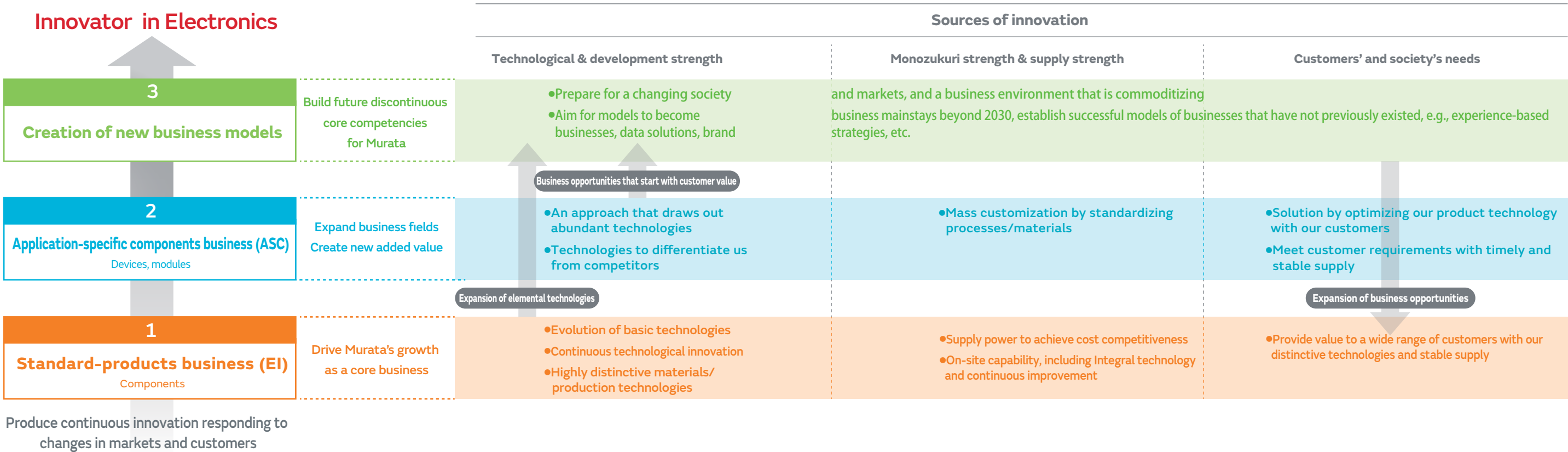


Practicing 3-layer portfolio management



In order for Murata to continue to create value as an innovator in the drastically changing electronics industry, it is necessary to capture the global trends of technology and changes in society and reflect them in business management. In order to create various innovations looking ahead to the future from a long-term perspective, Murata uses a three-layer portfolio in its business management to create value.



Reclassification of disclosure segment and net sales classification

From fiscal 2022, which is the first year covered in the “Medium-term Direction 2024,” Murata discloses information based on its three-layer portfolio. By changing the disclosure segments, Murata will improve the transparency of management, have more active communication with stakeholders, and promote autonomous and decentralized organizational management.

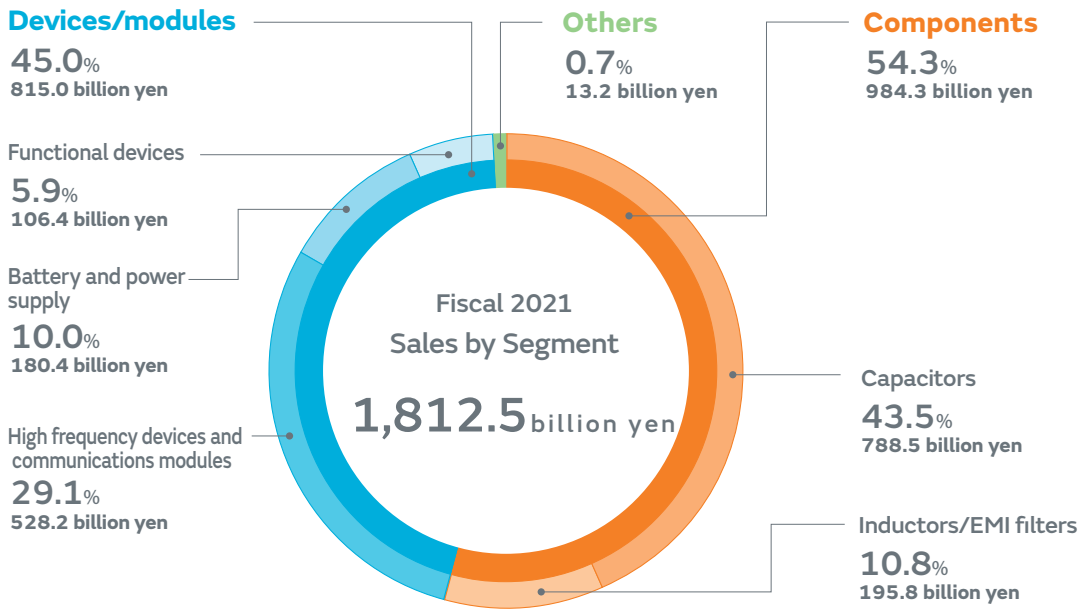
Former segment classification (- FY2021)

Segments	Net sales classification	Main products
Components	Capacitors	Multilayer ceramic capacitors
	Piezoelectric components	SAW filters Piezoelectric sensors Resonators
	Others components	Inductors EMI suppression filters Lithium-ion secondary batteries Connectors Sensors Thermistors
Modules		RF modules Multilayer ceramic devices Connectivity modules Multilayer resin substrates (Multilayer LCP Product) Power supply modules Solutions
Others		Machinery manufacturing Sales of software

New segment classification (FY2022 -)

Segments	Net sales classification	Main products
Components	Capacitors	Multilayer ceramic capacitors
	Inductors/EMI filters	Inductors EMI suppression filters
	High frequency devices and communications modules	SAW filters RF modules Multilayer ceramic devices Connectors Connectivity modules Multilayer resin substrates (Multilayer LCP Product)
Devices/modules	Battery and power supply	Lithium-ion secondary batteries Power supply modules
	Functional devices	Sensors Timing devices (Resonators)
		Solution business Medical products Machinery manufacturing, etc.
Others		

Sales breakdown by segment



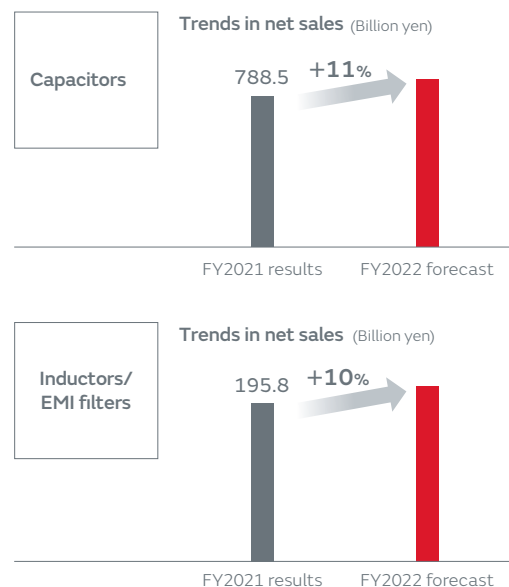
1 Standard-products business (EI) Components

Main products

Capacitors: Multilayer ceramic capacitors (MLCCs), etc.
Inductors/EMI filters: Inductors, EMI suppression filters, etc.

Definition of layer 1	Consists of component products such as MLCCs and inductors. This is a business that we have built up since our founding and will continue to drive growth as a core business. We will continue to strengthen our existing strengths in technology, supply, cost competitiveness, and monozukuri.
Key issues	<ul style="list-style-type: none"> Improving business efficiency with the aim of further solidifying business foundations Increasing production capacity to meet growing demand in the areas of communications and mobility Establishing a production system that can flexibly respond to changes in the business environment and increased demand by accelerating smart factory initiatives, improving productivity, and fostering overseas production bases
Our vision for 2030	<ul style="list-style-type: none"> To secure business opportunities in the growing market while working to increase business efficiency and achieve lean business operations To play a role in technology strategies and new product creation as the basis for layer 2 and layer 3 To be able to maintain a competitive advantage over competitors To lead Murata's ESG initiatives and make a significant contribution to solving social issues

FY2021 results and FY2022 forecast



* From earnings forecast announced on April 28, 2022

Business × SDGs

MLCC that puts environmental load reduction into practice based on "light, thin, short, and small" characteristics

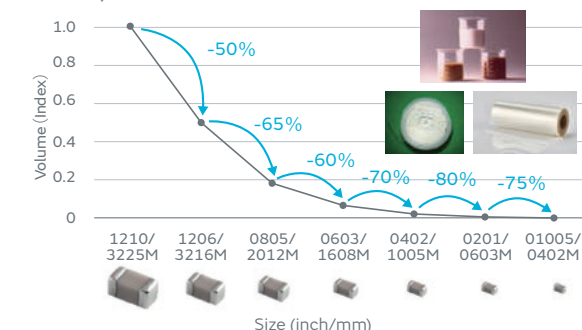


Since our founding, we have been pursuing miniaturization of MLCCs and have supplied products to a wide range of markets. Through the development of "light, thin, short, and small" technologies, we respond to the needs of society and contribute to improving the convenience of people's lives and the sustainable use of resources through our customers' products.

We will continue to contribute to the further miniaturization and enhanced multifunctionality of electronic devices and to resource and energy conservation by making them lighter, thinner, shorter, and smaller, in response to the growing needs for miniaturization and larger capacity, such as the spread of 5G-compatible smartphones and wearable devices.

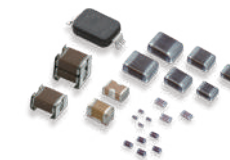
<https://corporate.murata.com/en-global/csr/sdgs-initiatives/case2-mlcc>

Reduction of materials used by making MLCCs lighter, thinner, shorter and smaller



Capacitors

Multilayer ceramic capacitors (MLCC)



Business opportunities

- Increased demand for components due to 5G and advancements of automobile electrification

Competitors

Samsung Electro-Mechanics (South Korea), TAIYO YUDEN (Japan), TDK (Japan), Yageo (Taiwan), etc.

Strengths

- Extensive product lineup/High market share
- Technological capabilities and monozukuri strength that enable small, high-performance products, ensure reliability and high quality
- Worldwide sales network and the largest supply capacity in the industry
- Profitability based on integrated manufacturing systems from materials to finished products

Risks

- Deterioration in market conditions due to global economic stagnation and increasing geopolitical risks, and the resulting fluctuations in demand for electronics products
- Changes in the business environment due to intensified competition with competitors

Growth strategies

(1) Increase production capacity to meet growing demand for components

Demand for components is expected to continue to increase in the communications and mobility markets. We will further expand the scale of our operations by leveraging our competitive advantage of having the largest production capacity in the industry.

(2) Plan and execute growth scenarios based on risks such as the rise of competitors

In the MLCC market, which is expected to grow in the future, competition with existing competitors

is expected to intensify. We aim to achieve sustainable business growth by paying attention to the competitive environment.

(3) Continue to maintain the top market share through continuous innovation and a solid supply system

Murata's share of the MLCC market is 40%, with a high share of 50% in the automotive market, which is expected to grow in the future. We will maintain and improve our market position by further strengthening the competitive advantages we have cultivated to date.

TOPICS

Increased production capacity by constructing new production buildings

In order to meet increasing demand for MLCCs over the medium to long term, Murata has been increasing production capacity at its production bases in Japan and overseas. In fiscal 2021, we began construction of new production buildings in Thailand and at Izumo Murata Manufacturing Co., Ltd. (Shimane Prefecture). Construction is scheduled for completion in fiscal 2022 and fiscal 2023, respectively.



Rendering of Izumo Murata Manufacturing Co., Ltd.'s new building

Inductors/EMI filters

Inductors (coils)



Inductors work by making electricity and magnetism interact with each other to convert voltage and stabilize current, etc. Together with capacitors and resistors, they are the basic components of electronic circuits. Like capacitors, they are electronic components commonly used in many different electronic devices.

Business opportunities

- Increased demand for components due to 5G and advancements of automobile electrification
- Growing need for higher performance and reliability of RF inductors and power inductors

Competitors

TDK (Japan), TAIYO YUDEN (Japan), Cyntec (Taiwan), Sunlord (China), etc.

Strengths

- Extensive product lineup/High market share
- Optimal product design using various manufacturing methods
- High quality, high customer support, and the evaluation and analysis technology to support it
- High supply capacity to meet strong demand

Risks

- Deterioration in market conditions due to global economic stagnation and increasing geopolitical risks, and the resulting fluctuations in demand for electronics products
- Intensified competition with competitors

Growth strategies

(1) Provide new customer value in response to market changes

In the future, technologies and applications in the in-vehicle system market and communications market will undergo major changes. In the in-vehicle system market, demand for power inductors and inductors for interfaces will grow, and in the communications market, as modules inside smartphones become smaller, RF inductors will become more compact and have higher Q*. We are working to provide new customer value by firmly grasping changes in the market and customers, releasing new products such as new power inductors for automotive applications and compact, high-Q RF inductors.

(2) Provide products that meet market demands by integrating development capabilities and basic technologies

Murata creates roadmaps of markets, products, and technologies for the next five to ten years, and quickly commercializes products demanded by customers through product development that anticipates future

needs. Murata also possesses multiple methods and processes for development and monozukuri technologies, including multilayer, winding, and film. By integrating advanced material development, product development, process development and basic technologies (simulation, reliability evaluation, mounting technology, application), we will provide products that meet market demands.

(3) Expand global support system for customers

The need for noise suppression is further increasing in the in-vehicle system market due to the advancement of automobile electrification and the expansion of 5G in the communications market. By deepening relationships with customers and pursuing cutting-edge technologies through customer support for noise suppression and the provision of new products and solutions using EMC labs in eight locations not only in Japan but also in Europe, the United States, China, and other parts of the world, we will become the "No. 1 EMC Solution Provider."

*Q stands for Quality Factor. The higher the Q value, the higher the inductor characteristics

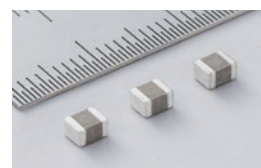
TOPICS

Released new products in response to the advancement of automobile electrification

We have developed and commercialized a large number of products to meet various customer needs in line with the advancement of automobile electrification. Most recently, we have released high-current power inductors and interface inductors.

• "DFE32CAH_R0 Series" metal power inductors with the world's best electrical characteristics in 3225 (3.2 x 2.5 mm) size for automotive applications

• "LQW21FT_0H Series," the world's smallest inductor for automotive PoC* circuits, 2012 (2.0 x 1.2 mm) size



DFE32CAH_R0 Series

* Power Over Coax: A method in which the signal line and power line are integrated into a single coaxial cable

2

Application-specific components business (ASC)

Devices/modules

Main products

High frequency devices and communications modules: SAW filters, multilayer device chips, RF modules, Multilayer resin substrates (Multilayer LCP Product), connectivity modules, connectors, etc.
Battery and power supply: Lithium-ion secondary batteries, power supply modules, etc.
Functional devices: Sensors, timing devices (resonators), etc.

Definition of layer 2

This business consists of device and module products such as SAW filters, RF modules, Multilayer resin substrates (Multilayer LCP Product), connectivity modules, lithium-ion secondary batteries, and sensors, and has established its business model along with the growth of cell phones and smartphones. In addition to pursuing technological differentiation from our competitors, we are developing our business by leveraging our strengths, such as our abundant technologies, problem solving through product technology-driven discussions with our customers, and timely and stable supply.

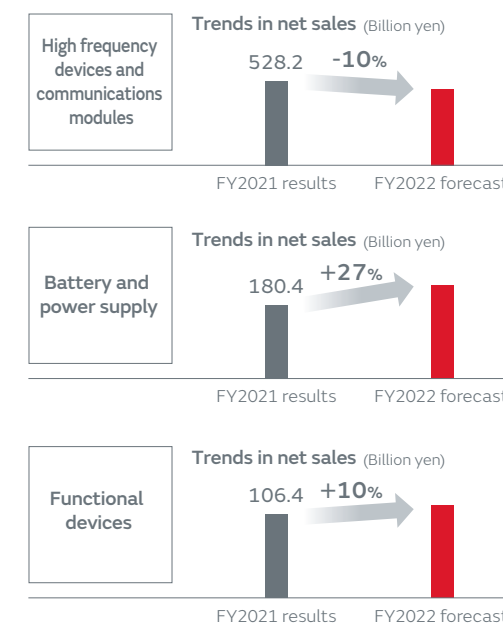
Key issues

- Establishing technology that differentiates us from competitors
- Promoting thorough standardization and mass customization of processes and materials to accommodate variable-mix, variable-volume production
- Strengthening the financial health of businesses with low profitability

Our vision for 2030

- To expand the number of markets entered beyond those centered on smartphones
- To be able to establish differentiated technologies and develop and produce products that contribute to business growth in layer 2
- To also contribute to the creation of layer 3 business model

FY2021 results and FY2022 forecast



* From earnings forecast announced on April 28, 2022

Business X SDGs

Murata's power supply modules contribute to energy consumption



In data centers, which are critical infrastructure supporting the development of technologies such as 5G, AI, IoT, and big data, efforts to address the rapid increase in energy consumption have become a common industry issue. Murata's power supply modules contribute to energy conservation by pursuing high efficiency, low heat generation, conserve space, and low noise at the component level.

Approximately 80% of Murata's power supply modules that have received 80 PLUS* certification have received TITANIUM, the highest rating. We will continue to take on the challenge of further energy conservation in the power supply market on the strength of "high efficiency."

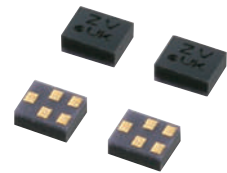
<https://corporate.murata.com/en-global/csr/sdgs-initiatives/case1-power>

* Power saving program for electrical equipment promoted by the 80 PLUS Program (<http://www.80plus.org>)



High frequency devices and communications modules 1

Surface acoustic wave (SAW) filters



SAW filter is a filter that can pick out electric signals in a particular frequency band, using the surface acoustic wave that propagates along the surface of the piezoelectric substrate. Ensuring smooth wireless communication between devices requires high-functioning filters that can let through electric signals in a particular frequency band, while eliminating noises of unnecessary frequency bands.

Business opportunities
<ul style="list-style-type: none">• Expansion of the communications market through the advancement of 5G• Addition of wireless communications functions to IoT devices• Advancement of technological trends such as higher frequency and smaller filters with superior composite performance
Competitors
TAIYO YUDEN (Japan), Qualcomm (U.S.), Qorvo (U.S.), Wisol (South Korea), Shoulder (China), etc.

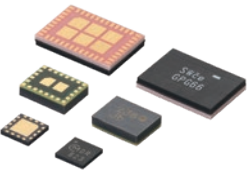
Strengths
<ul style="list-style-type: none">• Extensive product lineup/High market share• Superior characteristics (high frequency/broadband/high attenuation/low insertion loss/small size) required in the future communications market• Reliable quality• Largest production capacity in the industry and reliable supply capability
Risks
<ul style="list-style-type: none">• Deterioration of market environment due to global economic stagnation and heightened geopolitical risks• Intensified competition with competitors and entry by low-cost manufacturers

Growth strategies	
<p>(1) Secure profit-earning opportunities by differentiation in high-value-added products and strengthening cost competitiveness</p> <p>In addition to our proprietary I.H.P. and TC-SAW technologies, we will strengthen alliances for new technologies and strive to enhance cost competitiveness by improving productivity to respond to the rise of low-cost manufacturers.</p> <p>(2) Mass production of filters using XBAR technology</p> <p>With the spread of 5G and next-generation Wi-Fi standards, the need for high-performance high-frequency filters with a broad bandwidth is expected to increase. XBAR technology has advanced characteristics at high frequencies and in a broad bandwidth, as well as high compatibility</p>	<p>with the SAW filter manufacturing process. This will strengthen our business as a differentiating technology for filters.</p> <p>(3) Explore new applications and customers by leveraging Murata's strengths in the expanding communications market with 5G</p> <p>With the spread of IoT devices other than smartphones, the wireless communications function is added to various applications. In addition, with the introduction of 5G, the combination of incorporated frequency bands is becoming more complex, and the technical requirements for filters are becoming more challenging. Murata will expand its business in new markets by leveraging its technological strengths.</p>

TOPICS	<p>Acquired "XBAR technology" in anticipation of full-scale 5G adoption</p> <p>In March 2022, we acquired Resonant Inc. and obtained its highly proprietary "XBAR technology." XBAR technology achieves a high level of characteristics such as high attenuation, low loss, and steepness in the high-frequency band, further suppressing signals that would otherwise have to be received as noise with conventional technologies. This is an extremely important technology for achieving high-speed and comfortable wireless communications such as 5G. By integrating the filter technology, process technology, and monozukuri strength that Murata has cultivated so far with its SAW filters and I.H.P. SAW filters together with XBAR technology, Murata will provide even better high-frequency filters.</p>
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High frequency devices and communications modules 2

RF modules



RF modules are electronic component units that realize an analogue high-frequency circuit that controls communications among wireless devices by integrating various key devices in a small package. This module is comprised of passive devices such as SAW filters, high-power amplifiers (PA) in transmission circuits, low-noise amplifiers (LNA) in reception circuits, antenna changeover switches and other semiconductor devices. RF modules are used for various types of wireless devices including smartphones and tablet PCs.

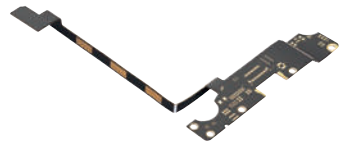
Business opportunities	Strengths
<ul style="list-style-type: none">• Expansion of frequency bands, advancement of communications technologies driven by growing adoption of 5G• Advancement in modularization and miniaturization of electronic components	<ul style="list-style-type: none">• In-house production of key devices such as filters and packaging technologies• Identification of customer trends and capability to propose products utilizing sales and technical support network• Business speed, reliable quality and stable supply enabled by integrated production
Competitors	Risks
Skyworks Solutions (U.S.), Qorvo (U.S.), Qualcomm (U.S.), Broadcom (U.S.), etc.	<ul style="list-style-type: none">• Potential moves by customers and component suppliers due to heightened geopolitical risks• Entry of low-cost module manufacturers into the market

Growth strategies	
<p>(1) Realize business growth by investing resources in differentiating technologies</p> <p>In the current competitive environment, the level of technology of competitors is very high. We will establish a competitive advantage by fostering or acquiring differentiated technologies.</p> <p>(2) Empower Digital Envelope Tracking Technology</p> <p>We will differentiate ourselves from our competitors and capture business opportunities through the "Digital Envelope Tracking</p>	<p>Technology" of Eta Wireless Inc., which we acquired in September 2021.</p> <p>(3) Enhance fundamental capabilities to improve position in growing markets</p> <p>In the 5G and the 6G era, which is also called Beyond 5G, "ultra-low power consumption" and "ultra-reliable communication" are required. In order to survive in the global competition, we will continue to strengthen our high technological capabilities and high-quality monozukuri that Murata has cultivated over the years.</p>

TOPICS	<p>Acquire differentiated technologies through M&A</p> <p>Anticipating an increase in demand for modules, Murata has been conducting M&As to strengthen its business since the 2010s. In 2012, we acquired the cellular PA business from Renesas Electronics Corporation, and in 2014, we acquired Peregrine Semiconductor Corporation, which manufactures switch ICs using silicon-based materials, bringing semiconductor technology in-house to differentiate our modules. We have expanded our high-frequency module business by combining our previous strengths in passive devices such as SAW filters and packaging technology. In 2021, we also acquired Eta Wireless Inc. to acquire new technologies related to power consumption reduction. We aim to grow our business through the enhancement of differentiated technologies acquired through M&A.</p>
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High frequency devices and communications modules 3

Multilayer resin substrates
(Multilayer LCP Product)



Multilayer LCP Product is a thinner Multilayer resin substrates comprising LCP (liquid crystal polymer) sheets. It features exceptional RF characteristics and realizes a substrate with a stable performance due to low water absorption. It is also characterized by the ability to handle a flexible bending process because it does not require an adhesive layer. In addition, high multiple layers are possible by using Murata's multilayer technology, enabling high flexibility in design. Multilayer LCP Product is used in smartphones, wearable devices, and other applications, contributing to smaller, thinner, and higher performance devices with low energy consumption.

Business opportunities
<ul style="list-style-type: none">• Expansion of high-frequency communication markets such as 5G and UWB (Ultra Wide Band)• Resolution of customers' issues by utilizing characteristics, such as low water absorption and shape retention property
Competitors
ZDT (Taiwan), Flexium Interconnect (Taiwan), etc.

Strengths
<ul style="list-style-type: none">• Superiority in low transmission loss properties in the high-frequency band• High multi layers, low water absorption, flexibility that can handle complex bending process• Extensive mass production experience for LCPs
Risks
<ul style="list-style-type: none">• Intensified competition with competitors• Changes in the demand due to changes in customers' design

Growth strategies	
<p>(1) Promote sales expansion activities in new business areas and to new customers</p> <p>In addition to earnings in existing business areas, we will expand our customer base and diversify revenue sources, including strengthening internal synergies.</p> <p>(2) Further enhance differentiated technologies</p> <p>We will further strengthen our competitive advantage</p>	<p>in terms of characteristics in the 5G millimeter wave bands and UWB areas.</p> <p>(3) Improve productivity through the promotion of smart factories and the development of cost reduction technologies</p> <p>We will strengthen our monozukuri strength and cost competitiveness by continuing productivity improvement activities.</p>

TOPICS	Business opportunities in 5G millimeter wave bands and UWB (Ultra Wide Band)
<p>Millimeter waves and other extremely high-frequency waves are used in the 5G network, so Multilayer LCP Product is increasingly used in millimeter wave transmission lines, as they can take advantage of the low-transmission loss properties at extremely high frequencies, one of the features of Multilayer LCP Product. In addition, as the frequencies used become higher, Multilayer LCP Product will be able to show its competitive superiority in terms of transmission loss compared with competing technologies. Leveraging its feature of low water absorption,</p>	<p>it is also highly stable for uses such as antennas, which utilizes resonance. Now that smartphones have UWB and in some cases are used in digital key authentication utilizing its highly accurate positioning and measurement of distance, the market is expected to expand. Multilayer LCP Product has frequency stability and is suitable for UWB antennas. We will aim for business growth through the combination of high-performance materials and Murata's unique ideas, developed based on our multilayer technology and high-frequency technology.</p>

High frequency devices and communications modules 4

Connectivity modules



Connectivity modules are essential compound components that wirelessly connect various devices. These are mounted on familiar home appliances used in our daily lives, such as smartphones, tablet PCs, digital cameras and air conditioners, and in-vehicle devices such as car navigation systems. They are also used in various settings such that they enable users to download and upload photos and music from the Internet, and perform hands-free calling while driving.

Business opportunities
<ul style="list-style-type: none">• Growing adoption of 5G• Full-fledged consideration of Beyond 5G• Expansion of wireless communication functions in automobiles and various types of devices following the development of an IoT society
Competitors
u-blox (Switzerland), LG Innotek (South Korea), etc.

Strengths
<ul style="list-style-type: none">• Millimeter wave modules using Murata's unique Multilayer resin substrates (Multilayer LCP Product)• Technologies that enable miniaturization and high performance as well as ensure reliability• Software technologies that improve connectivity• Product proposal capabilities and partnerships with customers by leveraging our knowledge of communications cultivated through our smartphone business
Risks
<ul style="list-style-type: none">• Intensified competition with competitors• Delays in new product releases due to delays in the start-up of new applications such as automated driving

Growth strategies	
<p>(1) Execute portfolio review</p> <p>We will review our business structure, which is centered on smartphones, and aim to expand our business in diverse areas centered on mobility and IoT, which are expected to grow in the future.</p> <p>(2) Cultivate new markets and develop and expand sales of new products</p> <p>We will sow the seeds of the future in response to</p>	<p>expanding business opportunities resulting from changes in the communications system.</p> <p>(3) Strengthen the structure with a view to further market expansion in the area of communications</p> <p>We will pursue a production system that can efficiently respond to diverse customer requirements by realizing a thick and short value chain through further strengthening the cooperation between development and manufacturing.</p>

TOPICS	Reviewing the portfolio and tackling new markets
<p>We will review the smartphone-oriented business structure that has achieved significant growth to date and capture business opportunities in the communications area in a new and greatly expanding diverse market. We aim to continue to promptly supply products that respond to various changes, such as 5G and new communication standards, by leveraging our strengths such as in Murata's unique Multilayer resin substrates</p>	<p>technology, design technology that realizes miniaturization, high performance as well as ensure reliability, and software technology that improves connectivity. In addition, Murata strives to contribute to the resolution of social issues and reduction of environmental burden by proposing appropriate products in diversified business opportunities such as environment and wellness.</p>

Battery and power supply

Lithium-ion secondary batteries



Murata's lithium-ion secondary batteries are classified into three types: cylindrical, laminated, and small batteries. The cylindrical type, on which we are particularly focusing, has the advantages of high output, safety, long-term storage, and high temperature characteristics. We will leverage these strengths to expand our business in the expanding markets for small drive systems and storage batteries to contribute to the enrichment of society by responding to the need for decarbonization, renewable energy, energy conservation, and so on.

Business opportunities
Cylindrical type <ul style="list-style-type: none">• Trends toward cordless power tools and gardening tools, as well as shift to decarbonization (from gasoline engines to batteries and motors)• Utilization of natural energy, in-house consumption of electricity, and backup power supplies during power outage Small type <ul style="list-style-type: none">• Greater demand for small batteries for automotive, medical, wearable devices and IoT applications
Competitors
Samsung SDI (South Korea), LG Chem (South Korea), Panasonic (Japan), TDK (Japan), VARTA (Germany), etc.

Strengths
<ul style="list-style-type: none">• High-quality, high-output technology• Packaging technology that enables impact resistance and miniaturization
Risks
<ul style="list-style-type: none">• Market entry and expansion by competitors in our target markets• Rising resource prices due to increased resource depletion risk and geopolitical risk• Global environmental regulations and trend towards local production for local consumption

Growth strategies	
<p>(1) Further enhance differentiated technologies</p> <p>We will strengthen Murata's technological strengths based on our superior materials technology and expand our business in growing markets.</p> <p>(2) Establish business foundation as Murata's environmental contribution business</p> <p>We aim to capture business opportunities on the environmental front such as through storage batteries using Murata's unique FORTELION</p>	<p>lithium-ion secondary battery, which uses olivine-type lithium iron phosphate as the cathode material and has a long service life and high safety characteristics.</p> <p>(3) Build a strong business foundation through timely investment and strengthening of monozukuri</p> <p>We will focus on markets where we can leverage our strengths to achieve stable future growth, while also strengthening our monozukuri strength to maximize our differentiated technologies.</p>

TOPICS	Contributing to the enrichment of society with Murata's batteries
Lithium-ion secondary batteries are positioned as the cornerstone of business development in environment-related business opportunities. The contribution to safety, renewable energy, and energy conservation is in line with social issues, and we can expect growth in our battery business and power supply business as well as storage battery business through the integration of the	said businesses. In the short term, electrification is progressing for power tools, and in the medium to long term, the use of batteries is expected to expand in a wide range of applications, driven by decarbonization. We will contribute to the realization of a decarbonized society by providing the world with products that leverage Murata's strengths.

Functional devices

Sensors



Sensors are electronic components that convert the various energies around us into signals and data that are easy for humans and machines to handle. Murata has a diverse product lineup ranging from high-performance, high-reliability devices using ceramic material technology, microfabrication technology such as MEMS, and devices and modules using magnetoresistive elements.

Business opportunities	Strengths
<ul style="list-style-type: none">• Increased demand for high-performance sensors driven by growing use of advanced driver assistance systems (ADAS) and self-driving cars• Increased demand for components due to the advancement of automobile electrification• Need for sensor nodes due to expansion of AI and cloud-based services• Creating new demand through value co-creation with external partners	<ul style="list-style-type: none">• Low noise, high sensitivity, high accuracy, robustness and reliability achieved by Murata's MEMS designing, processing and packaging technologies• Extensive sensor technology and a diverse product lineup• Creating and proposing value to customers with differentiated elements through the use of various materials
Competitors	Risks
Bosch (Germany), Analog Devices (U.S.), STMicroelectronics (Switzerland), Panasonic (Japan), TDK (Japan), Nippon Ceramic (Japan), etc.	<ul style="list-style-type: none">• Intensified competition with competitors• Delays in releasing new products in response to needs arising from changes in the external environment• Acquisition of technology to meet diverse market need

Growth strategies	
<p>(1) Create core technologies and invest resources in applications that leverage our strengths</p> <p>The growth of the mobility and IoT markets is expected to lead to a significant increase in the number of functions requiring sensors. We aim to expand our sensor business by focusing on areas where we can leverage Murata's strengths in response to expanding business opportunities.</p> <p>(2) Differentiate technologies and create new value with partners</p> <p>We will further refine our technological</p>	<p>capabilities, which is one of our strengths, and at the same time, we will aim to co-create value with our partners and tackle business challenges with new ideas that are not bound by existing areas.</p> <p>(3) Establish SCM to maximize product value</p> <p>Sensors are characterized by high-mix low-volume production, and we will build a process that can provide value to customers while differentiating our products and accommodating high-mix production.</p>

TOPICS	Responding to advances in automated driving technology with advanced and diverse sensor technologies
For the automated driving market, which is expected to grow in the future, there is a growing need for sensing technology to ensure safe and comfortable vehicle operation. MEMS inertial sensors that can measure vehicle position, attitude, and direction with higher precision when driving; ultrasonic sensors for peripheral detection necessary to prevent false starts during automatic parking and parking; and thermistors that contribute to overheat protection and temperature detection for various	devices to maximize vehicle performance and ensure stable operation. These sensors are a business area where Murata can demonstrate its strength, and we will capture business opportunities in this growing market with differentiated technologies.



Gyro-acceleration combo sensor

3

Creation of new business models

Background and positioning of layer 3

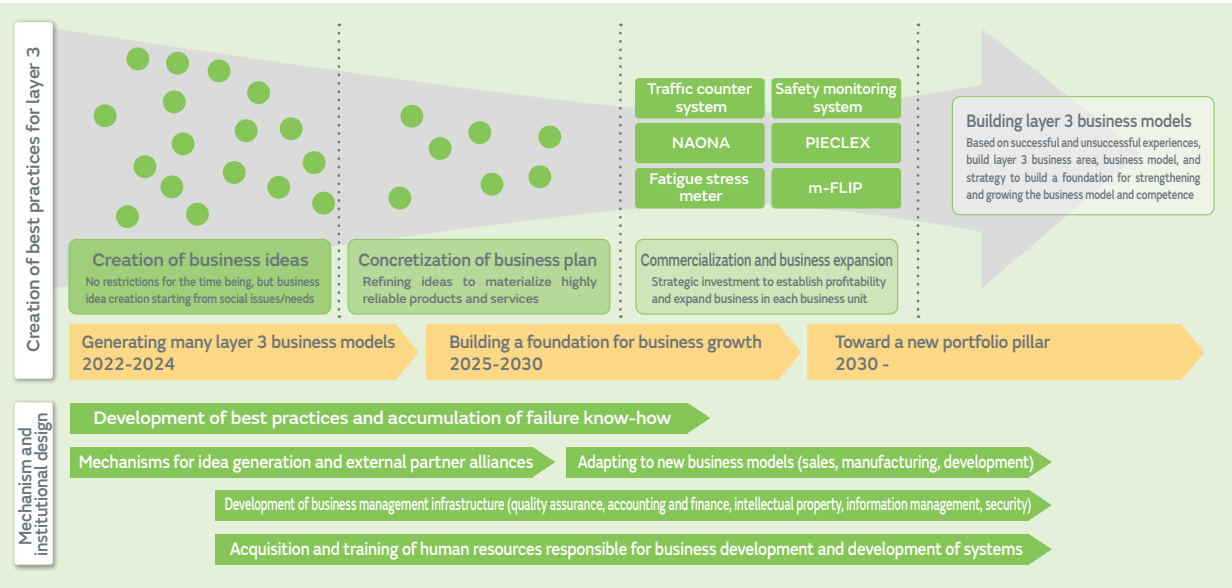
With the expansion of the electronics area surrounding Murata, such as the progress of digitalization associated with the spread of 5G, the electrification of automobiles, and the new business opportunities in the out-car area that will result, the definition of customers is expected to change. For example, in the area of communications, our business has been mainly supplying components and modules to smartphone manufacturers, but with the expansion of applications utilizing communications, such as local 5G and telemedicine, the value demanded by our customers is shifting to software and solutions. For such customers, we are required to propose solutions that include not only the sale of electronic components but also the utilization method of communications. In order to continue to provide value to our customers in an ever-changing

society, Murata must expand the value it can offer. Against this backdrop, Murata, as layer 3, will build a new business model by combining with layers 1 and 2 and utilizing its accumulated knowledge of communications and other areas, as well as by identifying a wide range of possibilities without being bound by the conventional framework of markets, commercial products, or business forms. Of course, we will continue to provide value through technological innovation in layers 1 and 2 of Murata's existing base business. Layer 3 is positioned as an area of challenge for Murata's long-term development. In addition, we will consider areas that are difficult to tackle by extending Murata's existing capabilities and framework, including co-creation with external parties.

Steps toward the realization of layer 3 and actions under Medium-term Direction 2024

Under Medium-term Direction 2024, we will identify areas where Murata can leverage its strengths while building on quick successes and small successes as the first step toward making layer 3 business a pillar of our portfolio in 2030 and beyond. Furthermore,

in order to create a new business of layer 3, we will implement a concrete strategy that includes human resources and organizational structure to address issues that cannot be addressed within the existing internal framework.



Case study

PIECLEX	New business combining Murata's strengths with those of its partners	
Murata and Teijin Frontier have jointly developed the world's first piezoelectric fabric "PIECLEX" that generates electrical energy and exhibits antimicrobial performance when a motion is applied. This is a new energy-utilizing technology that converts the force of motion such as human movement into electrical energy and demonstrates antimicrobial performance by combining Murata's piezoelectric technology cultivated through the development and manufacture of products such as SAW filters and		sensors with Teijin Frontier's fiber technology from materials to products. The textile area has been a difficult business area to tackle with Murata's existing capabilities or an extension of them, but the business alliance with Teijin Frontier has made it possible to commercialize businesses by acquiring new capabilities.
Worker safety monitoring system	New business to solve users' problems and improve the value of their experience	
TODA CORPORATION, MIDORI ANZEN, and Hitachi Solutions have jointly developed the "worker safety monitoring system," which uses helmet-mounted sensor devices to monitor workers' biometric data and surrounding environment (work environment) in real time in industries that require worker safety management, such as construction and manufacturing. This will be a business that provides solutions to the social issue of the need for a safe and comfortable work environment		against the backdrop of a declining construction workforce and aging field workers due to Japan's shrinking population. The solution to the user's problems and the value of the experience are important factors in expanding the business of the "worker safety monitoring system."
Traffic counter system	New business that uses data to solve social issues	
The "traffic counter system" is a system that collects traffic volume data by utilizing Murata's strengths in "communications" and "power supply" technologies, and is developing its data sales business mainly in Southeast Asia, where serious traffic congestion is a social issue. Data collected through traffic counters is used for measures such as improving traffic infrastructure and controlling traffic volume to relieve congestion. Through this business, Murata has been able to build a platform of many know-hows in terms of establishing technologies,		collaborating with local companies, and dealing with different licensing procedures in different countries and regions. This is a platform that meets the challenges faced by companies starting a data business, and we will aggressively pursue data business development beyond traffic volume.