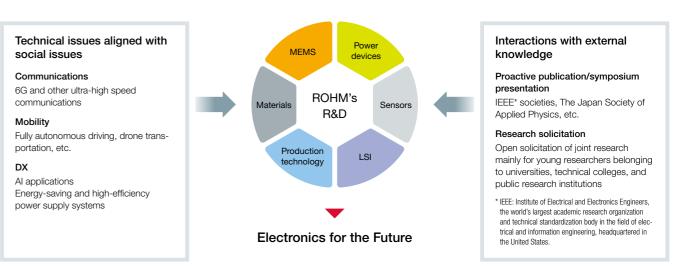


Evolution of Technologies to Contribute to the Advancement and Progress of Culture Develop new, high value-added products that contribute to Material issues

energy saving and miniaturization Strengthen development structures creating products that can compete globally: Assigning PMEs Customer-oriented solution proposals using comprehensive capabilities from passive components to power devices and ICs

## Research and Development System

The R&D Center conducts research to solve technological issues and advance existing products mainly in the areas of communications, mobility, and DX. As part of our open innovation efforts, we are also building stronger and broader partnerships with external research institutions through joint



## Cases Examples of R&D

## 1 Participating in Integrated Green-niX Consortium for Research and Human-Resource Development

We joined the Integrated Consortium for Research and Human-Resource Development (Green-niX), which was launched in March 2023 and is centered on three universities - Tokyo Institute of Technology, Toyohashi University of Technology, and Hiroshima University. Through this consortium, which brings together leading researchers on Si electronics at these three universities, we aim to create green semiconductors that have little environmental burden by conducting R&D related to 2D materials and ferroelectric materials, future semiconductor materials, and similar activities while incorporating the R&D needs of companies.

ROHM has clearly stated that it will contribute to the consortium on the two fronts of R&D and human resource development. We are working to establish new collaborations by not only providing educational opportunities to the undergraduate and graduate students of consortium member universities through ROHM original lectures but also promoting exchanges between undergraduate students, graduate students, and professors and ROHM engineers and researchers, who have until now had little contact with each other.

## 2 Incorporating new independent perspectives through open research solicitation

At ROHM, we solicit joint research topics through our open research solicitation system, which targets researchers who belong to universities, technical colleges, and public research institutes. ROHM indicates needs related to advanced analysis methods, principle analysis, and undeveloped technologies, and in response, research institutes make proposals related to corresponding research results, technology they possess, and new ideas. If there is a match, we provide up to 2.5 million yen annually to conduct joint research for up to three years. This joint research with universities is strongly stimulating for various reasons, including giving birth to ideas from a perspective of "why does this happen," a question often not examined when a company conducts research on its own, and an overall academic perspective. These exchanges also have secondary benefits, such as instilling in students an interest in ROHM.

### Stable Supply of High-quality Products

 Strengthen production systems through IDM activities Improve productivity by introducing flexible production

lines

ity training

· Implement rigorous quality control and employee qual-

#### Strengthening Sustainable Technologies, Developing and Supplying Innovative Products · Contribution by developing energy-saving products and supplying them to the market

 Contribution by developing and supplying miniaturized products · Contribution by developing and supplying products pursuing functional safety

research with universities in Japan and overseas, as well as through our open research solicitation system. In addition to key areas for ROHM, such as automotive and industrial equipment, we will continue to capture technology trends in new areas and exert our influence on innovation in targeted areas.

Strengthening our competitiveness by focusing on increasing the number of patents through a Group-wide support system



To formulate an intellectual property strategy, we first need to understand ROHM's intellectual property position in the semiconductor industry. For example, on looking at the relationship between net sales and the number of patent families\* held, we find that there is a correlation. This can be seen from the number of patent families, and at the same time, ROHM's current position can be understood. Based on these analysis results, we work out the pace of the patent applications we need in order to compete with other companies in the same industry. We then set a target for the number of

**ROHM's Intellectual Property Activities** 

applications and carry out promotional activities to achieve our goal. Additionally, as ROHM's Chief Technology Officer, I am in charge of the legal division as well as the intellectual property division. Not only does this allow both divisions to work together to smoothly handle legal matters, such as filing negotiations and patent decisions, but it also means that we can flexibly form teams from both divisions to respond depending on the project. This type of structure has become one of our strenaths.

\* A collection of patents that cover patent applications in multiple countries

Tetsuo Tateishi Member of the Board.

Senior Corporate Officer, CTO

## Patent Strategy to Become a Major Global Player

Since some patents can become strong patents after a number of years, we basically file patents for all our inventions. However, manufacturing know-how and inventions that would go unnoticed even if used without permission by others must be kept secret. This is why proper management is needed depending on the type of invention. As for how to apply for a patent overseas, since ROHM's main development base is Japan, we first apply for a patent in Japan. We then narrow down the most important patents and apply for them overseas, but bearing in mind the high cost of filing overseas, we select the countries where we file each patent. With regard to patents that have reached their renewal deadline, after considering the maintenance fee, we decide whether to extend the patent maintenance period, sell or let them lapse. These decisions are made by the intellectual property division and the business units based on global

technological trends and ROHM's business strategy.

ROHM sets guidelines for the number of patents it owns in order to become a major global player. With patents taking several years to be granted, the number of patents held does not increase rapidly. Patent rights also expire after 20 years, so a long-term filing plan is required. As mentioned earlier, there is a correlation between net sales and the number of patents held, so based on ROHM's projected net sales of 1 trillion yen by 2030, we have determined the number of patent families we should aim for each year. Based on this number and the number of patent families currently held, we set the target number of filings for each year. The basis of ROHM's patent strategy is to closely monitor the number of patents relative to sales and apply for a sufficient number of applications to remain competitive.

## Issues and Responses Regarding Intellectual Property Activities

Patents can also be obtained through transfer from another company or through an M&A. Patent strategies such as determining the pace of applications in future key areas while also referring to the filings of other companies are also necessary to advance management strategies. Technology manufacturing companies like ROHM cannot survive without patents. Merely focusing on technology does not result in good intellectual property. This is why an intellectual property strategy is needed to show how patents can be best used for business. An intellectual property strategy is basically the same as running a business in that the aim is to maximize the

return on investment in the form of business sales. To this end, we are building a multifaceted strategy while referring to various indicators such as the number of patent families. In order to maximize the return on intellectual property investment, it is vital to improve the quality of our patents, and we plan to carry out activities to do so.

In terms of a patent strategy, we need to clearly document the process for determining criteria in order to provide feedback on the results.

#### Evolution of Technologies to Contribute to the Advancement and Progress of Culture

Develop new, high value-added products that contribute to energy saving and miniaturization · Strengthen development structures creating products that can compete globally: Assigning PMEs · Customer-oriented solution proposals using comprehensive capabilities from passive components to power devices and ICs

## Intellectual Property Activity Promotion System

Material issues

An Intellectual Property Strategy Meeting, led by the Intellectual Property General Manager and comprised of executives from the technology side and directors, is held six times a year. Group-wide intellectual property strategies and policies are discussed and formulated at these meetings. The formulated intellectual property strategy policy is reported at least twice a year to the Executive Meeting, which is attended by corporate officers including the President, where the Company makes its management decisions. Important matters decided at the Executive Meeting are also reported to the Board of Directors, creating a framework whereby directors can directly oversee intellectual property. The intellectual property strategy policy is shared with business units to promote the intellectual property strategy from the top down. Furthermore, the Employee Invention Advisory Committee, which is made up of general managers from the technology side, takes the lead in encouraging new inventions and converting those inventions into intellectual property through collaboration across divisions and from the bottom-up. Every year, inventors who meet the standards are given awards. For

## Investment in Intellectual Property to Strengthen Growth Fields

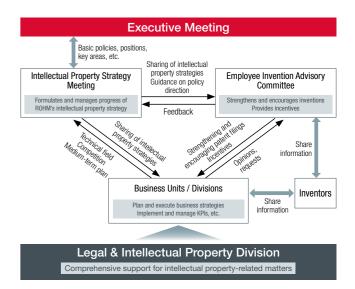
In key technology fields, we not only file for patents from the Company but also procure patent rights from external sources. We are working to monetize patents that are underutilized due to changes in the business environment through sales and licensing, and we are striving to strengthen our intellectual property portfolio while replacing patents as and when needed. In order to realize the intellectual property strategy guidelines, the annual target for the number of patent filings needs to be doubled from 2020's 500 in the three years that follow. Hence, we are making efforts to file 1,000 patents in 2023. To achieve this, we are focusing on strengthening support for acquiring patents.

## Developing Human Resources to Promote Intellectual Property Strategy

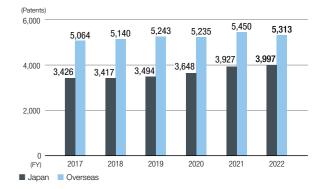
In order to develop human resources that support our intellectual property activities, we are systematically developing intellectual property personnel who can play an active role globally through both off-the-job and on-the-job training. Furthermore, seminars are held for members of the Intellectual Property Division, with the heads of relevant departments within the Company serving as instructors and giving lectures on their own department's business. Through



example, we specifically encourage the creation of intellectual property from inventions created at ROHM through incentives, such as the Rookie of the Year award for young employees.



Number of Patents Held in the ROHM Group



this, we aim to develop human resources who can implement the intellectual property strategy based on the Company's business environment. Moreover, we have created an intellectual property skill map for members of the Intellectual Property Division to give direction on skills and career paths. The skill map is also used during meetings between superiors and subordinates which are held every six months to set goals to help further their careers.