Renesas

FINANCIAL REPORT 2022

Fiscal Year Ended December 31, 2022

RENESAS ELECTRONICS CORPORATION

Contents

Management's Discussion and Analysis of Operations **3**

Financial Section **13**

Consolidated Financial Statements **14**

Consolidated Statement of Financial Position 14

Consolidated Statement of Profit or Loss 16

Consolidated Statements of Comprehensive Income 17

Consolidated Statements of Changes in Equity 18

Consolidated Statements of Cash Flows 20

Notes to Consolidated Financial Statements 22

Independent Auditor's Report

The following section, Management’s Discussion and Analysis of Operations, provides an overview of the consolidated financial statements of Renesas Electronics Corporation (hereinafter “the Company”) and its consolidated subsidiaries (hereinafter “the Group”), as of and for the fiscal year ended December 31, 2022.

Introduction

Financial Position, Operating Results and Cash Flow Analysis

Forward-looking statements concerning financial position, operating results and cash flow are prepared using the Group’s judgment as of December 31, 2022.

(1) Significant Accounting Policies and Estimates
The Group’s consolidated financial statements are prepared in accordance with International Financial Reporting Standards (hereinafter "IFRS") and in accordance with Article 93 of the “Ordinance on Terminology, Forms, and Preparation Methods of Consolidated Financial Statements”. In preparing these consolidated financial statements, estimates and assumptions deemed necessary are made based on reasonable standards. Significant accounting policies, assumptions for the future and uncertainties involved in the estimates used in the consolidated financial statements are listed under “Note 3. Significant Accounting Policies, Note 4. Significant Accounting Estimates and Judgments” in the Financial Section.

(2) Consolidated Financial Position

	As of December 31, 2021	**As of December 31, 2022**	Increase (Decrease)
	Billion yen	Billion yen	Billion yen
Total assets	2,426.3	2,812.3	386.0
Total equity	1,153.4	1,537.5	384.1
Equity attributable to owners of parent	1,150.1	1,533.8	383.7
Equity ratio attributable to owners of parent (%)	47.4	54.5	7.1
Interest-bearing liabilities	831.3	770.0	(61.3)
Debt to Equity ratio	0.72	0.50	(0.22)

Total assets at December 31, 2022 were 2,812.3 billion yen, a 386.0 billion yen increase from December 31, 2021. This was mainly due to an increase in accounts receivable from revenue growth and an increase in goodwill affected by yen depreciation. Total equity was 1,537.5 billion yen, a 384.1 billion yen increase from December 31, 2021. Despite a decrease resulting from the acquisition of treasury shares, total equity grew mainly due to an increase in other components of equity such as increase in exchange differences on translation of foreign operations following fluctuations in the exchange rate as well as an increase in retained earnings through profit.

Equity attributable to owners of parent increased by 383.7 billion yen from December 31, 2021, and Equity ratio attributable to owners of parent was 54.5%. In addition, Interest-bearing liabilities decreased by 61.3 billion yen from December 31, 2021, mainly due to the repayment of borrowings. Consequently, Debt to equity ratio was 0.5.
The allocation of the acquisition costs for the business combinations with Dialog Semiconductor Plc (hereinafter “Dialog”) and Celeno Communications Inc. (hereinafter “Celeno”) has been revised at the end of the three months ended March 31, 2022 and at the end of the three months ended June 30, 2022, respectively. These revisions to the allocation of the acquisition costs (PPA) have been reflected in the consolidated financial results for the year ended December 31, 2021.

(3) Overview of Financial Results
The Group discloses consolidated business results in terms of both its internal measures which management relies upon in making decisions (hereinafter “Non-GAAP”) and those under IFRS.

Non-GAAP revenue, Non-GAAP gross profit and Non-GAAP operating profit are revenue, gross profit and operating profit under IFRS (hereinafter “IFRS revenue,” “IFRS gross profit” and “IFRS operating profit”) after excluding or adjusting non-recurring items and other adjustments following a certain set of rules. The Group believes providing non-GAAP forecasts will help to better understand the Group’s constant business results. Non-recurring items include depreciation of intangible assets recognized from acquisitions, other purchase price allocation (hereinafter “PPA”) adjustments and stock-based compensation as well as other non-recurring expenses and income the Group believes to be applicable.

The Group consists of “Automotive Business” and “Industrial/Infrastructure/IoT Business” and those are the Group’s reportable segments. For details, please refer to “Note 6. Business Segments” in the Financial Section.

(Note): For non-GAAP disclosure, the Group refers to the rules specified by the U.S. Securities and Exchange Commission but does not fully comply with such rules.

A) Overview of the current financial operation (Non-GAAP basis)

Summary of Consolidated Financial Results for the Fiscal Year ended December 31, 2022 (Non-GAAP basis)

	Year ended December 31, 2021 (Jan 1 – Dec 31, 2021)	**Year ended December 31, 2022** (Jan 1 – Dec 31, 2022)	Increase (Decrease)	
	Billion yen	Billion yen	Billion yen	% Change
Non-GAAP Revenue	994.4	1,502.7	508.3	51.1%
Automotive	462.3	645.0	182.7	39.5%
Industrial/Infrastructure/IoT	515.5	845.9	330.3	64.1%
Non-GAAP Gross Profit Non-GAAP Gross Margin	528.9 53.2%	863.2 57.4%	334.3 4.3pts	63.2% ---
Automotive	214.6 46.4%	324.4 50.3%	109.9 3.9pts	51.2% ---
Industrial/Infrastructure/IoT	312.3 60.6%	535.3 63.3%	223.0 2.7pts	71.4% ---
Non-GAAP Operating Profit Non-GAAP Operating Margin	296.6 29.8%	559.4 37.2%	262.8 7.4pts	88.6% ---
Automotive	122.4 26.5%	219.2 34.0%	96.8 7.5pts	79.0% ---
Industrial/Infrastructure/IoT	167.1 32.4%	331.8 39.2%	164.7 6.8pts	98.6% ---
	Yen	Yen		
Exchange rate (USD)	109	130	-	-
Exchange rate (EUR)	130	137	-	-

Note 1: The allocation of the acquisition costs for the business combinations with Dialog and Celeno has been revised at the end of the three months ended March 31, 2022 and at the end of the three months ended June 30, 2022, respectively. These significant revisions to the allocation of the acquisition costs (PPA) have been reflected in the consolidated financial results for the year ended December 31, 2021.
Note 2: For details on the above, please refer to “Note 6. Business Segments” in the Financial Section.
Note 3: Exchange rates are the average of each month's rates used for the conversion of revenues and expenses.

The financial results for the year ended December 31, 2022 are as follows:

<Non-GAAP Revenue>
Consolidated non-GAAP revenue for the year ended December 31, 2022 was 1,502.7 billion yen, a 51.1% increase year on year. This was mainly due to a sales increase effect from the consolidation of Dialog acquired on August 31, 2021 and yen depreciation, in addition to an increase in revenue in the Automotive Business supported by continued growth in semiconductor contents per vehicle as well as an increase in revenue in the Industrial/Infrastructure/IoT Business from demand expansion in the infrastructure market such as datacenters.

<Non-GAAP Gross Profit (Margin)>
Non-GAAP gross profits for the year ended December 31, 2022 was 863.2 billion yen, a 334.3 billion yen increase year on year. This was mainly due to above-mentioned increases in Automotive and Industrial/Infrastructure/IoT Business revenue as well as an increase in gross margin mainly from improvements in product mix. As a result, non-GAAP gross margin for the year ended December 31, 2022 was 57.4%, an increase by 4.3 points year on year.

<Non-GAAP Operating Profit (Margin)>
Non-GAAP operating profit for the year ended December 31, 2022 was 559.4 billion yen, a 262.8 billion yen increase year on year. This was mainly due to an increase in gross profit as well as an effort to streamline business operations. As a result, non-GAAP operating margin for the year ended December 31, 2022 was 37.2%, an increase by 7.4 points year on year.

The revenue breakdown of the business segments for the year ended December 31, 2022 are as follows:

<u>Automotive Business</u>
The Automotive Business includes the product categories “Automotive Control,” comprising semiconductor devices for controlling automobile engines and bodies, and “Automotive Information,” comprising of semiconductor devices used in sensing systems for detecting environments inside and outside the vehicle as well as Automotive Information devices such as in-vehicle infotainment (IVI) and instrument panels used to give various information to the driver of the vehicle. The Group mainly supplies microcontrollers (MCUs), system-on-chips (SoCs), analog semiconductor devices and power semiconductor devices in each of these categories.

Non-GAAP revenue of the Automotive Business for the year ended December 31, 2022 was 645.0 billion yen, a 39.5% increase year on year. This was mainly due to yen depreciation in addition to increases in sales for both the “Automotive

Control" and "Automotive Information" categories following the growth of semiconductor contents per vehicle.

Non-GAAP gross profit of the Automotive Business for the year ended December 31, 2022 was 324.4 billion yen, a 109.9 billion yen increase year on year. This was due to an increase in gross margin mainly from product mix improvements in addition to an increase in revenue.

Non-GAAP operating profit of the Automotive Business for the year ended December 31, 2022 was 219.2 billion yen, a 96.8 billion yen increase year on year, due to the sales increase effect as well as an increase in profits from gross margin improvements.

Industrial/Infrastructure/IoT Business

The Industrial/Infrastructure/IoT Business includes the categories "Industrial," "Infrastructure" and "IoT" which support a smart society. The Group mainly supplies MCUs, SoCs and analog semiconductor devices in each of these categories.

Non-GAAP revenue of the Industrial/Infrastructure/IoT Business for the year ended December 31, 2022 was 845.9 billion yen, a 64.1% increase year on year. This was mainly due to a revenue increase from Dialog consolidation and yen depreciation in addition to an increase in revenues in the "Industrial," "Infrastructure," and "IoT" categories. Main contributors were devices for factory automation, PC/mobile, and datacenters.

Non-GAAP gross profit of the Industrial/Infrastructure/IoT Business for the year ended December 31, 2022 was 535.3 billion yen, a 223.0 billion yen increase year on year. This was mainly due to an increase in gross margin from product mix improvements in addition to increased revenue.

Non-GAAP operating profit of the Industrial/Infrastructure/IoT Business for the year ended December 31, 2022 was 331.8 billion yen, a 164.7 billion yen increase year on year, due to the sales increase effect as well as an increase in profits from gross margin improvements.

The Group announced the "Mid-Term Growth Strategy" and "Financial Model" on February 17, 2020. The Group set as a long-term target of achieving sales growth exceeding that of the market through concentrated investment of management resources in markets on which the Group is focusing its attention. The Group also targets to optimize production efficiency, improve the product mix and realize synergies from the integrations of the former IDT, Dialog and Celeno. The Group updated its existing financial model on September 29, 2021, targeting to achieve a 50-55% non-GAAP gross margin and a 25-30% non-GAAP operating margin.

The targets in the "Mid-Term Growth Strategy" and "Financial Model" are the Group's long-term management objectives as of the date of filing and we cannot guarantee that they will be achieved. Results may be affected by a number of risk factors and other changes in the external environment, including the matters described under "Risk Factors" in the Management's Discussion and Analysis of Operations.

B) Reconciliation of Non-GAAP gross profit to IFRS gross profit and Non-GAAP operating profit to IFRS operating profit

(Billion yen)

	Year ended December 31, 2021 (Jan 1 – Dec 31, 2021)	**Year ended December 31, 2022** (Jan 1 – Dec 31, 2022)
Non-GAAP gross profit Non-GAAP gross margin	528.9 53.2%	863.2 57.4%
Reconciliations in Revenue Level (Note 1)	(0.5)	(1.8)
Amortization of purchased intangible assets and depreciation of property, plant and equipment	(0.9)	(1.0)
Market valuation of inventories	(13.1)	(1.5)
Stock-based compensation	(1.4)	(1.5)
Other reconciliation items in non-recurring expenses and adjustments (Note 2)	(16.9)	(3.2)
IFRS gross profit IFRS gross margin	496.1 49.9%	854.0 56.9%
Non-GAAP operating profit Non-GAAP operating margin	296.6 29.8%	559.4 37.2%
Reconciliations in Revenue Level (Note 1)	(0.5)	(1.8)
Amortization of purchased intangible assets and depreciation of property, plant and equipment	(67.3)	(106.2)
Market valuation of inventories	(13.1)	(1.5)
Stock-based compensation	(14.9)	(18.1)
Other reconciliation items in non-recurring expenses and adjustments (Note 2)	(27.0)	(7.5)
IFRS operating profit IFRS operating margin	173.8 17.5%	424.2 28.3%

Note 1: Non-GAAP adjustments have been applied to the revenue following the implementation of PPA.

Note 2: “Other reconciliation items in non-recurring expenses and adjustments” includes the non-recurring items related to acquisitions and other adjustments as well as non-recurring profits or losses the Group believes to be applicable.

Note 3: The allocation of the acquisition costs for the business combinations with Dialog and Celeno has been revised at the end of the three months ended March 31, 2022 and at the end of the three months ended June 30, 2022, respectively. These significant revisions to the allocation of the acquisition costs (PPA) have been reflected in the consolidated financial results for the year ended December 31, 2021.

C) Overview of the current financial operation (IFRS)

Summary of Consolidated Financial Results for the Year ended December 31, 2022 (IFRS basis)

	Year ended December 31, 2021 (Jan 1 – Dec 31, 2021)	**Year ended December 31, 2022** (Jan 1 – Dec 31, 2022)	Increase (Decrease)	
	Billion yen	Billion yen	Billion yen	% Change
Revenue	993.9	1,500.9	506.9	51.0%
Gross Profit	496.1	854.0	357.9	72.1%
Gross Margin	49.9%	56.9%	7.0 pts	---
Operating Profit	173.8	424.2	250.3	144.0%
Operating Margin	17.5%	28.3%	10.8 pts	---

(Note): The allocation of the acquisition costs for the business combinations with Dialog and Celeno has been revised at the end of the three months ended March 31, 2022 and at the end of the three months ended June 30, 2022, respectively. These significant revisions to the allocation of the acquisition costs (PPA) have been reflected in the consolidated financial results for the year ended December 31, 2021.

D) Overview of production, orders and sales

The Group manufactures and sells a wide variety of products and even if the products are of the same type, their performance, structure, and format are not necessarily uniform. In addition, there are many products that do not take the form of built-to-order production. Accordingly, the Group does not disclose the scale of production or the scale of orders received for each product category in terms of value or quantity.

Therefore, the status of production, orders received, and sales is shown in relation to the revenue segment in "Management's Discussion and Analysis."

Sales to major customers and the ratio to total sales are as follows.

	Business Segments	**Year ended December 31, 2021** (Jan 1 – Dec 31, 2021)		**Year ended December 31, 2022** (Jan 1 – Dec 31, 2022)	
		Million yen	%	Million yen	%
Ryosan Company, Limited	Automotive and Industrial/Infrastructure/IoT Business	141,325	14.21	---	---
WT Microelectronics Co.,Ltd	Automotive and Industrial/Infrastructure/IoT Business	127,845	12.86	---	---

(Note): During the year ended December 31, 2022, there was no transaction with a single customer that accounted for 10 % or more of the Group’s total sales. For this reason, total sales and the ratio to total sales are omitted from the above table.

(4) Cash Flows

	Year ended December 31, 2021 (Jan 1 – Dec 31, 2021)	Year ended December 31, 2022 (Jan 1 – Dec 31, 2022)
	Billion yen	Billion yen
Net cash provided by (used in) operating activities	307.4	479.3
Net cash provided by (used in) investing activities	(663.1)	(97.5)
Free cash flows (Note)	(355.7)	381.8
Net cash provided by (used in) financing activities	340.9	(294.8)
Cash and cash equivalents at the beginning of period	219.8	221.9
Cash and cash equivalents at the end of period	221.9	336.1

Note: As defined as a total of net cash flows provided by (used in) operating and investing activities.

(Net cash provided by (used in) operating activities)
Net cash provided by operating activities for the year ended December 31, 2022 was 479.3 billion yen. This was mainly due to a recording of 362.3 billion yen in profit before tax as well as adjustments in non-cash items such as depreciation.

(Net cash provided by (used in) investing activities)
Net cash used in investing activities for the year ended December 31, 2022 was 97.5 billion yen. This was mainly due to purchase of property, plant and equipment as well as intangible assets.

The foregoing resulted in positive free cash flows of 381.8 billion yen for the year ended December 31, 2022.

(Net cash provided by (used in) financing activities)
Net cash used in financing activities for the year ended December 31, 2022 was 294.8 billion yen. This was mainly due to purchase of treasury shares and repayments of borrowings to main financing banks.

(5) Liquidity and Capital Resources
The Group's basic financial policy is to secure adequate liquidity and capital resources for its operations and to maintain a strong balance sheet.

On January 15, 2019, the Company entered into a syndicated loan agreement for a total of 897 billion yen with its primary financial institutions, MUFG Bank, Ltd., Mizuho Bank, Ltd., Sumitomo Mitsui Trust Bank, Limited, and others, in order to procure capital necessary for the acquisition of the former IDT and to renew an existing loan for the purpose of securing mid- to long-term working capital. The Company drew down 698 billion yen as a term-loan under the aforementioned agreement in March 2019. In addition, the Company repaid an existing term-loan in June 2019 and executed a 149-billion-yen term-loan agreement.

In addition, on August 31, 2021, the Company borrowed term loans with a total amount of 270 billion yen from MUFG Bank, Ltd. and Mizuho Bank, Ltd., to finance the acquisition of Dialog.

On December 23, 2021, with the purpose of refinancing the remaining 240 billion yen of the existing loan of 270 billion yen to mid- to long-term funds, and after having repaid 30 billion yen, the Company concluded a syndicated loan agreement with MUFG Bank, Ltd., Mizuho Bank, Ltd., Sumitomo Mitsui Trust Bank, and others for the total of 96 billion yen. On the same day, the Company concluded a JBIC loan agreement with JBIC (Japan Bank for International Cooperation) for a total of 144 billion yen. Based on these agreements, the Company borrowed a total amount of 240 billion yen on December 30, 2021.

The Company decided on November 19, 2021, to issue US dollar-denominated senior notes in multiple tranches. The Company issued 500 million of US dollar-denominated senior notes due 2024 and 850 million of US dollar-denominated senior notes due 2026, for total proceeds of 1,350 million US dollars. The yen-converted amount of the outstanding balance of the Company's bonds at the end of the fiscal year ended December 31, 2022 was 178.6 billion yen.

In April 2022, the Company executed a short-term loan of 50 billion yen with MUFG Bank, Ltd., Mizuho Bank, Ltd. and Sumitomo Mitsui Trust Bank, Limited as borrowers under a commitment-line-setting contract dated January 15, 2019. The loan was repaid in full in July 2022.

For the purpose of responding to the demand for funds for future business development and securing flexible means of procuring working capital, the Company entered into a term loan agreement with Bank of America N. A. Tokyo Branch dated June 28, 2022 for a total of 200 million US dollars, and the Company entered into a term loan agreement with MUFG Bank dated June 30, 2022 for a total of 20 billion yen. Based on these agreements, the Company borrowed a total of 47.1 billion yen on June 30, 2022.

As of December 31, 2022, the total amount of borrowings was 5,772 billion yen. As of December 31, 2022, the Group had 3,361 billion yen in cash and cash equivalents.

(6) Off-balance Sheet Arrangements
The Group conducts liquidation of accounts receivable on a regular basis. As of December 31, 2022, the balance of liquidated accounts receivable was 14.0 billion yen.

Risk Factors

The Group’s operations and financial results are subject to various risks and uncertainties, including those described below, that could significantly affect investors’ judgment. In addition, the following statements include matters which might not necessarily fall within the scope of such significant risks but are deemed important for investors’ judgment from a standpoint of affirmative disclosure.

Statements regarding the future in the following paragraphs are based on the Group’s understanding of the information available as of March 30, 2023.

1）Market Fluctuations

Semiconductor market fluctuations, which are caused by factors such as economic cycles in each region and shifts in demand of end customers, affect the Group. Although the Group carefully monitors changes in market conditions, it is difficult to completely avoid the impact of market fluctuations due to economic cycles in countries around the world and changes in the demand for end products. Market downturns, therefore, could lead to decline in product demand and increase in production and inventory amounts, as well as lower sales prices. Consequently, market downturns could reduce the Group’s sales, as well as lower fab utilization rates, which may in turn result in lower gross margins, ultimately leading to deterioration in profits.

2）Fluctuations in foreign exchange and interest rates

The Group engages in business activities in all parts of the world and in a wide range of currencies. The Group continues to engage in hedging transactions and other arrangements to minimize exchange rate risks, but it is possible for our consolidated business results and financial condition, including our sales amount in foreign currencies, our materials costs in foreign currencies, our production costs at overseas manufacturing sites, and other items, to be influenced if exchange rates change significantly. Also, the Group’s assets, liabilities, income, and costs can change greatly by presenting our assets and debts that are denominated in foreign currencies by converting the amounts in Japanese yen, and these can also change when financial statements in foreign currencies at our overseas subsidiaries are converted to and presented in Japanese yen.

Since expenses as well as asset and debt values associated with the Group’s business operation are influenced by fluctuations in interest rates, it is also possible for the Group’s businesses, performance, and financial condition to be adversely influenced by these fluctuations.

3）Natural Disasters

Natural disasters such as earthquakes, tsunamis, typhoons, and floods, accidents such as fires, power outages, and system failures, acts of terror, war, infectious diseases and other unpredictable factors could adversely affect the Group’s business operation. In particular, as the Group owns key facilities and equipment in areas where earthquakes occur at a frequency higher than the global average, the effects of earthquakes and other events could damage the Group’s facilities and equipment and force a halt to manufacturing and other operations, and such events could consequently cause severe damage to the Group’s business. Similar situations may also occur due to other types of natural disasters, accidents such as fires, power outages, and system failures, acts of terror, war, infectious diseases, and other similar events. For example, in March 2021, a fire occurred at some processes of a Group subsidiary’s semiconductor manufacturing plant (N3 building (300mm line)), causing the production and shipment of products at the plant to cease temporarily. However, in the future, the Group's business, results of operations and financial condition could be materially adversely affected by, among other things, the burden of costs to restore damaged plant facilities and equipment, a decrease in sales and operating income due to a decrease in plant utilization or stop, and a deterioration in gross margins.

In preparation for these risks, the Group sets and manages the BCP (Business Continuity Plan), which defines preventive plans and contingency plans and others, and also purchase various insurances; however, such plans and insurances may not fully hedge the risks or cover the losses and damages from events that we could not anticipate. Also, the current spread of COVID-19 infections worldwide and the continuing unstable social, economic, fiscal, and working environments have affected the Group's business performance and business activities. The Group puts top priority to ensure the health and safety of employees, customers, and other related parties, and strives to develop a system that allows the Group to continue its business even in the face of various difficulties caused by the pandemic. However, the spread of the COVID-19 pandemic is not a factor the Group can directly control, so development of such countermeasures does not guarantee the Group's business continuity. If the COVID-19 situation becomes more serious or prolonged in the future, the Group's business, results of operations and financial condition may be significantly adversely affected.

4）Competition

The semiconductor industry is extremely competitive, and the Group is exposed to fierce competition from competitors around the world in areas such as product performance, structure, pricing and quality. In particular, certain competitors have pursued acquisitions, consolidations, and business alliances, and others. in recent years and there is a possibility that such actions will be taken in the future as well. As a result, the competitive environment surrounding the Group may further intensify. To maintain and improve competitiveness, the Group takes various measures including development of leading-edge technologies, standardizing design, cost reduction, and consideration of strategic alliances with third parties or possibility of further acquisitions. In the event that the Group cannot maintain its competitiveness, the Group’s market share may decline, which may negatively impact the Group’s financial results.

In addition, fierce market competition has subjected the products of the Group to sharp downward pressure on prices, for which measures to improve profitability, such as price negotiations and efforts at cost price reduction, have been unable to fully compensate. This raises the possibility of a worsening of the Group’s gross margin. Furthermore, in cases where customers for the Group’s products for which the gross margin is low have difficulty switching to other products or require a certain amount of time to secure replacements, it may be difficult for the Group to halt or reduce production in a timely manner. This may result in a reduction in the profitability of the Group.

5）Implementation of Management Strategies

The Group is implementing a variety of business strategies and structural measures, including the development of a " Mid-Term Growth Strategy" and reforming the organizational structure of the Group, to strengthen the foundations of its profitability. Implementing these business strategies and structural measures requires a certain level of cost and due to changes in economic conditions and the business environment, factors for which the future is uncertain, as well as additional unforeseeable factors, it is possible that some of those reforms may become difficult to carry out and others may not achieve the originally planned results. Furthermore, additional costs, which are higher than originally expected, may arise. Thus, these issues may adversely influence the Group's performance and financial condition.

6）Business Activities Worldwide

The Group conducts business worldwide, which can be adversely affected by factors such as barriers to long-term relationships with potential customers and local enterprises, restrictions on investment and imports/exports tariffs, fair trade regulations, political, social and economic risk including changes in trade policies, trade barriers and heightened trade conflicts among countries, outbreaks of illness or disease, exchange rate fluctuations, rising wage levels, and transportation delays. As a result, the Group may fail to achieve its initial targets regarding business in overseas markets, which could have a negative impact on the business growth and performance of the Group.

7）Strategic Alliance and Corporate Acquisition

For business expansion and strengthening of competitiveness, the Group may engage in strategic alliances, including joint investments, and corporate acquisitions. However, in cases where there is a mismatch with the prospective alliance partner or acquisition target in areas of management strategy such as capital procurement, technology management, and product development, or there are financial or other problems affecting the business of the prospective collaboration partner or acquisition target, in addition to the time and expense required for integration of aspects such as business execution, technology, products, personnel, systems and response to antitrust laws and other regulations of the relevant authorities, there is a possibility that the alliance relationship or capital ties will not be sustainable, or in the case of acquisitions for which the anticipated return on investment or profitability cannot be realized. Furthermore, there is a possibility that the anticipated synergies or other advantages cannot be realized due to an inability to retain or secure the main customers or key personnel of the prospective alliance partner or acquisition target. Thus, there is no certainty that an alliance or acquisition will achieve the goals initially anticipated.

8）Financing

While the Group has been procuring business funds by methods such as borrowing from financial institutions and other sources, and issuance of bonds, in the future it may become necessary to procure additional financing to implement business and investment plans, expand manufacturing capabilities, acquire technologies and services, and repay debts. It is possible that the Group may face limitations on its ability to raise funds due to a variety of reasons, including the fact that the Group may not be able to acquire required financing in a timely manner or may face increasing financing costs due to the worsening business environment in the semiconductor industry, worsening conditions in the financial and stock markets, and changes in the financing policies of lenders. In addition, the Company may also finance acquisitions when conducting acquisitions from financial institutions and other sources. However, regardless of whether or not the Company raises funds by methods such as borrowing from financial institutions and other sources, the Company will bear interest-bearing liabilities by financing for company acquisitions. If the initially expected cash flow generation is not realized, the Group's financial condition will deteriorate, credit ratings may be lowered, which may also increase funding costs or constrain the Group's financing. In addition, some of the borrowing contracts executed between the Group and some financial institutions stipulate articles of financial covenants. If the Group breaches these articles due to reasons such as a deterioration of the Group's financial condition, the Group may lose the benefit of term on the contract, and it may adversely influence the Group's business performance and financial conditions.

9）Notes on Additional Financing

After implementation of the allocation of new shares to a third party based on a decision at the Meeting of the Board of Directors held on December 10, 2012, we received an offer from the former Innovation Network Corporation of Japan (business name changed to Japan Investment Corporation as of September 25, 2018) that they are willing to provide additional investments or loans with an upper limit of 50 billion yen. However, former Innovation Network Corporation of Japan underwent restructuring, forming a separate subsidiary entity as of September 21, 2018, leading to the new subsidiary, INCJ, Ltd., to take over the contract initially undertaken with the former Innovation Network Corporation of Japan. Currently, no specific details regarding the timing of or conditions associated with these additional investments or loans have been determined, and there is no guarantee that these additional investments or loans will actually be implemented. If investments occur based on this offer, further dilution of existing stock will occur, and this may adversely impact existing shareholders. In addition, if loans are made under this offer, the Group's outstanding interest-bearing liabilities will increase, and this may impose restrictions on some of our business activities. Furthermore, if fluctuations in interest rates occur in the future, the Group's businesses, performance, and financial condition may be adversely affected.

10）Relationship with Major Shareholder, INCJ

As a result of the allocation of common stock to the former Innovation Network Corporation of Japan and others by way of third-party allotment on September 30, 2013, the former Innovation Network Corporation of Japan now holds a majority share of voting rights held in association with Renesas Electronics' share. From June 2017 onward, the former Innovation Network Corporation of Japan gradually divested itself of its holdings of common stock in the Company, and as of September 21, 2018, formed a separate subsidiary entity. As a result of this restructuring, all shares owned by the former Innovation Network Corporation of Japan were passed on to the new subsidiary, INCJ, Ltd., which is presently the largest shareholder in the Company. Although INCJ, Ltd. has sold some of its shares in the Company, INCJ, Ltd. remains the largest and major shareholder of the Company. Thus, the business operations of the Group are potentially subject to a substantial influence through the exercise by INCJ of its voting rights at General Meetings of Shareholders. In addition, should INCJ at some future date sell all or part of Renesas Electronics' share which is currently held for investment purpose, this could potentially have a substantial effect on the market value of Renesas Electronics' share, depending on factors such as the market climate at the time of the sale.

11）Rapid Technological Evolutions and Other Issues

The semiconductor market in which the Group does business is characterized by rapid technological changes and rapid evolution of technological standards. Therefore, if the Group is not able to carry out appropriate research and development, the Group's businesses, performance, and financial condition may all be adversely affected by product obsolescence and the existence of competing products in the marketplace.

12）Product Production

A. Production Process Risk

Semiconductor products require extremely complex production processes. In an effort to increase yields (defined as the ratio of non-defective products from the materials used), the Group takes steps to properly control production processes and seeks ongoing improvements. However, the emergence of defects in these production processes could lead to lower yields. These defects, in turn, could trigger shipment delays, reductions in shipment volume, or, at worst, the halting of shipments.

B. Procurement of Raw Materials, Components, and Production Facilities

The timely procurement of necessary raw materials, components and production facilities is critical to semiconductor production. To avoid supply problems related to these essential raw materials, components and production facilities, the Group works diligently to develop close relationships with multiple suppliers. Some necessary materials, however, are available only from specific suppliers. Consequently, insufficient supply capacity amid tight demand for these materials as well as events including natural disasters, accidents, acts of terror, war, worsening of business conditions, and withdrawal from the business by suppliers could preclude their timely procurement, or may result in sharply higher prices for these essential materials upon procurement. Furthermore, defects in procured raw materials or components could adversely influence the Group's manufacturing operations and additional costs may be incurred by the Group.

C. Risks Associated with Outsourced Production

The Group outsources the manufacturing of certain semiconductor products to external foundries (contract manufacturers) and other entities. In doing so, the Group selects its trusted outsourcers, rigorously screened in advance based on their technological capabilities, supply capacity, and other relevant traits; however, there is some possibility of delivery delays, product defects and other production-side risks stemming from outsourcers. In particular, inadequate production capacity among outsourcers or operation shutdown of the outsourcers as a result of a natural disaster, could result in the Group being unable to supply enough products.

D. Maintenance of Production Capacity at an Appropriate Level

The semiconductor market is sensitive to fluctuations in the business climate, and it is difficult to predict future product demand accurately. Thus, it is not always possible for the Group to maintain production capacity at an appropriate level that matches product demand. Unanticipated events such as fires, power outages or system failures at manufacturing plants could also significantly reduce the Group's production capacity for a given period of time, In addition, even if the Group engages in capital investment to boost production capacity, there is generally a certain amount of time required before the actual increase in production capacity takes place.

Therefore, if demand for specific products substantially exceeds the Group's production capacity at a certain point and the state of excess demand continues over time, there is a possibility that the Group will be unable to supply customers with the products they desire, that opportunities to sell the products in question will be lost, that the Group will lose market share as customers switch to competing products, and that the relationship of the Group and its customers will suffer.

On the other hand, if in response to a rise in demand for specific products the Group undertakes capital investment with the aim of increasing production capacity, there is no guarantee that demand for the products in question will remain strong once production capacity actually increases and afterward. There is a possibility that actual product demand may turn out to be less than anticipated, in which case it may not be possible to recover the capital investment with the anticipated earnings.

13）Product Quality

Although the Group makes an effort to improve the quality of semiconductor products, they may contain defects, anomalies or malfunctions that are undetectable at the time of shipment due to increased sophistication of technologies, the diversity of ways in which the Group's products are used by customers and defects in procured raw materials or components. These defects, anomalies or malfunctions could be discovered after the Group products were shipped to customers, resulting in the return or exchange of the Group's products, claims for compensatory damages, or discontinuation of the use of the Group's products, which could negatively impact the profits and operating results of the Group. To prepare for such events, the Group has insurance such as product liability insurance and recall insurance, but it is not guaranteed that the full costs of reimbursements would be covered by these.

14）Product Sales

A. Reliance on Key Customers

The Group relies on certain key customers for a significant portion of its product sales to customers. The decision by these key customers to cease adoption of the Group's products, or to dramatically reduce order volumes, could negatively impact the Group's operating results.

B. Changes in production plans by customers of custom products

The Group receives orders from customers for the development of specific semiconductor products in some cases. There is the possibility that, after the Group received the orders, the customers decide to postpone or cancel the launch of the end products in which the ordered product is scheduled to be embedded. There is also the possibility that the customers cancel its order if the functions and quality of the product do not meet the customer requirements. Further, the weak sales of end products in which products developed by the Group are embedded may cause customers to reduce their orders, or to postpone delivery dates. Such changes in production plans, order reductions, postponements and other actions from the customers concerning custom products may cause declines in the Group sales and profitability.

C. Reliance on Authorized Sales Agents

In Japan and Asia, the Group sells the majority of its products via independent authorized sales agents and relies on certain major authorized sales agents for a significant portion of these sales. The inability of the Group to provide these authorized sales agents with competitive sales incentives or margins, or to secure sales volumes that the authorized sales agents consider appropriate, could result in a decision by such agents to review their sales network of the Group's products, including the reduction of the network, and others., which could cause a downturn in the Group sales.

15）Securing Human Resources

The Group works hard to secure superior human resources for management, technology development, sales, and other areas when deploying business operations. However, since such superbly talented people are of limited number, there is fierce competition in the hiring of human resources. Under the current conditions, it may not be possible for the Group to secure the talented human resources it requires.

16）Defined Benefit Obligations

Net defined benefit liability and net defined benefit asset are calculated based on actuarial assumptions, such as discount rates or returns on assets. However, the Group performance and financial condition may be adversely affected either if discrepancies between actuarial assumptions and business performance arise due to changing interest rates or a fall in the stock market and defined benefit obligations increase or our plan assets decrease and there is an increase in the pension funding deficit in the retirement benefit obligations system.

17）Capital Expenditures and Fixed Cost Ratio

The semiconductor business in which the Group is engaged requires substantial capital investment. The Group undertakes capital investment in an ongoing manner, and this requires it to bear the associated amortization costs. In addition, if there is a decrease in demand due to changes in the market climate and the anticipated scale of sales cannot be achieved, or if excess supply causes product prices to fall, there is a possibility that a portion or the entirety of the capital investment will not be recoverable or will take longer than anticipated to be recovered, and as a result it may have an adverse effect on the business performance and the financial condition of the Group.

Furthermore, the majority of the expenses of the Group are accounted for by fixed costs such as production costs associated with factory maintenance and R&D expenses, in addition to the abovementioned amortization costs accompanying capital investment. Even if there is a decline in sales due to a reduction in orders from the Group's main customers or a drop in product demand, or if the factory operating rate decreases, it may be difficult to reduce fixed costs to compensate. As a result, a relatively small-scale drop in sales can have an adverse effect on the profitability of the Group.

18）Impairment Loss on Long-term Assets

The Group owns substantial long-term assets, consisting of both property, plant and equipment such as plant facilities and intangible assets such as goodwill obtained through the past acquisition. When there are indications of impairment, the Group examines the possibility of recovering the book value of assets based on the future cash flow to be generated from the assets. It may be necessary to recognize impairment of such assets if insufficient cash flow is generated.

19）Information Systems

Information systems are of growing importance in the Group's business activities. Although the Group makes an effort to manage stable operation of information systems, there is a likelihood that customer confidence and social trust would deteriorate, resulting in a negative effect on the Group's performance if there is a significant problem with the Group's information systems caused by factors such as natural disasters, accidents, computer viruses and unauthorized accesses.

20）Information Management

The Group has in its possession a great deal of confidential information and personal information relating to its business activities. While such confidential information is managed according to law and internal regulations specifically designed for that purpose, there is always the risk that information may leak due to unforeseen circumstances. Should such an event occur, there is a likelihood that leaks of confidential information may result in damages to our competitive position and customer confidence and social trust would deteriorate, resulting in a negative effect on the Group's performance.

21）Legal Restrictions

The Group is subject to a variety of legal restrictions in the various countries and regions. These include requirements for approval for businesses and investments, antitrust laws and regulations, export restrictions, customs duties and tariffs, accounting standards and taxation, and environment laws. In the future, it is possible that the Group's businesses, performance, and financial condition may be adversely affected by increased costs and restrictions on business activities associated with the strengthening of local laws.

The Group makes use of an internal regulation system to ensure legal compliance and appropriate financial reporting. However, since by its nature an internal regulation system is inherently limited, there is no guarantee that it will accomplish its goals completely. Consequently, the possibility is not nonexistent that legal violations, and others, may occur in the future.

Should a violation of the law or other regulations occur, the Group could be subject to administrative penalties such as fines, legal penalties, or claims for compensatory damages, or there could be a negative impact on the social standing of the Group. This could have an adverse effect on the businesses, business performance, and financial condition of the Group.

22）Environmental Factors

The Group strives to decrease its environmental impact with respect to diversified and complex environmental issues such as global warming, air pollution, industrial waste, tightening of hazardous substance regulation, and soil pollution. There is the possibility that, regardless of whether there is negligence in its pursuit of business activities, the Group could bear legal or social responsibility for environmental problems. Should such an event occur, the burden of expenses for resolution could potentially be high, and the Group could suffer erosion in social trust.

23）Intellectual Property

While the Group seeks to protect its intellectual property, it may not be adequately protected in certain countries and areas. In addition, there are cases that the Group’s products are developed, manufactured and sold by using licenses received from third parties. In such cases, there is the possibility that the Group could not receive necessary licenses from third parties, or the Group could only receive licenses under terms and conditions that are less favorable than before.

With regard to the intellectual property rights related to the Group’s products, it is possible that a third party might file a lawsuit against the Group or its customers claiming patent infringement, or the like, and that as a result the manufacture and sale of the affected products might not be possible in certain countries or regions. It is also possible that the Group could be liable for damages to a third party or to a customer of the Group.

24) Legal Issues

Details are listed under “Note 36. Commitments and Contingent Liabilities, (4) Others” in the Financial Section.

FINANCIAL SECTION

1. Basis of Preparation of the Consolidated Financial Statements

(1) The consolidated financial statements of Renesas Electronics Corporation (hereinafter "the Company") and its consolidated subsidiaries (hereinafter "the Group") have been prepared in accordance with International Financial Reporting Standards (hereinafter "IFRS") pursuant to the provisions of Article 93 of the "Ordinance on Terminology, Forms and Preparation Methods of Consolidated Financial Statements" (Ministry of Finance Ordinance No. 28, 1976, hereinafter "Ordinance on Consolidated Financial Statements").

(2) The non-consolidated financial statements of the Company were prepared in accordance with the Ministry of Finance Ordinance No. 59, 1963, "Ordinance on Terminology, Forms and Preparation Methods of Consolidated Financial Statements" (hereinafter "Ordinance on Financial Statements").

As a company submitting financial statements prepared in accordance with special provisions of the Ordinance of Financial Statements, the Company prepares its financial statements in accordance with Article 127 of the Ordinance of Financial Statements.

(3) In the consolidated financial statements and the non-consolidated financial statements, figures are presented by rounding them to the nearest million yen.

2. Audit Certification

The consolidated financial statements for the year ended December 31, 2022 (from January 1, 2022 to December 31, 2022) and the non-consolidated financial statements for the year ended December 31, 2022 (from January 1, 2022 to December 31, 2022) were audited by PricewaterhouseCoopers Aarata LLC in accordance with Article 193-2, Section 1, of the Financial Instruments and Exchange Act.

3. Special Measures for Preparing Fairly Stated Financial Statements

These measures involve attaining a thorough understanding of accounting standards and developing a system for addressing changes made to these standards. To this end, the Company has registered with the Financial Accounting Standards Foundation, and participates in seminars.

4. Development of a System to Appropriately Prepare Consolidated Financial Statements Based on IFRS

To appropriately prepare its consolidated financial statements in accordance with IFRS, the Company obtains press releases and accounting standards issued by the International Accounting Standards Board as required to understand the latest standards and analyze the impact. The Company has also prepared the Group accounting policies or "Global Rule Book" in accordance with IFRS and formulates accounting treatments based on the Group accounting policies. In addition, the Company makes efforts to accumulate in-house expertise by participating in seminars. hosted by the Financial Accounting Standards Foundation and audit corporations and others.

1. Consolidated Financial Statements

(1) Consolidated Financial Statements

(i) Consolidated Statement of Financial Position

(In millions of yen)

	Notes	As of December 31, 2021	As of December 31, 2022
Assets			
Current assets			
Cash and cash equivalents	8	221,924	336,068
Trade and other receivables	9, 33	140,478	162,623
Inventories	10	137,759	187,958
Other current financial assets	16, 33	737	6,688
Income taxes receivable		4,395	4,462
Other current assets	11	12,352	17,320
Total current assets		517,645	715,119
Non-current assets			
Property, plant and equipment	12, 14, 15, 19	198,165	208,042
Goodwill	7, 13, 15	1,089,452	1,265,457
Intangible assets	13, 15	534,778	487,438
Other non-current financial assets	16, 33	34,633	84,149
Deferred tax assets	17	42,537	37,876
Other non-current assets	11	9,091	14,191
Total non-current assets		1,908,656	2,097,153
Total assets		2,426,301	2,812,272

(In millions of yen)

	Notes	As of December 31, 2021	As of December 31, 2022
Liabilities and equity			
Liabilities			
Current liabilities			
Trade and other payables	18, 33, 38	204,330	222,941
Bonds and borrowings	19, 33	121,105	120,005
Other current financial liabilities	20, 33	11,595	13,838
Income taxes payable		22,050	79,025
Provisions	21	11,185	8,099
Other current liabilities	11	75,623	81,565
Total current liabilities		445,888	525,473
Non-current liabilities			
Trade and other payables	18, 33	15,100	3,382
Bonds and borrowings	19, 33	692,983	635,738
Other non-current financial liabilities	20, 33	11,868	11,301
Income taxes payable		3,792	2,551
Retirement benefit liability	22	27,926	24,102
Provisions	21	3,795	3,289
Deferred tax liabilities	17	65,788	63,523
Other non-current liabilities	11	5,763	5,435
Total non-current liabilities		827,015	749,321
Total liabilities		1,272,903	1,274,794
Equity			
Share capital	23	147,133	153,209
Capital surplus	23	337,989	348,446
Retained earnings	23	570,292	828,599
Treasury shares	23	(11)	(192,171)
Other components of equity		94,678	395,667
Total equity attributable to owners of parent		1,150,081	1,533,750
Non-controlling interests		3,317	3,728
Total equity		1,153,398	1,537,478
Total liabilities and equity		2,426,301	2,812,272

(ii) Consolidated Statement of Profit or Loss and Consolidated Statement of Comprehensive Income

Consolidated Statement of Profit or Loss

(In millions of yen)

	Notes	The year ended December 31, 2021	The year ended December 31, 2022
Revenue	6, 24	993,908	1,500,853
Cost of sales	37, 38	(497,780)	(646,864)
Gross profit		496,128	853,989
Selling, general and administrative expenses	25, 37	(317,199)	(426,861)
Other income	26	8,031	17,677
Other expenses	27	(13,133)	(20,635)
Operating profit		173,827	424,170
Finance income	28	4,140	1,409
Finance costs	28	(35,249)	(63,280)
Profit before tax		142,718	362,299
Income tax expense	17	(23,031)	(105,512)
Profit		119,687	256,787
Profit attributable to			
Owners of parent		119,536	256,632
Non-controlling interests		151	155
Profit		119,687	256,787
Earnings per share	30		
Basic earnings per share (yen)		64.77	137.67
Diluted earnings per share (yen)		63.35	134.85

Consolidated Statement of Comprehensive Income

(In millions of yen)

	Notes	The year ended December 31, 2021	The year ended December 31, 2022
Profit		119,687	256,787
Other comprehensive income			
Items that will not be reclassified to profit or loss			
Remeasurements of defined benefit plans		902	1,913
Equity instruments measured at fair value through other comprehensive income		(311)	(130)
Total of items that will not be reclassified to profit or loss		591	1,783
Items that may be reclassified subsequently to profit or loss			
Exchange differences on translation of foreign operations		168,975	312,707
Cash flow hedges		(4,022)	(11,946)
Cost of hedges		(153)	6,653
Total of items that may be reclassified subsequently to profit or loss		164,800	307,414
Total other comprehensive income	29	165,391	309,197
Total comprehensive income		285,078	565,984
Comprehensive income attributable to			
Owners of parent		284,721	565,573
Non-controlling interests		357	411
Total comprehensive income		285,078	565,984

(iii) Consolidated Statement of Changes in Equity
The year ended December 31, 2021

(In millions of yen)

	Notes	Equity attributable to owners of parent						
						Other components of equity		
		Share capital	Capital surplus	Retained earnings	Treasury shares	Share acquisition rights	Remeasurements of defined benefit plans	Equity instruments measured at fair value through other comprehensive income
Balance as of January 1, 2021		28,971	208,253	449,975	(11)	15,959	—	(1,131)
Profit		—	—	119,536	—	—	—	—
Other comprehensive income		—	—	—	—	—	902	(311)
Total comprehensive income		—	—	119,536	—	—	902	(311)
Issuance of new shares	23	118,162	117,320	—	—	—	—	—
Share-based payment transactions	32	—	12,416	—	—	(2,843)	—	—
Transfer to retained earnings		—	—	781	—	154	(902)	(33)
Reclassification to non-financial assets	7	—	—	—	—	—	—	—
Total transactions with owners		118,162	129,736	781	—	(2,689)	(902)	(33)
Balance as of December 31, 2021		147,133	337,989	570,292	(11)	13,270	—	(1,475)

	Notes	Equity attributable to owners of parent					Non-controlling interests	Total equity
		Other components of equity						
		Exchange differences on translation of foreign operations	Cash flow hedges	Cost of hedges	Total	Total equity attributable to owners of parent		
Balance as of January 1, 2021		(85,315)	—	—	(70,487)	616,701	2,960	619,661
Profit		—	—	—	—	119,536	151	119,687
Other comprehensive income		168,769	(4,022)	(153)	165,185	165,185	206	165,391
Total comprehensive income		168,769	(4,022)	(153)	165,185	284,721	357	285,078
Issuance of new shares	23	—	—	—	—	235,482	—	235,482
Share-based payment transactions	32	—	—	—	(2,843)	9,573	—	9,573
Transfer to retained earnings		—	—	—	(781)	—	—	—
Reclassification to non-financial assets	7	—	3,604	—	3,604	3,604	—	3,604
Total transactions with owners		—	3,604	—	(20)	248,659	—	248,659
Balance as of December 31, 2021		83,454	(418)	(153)	94,678	1,150,081	3,317	1,153,398

The year ended December 31, 2022

(In millions of yen)

	Notes	Equity attributable to owners of parent						
						Other components of equity		
		Share capital	Capital surplus	Retained earnings	Treasury shares	Share acquisition rights	Remeasurements of defined benefit plans	Equity instruments measured at fair value through other comprehensive income
Balance as of January 1, 2022		147,133	337,989	570,292	(11)	13,270	—	(1,475)
Profit		—	—	256,632	—	—	—	—
Other comprehensive income		—	—	—	—	—	1,913	(130)
Total comprehensive income		—	—	256,632	—	—	1,913	(130)
Issuance of new shares	23	6,076	6,040	—	—	—	—	—
Purchase of treasury shares	23	—	(442)	—	(192,160)	—	—	—
Share-based payment transactions	32	—	4,859	—	—	(6,277)	—	—
Transfer to retained earnings		—	—	1,675	—	609	(1,913)	(371)
Total transactions with owners		6,076	10,457	1,675	(192,160)	(5,668)	(1,913)	(371)
Balance as of December 31, 2022		153,209	348,446	828,599	(192,171)	7,602	—	(1,976)

	Notes	Equity attributable to owners of parent					Non-controlling interests	Total equity
		Other components of equity						
		Exchange differences on translation of foreign operations	Cash flow hedges	Cost of hedges	Total	Total equity attributable to owners of parent		
Balance as of January 1, 2022		83,454	(418)	(153)	94,678	1,150,081	3,317	1,153,398
Profit		—	—	—	—	256,632	155	256,787
Other comprehensive income		312,451	(11,946)	6,653	308,941	308,941	256	309,197
Total comprehensive income		312,451	(11,946)	6,653	308,941	565,573	411	565,984
Issuance of new shares	23	—	—	—	—	12,116	—	12,116
Purchase of treasury shares	23	—	—	—	—	(192,602)	—	(192,602)
Share-based payment transactions	32	—	—	—	(6,277)	(1,418)	—	(1,418)
Transfer to retained earnings		—	—	—	(1,675)	—	—	—
Total transactions with owners		—	—	—	(7,952)	(181,904)	—	(181,904)
Balance as of December 31, 2022		395,905	(12,364)	6,500	395,667	1,533,750	3,728	1,537,478

(iv) Consolidated Statement of Cash Flows

(In millions of yen)

	Notes	The year ended December 31, 2021	The year ended December 31, 2022
Cash flows from operating activities			
Profit before tax		142,718	362,299
Depreciation and amortization		146,047	186,032
Impairment losses		135	7,719
Finance income and finance costs		6,944	9,959
Share-based payment expenses		14,899	18,144
Foreign exchange loss (gain)		23,761	42,997
Loss (gain) on sales of property, plant and equipment, and intangible assets		(5,557)	(9,583)
Decrease (increase) in inventories		(6,253)	(41,546)
Decrease (increase) in trade and other receivables		(9,512)	(7,886)
Decrease (increase) in other financial assets		(9,699)	(29,303)
Increase (decrease) in trade and other payables		50,413	13,882
Increase (decrease) in retirement benefit liability		(2,560)	(4,600)
Increase (decrease) in provisions		3,845	(4,414)
Increase (decrease) in other current liabilities		(20,225)	(286)
Increase (decrease) in other financial liabilities		4,681	(1,454)
Other		(9,327)	(7,826)
Subtotal		330,310	534,134
Interest received		242	491
Dividends received		300	219
Income taxes paid		(23,468)	(55,519)
Net cash flows from operating activities		307,384	479,325
Cash flows from investing activities			
Purchase of property, plant and equipment		(36,938)	(66,135)
Proceeds from sales of property, plant and equipment		8,408	10,627
Purchase of intangible assets		(15,408)	(22,064)
Purchase of other financial assets		(1,416)	(5,602)
Proceeds from sales of other financial assets		579	1,268
Payments for acquisitions of subsidiaries	7	(614,816)	(6,748)
Payments for acquisitions of subsidiaries for the contingent consideration		—	(2,103)
Other		(3,535)	(6,766)
Net cash flows from investing activities		(663,126)	(97,523)
Cash flows from financing activities			
Proceeds from short-term borrowings	31	270,000	50,000
Repayments of short-term borrowings	31	(270,000)	(51,180)
Proceeds from long-term borrowings	31	240,000	47,096
Repayments of long-term borrowings	31	(262,777)	(128,767)
Proceeds from issuance of bonds	31	154,359	—
Proceeds from issuance of shares		223,799	—
Payments for share issuance costs		(1,179)	—
Purchase of treasury shares	23	—	(200,000)
Repayments of lease liabilities	31	(4,571)	(5,901)
Interest paid		(8,682)	(5,947)
Other		(34)	(71)
Net cash flows from financing activities		340,915	(294,770)

(In millions of yen)

	Notes	The year ended December 31, 2021	The year ended December 31, 2022
Effect of exchange rate changes on cash and cash equivalents		16,965	27,112
Net increase (decrease) in cash and cash equivalents		2,138	114,144
Cash and cash equivalents at beginning of the period	8	219,786	221,924
Cash and cash equivalents at end of the period	8	221,924	336,068

Notes to Consolidated Financial Statements

1. Reporting Entity

Renesas Electronics Corporation (hereinafter “the Company”) is a public company established under the Companies Act of Japan and domiciled in Japan. The accompanying consolidated financial statements of the Company and its consolidated subsidiaries (hereinafter “the Group”) are composed of the Company, its subsidiaries and interests of the Group in its associates, with December 31, 2022 as the closing date. The Group engages in research, development, design, manufacturing, sales and services related to various kinds of semiconductors as a manufacturer specializing in semiconductors. For details of the Group’s major business, please refer to “Note 6. Business Segments.”

The consolidated financial statements for the year ended December 31, 2022 were approved on March 30, 2023 by Hidetoshi Shibata, President and CEO, and Shuhei Shinkai, Executive Vice President, Member of the Board and CFO.

2. Basis for Preparation

(1) Compliance with IFRS

Because the Group meets the requirements for “Specified Companies Complying with Designated International Accounting Standards” stated in Article 1-2 of Ordinance on Consolidated Financial Statements, the Group has adopted the provisions of Article 93 of the Ordinance. The consolidated financial statements of the Group have been prepared in accordance with IFRS.

(2) Basis of measurement

The consolidated financial statements of the Group have been prepared based on the accounting policies separately described in “Note 3. Significant Accounting Policies.” Assets and liabilities are measured at a historical cost basis unless otherwise stated.

(3) Functional currency and presentation currency

The consolidated financial statements are presented in Japanese yen (rounded to the nearest million yen), which is the functional currency of the Company.

(4) Changes in presentation

(Consolidated Statement of Cash Flows)

Within “Cash flows from operating activities” category, “Decrease (increase) in other financial assets,” which was disclosed in “Other” for the year ended December 31, 2021, has been presented separately for the year ended December 31, 2022 due to the increase in its materiality.

In order to reflect this change in presentation, the consolidated statement of cash flows for the year ended December 31, 2021 has been reclassified. Consequently, within “Cash flows from operating activities” category, (4,466) million yen of “Other” has been classified to 4,681 million yen of “Decrease (increase) in other financial assets,” (9,147) million yen of “Other.”

For the year ended December 31, 2022, the Group has completed the purchase price allocation. Therefore, the consolidated statement of cash flows for the year ended December 31, 2021 has been revised.

3. Significant Accounting Policies

The significant accounting policies of the Group are as follows and are applied to all the periods presented in the consolidated financial statements.

(1) Basis of consolidation

A. Subsidiaries

Subsidiaries are entities controlled by the Group. Control refers to a case in which the Group has power over an entity, is exposed to variable returns from involvement with the entity and has the ability to affect those returns through its power over the entity.

The financial statements of subsidiaries are included in the consolidated financial statements from the date when control is obtained until the date when control is lost. In the event that the Group disposes of some of its ownership interest in a subsidiary that does not result in a loss of control, the change in ownership interest of the Group is accounted for as an equity transaction, and the difference between the adjustment of non-controlling interests and the fair value of the consideration is directly recognized in equity as equity attributable to owners of parent.

If the closing dates of a subsidiary and that of the consolidated financial statements are different, financial statements prepared with a provisional closing date, which is same as that of consolidated financial statements, are used.

B. Associates

Associates are entities over which the Group has a significant influence over the decisions on financial and operating policies but does not have control. Investments in associates are accounted for using the equity method.

Investments in associates are initially recognized at cost. Ownership interests of the Group in profit or loss and other comprehensive income of the associate from the date when the Group obtains significant influence until the date when the Group loses significant influence are recognized as changes in the amount of investments in associates.

C. Transactions eliminated on consolidation

Inter-company balances of receivables and payables, transactions and unrealized gains or losses resulting from inter-company transactions are eliminated on consolidation.

(2) Business combinations

Business combinations are accounted for using the acquisition method. Consideration transferred in a business combination is measured as the sum of the acquisition-date fair value of the assets transferred, liabilities assumed, and equity instruments issued by the Company in exchange for control over the acquiree.

Any excess of the consideration for acquisition, the non-controlling interests in the acquiree and the fair value of assets of the acquiree that the acquirer previously held over the net amount of identifiable assets and liabilities as of the date of acquisition is recognized as goodwill. Conversely, if the consideration for acquisition is lower than the net amount of identifiable assets and liabilities as of the date of acquisition, it is immediately recognized in profit or loss. Acquisition-related costs are recognized in profit or loss. The additional acquisition of non-controlling interests after obtaining control is accounted for as an equity transaction, and no corresponding goodwill is recognized.

If the initial accounting treatment of a business combination is not completed by the end of the fiscal year when the business combination took place, provisional amounts for the items for which accounting is incomplete are reported, and such provisional amounts that were recognized as of the date of acquisition are adjusted retrospectively during the measurement period within one year from the date of acquisition.

(3) Foreign currency translation

A. Functional currency and presentation currency

The financial statements of the Group entities are prepared in their respective functional currency. The consolidated financial statements of the Group are presented in Japanese yen, which is the functional currency of the Company.

B. Foreign currency transactions

Foreign currency transactions are translated into the functional currency at the spot exchange rate or a rate approximate to the spot exchange rate on the date of the transaction. Monetary items denominated in a foreign currency at the end of the reporting period are translated into the functional currency using the closing rate, while non-monetary items denominated in a foreign currency that are measured at historical cost are translated using the exchange rate in effect on the date of the initial transaction, and those that are measured at fair value are translated using the exchange rate in effect on the date when the fair value was calculated.

Exchange differences from translation or settlement are recognized in profit or loss during the period when they arise. However, exchange differences arising from equity instruments and cash flow hedges measured through other comprehensive income are recognized in other comprehensive income.

C. Foreign operations

In preparing the consolidated financial statements, the assets and liabilities of a foreign operation are translated into Japanese yen at the exchange rate as of the closing date of the consolidated financial statements, and profit or loss and cash flows of the foreign operation are translated into Japanese yen at the exchange rate on the date of the transaction or the average exchange rate for the period that is approximate to the exchange rate on the date of the transaction. Exchange differences are recognized in other comprehensive income, and the cumulative amount thereof is recognized in other components of equity.

On disposal of the entire ownership interest in a foreign operation or part of the interest that results in a loss of control or significant influence, the exchange differences of the foreign operation that were recognized in other comprehensive income and accumulated in equity are reclassified from equity to profit or loss when the related gains or losses on disposal are recognized.

Exchange differences arising from monetary items, which are receivables or payables from foreign operations that settlements are neither planned nor likely to occur in the foreseeable future, are a part of the entity's net investment in that foreign operation. Exchange differences arising from the monetary items are recognized in other comprehensive income.

(4) Financial instruments

A. Financial assets other than derivatives

(a) Initial recognition and measurement

Trade and other receivables are initially recognized at their transaction price on that date, and all other financial assets are initially recognized on the date of the transaction when the Company becomes the contracting party to the financial assets.

At the time of initial recognition, financial assets are classified as financial assets measured at amortized cost or financial assets measured at fair value.

(i) Financial assets measured at amortized cost

Financial assets are classified as financial assets measured at amortized cost if both of the following conditions are met.

- Assets are held within a business model that aims to hold assets to collect contractual cash flows.
- The contract terms of the financial assets give rise on specified dates to cash flows that are solely payments of principal and interest on the principal amount outstanding.

(ii) Financial assets measured at fair value through other comprehensive income

- Debt instruments measured at fair value through other comprehensive income

  If both of the following conditions are met, financial assets are classified as debt instruments measured at fair value through other comprehensive income.

  - Assets are held within a business model whose objective is achieved by both the collection and sale of contractual cash flows.
  - The contract terms of the financial assets give rise on specified dates to cash flows that are solely payments of principal and interest on the principal amount outstanding.

- Equity instruments measured at fair value through other comprehensive income

  When an irrevocable election at the time of initial recognition is made, subsequent changes in fair value are recognized in other comprehensive income and such equity instruments are classified as financial assets measured at fair value through other comprehensive income.

(iii) Financial assets measured at fair value through profit or loss

Financial assets that do not meet the criteria for either (i) or (ii) above are classified into financial assets measured at fair value through profit or loss.

Financial assets are recognized initially at fair value plus, in the case of financial assets not recorded at fair value through profit or loss, transaction costs that are directly attributable to the acquisition of the financial assets. Transaction costs for financial assets measured at fair value through profit or loss are recognized in profit or loss.

(b) Subsequent measurement

After the initial recognition, financial assets are measured as follows according to their classification.

(i) Financial assets measured at amortized cost

Financial assets measured at amortized cost are measured at amortized cost using the effective interest method.

(ii) Financial assets measured at fair value through other comprehensive income

・Debt instruments measured at fair value through other comprehensive income

The amount of changes in the fair value of debt instruments measured at fair value through other comprehensive income is recognized in other comprehensive income, except for impairment gains or losses and foreign exchange gain or loss, until the financial assets are derecognized. If the financial assets are derecognized, gains or losses accumulated in other comprehensive income are reclassified to profit or loss.

・Equity instruments measured at fair value through other comprehensive income

The amount of changes in the fair value of equity instruments measured at fair value through other comprehensive income is recognized in other comprehensive income. If the financial assets are derecognized, or if the fair value has declined significantly, gains or losses accumulated in other comprehensive income are directly reclassified to retained earnings. Dividend income from the financial assets is recognized as finance income in profit or loss.

(iii) Financial assets measured at fair value through profit or loss

Financial assets measured at fair value through profit or loss are measured at fair value after the initial recognition, and changes in fair value are recognized in profit or loss.

(c) Impairment of financial assets

For impairment of financial assets measured at amortized cost, the Group recognizes an allowance for expected credit losses of financial assets. On each reporting date, the Group assesses whether the credit risk of the financial instruments has increased significantly subsequent to the initial recognition.

If the credit risk of financial instruments has not increased significantly after the initial recognition, the loss allowance of the financial instruments is measured at the amount of 12-month expected credit losses, and if the credit risk of the financial instruments has increased significantly after the initial recognition, the loss allowance of the financial instruments is measured at the amount of lifetime expected credit losses.

However, for trade receivables, the loss allowance is always measured at the amount of lifetime expected credit losses.

Expected credit losses of the financial instruments are estimated in a way that reflects:

- An unbiased and probability-weighted amount that is determined by evaluating a range of possible outcomes
- The time value of money
- Reasonable and supportable information that is available without undue cost or effort at the reporting date about past events, current conditions and forecasts of future economic conditions

Changes in the amount of the measurement are recognized in profit or loss.

(d) Derecognition

The Group derecognizes financial assets if the contractual rights to the cash flows from the financial assets expire, or if substantially all risks and rewards associated with ownership of the financial assets are transferred as a result of assigning the contractual right to receive cash flows from the financial assets.

B. Financial liabilities other than derivatives

(a) Initial recognition and measurement

At the time of initial recognition, financial liabilities are classified as financial liabilities measured at amortized cost or financial liabilities measured at fair value through profit or loss. Although all financial liabilities are initially measured at fair value, financial liabilities measured at amortized cost are measured at an amount obtained by deducting directly attributable transaction costs.

(b) Subsequent measurement

(i) Financial liabilities measured at amortized cost

Financial liabilities measured at amortized cost are measured at amortized cost using the effective interest method.

(ii) Financial liabilities measured at fair value through profit or loss

Financial liabilities measured at fair value through profit or loss are measured at fair value after the initial recognition, and the changes are recognized in profit or loss.

(c) Derecognition

The Group derecognizes financial liabilities when they are extinguished, for example when then obligations specified in the contract are discharged, cancelled or expired.

C. Derivatives and hedge accounting

The Group holds derivative financial instruments for the purpose of hedging the risk of exchange rate fluctuations and others. The Group has a policy of not conducting speculative derivative transactions.

Derivatives are initially recognized at fair value, related transaction costs and the difference between the fair value at the time of initial recognition and the transaction price are recognized in profit or loss when they are incurred. After the initial recognition, derivatives are remeasured at fair value, and changes in the fair value are accounted for as described below, depending on whether the derivative financial instruments that are designated as hedging instruments meet the requirements for hedge accounting. The Group designates the derivatives that meet the requirements for hedge accounting as hedging instruments and applies hedge accounting. In addition, at the inception of a hedge, the Group formally documents the risk management objective, the relationship between hedging instruments and the hedged items, along with strategies when executing hedging transactions, the nature of the risk being hedged and the method of assessing hedge effectiveness.

(i) Cash flow hedges

Of gains or losses from hedging instruments, the effective portion of the hedge is recognized in other comprehensive income, and the ineffective portion is recognized in profit or loss.

When applying cash flow hedges to currency swap contracts, the portion excluding the currency basis spread is designated as the hedging instrument, and for the currency basis spread portion, the amount of change in fair value is recognized as hedging cost through other components of equity and included in the comprehensive income. The amount accumulated in other components of equity is transferred to profit or loss during the same period in which the cash flows to be hedged affect profit or loss. If the hedged item is the acquisition of a non-financial asset, the amount accumulated in other components of equity will be treated as an adjustment to the initial acquisition cost of the non-financial asset.

When the Group recognizes hedging cost for a derivative transaction entered in order to hedge a time-period related hedged item, it transfers the cumulative costs of hedging accumulated in other components of equity to profit or loss on a systematic and rational basis over the period during which the hedge adjustment from the hedging instrument affects profit or loss.

The amount of hedging instruments that is recorded in other comprehensive income is reclassified to profit or loss at the time when the underlying hedged transactions affect profit or loss. If the hedged items give rise to the recognition of non-financial assets or non-financial liabilities, the amount that is recognized in other comprehensive income is reclassified as an adjustment to the initial carrying amount of non-financial assets or non-financial liabilities.

For cash flow hedges other than the above, the amount is reclassified from other comprehensive income to profit or loss in the same period or periods during which the hedged expected future cash flows affect profit or loss. However, if the accumulated amount is a loss and if all or part of the loss is not expected to be recovered in the future, the amount that is not expected to be recovered is immediately reclassified to profit or loss.

When hedge accounting is terminated, this accumulated amount remains in other comprehensive income until the expected future cash flows occur, and if the forecast transaction is no longer expected to occur, this amount is immediately reclassified to profit or loss.

(ii) Derivatives that do not meet requirements for hedge accounting

Changes in fair value are recognized in profit or loss.

(5) Cash and cash equivalents

Cash and cash equivalents consist of cash on hand, deposits that can be withdrawn at any time and short-term investments with a maturity of 3 months or less when purchased that can be easily converted to cash and are subject to an insignificant risk of changes in value.

(6) Inventories

The acquisition cost of inventories comprises all costs of purchase, costs of conversion and all other costs incurred in bringing the inventories to their present location and condition.

After the initial recognition, inventories are measured at the lower of cost and net realizable value, but if cost exceeds net realizable value, the inventories are written down to net realizable value. The net realizable value is calculated by deducting the estimated costs of completion and the estimated costs necessary to make the sale from the estimated selling price in the ordinary course of business.

The cost is also calculated using the following methods:

Merchandise and finished goods

Custom-made products: Specific identification method

Mass products: Average method

Work in progress

Custom-made products: Specific identification method

Mass products: Average method

Raw materials and supplies: Mainly average method

(7) Property, plant and equipment (other than leased assets)

The acquisition cost of property, plant and equipment includes costs directly related to the acquisition of assets, dismantling, disposal and restoration costs and borrowing costs that meet the requirements for capitalization.

The cost model is used in the measurement of property, plant and equipment, and they are presented at the carrying value obtained by deducting accumulated depreciation and accumulated impairment losses from the acquisition cost.

Except for land and construction in progress, the acquisition cost of each asset after deducting the residual value is depreciated over the estimated useful life using the straight-line method.

The estimated useful life, the residual value and the depreciation method are reviewed at the end of each fiscal year, and any changes are applied to the period when the estimated are changed and future periods prospectively as a change in the accounting estimate. The impact of the change of these estimates is recognized in the period when the estimates are changed and future periods.

The estimated useful lives of major assets are as follows.

Buildings and structures	10 to 45 years
Machinery, equipment and vehicles	2 to 8 years
Tools, furniture and fixtures	2 to 10 years

(8) Goodwill and intangible assets

A. Goodwill

The measurement of goodwill at the time of initial recognition is as stated in “(2) Business combinations.” After initial recognition, goodwill is not amortized and is measured at cost less any accumulated impairment losses.

Goodwill is allocated to each of the acquirer’s cash-generating units that are expected to benefit from the synergies of the business combination, and an impairment test is performed for the cash-generating units to which goodwill was allocated at a certain time each fiscal year and whenever there is an indication of impairment. Impairment losses on goodwill are recognized in profit or loss and are not reversed in a subsequent period.

B. Intangible assets

The cost model is used for intangible assets, and they are presented at cost less any accumulated amortization and accumulated impairment losses.

(a) Intangible assets acquired separately

Intangible assets acquired separately are measured at cost at the time of initial recognition.

(b) Intangible assets acquired in a business combination

For intangible assets acquired in a business combination, their acquisition cost is measured at fair value as of the date of acquisition. Intangible assets acquired in a business combination are comprised primarily of developed technology, customer relationships, and in-process research and development.

(Developed technology)

Intangible assets that represent future excess earnings power expected to arise from the technology and that have been already developed as of the date of acquisition with the acquiree are recognized as Developed technology.

(Customer relationships)

Intangible assets related to future excess earnings power expected to arise from the existing customers as of the date of acquisition with the acquiree are recognized as Customer relationships.

(In-process research and development)

Intangible assets in an intermediate stage of identifiable research and development assets meeting the asset

requirements are recognized as in-process research and development.
The details for intangible assets acquired in a business combination, see “Note 13. Goodwill and Intangible Assets.”

(c) Internally-generated intangible assets (Capitalized development cost)
For internally-generated intangible assets, the expenditure is recorded as an expense, except for development costs that meet the following requirements for capitalization:

- The technical feasibility of completing the intangible asset so that it will be available for use or sale;
- The intention of an entity to complete the intangible asset and use or sell it;
- The ability to use or sell the intangible asset;
- A method for the intangible asset to generate probable future economic benefits;
- The availability of adequate technical, financial and other resources necessary for completing the development of the intangible asset and using or selling it; and
- The ability to measure the expenditure attributable to the intangible asset during its development reliably
These internally generated intangible assets are amortized using the straight-line method from the time when they are provided for use in business operations based on estimated useful life (5 years) for which they are expected to provide net cash inflows. Expenditure on research and development that does not meet the requirements for capitalization above is recognized in profit or loss at the time of occurrence.

Intangible assets with finite useful lives are amortized over their respective estimated useful life using the straight-line method, and an impairment test is performed if any indications of impairment exist. For intangible assets with finite useful lives, their useful lives and amortization method are reviewed at the end of each fiscal year. A change in the useful life or the amortization method is applied prospectively as a change in accounting estimate.

Commercial software products are mainly amortized using a method based on the expected sales volume over the expected sales period (3 years or less), and software for internal use is mainly amortized using the straight-line method based on the expected available period (5 years) for internal use. Technical assets are mainly amortized using the straight-line method based on the available period (12 years or less) in business activities. Customer relationships are mainly amortized using the straight-line method based on the estimated useful life (14 years or less).

Intangible assets with indefinite useful life and intangible assets that are not yet available for use are not amortized, and an impairment test is performed at a certain time each fiscal year or whenever any indication of impairment exists.

(9) Leases

A. Overall

(a) Identification of a lease
At inception of a contract, the Group assesses whether the contract is, or contains, a lease. A contract is, or contains, a lease if it conveys the right to control the use of an identified asset for a period of time in exchange for consideration. The Group reviews the following to assess whether a contract conveys the right to control the use of an identified asset.
(i)The use of the identified asset in a contract is directed.
(ii)The lessee has the right to obtain substantially all of the economic benefits from use of the identified asset throughout the period of use.
(iii)The lessee has the right to direct the use of an asset. Also, in case that the determination of how and for what purpose the asset is used are predetermined, if applicable to any of the following, it is determined that the lessee has the right to direct the use of an asset.

- The lessee has the right to operate the asset.
- The lessee designed the asset in a way that predetermines how and for what purpose the asset will be used.

(b) Lease term
The lease term is defined as the non-cancellable period for which a lessee has the right to use an underlying asset, together with both:

- periods covered by an option to extend the lease if the lessee is reasonably certain to exercise that option; and
- periods covered by an option to terminate the lease if the lessee is reasonably certain not to exercise that option.

B. Leases as Lessee

(a) Separable components of a contract
The Group allocates the consideration in contract for a building lease to lease and non-lease components on the basis of the relative stand-alone price of each lease component. In addition, the Group elects not to separate non-lease components from lease components, and instead accounts for each lease component and any associated non-lease components as a single lease component for the lease other than a building lease.

(b) Right-of-use assets
The Group recognizes the right-of-use assets and the lease liabilities at the date of initial application. The right-of-use assets are measured initially at cost. This cost is calculated by deducting any lease incentives received from the sum of the amounts of the initial measurement of the lease liabilities, any lease payments made at or before the commencement date, any initial direct costs and an estimate of costs to be incurred in dismantling and removing the underlying assets, restoring the underlying asset or restoring the site on which it is located. After the commencement date, the right-of-use asset is measured using a cost model by deducting any accumulated depreciation and any accumulated impairment losses from the cost.

The right-of-use assets are depreciated using the straight-line method over the period which is the earlier of the useful life of the underlying asset or the lease term. If it is reasonably certain that the Group will exercise a purchase option, depreciation is based on the useful life of the underlying asset.

(c) Lease liabilities

Lease liabilities are measured initially at the present value of unpaid lease payments discounted using the interest rate implicit in the lease. If the interest rate implicit in the lease cannot be readily determined, the Group's incremental borrowing rate is used. The Group typically uses our incremental borrowing rate as the discount rate.

The lease payments in the measurement of lease liabilities includes the fixed payments, the amount of payments for the lease in any optional period if it is considered to be reasonable certain to exercise an extension option, and the payments of penalties for terminating the lease if the lease term reflects the lessee exercising an option to terminate the lease.

If there is a change in future lease payments resulting from a change in an index or rate, there is a change in the amounts expected to be payable under a residual value guarantee, or there is a change in determining whether purchase, extension and termination option is reasonably certain to exercise, lease liabilities are remeasured.

When lease liabilities are remeasured, the carrying amount of the right-of-use assets is adjusted or the remaining remeasurement is recognized in profit or loss if the carrying amount of the right-of-use assets is reduced to zero.

(d) Short-term leases within 12 months and leases of low-value assets

The Group elects not to recognize right-of-use assets and lease liabilities for short-term leases within 12 months and leases of low-value assets including IT equipment and recognizes these lease payments as expenses over the lease term using the straight-line method.

(10) Impairment of non-financial assets

The Group determines whether there is any indication that an asset (except for inventories, deferred tax assets and retirement benefit assets) may be impaired each fiscal year, and if such indication exists, an impairment test is performed. However, for goodwill or intangible assets with indefinite useful life or that are not yet available for use, an impairment test is performed at a certain time each fiscal year and when indicators of impairment are identified. or when any signs of impairment are identified.

In the impairment test, a recoverable amount is estimated, and the carrying amount and the recoverable amount are compared. The recoverable amount of assets or cash-generating units is calculated at the higher of the value in use and the fair value less costs of disposal. The value in use is calculated by discounting the estimated future cash flows to the present value, using the pre-tax discount rate that reflects the time value of money and risks specific to the asset.

If the recoverable amount of assets or cash-generating units is lower than the carrying amount as a result of the impairment test, an impairment loss is recognized. When the impairment loss of a cash-generating unit including goodwill is recognized, an allocation is made first to reduce the carrying amount of goodwill that is allocated to the cash-generating unit, and then an allocation is made to proportionally reduce the carrying amount of other assets in the cash-generating unit.

The impairment loss is reversed if there is any indication that the impairment loss recognized in a prior period may no longer exist or may have decreased and if the estimated recoverable amount exceeds the carrying amount. The upper limit of the reversal shall not exceed the carrying amount that would have been determined had no impairment loss been recognized in prior years, net of depreciation or amortization. The impairment loss on goodwill is not reversed.

(11) Provisions

The Group recognizes a provision if the Group has assumed a legal or constructive obligation as a result of a past event, if it is probable that an outflow of economic benefits will be required to settle the obligation and if a reliable estimate can be made of the amount of the obligation.

If the time value of the money of the provision is significant, the estimated future cash flows are discounted to the present value using a pre-tax discount rate that reflects the time value of the money and risks specific to the liability. The unwinding of the discount amount due to the passage of time are recognized as a finance cost.

(12) Levies

For levies that are an outflow of resources embodying economic benefits required by the government to the Group in accordance with laws and regulations, an expected payment is recognized as a liability when the obligation event that triggers the payment of levies prescribed by laws and regulations occurs.

(13) Employee benefits

A. Short-term employee benefits

A short-term employee benefit is an employee benefit that will be settled within 12 months from the end of the fiscal year in which the employee renders the related service, and the Group recognizes an amount expected to be paid in exchange for the services rendered during a certain accounting period. Short-term employee benefits in the Group include bonuses and benefits related to paid leave.

The expected costs of employee benefits related to accumulating paid leave are recognized when an employee renders the service that will increase the entitlement to future paid leave. In addition, the Group measures the expected cost of accumulating paid leave as an additional amount that the Group is expected to pay as a result of the unused entitlement that has accumulated as of the end of the fiscal year.

Bonuses are recognized as a liability if the Group has a legal or constructive obligation to pay as a result of the provision of service by the employee in the past and if the obligation can be estimated reliably.

B. Post-employment benefits

For post-employment benefit plans, the Group has adopted defined benefit plans and defined contribution plans.

(a) Defined contribution plans

Contributions to defined contribution plans are recognized as an expense when they are incurred unless they are included in inventories or property, plant and equipment. If contributions already paid exceed contributions due for services provided before the end of the fiscal year, the Group recognizes the excess as an asset to the extent to which the prepayment becomes the reduction of future payments or a future refund.

(b) Defined benefit plans

The net amount of assets or liabilities of the defined benefit plan is the amount obtained by deducting the fair value of the plan assets (including the upper limit of the assets and adjustments to minimum funding requirements, if necessary) from the present value of defined benefit obligations, and it is recognized in the consolidated financial statements as an asset or a liability. The defined benefit obligations are calculated using the projected unit credit method, and the present value of defined benefit obligations is calculated by applying a discount rate to the expected payment amount in the future. The discount rate is calculated based on market yields at the end of the reporting period on high quality corporate bonds corresponding to the discount period which is determined based on the period until the future expected benefit payment date in each reporting period.

Service costs and net interest expense for the net amount of assets or liabilities related to the defined benefit plans are recognized in profit or loss.

Actuarial gains or losses and fluctuations in the return on the plan assets excluding the portion included in the net interest expense and change in the impact of the asset ceiling are recognized in other comprehensive income as “Remeasurements of defined benefit plans” in the corresponding period and are immediately transferred from other components of equity to retained earnings. Past service costs are recognized in profit or loss when the plan is revised or curtailed, or when related restructuring costs or termination benefits are recognized, whichever is earlier.

C. Other long-term employee benefits

As long-term employee benefit plans other than post-employment benefits, the Group has a special leave and a reward plan based on the number of service years. The obligations regarding other long-term employee benefits are measured at the amount obtained by discounting the estimated amount of future benefits that the employees have earned as consideration for services rendered in the previous and current fiscal years to the present value.

(14) Government grants

Government grants are recognized at fair value when there is reasonable assurance that the Group complies with the required conditions and that the grants will be received. Grants related to revenue are recognized in profit or loss. Grants recognized as profit or loss are deducted from the corresponding expenses when they are directly based on the incurred expenses. Grants received based on other conditions are shown in other income.

(15) Treasury shares

When treasury shares are acquired, the amount of the consideration paid, including directly attributable transaction costs, is recognized at cost and deducted from equity. Including disposals of treasury shares based on the exercise of stock options and the vesting of Restricted Stock Unit (RSU), when treasury shares are sold, the gains or losses on the disposal are recognized as capital surplus.

(16) Share-based payments

The Group has adopted share-based payment plans as incentive plans for directors, senior vice presidents and employees.

Restricted Stock Unit (RSU) and Performance Share Unit (PSU) are share-based payment plans with share issuance in the future. RSU is vested subject to continued employment with a Group Company and PSU is vested in response to the extent of the growth rate of total shareholder return. The payments are measured with reference to the fair value of the Company's stock, recognized as an expense in profit or loss, and the same amount is recognized as an increase in equity.

Stock options are estimated at fair value on the grant date and recognized as an expense over the vesting period, taking into account the number of stock options that are expected to eventually vest, and the same amount is recognized as an increase in equity. The fair value of granted options is calculated by taking the terms and conditions of the options into account. If it is determined that the number of stock options that will be vested will differ from the prior estimate due to subsequent information, the estimate of the number of stock options that will be vested is revised as necessary.

(17) Revenue recognition

The Group recognizes revenue based on the following five-step model.

Step 1: Identify the contract with a customer
Step 2: Identify the performance obligations in the contract
Step 3: Determine the transaction price
Step 4: Allocate the transaction price to the performance obligations in the contract
Step 5: Recognize revenue when the entity satisfies a performance obligation

The Group engages in research, development, design, manufacturing, sales and services related to various kinds of semiconductors as a manufacturer specializing in semiconductors. Revenue is mainly recognized when the goods are delivered as the ownership of these goods has been transferred to the customer and the performance obligations are identified at the time of delivery.

Also, revenue is measured at the amount of the consideration received after deducting discounts, rebates and returns.

Sales to specific distributors may be subject to the following various sales promotion programs.

Ship and debit is a program designed to assist specific distributors on their sales to end customers through pricing adjustments. Under this program, the selling prices will be adjusted when the specific distributors sell the products to the end customers. At the time we record sales to the specific distributors, we accrue for refund liabilities and deduct the same amounts from revenue based on the estimate of the variable consideration resulting from the possible application of the ship and debit program upon the future sales by the distributors. In addition, the related balance of accounts receivable-trade is transferred to long-term accounts receivable in order to reduce specific distributors' financial burden caused by a time lag, and will be reversed in the future based on the contract.

Stock rotation is a program whereby on a semiannual basis, specific distributors are allowed to return, for credit, inventories equal to a certain percentage of their purchases for the previous six months. We accrue for refund liabilities related to the stock rotation program on a quarterly basis and deduct the same amount from revenue.

(18) Finance income and Finance costs

Finance income consists of dividend income, interest income, foreign exchange gain, gains on sales of financial assets, gains on hedging financial instruments that are recognized in profit or loss, and the transfer of amounts previously recognized in other comprehensive income. Interest income is recognized at the time of occurrence using the effective interest method. Dividend income is usually recognized on the date when the Group’s right to receive payment is established.

Finance costs consist of interest expenses for corporate bonds, borrowings and interest expenses for lease liabilities, foreign exchange loss, losses on sales of financial assets, losses from hedging financial instruments that are recognized in profit or loss, and the transfer of amounts previously recognized in other comprehensive income. Acquisitions or construction of qualifying assets, or borrowing costs not directly attributable to the production, are recognized at the time of occurrence using the effective interest method. Lease payments are allocated to finance costs and the repayment portion of the liability balance, and finance costs are allocated over the lease term so as to produce a constant periodic rate of interest on the remaining balance of the liability.

(19) Income taxes

Current taxes and deferred taxes are presented as income tax expense in the consolidated statement of profit or loss, except for those related to business combinations and items that are recognized in other comprehensive income or that are directly recognized in equity.

Current taxes and deferred taxes related to items that are recognized in other comprehensive income are recognized in other comprehensive income.

A. Current taxes

Current taxes are measured at the amount paid to tax authorities or the amount expected to be refunded from tax authorities. The tax rates and the tax law used for the calculation of the tax amount are those established or substantively established by the closing date.

B. Deferred taxes

Deferred taxes are calculated based on temporary differences between the tax base amount and the carrying amount for accounting purposes of assets and liabilities at the end of the fiscal year. Deferred tax assets are recognized for deductible temporary differences, unused tax credits and unused tax losses are expected to arise to the extent to which it is probable that taxable profits will be available against which they can be utilized, and deferred tax liabilities are recognized for taxable temporary differences, in principle.

Neither a deferred tax asset nor a deferred tax liability is recognized for the following temporary differences:

- Temporary difference arising from the initial recognition of goodwill
- Temporary difference arising from the initial recognition of an asset and a liability arising from a transaction (excluding business combination transactions) that does not have an impact on accounting profits and taxable profits
- A case where the timing for eliminating a taxable temporary difference for an investment in a subsidiary or an associate and an interest in the arrangement of joint control can be controlled and where it is probable that the difference will not be eliminated in the foreseeable future
- A case where it is improbable that a deductible temporary difference for an investment in a subsidiary or an associate and an interest in the arrangement of joint control will be eliminated in the foreseeable future, or a case where it is improbable that a taxable profit that will be available for the temporary difference will be earned

Deferred tax assets and liabilities are measured at a tax rate (and based on tax law) that is expected to be applied in the period when assets are realized or liabilities are settled based on the statutory tax rate (and based on tax law) that is established or substantively established by the closing date.

Deferred tax assets and deferred tax liabilities are offset if the Group has the legally enforceable right to offset current tax assets and current tax liabilities, and if any of the following cases applies:

- Income tax expense is imposed on the same taxable entity by the same tax authority
- Although income tax expense is imposed on different taxable entities, these taxable entities intend to settle current tax assets and current tax liabilities on a net basis or intend to settle current tax liabilities at the same time as realizing current tax assets.

The carrying amount of deferred tax assets is reviewed at the end of each fiscal year. If it becomes improbable that taxable profits sufficient to realize part or all of the benefits of deferred tax assets will be earned, the carrying amount of deferred tax assets is reduced to that extent. In addition, the amount of the write-down is reversed to the extent to which it becomes probable that sufficient taxable profits will be earned.

The Group recognizes tax assets and liabilities at a reasonably estimated amount where there is an uncertain tax position.

(20) Earnings per share

Basic earnings per share are calculated by dividing profit attributable to owners (ordinary shareholders) of the parent by the weighted average number of ordinary shares outstanding, net of treasury shares, during each fiscal year.

Diluted basic earnings per share are calculated, adjusted for the effects of all dilutive potential ordinary shares.

(21) Non-current assets held for sale and discontinued operations

A. Non-current assets held for sale

For assets or asset groups that are not in continuing use and for which recovery through sale is expected, that are highly likely to be sold within one year, and that the execution of sales plan is confirmed by management and can be sold in their current condition, assets held for sale and liabilities directly related to assets held for sale are classified into disposal groups separately from other assets and liabilities and recorded in the consolidated statement of financial position.

Non-current assets classified as assets held for sale are measured at the lower of the carrying amount and the fair value after deducting the costs for sale. Assets classified as assets held for sale are not depreciated or amortized.

B. Discontinued operations

A component of an entity that has either been disposed of or is classified as held for sale is recognized as a discontinued operation if any of the following applies:

- A separate major line of business or geographical area of operations;
- Part of a single coordinated plan to dispose of a separate major line of business or geographical area of operations; or
- A subsidiary acquired exclusively with a view to resale.

If an operation is classified as a discontinued operation, the consolidated statement of profit or loss and the consolidated statement of comprehensive income for a comparative period are restated on the assumption that the operation was discontinued on the commencement date of the comparative period.

4. Significant Accounting Estimates and Judgments

In preparing the consolidated financial statements, management of the Group makes judgements, accounting estimates and assumptions that could have an impact on the application of accounting policies and the reporting amounts of assets, liabilities, revenue and expenses. These estimates and assumptions are based on the best judgment of management, taking into account various factors that are deemed reasonable on the closing date in light of past experience and available information. However, figures based on these estimates and assumptions may differ from the actual results due to their nature.

Estimates and underlying assumptions are reviewed continuously. The results of the review of these estimates are reflected in the period when the estimates are revised and for the future periods.

The Group considers the impact of the spread of COVID-19 when making estimates and assumptions (such as judgments regarding the potential impairment of goodwill and collectability of deferred tax assets), to a reasonable extent based on available information.

These estimates and assumptions may be affected depending on the future events of the spread of COVID-19.

Estimates and assumptions that have a significant impact on the amounts recognized in the consolidated financial statements are as follows:

(1) Impairment of non-financial assets

The Group performs an impairment test for non-financial assets (excluding inventories, deferred tax assets and retirement benefit asset) if there is any indication that the recoverable amount will be less than the carrying amount.

However, for goodwill or intangible assets with indefinite useful life or that are not yet available for use, an impairment test is performed at a certain time each fiscal year and when any signs of impairment exist.

The impairment test is performed by comparing the carrying amount and the recoverable amount of the assets, and if the recoverable amount falls below the carrying amount, an impairment loss is recorded. The recoverable amount is calculated mainly using the discounted cash flow model, where certain assumptions, including, but not limited to, the useful life of the asset, future cash flows, sales revenue, gross margin, discount rate, and long-term growth rate, are made. These assumptions are determined based on the best estimates and judgments of management but could be influenced by fluctuations in uncertain future economic conditions. If a revision becomes necessary, it could have a significant impact on the amounts that will be recognized in the consolidated financial statements of subsequent periods.

The calculation method of the recoverable amount is stated in “Note 15. Impairment of Non-financial Assets.”

(2) Post-employment benefits

The Group has a variety of post-employment benefit plans, including a defined benefit plan.

The present value of the defined benefit obligation of each plan and related service costs are calculated based on actuarial assumptions. For the actuarial assumptions, estimates and judgments on a range of variables such as the discount rate are required.

The actuarial assumptions are determined based on the best estimates and judgments of management but could be affected by fluctuations in uncertain future economic conditions. If a revision becomes necessary, it could have a significant impact on the amounts that will be recognized in the consolidated financial statements of subsequent periods.

These actuarial assumptions and related sensitivities are stated in “Note 22. Employee Benefits.”

(3) Provisions

The Group records multiple provisions in the consolidated statement of financial position, including the provision for product warranties and asset retirement obligations, among others.

These provisions are recorded based on the best estimate of expenditure required for the settlement of the obligations, considering risks and uncertainties related to the obligations on the closing date.

The amount of expenditure required for the settlement of the obligations is calculated by comprehensively considering results that could arise in the future, but it could be affected by the occurrence of unforeseeable events and changes in the situation. If the actual amount of expenditure differs from the estimate, it could have a significant impact on amounts recognized in the consolidated financial statements of subsequent periods.

The nature and amounts of provisions are stated in “Note 21. Provisions.”

(4) Recoverability of deferred tax assets

When deferred tax assets are recognized, the time and amount of taxable profits that will be earned in the future based on a business plan are estimated and calculated based on judgment of the possibility that taxable profits will arise.

Because the timing and amount of taxable profits are affected by the future business performance of the Group, if the actual timing and amount differ from the estimate, it could have a significant impact on the amounts recognized in the consolidated financial statements of subsequent periods.

Details and amounts of deferred tax assets are stated in “Note 17. Income Tax.”

(5) Inventories

Inventories are measured at cost, but if the net realizable value at the end of the fiscal year falls below the acquisition cost, inventories are measured at the net realizable value, and the difference from the acquisition cost is recognized in the cost of sales, in principle. For slow moving inventory that is outside of the operating cycle process, the net realizable value is calculated reflecting the future demand and market trends. If the net realizable value declines significantly due to the greater-than-expected deterioration of the market environment, a loss could arise.

(6) Measurement method of the fair value of financial instruments

When the Group evaluates the fair value of certain financial instruments, the Group uses valuation techniques that use inputs that are not observable in the market. These unobservable inputs could be affected by fluctuations in uncertain future economic conditions, and if a revision becomes necessary, it could have a significant impact on the consolidated financial statements in subsequent periods.

The details and amounts of the fair value of financial instruments are stated in “Note 3. Significant Accounting Policies, (4) Financial instruments” and “Note 33. Financial Instruments.”

(7) Income taxes

The Group recognizes tax assets and liabilities at a reasonably estimated amount based on the interpretation of tax laws where there is an uncertain tax position. Deferred taxes of the Group include liabilities related to an uncertain tax position. Tax effects of assets and liabilities explained above are calculated using the expected value method. Estimates are based on the best estimate at the moment. However, differences from the estimates could have a significant impact on the consolidated financial statements in subsequent periods depending on the actual results. For details, please refer to “Note 17. Income Taxes.”

5. Standards and Interpretations Not Yet Adopted

Of the new standards and interpretations that were newly issued or revised as of the date of the approval of the consolidated financial statements, the major standards and interpretations that the Group has not yet adopted as of December 31, 2022 are as follows:

IFRS 17 “Insurance Contract”

IFRS 17 “Insurance Contract” was issued as replacement for IFRS4 “Insurance Contracts.” The Group will apply the standard from January 1, 2023. The application of the standard is not expected to have a significant impact on the consolidated financial statements.

6. Business Segments

(1) Overview of reportable segments

The Group's reportable segments are components of the Group for which separate financial information is available that is evaluated regularly by the Board of Directors to determine the allocation of management resources and assess performance.

The Group mainly consists of "Automotive Business" and "Industrial/Infrastructure/IoT Business" and those are the Group's reportable segments. The Automotive Business includes the product categories "Automotive control," comprising semiconductor devices for controlling automobile engines and bodies, and "Automotive information," comprising of semiconductor devices used in sensing systems for detecting environments inside and outside the vehicle as well as automotive information devices such as IVI (In-Vehicle Infotainment) and instrument panels used to give various information to the driver of the vehicle. The Group mainly supplies microcontrollers (MCUs), SoCs (System-on-Chip), analog semiconductor devices and power semiconductor devices in each of these categories. The Industrial/Infrastructure/IoT Business includes the product categories "Industrial," "Infrastructure" and "IoT" which support the smart society. The Group mainly supplies MCUs and SoCs in each of these categories. Additionally, commissioned development and manufacturing from the Group's design and manufacturing subsidiaries are categorized as "Other."

(2) Information on reportable segments

The accounting treatment for the reportable segments is same as described in "Note 3. Significant Accounting Policies." The Group discloses revenue from external customers, segment gross profit, and segment operating profit (which is the segment profit).

Segment gross profit and segment operating profit are internal key performance indicators which are used by management when making decisions and are calculated by excluding the following items from IFRS revenue, gross profit and operating profit (Adjustments 2): amortization of certain tangible and intangible assets related to business combinations; certain share-based payment expenses; and other non-recurring items. Other non-recurring items include costs related to acquisitions and gains and losses the Group believes to be appropriate for deduction. However, certain other non-recurring items the Group believes to be covered by each reportable segment are included in segment gross profit and segment operating profit of each reportable segment (Adjustments 1). The Group's Executive Officers assess the performance after eliminating intragroup transactions, and therefore, there are no transfers between reportable segments included within the segment results.

Information on reportable segments is as follows.

The year ended December 31, 2021 (In millions of yen)

	Reportable Segments		Other	Adjustments 1	Total	Adjustments 2	Consolidation basis
	Automotive	Industrial/ Infrastructure/ IoT					
Revenue from external customers	462,309	515,547	16,562	—	994,418	(510)	993,908
Segment gross profit	214,573	312,301	1,992	—	528,866	(32,738)	496,128
Segment profit	122,443	167,071	1,992	5,075	296,581	(122,754)	173,827
Finance income							4,140
Finance costs							(35,249)
Profit before tax							142,718
(Other items) Depreciation and amortization	43,468	35,316	—	—	78,784	67,263	146,047

The year ended December 31, 2022 (In millions of yen)

	Reportable Segments		Other	Adjustments 1	Total	Adjustments 2	Consolidation basis
	Automotive	Industrial/ Infrastructure/ IoT					
Revenue from external customers	645,040	845,881	11,778	—	1,502,699	(1,846)	1,500,853
Segment gross profit	324,423	535,345	3,394	—	863,162	(9,173)	853,989
Segment profit	219,216	331,772	3,394	5,004	559,386	(135,216)	424,170
Finance income							1,409
Finance costs							(63,280)
Profit before tax							362,299
(Other items) Depreciation and amortization	42,042	37,790	—	—	79,832	106,200	186,032

(3) Information on products and services

Information on products and services is the same with information on reportable segments and therefore, omitted from this section.

(4) Information on regions and countries

The components of revenue and non-current assets from external customers by region and country are as follows.

a. Revenue from external customers

(In millions of yen)

	The year ended December 31, 2021	The year ended December 31, 2022
Japan	314,528	376,795
China	231,059	424,150
Asia (Excluding Japan and China)	213,313	319,311
Europe	147,889	236,683
North America	83,584	137,815
Others	3,535	6,099
Total	993,908	1,500,853

(Note) Revenues are categorized into the country or region based on the location of the customers.

b. Non-current assets

Non-current assets include property, plant and equipment, goodwill and intangible assets.

(In millions of yen)

	The year ended December 31, 2021	The year ended December 31, 2022
Japan	1,422,162	1,587,405
Malaysia	242,557	229,101
Asia (Excluding Japan and Malaysia)	22,301	37,045
Europe	46,656	41,022
North America	88,719	66,362
Others	—	2
Total	1,822,395	1,960,937

(5) Major customers

Revenue from a single external customer accounting for 10% or more of revenue is as follows.

(In millions of yen)

	Name of related reportable segments	The year ended December 31, 2021	The year ended December 31, 2022
Ryosan Company, Limited	Automotive, Industrial/ Infrastructure/IoT	141,325	—
WT Microelectoronics Co., Ltd	Automotive, Industrial/ Infrastructure/IoT	127,845	—

(Note) For the year ended December 31, 2022, there were no transactions with a single external customer accounting for 10% or more of revenue and therefore, the amount of revenue is omitted from the above table.

7. Business Combinations

Business combinations implemented during the year ended December 31, 2021 and the year ended December 31, 2022 are as follows. Business combinations which are not material individually or collectively are omitted.

(The year ended December 31, 2021)

(Dialog Semiconductor Plc)

a. Overview of business combination

The Company made an acquisition of the entire issued and to be issued share capital of Dialog Semiconductor Plc (hereinafter "Dialog") on August 31, 2021. Following the completion of the acquisition, Dialog has become a wholly-owned subsidiary of the Company (hereinafter "the Dialog Acquisition").

1) Name and overview of the acquiree

Name of the acquiree: Dialog Semiconductor Plc

Business overview: Development, manufacturing and sales of analog ICs such as mixed-signal devices.

2) Date of the acquisition

August 31, 2021. (LONDON, United Kingdom: August 30, 2021)

3) Purpose of the acquisition

Dialog is an innovative provider of highly-integrated and power-efficient mixed-signal ICs for a broad array of customers within IoT, consumer electronics and high-growth segments of automotive and industrial end-markets. Centered around its low-power and mixed-signal expertise, Dialog brings a wide range of product offerings including battery and power management, power conversion, configurable mixed-signal (CMIC), LED drivers, custom mixed-signal ICs (ASICs) and automotive power management ICs (PMICs), wireless charging technology, and more. Dialog also offers broad and differentiated Bluetooth® Low Energy, Wi-Fi and audio system-on-chips (SoCs) that deliver advanced connectivity for a wide range of applications; from smart home/building automation, wearables, to connected medical. All these systems complement and expand Renesas' leadership portfolio in delivering comprehensive solutions to improve performance and efficiency in high-computing electronic systems.

The Dialog acquisition demonstrates Renesas' continued and unwavering commitment to further advance its solution offering. The complementary nature of the companies' technological assets and the scale of the combined portfolios will enable Renesas to build more robust and comprehensive solutions to serve high-growth segments of the IoT and automotive markets. Renesas believes there is a compelling strategic rationale for the Dialog acquisition because it:

(i) Scales Renesas' IoT sector capabilities with Dialog's low-power technologies

Dialog has a differentiated portfolio of low-power mixed-signal products, decades of experience in developing custom and configurable solutions for the world's largest customers and expertise in low-power connectivity that are highly complementary to Renesas. The Dialog acquisition of these low-power technologies enhances Renesas' product portfolio and expands horizons in addressing high-growth markets in the IoT field.

(ii) Unlocks further differentiation to Renesas system solution with connectivity

Bringing together Renesas and Dialog will extend the Group's reach to a broader customer base and open up additional growth potential in the key growth segments: industrial infrastructure, IoT and automotive. Dialog's BLE, Wi-Fi and audio SoCs are highly complementary to Renesas' microcontroller (MCU)-based solutions. Combining Dialog's innovative low-power Wi-Fi and Bluetooth® SoC and expertise with Renesas' technologies will enable Renesas to further differentiate its system solution offering and extend its footprint in high-growth segments, including contactless IoT applications for smart home/building automation and healthcare. Renesas' automotive solutions will also be enriched with connectivity for a wide range of security and safety applications.

4) Acquisition Method

Renesas implemented a scheme of arrangement pursuant to UK law. The scheme of arrangement is a method of acquisition whereby with the agreement of Dialog, the Dialog acquisition can be executed by obtaining approvals from Dialog shareholders and the Court.

b. Consideration for the acquisition and its breakdown

(In millions of yen)

Consideration		Amount
Cash		623,892
Restricted stock units		7,183
Total	A	631,075

Expenses related to the acquisition were 4,589 million yen, which were recorded in "Selling, general and administrative expenses" for the year ended December 31, 2021. Details of the consideration for acquisition in restricted stock units are described in "Note 32. Share-based Payments."

c. Fair value of assets acquired, liabilities assumed and goodwill

(In millions of yen)

		Date of acquisition (August 31, 2021)
Current assets		
Cash and cash equivalents		40,450
Trade and other receivables (Note 2)		39,808
Inventories		34,748
Other		8,842
Total current assets		123,848
Non-current assets		
Property, plant and equipment		10,771
Intangible assets		40,303
Other		2,376
Total non-current assets		53,450
Total assets		177,298
Current liabilities		
Trade and other payables		14,825
Other		36,848
Total current liabilities		51,673
Non-current liabilities		
Other non-current financial liabilities		2,881
Deferred tax liabilities		4,445
Other		3,238
Total non-current liabilities		10,564
Total liabilities		62,237
Net assets	B	115,061
Basis adjustment (Note 3)	C	3,604
Goodwill (Note 4)	A-B+C	519,618

(Note 1) As of December 31, 2021, the acquisition was accounted for using provisional amounts determined based on reasonable information currently available, and since the recognition and fair value measurement of the identifiable assets acquired and liabilities assumed at the acquisition date have not been finalized, the purchase price allocation is still preliminary. Currently the valuation of property, plant and equipment and additional recognition of intangible assets, among other assets and liabilities, have not been completed, except for certain inventories for which the valuation was able to be completed. As a result, goodwill was provisionally recognized as the total amount of the excess of the consideration transferred over the net amount of the assets acquired and liabilities assumed. The identifiable intangible assets are tentatively recorded at the book value as carried by Dialog.

(Note 2) The total contract amount is the same as the fair value, and there are no receivables that are expected to be unrecoverable.

(Note 3) The Company has entered into currency options and forward exchange contracts to hedge the foreign exchange risk against EUR-denominated acquisition consideration payments and adopted hedge accounting. The hedging instruments were settled in cash at the fair value on the acquisition date. The basis adjustment is the amount of change in the fair value of the hedging instruments recorded in other comprehensive income on the acquisition date and were added to the amount of goodwill.

(Note 4) Goodwill reflects future excess earning power expected from synergies between the Company and Dialog. No amount of goodwill is expected to be deductible for tax purposes.

d. Payments for acquisition of subsidiaries

(In millions of yen)

Item	Amount
Consideration for acquisition in cash	623,892
Cash and cash equivalents held by the acquiree at the time of obtaining control	(40,450)
Amount of cash paid for the acquisition of subsidiaries	583,442
Basis adjustment	3,604
Amount of cash paid for the acquisition of subsidiaries (net amount)	587,046

e. Impact on revenue and profit as though the date of the acquisition had been as of the beginning of the fiscal year (unaudited information)

Assuming that the date of the acquisition of Dialog was at the beginning of the fiscal year, revenue and profit for the year ended December 31, 2021 would be 1,093,258 million yen and 156,593 million yen, respectively. As of December 31, 2021, the recognition and fair value measurement of the identifiable assets acquired and liabilities assumed at the acquisition date have not been finalized. As a result, the adjustments such as amortization of intangible assets are not reflected in the aforementioned revenue and profit figures. The pro forma information is not necessarily indicative of events that may happen in the future.

In addition, in order to prepare this information, Dialog's past financial information has been adjusted for significant differences to comply with the Company's accounting policies.

f. Revenue and profit / loss of the acquired company

From the acquisition date to December 31, 2021, the Company recorded the revenue of Dialog of 66,757 million yen and profit of 4,545 million yen in the consolidated statement of profit or loss and consolidated statement of comprehensive income.

(Celeno Communications Inc.)

a. Overview of business combination

On December 20, 2021, the Company made an acquisition of the entire issued share capital of Celeno Communications Inc. (hereinafter “Celeno”), a semiconductor company in the United States of America which mainly operates its business in Israel. Following the completion of the acquisition, Celeno has become a wholly-owned subsidiary of the Company (hereinafter “the Celeno Acquisition”).

1) Name and overview of the acquiree

Name of the acquiree: Celeno Communications Inc.
Business overview: Development and sale of connectivity devices such as Wi-Fi 5, Wi-Fi 6 and IoT chipsets.

2) Date of the acquisition

December 20, 2021.

3) Purpose of the acquisition

Headquartered in Israel, Celeno offers a wide range of wireless communication solutions, including advanced Wi-Fi chipsets and software solutions, for high-performance home networks, smart buildings, enterprise and industrial markets. Its industry’s most compact chipset offerings for Wi-Fi 6 and 6E deliver exceptional Wi-Fi network performance and increased security with low latency and low power consumption. Celeno’s breakthrough Wi-Fi Doppler Imaging technology, a Wi-Fi based, high-resolution imaging technology is ideal for home elderly care and assisted living, home security, safe driving and digital and connected factories. It depicts, tracks and analyzes the motion, behavior and location of people and objects using standard Wi-Fi, eliminating the need for multiple cameras or sensors in home environments and commercial buildings. As the world’s No.1 embedded processor supplier, Renesas offers a breadth of low-power MCU/MPU/SoC processors, wireless ICs, sensors and power management technologies. Celeno’s field-proven Wi-Fi and software capabilities are highly complementary to Renesas. The combination creates a comprehensive, end-to-end embedded solutions for addressing the fast-growing markets for low-power connectivity in IoT, infrastructure, industrial and automotive applications.

In addition to expanding the solution offering, the Celeno Acquisition also increases Renesas’ engineering and design scale with Celeno’s design center in Israel and by welcoming R&D staff based in Israel, Ukraine, India, China, Taiwan and more. This further strengthens Renesas’ global engineering and software development talent base, allowing Renesas to bring more seamless and expanded services to customers around the globe.

4) Acquisition Method
For the purpose of the Celeno Acquisition, Renesas established a wholly-owned subsidiary (hereinafter “Acquisition Subsidiary”) in Delaware, the United States of America which merged with Celeno in a reverse triangular merger. Celeno was the surviving company following the merger. The Company paid cash to Celeno's shareholders as consideration for the merger. The shares of the Acquisition Subsidiary owned by Renesas were converted into outstanding shares in Celeno, making Celeno a wholly-owned subsidiary of Renesas.

b. Consideration for the acquisition and its breakdown

(In millions of yen)

Consideration		Amount
Cash		28,037
Contingent consideration		4,681
Total	A	32,718

Expenses related to the acquisition were 508 million yen, which were recorded in “Selling, general and administrative expenses” for the year ended December 31, 2021.

c. Fair value of assets acquired, liabilities assumed and goodwill

(In millions of yen)

		Date of acquisition (December 20, 2021)
Current assets		
Cash and cash equivalents		267
Trade and other receivables (Note 2)		375
Inventories		3,024
Other		396
Total current assets		4,062
Non-current assets		
Property, plant and equipment		103
Intangible assets		844
Other		2
Total non-current assets		949
Total assets		5,011
Current liabilities		
Trade and other payables		2,715
Bonds and borrowings		2,185
Other		1,586
Total current liabilities		6,486
Non-current liabilities		
Total non-current liabilities		—
Total liabilities		6,486
Net assets	B	(1,475)
Goodwill (Note 3)	A-B	34,193

(Note 1) As of December 31 the acquisition was accounted for using provisional amounts determined based on reasonable information currently available, and since the recognition and fair value measurement of the identifiable assets acquired and liabilities assumed at the acquisition date have not been finalized, the purchase price allocation is still preliminary. Currently the valuation of property, plant and equipment and additional recognition of intangible assets, among other assets and liabilities, have not been completed, except for certain inventories for which the valuation was able to be completed. As a result, goodwill was provisionally recognized as the total amount of the excess of the consideration transferred over the net amount of the assets acquired and liabilities assumed. The identifiable intangible assets are tentatively recorded at the book value as carried by Celeno.

(Note 2) The total contract amount is the same as the fair value, and there are no receivables that are expected to be unrecoverable.

(Note 3) Goodwill reflects future excess earning power expected from synergies between the Company and Celeno. No amount of goodwill is expected to be deductible for tax purposes.

d. Payments for acquisition of subsidiaries

(In millions of yen)

Item	Amount
Consideration for acquisition in cash	28,037
Cash and cash equivalents held by the acquiree at the time of obtaining control	(267)
Amount of cash paid for the acquisition of subsidiaries (net amount)	27,770

The acquisition consideration may change due to price adjustments in response to changes in working capital.

e. Impact on revenue and profit as though the date of the acquisition had been as of the beginning of the fiscal year (unaudited information)

Assuming that the date of the acquisition of Celeno was at the beginning of the fiscal year, the pro forma information is not stated since the impact on the consolidated revenue and profit for the year ended December 31, 2021 would not be material.

f. Revenue and profit / loss of the acquired company

For the year ended December 31, 2021, the revenue and profit of Celeno from the acquisition date to the year of December 31, 2021 had no significant impact in the consolidated financial statements.

g. Contingent consideration

Contingent consideration includes USD 45 million which will be paid when certain conditions related to Celeno's future product development and mass production progress are met.

The fair value of the contingent consideration is calculated as the present value of the amount that may be paid to Celeno, with consideration of the probability of occurrence.

The level of the fair value hierarchy for the contingent consideration is Level 3. Since the fluctuation after the acquisition date of the contingent consideration classified in Level 3 is negligible, the reconciliation table is not presented. Of the amount of change in fair value related to contingent consideration, the portion based on fluctuations in the time value of money is recorded in "Financial expenses," and the portion based on fluctuations other than the time value of money is recorded in "Other income" or "Other expenses."

(The year ended December 31, 2022)

(Dialog Semiconductor Plc)

As of December 31, 2021, the acquisition was accounted for using provisional amounts determined based on reasonable information available at the time of preparing consolidated financial statements. Since the recognition and fair value measurement of the identifiable assets acquired and liabilities assumed at the acquisition date had not been finalized, the purchase price allocation was provisionally accounted for. For the year ended December 31, 2022, the Group has completed the purchase price allocation and revised the goodwill amount as follows:

Fair value of assets acquired and liabilities assumed on the acquisition date (August 31, 2021)

(In millions of yen)

Adjusted items	Adjustments of goodwill
Goodwill (before adjustment) (Note 1)	519,618
Inventories	316
Property, plant and equipment	(2,531)
Intangible assets (Note 2)	(146,963)
Other (Non-current assets)	(125)
Other (Current liabilities)	(1,458)
Other financial liabilities	345
Deferred tax liabilities	29,731
Other (Non-current liabilities)	(763)
Total adjustments	(121,448)
Goodwill (after adjustment) (Note 1)	398,170

(Note 1) Goodwill reflects future excess earning power expected from synergies between the Company and Dialog. No amount of goodwill is expected to be deductible for tax purposes.

(Note 2) The amount allocated to intangible assets is mainly developed technology, and the fair value of such intangible assets is measured using the excess earnings method based on assumptions such as future business plans and discount rates.

The consolidated statement of financial position as of December 31, 2021 has been revised retrospectively upon the completion of the purchase price allocation. After the revision, goodwill has decreased by 127,106 million yen and retained earnings has decreased by 7,725 million yen. Property, plant and equipment, intangible assets, and deferred tax liabilities have increased by 2,436 million yen, 144,165 million yen, and 29,150 million yen, respectively.

In addition, operating profit has decreased by 9,774 million yen and profit has decreased by 7,725 million yen in the consolidated statement of profit or loss for year ended December 31, 2021. Total comprehensive income has decreased by 8,062 million yen in the consolidated statement of comprehensive income for the year ended December 31, 2021.

(Celeno Communications Inc.)

As of December 31, 2021, the acquisition was accounted for using provisional amounts determined based on reasonable information available at the time of preparing consolidated financial statements. Since the recognition and fair value measurement of the identifiable assets acquired and liabilities assumed at the acquisition date had not been finalized, the purchase price allocation was provisionally accounted for. For the year ended December 31, 2022, the Group has completed the purchase price allocation and revised the goodwill amount as follows. Adjustment in consideration for the acquisition is reflected for the year ended December 31, 2022.

Fair value of assets acquired and liabilities assumed on the acquisition date (December 20, 2021)

(In millions of yen)

Adjusted items	Adjustments of goodwill
Goodwill (before adjustment) (Note)	34,193
Inventories	166
Intangible assets	(18,644)
Deferred tax liabilities	409
Adjustment in consideration for the acquisition (Cash)	26
Total adjustments	(18,043)
Goodwill (after adjustment) (Note)	16,150

(Note) Goodwill reflects future excess earning power expected from synergies between the Company and Celeno. No amount of goodwill is expected to be deductible for tax purposes.

The consolidated statement of financial position as of December 31, 2021 has been revised retrospectively upon the completion of the purchase price allocation. After the revision, goodwill has decreased by 18,042 million yen and intangible assets has increased by 18,644 million yen.

In addition, the impact of the revision on the consolidated statement of profit or loss and consolidated statement of comprehensive income for the year ended December 31, 2021 is immaterial.

Contingent consideration includes $45 million which will be paid based on the contract when several certain conditions (milestones) related to Celeno's future product development and mass production progress are met.

The fair value of the contingent consideration is calculated as the present value of the amount that may be paid to Celeno with consideration of the probability of occurrence.

The level of the fair value hierarchy for the contingent consideration is Level 3. The reconciliation table of the change for the contingent consideration classified in Level 3 from the beginning balance to the ending balance is as described below.

(In millions of yen)

	The year ended December 31, 2021	The year ended December 31, 2022
Beginning balance	—	4,681
Settlement	—	(2,205)
Changes in fair value	—	(2,201)
Exchange differences	—	990
Ending balance	—	1,265

Of the amount of change in fair value related to contingent consideration, the fluctuated amount due to the time value of money is recorded in "Finance costs," and the fluctuated amount due to factors other than the time value of money is recorded in "Other income" and "Other expenses." For the year ended December 31, 2022, other income of 2,464 million yen and finance costs of 263 million yen were recorded for the change of fair value.

(Steradian Semiconductors Private Limited)

a. Overview of business combination

On October 17, 2022, the Company completed the acquisition of Steradian Semiconductors Private Limited (hereinafter "Steradian"), a fabless semiconductor company providing 4D imaging radar solutions, headquartered in Bengaluru, India. Following the completion of the acquisition, Steradian has become a wholly-owned subsidiary of the Company.

1) Name and overview of the acquiree

Name of the acquiree: Steradian Semiconductors Private Limited.

Business overview: 4D imaging radar solutions.

2) Date of the acquisition

October 17, 2022.

3) Purpose of the acquisition

Headquartered in Bengaluru, India, Steradian is a start-up founded in 2016 and provides radar solutions that enable highly accurate object recognition and power efficiency in a small chip. Radar is a vital technology for ADAS (Advanced Driver Assistance Systems), which uses a complex combination of various sensors in vehicles to detect objects. Renesas plans to capitalize on the high growth opportunities the automotive radar market offers, by expanding its automotive product portfolio with Steradian's radar technology and extending its reach in the radar market.

The resulting automotive radar solutions will combine the new automotive radar products, Renesas' ADAS SoCs (System-on-Chips) for processing radar signals, power management ICs (PMICs), and timing products together with software for object recognition. Together, these solutions will simplify the design of automotive radar systems and contribute to faster product development.

The combination of Steradian's leading-edge radar technology and engineering talent will boost Renesas' sensing solution offerings in a wide array of applications including industrial systems. Renesas will bring together the best possible device combination and software to meet the growing demand for sensor technology solutions and continue to make engineers' design work easier.

4) Acquisition Method

Acquisition of shares for cash consideration.

b. Consideration for the acquisition and its breakdown

(In millions of yen)

Consideration		Amount
Cash		4,971
Fair value of equity interest held just prior to the acquisition date		843
Contingent consideration		1,207
Total	A	7,021

Expenses related to the acquisition were 345 million yen, which were recorded in "Selling, general and administrative expenses" for the year ended December 31, 2022.

c. Fair value of assets acquired, liabilities assumed and goodwill

		(In millions of yen) Date of acquisition (October 17, 2022)
Current assets		
Cash and cash equivalents		101
Trade and other receivables (Note 2)		2
Income taxes receivable		19
Other		51
Total current assets		173
Non-current assets		
Property, plant and equipment		19
Intangible assets		5
Deferred tax assets		2
Total non-current assets		26
Total assets		199
Current liabilities		
Trade and other payables		16
Income taxes payable		13
Other		739
Total current liabilities		768
Non-current liabilities		
Retirement benefit liability		5
Other		14
Total non-current liabilities		19
Total liabilities		787
Net assets	B	(588)
Goodwill (Note 3)	A-B	7,609

(Note 1) As of December 31, 2022, the acquisition was accounted for using provisional amounts determined based on reasonable information currently available, and since the recognition and fair value measurement of the identifiable assets acquired and liabilities assumed at the acquisition date have not been finalized, the purchase price allocation is still preliminary. Currently the valuation of property, plant and equipment and additional recognition of intangible assets, among other assets and liabilities, have not been completed. As a result, goodwill was provisionally recognized as the total amount of the excess of the consideration transferred over the net amount of the assets acquired and liabilities assumed. The identifiable intangible assets are tentatively recorded at the book value as carried by Steradian.

(Note 2) The total contract amount is the same as the fair value, and there are no receivables that are expected to be unrecoverable.

(Note 3) Goodwill reflects future excess earning power expected from synergies between the Company and Steradian. No amount of goodwill is expected to be deductible for tax purposes.

d. Payments for acquisition of subsidiaries

(In millions of yen)

Item	Amount
Consideration for acquisition in cash	4,971
Cash and cash equivalents held by the acquiree at the time of obtaining control	(101)
Amount of cash paid for the acquisition of subsidiaries (net amount)	4,870

The acquisition consideration may change due to price adjustments in response to changes in working capital.

e. Impact on revenue and profit as though the date of the acquisition had been as of the beginning of the fiscal year (unaudited information)
Assuming that the date of the acquisition of Steradian was at the beginning of the fiscal year, the pro forma information is not stated since the impact on the consolidated revenue and profit for the year ended December 31, 2022 would not be material.

f. Revenue and profit / loss of the acquired company
For the year ended December 31, 2022, the revenue and profit of Steradian from the acquisition date to December 31, 2022 had no significant impact on the consolidated financial statements.

g. Contingent consideration
Contingent consideration includes $11 million which will be paid when certain conditions related to Steradian's future product development and mass production progress are met.
The fair value of the contingent consideration is calculated as the present value of the amount that may be paid to Steradian, with consideration of the probability of occurrence.
The level of the fair value hierarchy for the contingent consideration is Level 3. The reconciliation table of the change for the contingent consideration classified in Level 3 from the beginning balance to the ending balance is as described below.

(In millions of yen)

	The year ended December 31, 2021	The year ended December 31, 2022
Beginning balance	—	—
Increase due to the business combination	—	1,207
Exchange differences	—	(129)
Ending balance	—	1,078

h. Gain on step acquisitions
As a result of revaluing the equity interest (10.64%) of the acquired company held just prior to the acquisition date at fair value on the acquisition date, the Group recognized a gain on step acquisition of 447 million yen. The gain on step acquisition is recorded in "Equity instruments measured at fair value through other comprehensive income" in the consolidated statement of comprehensive income.

8. Cash and Cash Equivalents

The components of cash and cash equivalents are as described below. The balance of “Cash and cash equivalents” in the consolidated statement of financial position and the balance of “Cash and cash equivalents” in the consolidated statement of cash flows as of December 31, 2021 and December 31, 2022 are the same.

(In millions of yen)

	As of December 31, 2021	As of December 31, 2022
Cash and deposits	216,364	313,413
Short-term investments	5,560	22,655
Total	221,924	336,068

(Note) Cash and cash equivalents are classified as financial assets measured at amortized cost.

9. Trade and Other Receivables

The components of trade and other receivables are as follows.

(In millions of yen)

	As of December 31, 2021	As of December 31, 2022
Notes and trade receivables	136,810	158,242
Other receivables	3,737	4,538
Loss allowance	(69)	(157)
Total	140,478	162,623

(Note) Trade and other receivables are classified as financial assets measured at amortized cost.

10. Inventories

The components of inventories are as follows.

(In millions of yen)

	As of December 31, 2021	As of December 31, 2022
Merchandise and finished goods	38,424	53,282
Work in progress	90,016	119,727
Raw materials and supplies	9,319	14,949
Total	137,759	187,958

(Note) The amount of inventories recognized as expenses approximates “Cost of sales.” For write-downs of inventories previously recognized as an expense as a result of declining profitability, using the reversal method (figures in parentheses represent reversals) (3,916) million yen and 6,292 million yen were included in “Cost of sales” in the prior fiscal year and the current fiscal year, respectively.

11. Other Assets and Other Liabilities

The components of other current assets and other non-current assets are as follows.

(In millions of yen)

	As of December 31, 2021	As of December 31, 2022
Prepaid expenses	16,060	24,922
Consumption taxes receivable	1,766	2,376
Other	3,617	4,213
Total	21,443	31,511
Current assets	12,352	17,320
Non-current assets	9,091	14,191

The components of other current liabilities and other non-current liabilities are as follows.

(In millions of yen)

	As of December 31, 2021	As of December 31, 2022
Accrued expenses	57,203	62,994
Paid leave payables	11,280	11,444
Advances received	881	643
Other	12,022	11,919
Total	81,386	87,000
Current liabilities	75,623	81,565
Non-current liabilities	5,763	5,435

12. Property, Plant and Equipment

(1) Movement during the fiscal year

The changes in acquisition cost, accumulated depreciation and impairment losses, and the carrying amounts of property, plant and equipment are as follows.

A. Acquisition Cost

(In millions of yen)

	Buildings and structures	Machinery, equipment and vehicles	Tools, furniture and fixtures	Right-of-use assets	Land	Construction in progress	Total
Balances as of January 1, 2021	215,839	680,085	130,693	20,816	23,493	12,200	1,083,126
Acquisition	197	2,960	2,629	2,781	—	44,605	53,172
Acquisition due to business combination	1,124	4,426	3,186	4,529	—	140	13,405
Sales or disposal	(31,327)	(81,196)	(8,189)	(2,923)	(118)	(572)	(124,325)
Transfer from construction in progress	1,008	36,479	8,392	—	—	(45,879)	—
Exchange differences	3,001	15,208	2,890	1,299	297	171	22,866
Other	(62)	(476)	(528)	(169)	—	472	(763)
Balances as of December 31, 2021	189,780	657,486	139,073	26,333	23,672	11,137	1,047,481
Acquisition	438	9,311	5,029	3,097	—	45,140	63,015
Acquisition due to business combination	—	18	3	—	—	—	21
Sales or disposal	(3,594)	(74,945)	(6,956)	(5,970)	(355)	(244)	(92,064)
Transfer from construction in progress	2,974	28,001	12,064	—	1	(43,040)	—
Exchange differences	4,161	17,967	4,672	1,699	451	319	29,269
Other	(124)	(159)	(471)	(89)	9	882	48
Balances as of December 31, 2022	193,635	637,679	153,414	25,070	23,778	14,194	1,047,770

B. Accumulated depreciation and impairment losses

(In millions of yen)

	Buildings and structures	Machinery, equipment and vehicles	Tools, furniture and fixtures	Right-of-use assets	Land	Construction in progress	Total
Balances as of January 1, 2021	(158,721)	(614,193)	(112,704)	(8,233)	(1,351)	(570)	(895,772)
Depreciation	(4,990)	(38,407)	(11,254)	(4,301)	—	—	(58,952)
Impairment losses	(1)	(64)	(64)	(17)	—	—	(146)
Sales or disposal	28,804	80,878	8,137	2,477	26	570	120,892
Exchange differences	(1,287)	(12,038)	(2,297)	(444)	—	—	(16,066)
Other	90	(495)	965	168	—	—	728
Balances as of December 31, 2021	(136,105)	(584,319)	(117,217)	(10,350)	(1,325)	—	(849,316)
Depreciation	(4,955)	(34,699)	(13,335)	(5,219)	—	—	(58,208)
Impairment losses	(94)	(128)	(66)	(301)	(314)	—	(903)
Sales or disposal	2,385	74,731	6,869	5,266	26	—	89,277
Exchange differences	(1,812)	(14,152)	(3,892)	(1,070)	—	—	(20,926)
Other	6	149	350	(157)	—	—	348
Balances as of December 31, 2022	(140,575)	(558,418)	(127,291)	(11,831)	(1,613)	—	(839,728)

C. Carrying amount

(In millions of yen)

	Buildings and structures	Machinery, equipment and vehicles	Tools, furniture and fixtures	Right-of-use assets	Land	Construction in progress	Total
Balances as of January 1, 2021	57,118	65,892	17,989	12,583	22,142	11,630	187,354
Balances as of December 31, 2021	53,675	73,167	21,856	15,983	22,347	11,137	198,165
Balances as of December 31, 2022	53,060	79,261	26,123	13,239	22,165	14,194	208,042

(Note)
1. The amount of property, plant and equipment under construction is presented as construction in progress.
2. For property, plant and equipment on which a mortgage is placed as collateral for liabilities, see “Note 19. Bonds and Borrowings.”
3. For commitments to the acquisition of property, plant and equipment, see “Note 36. Commitments and Contingent Liabilities.”
4. Depreciation is included in “Cost of sales” and “Selling, general and administrative expenses” in the consolidated statement of profit or loss.
5. Impairment losses are included in “Other expenses” in the consolidated statement of profit or loss. For details on impairment losses, see “Note 15. Impairment of Non-financial Assets.” The reversal of impairment (122 million yen) recognized for right-of-use assets in the current fiscal year is included in impairment losses above. The reversal of impairment is included in “Other income” in the consolidated statement of profit or loss.
6. There are no borrowing costs included in the cost of property, plant and equipment.
7. For details on right-of-use assets, see “Note 14. Leases.”

13. Goodwill and Intangible Assets

(1) Movement during the fiscal year

The changes in acquisition cost, accumulated amortization and impairment losses, and the carrying amounts of goodwill and intangible assets are as follows.

A. Acquisition cost

(In millions of yen)

	Goodwill	Intangible assets					
		Software	Capitalized development costs	Developed technology	Customer relationships	Other	Total
Balances as of January 1, 2021	590,459	81,217	8,427	347,113	97,485	109,605	643,847
Internally developed	—	1,298	933	—	—	—	2,231
Acquisitions	—	1,632	—	—	—	6,024	7,656
Acquisition due to business combination	414,320	140	—	152,566	34,715	19,333	206,754
Reclassification	—	—	—	7,628	—	(7,628)	—
Sales or disposal	—	(4,605)	(2,230)	(51)	—	(23,027)	(29,913)
Exchange differences	84,673	527	—	43,637	10,921	3,171	58,256
Other	—	6	—	—	—	212	218
Balances as of December 31, 2021	1,089,452	80,215	7,130	550,893	143,121	107,690	889,049
Internally developed	—	1,335	751	—	—	—	2,086
Acquisitions	—	1,892	—	—	—	7,503	9,395
Acquisition due to business combination	9,410	—	—	227	—	5	232
Reclassification	—	—	—	908	—	(908)	—
Sales or disposal	—	(2,494)	(1,715)	(1,264)	—	(2,400)	(7,873)
Exchange differences	166,595	829	—	81,824	20,378	6,864	109,896
Other	—	(25)	—	—	—	(285)	(310)
Balances as of December 31, 2022	1,265,457	81,752	6,166	632,588	163,499	118,470	1,002,475

B. Accumulated amortization and impairment losses

(In millions of yen)

	Goodwill	Intangible assets					
		Software	Capitalized development costs	Developed technology	Customer relationships	Other	Total
Balances as of January 1, 2021	—	(65,218)	(4,375)	(123,436)	(23,623)	(62,431)	(279,083)
Amortization	—	(6,188)	(1,638)	(56,437)	(8,450)	(13,601)	(86,314)
Impairment losses	—	(17)	—	—	—	—	(17)
Sales or disposal	—	4,367	2,230	51	—	22,987	29,635
Exchange differences	—	(418)	—	(14,573)	(1,877)	(1,532)	(18,400)
Other	—	8	—	—	—	(100)	(92)
Balances as of December 31, 2021	—	(67,466)	(3,783)	(194,395)	(33,950)	(54,677)	(354,271)
Amortization	—	(5,266)	(1,363)	(84,092)	(14,852)	(19,308)	(124,881)
Impairment losses	—	—	—	—	—	(7,007)	(7,007)
Sales or disposal	—	2,494	1,715	1,264	—	2,081	7,554
Exchange differences	—	(705)	—	(28,978)	(3,945)	(3,087)	(36,715)
Other	—	105	1	—	—	177	283
Balances as of December 31, 2022	—	(70,838)	(3,430)	(306,201)	(52,747)	(81,821)	(515,037)

C. Carrying amount

(In millions of yen)

	Goodwill	Intangible assets					
		Software	Capitalized development costs	Developed technology	Customer relationships	Other	Total
Balances as of January 1, 2021	590,459	15,999	4,052	223,677	73,862	47,174	364,764
Balances as of December 31, 2021	1,089,452	12,749	3,347	356,498	109,171	53,013	534,778
Balances as of December 31, 2022	1,265,457	10,914	2,736	326,387	110,752	36,649	487,438

(Note) 1. For software in intangible assets, the carrying amount classified as internally generated assets was 636 million yen as of December 31, 2021 and 526 million yen as of December 31, 2022.
2. Construction in progress related to software is included in “Software” under intangible assets.
3. For other in intangible assets, the carrying amount of intangible assets acquired through software license contracts (as license fees) was 29,761 million yen as of December 31, 2021 and 21,096 million yen as of December 31, 2022. In addition, the balances are mainly amortized using the straight-line method based on the available license period (5 years or less).
4. There are no intangible assets with restrictions on ownership or intangible assets on which a mortgage is placed as collateral for liabilities.
5. For commitments related to the acquisition of intangible assets, see “Note 36. Commitments and Contingent Liabilities.”
6. Amortization of intangible assets is included in “Cost of sales” and “Selling, general and administrative expenses” in the consolidated statement of profit or loss.
7. Impairment losses are included in “Other expenses” in the consolidated statement of profit or loss. For details on impairment losses, see “Note 15. Impairment of Non-financial Assets.”

(2) Significant intangible assets

Major intangible assets are developed technology acquired in the business combination with former Intersil in February 2017, former IDT in March 2019, Dialog in August 2021 and Celeno in December 2021. The carrying amount of developed technology acquired in the business combination was 356,498 million yen as of December 31, 2021 and 326,387 million yen as of December 31, 2022 (of which the carrying amount of developed technology identified under Dialog's PPA are 141,370 million yen and 134,474 million yen, respectively), and the remaining amortization period as of December 31, 2022 is 1 to 10 years. The carrying amount of customer relationships was 109,171 million yen as of December 31, 2021 and 110,752 million yen as of December 31, 2022, and the remaining amortization period as of December 31, 2022 is 3 to 11 years.

(3) Intangible assets not yet available for use

The carrying amount of intangible assets not yet available for use is included in “Other” and was 12,767 million yen as of December 31, 2021 and 6,768 million yen as of December 31, 2022 and represents in-process research and development. In-process research and development is reclassified as “Developed technology” and starts to be amortized when the development has been completed and the related technology has been put in operational use. The amount of reclassification was 7,628 million yen for the year ended December 31, 2021 and 908 million yen for the year ended December 31, 2022.

14. Leases

(1) Leases as lessee

A. Lease expenses, income and cash flows

Lease expenses, income and cash flows are as follows.

(In millions of yen)

	The year ended December 31, 2021	The year ended December 31, 2022
Depreciation charge for right-of-use assets by class of underlying asset		
Land	92	89
Buildings	2,812	3,892
Machinery, equipment and vehicles	1,268	1,078
Tools, furniture and fixtures	129	160
Total	4,301	5,219
Interest expense on lease liabilities	243	211
Expense relating to short-term leases	2,734	3,079
Expense relating to leases of low-value assets (excluding short-term leases)	349	488
Expense relating to variable lease payments which are not reflected in the measurement of lease liabilities	—	—
Income from subleasing right-of-use assets	—	—
Total cash outflows for leases	7,926	9,678
Gain (loss) from sale and leaseback transactions	—	(66)

B. Right-of-use assets which are included in the carrying amount of property, plant and equipment

The carrying amount and the increase/decrease in carrying amount of right-of-use assets which are included in the carrying amount of property, plant and equipment are as follows.

(In millions of yen)

	Balance as of December 31, 2021	Balance as of December 31, 2022
Land	118	44
Buildings	12,768	10,606
Machinery, equipment and vehicles	2,871	2,295
Tools, furniture and fixtures	226	294
Total	15,983	13,239

(Note) The increased amount of right-of-use assets for the year ended December 31, 2022 was 3,097 million yen.

C. Nature of the leasing activities

The Group leases land, building, machinery, equipment and vehicles.

The terms of lease contracts are negotiated individually and include a wide variety of the terms of contracts.

D. Options of extension and termination

The options of extension and termination are included in many lease contracts for buildings, machinery and equipment. The lease term for office buildings is mainly from 3 to 10 years and for machinery and equipment, its term is from 3 to 5 years. Some contracts include an option to extend the lease for a period of one year or the same lease years for the current lease contract after the termination date. In addition, some contracts include an option for early termination when the lessee notifies the lessor between six months to one year before the termination date.

These options will be utilized to maximize operational flexibility from the point of asset management used in the Group’s businesses.

15. Impairment of Non-financial Assets

The Group recorded impairment losses for the assets below. Impairment losses are included in “Other expenses” in the consolidated statement of profit or loss.

The components of assets for which the impairment losses are recorded are as follows.

The year ended December 31, 2021

(In millions of yen)

	Reportable segments		Total
	Automotive	Industrial/ Infrastructure/IoT	
Property, plant and equipment	76	42	118
Intangible assets	8	9	17
Total	84	51	135

The year ended December 31, 2022

(In millions of yen)

	Reportable segments		Total
	Automotive	Industrial/ Infrastructure/IoT	
Property, plant and equipment	639	387	1,026
Intangible assets	13	6,994	7,007
Total	652	7,381	8,033

(Note) 1. Impairment losses recognized as for right-of-use assets are included in the impairment losses of property, plant and equipment. The amount included in the impairment losses of property, plant and equipment for the prior fiscal year and the current fiscal year was 17 million yen and 424 million yen, respectively.

2. Impairment losses on certain in-process research and development projects assets that are discontinued are included in the impairment losses of intangible assets. The amount included in the impairment losses of intangible assets was 6,432 million yen for the year ended December 31, 2022.

3. Impairment losses recognized for lands are included in the impairment losses of property, plant and equipment. The amount included in the impairment losses of property, plant and equipment was 314 million yen for the year ended December 31, 2022.

(1) Impairment losses

The Group assesses impairment at the grouping level of the smallest identifiable group that generates cash inflows that are largely independent, based on the categories used for business management. The Group assesses impairment by each individual asset for significant assets to be disposed of, idle assets and business assets.

For the year ended December 31, 2021

(Assets to be disposed of)

For the Automotive and Industrial/Infrastructure/IoT business, the Group performs impairment tests as independent cash-generating units for the assets that have been decided to be disposed and writes down the carrying amount of assets to their recoverable amount. As a result, the Group has recorded impairment losses of 82 million yen.

The recoverable amount is measured at the fair value after deducting disposal costs. The fair value after deducting disposal costs is set at zero for assets difficult to sell or the selling amount is estimated and the hierarchy level of the fair value is Level 3.

(Idle assets)

For the Automotive and Industrial/Infrastructure/IoT business, the Group performs impairment tests as independent cash-generation units, writes down the carrying amount of idle assets that are unlikely to be used to their recoverable amount, and recorded impairment losses of 53 million yen.

The recoverable amount is measured at the fair value after deducting disposal costs. The fair value after deducting disposal costs is set at zero because it is difficult to sell these assets, and the hierarchy level of the fair value is Level 3.

For The year ended December 31, 2022

(Assets to be disposed of)

For the Automotive and Industrial/Infrastructure/IoT business, the Group performs impairment tests as independent cash-generating units for the assets that have been decided to be disposed and writes down the carrying amount of assets to their recoverable amount. As a result, the Group has recorded impairment losses of 586 million yen.

The recoverable amount is measured at the fair value after deducting disposal costs. The fair value after deducting disposal costs is set at zero for assets difficult to sell or the selling amount is estimated and the hierarchy level of the fair value is Level 3.

(Idle assets)

For the Automotive and Industrial/Infrastructure/IoT business, the Group performs impairment tests as independent cash-generation units, writes down the carrying amount of idle assets that are unlikely to be used to their recoverable amount, and recorded impairment losses of 701 million yen.

The recoverable amount is measured at the fair value after deducting disposal costs. The fair value after deducting disposal costs is set at zero because it is difficult to sell these assets, and the hierarchy level of the fair value is Level 3.

(2) Impairment test of goodwill and intangible assets not yet available for use

The Group performs impairment tests for cash-generating units to which goodwill and intangible assets not yet available for use are allocated at a certain time each fiscal year and whenever there is any indication of impairment.

Goodwill recorded in the consolidated statement of financial position was recognized when the Company merged with former Intersil for the year ended December 31, 2017, former IDT for the year ended December 31, 2019 and Dialog and Celeno for the year ended December 31, 2021, and it is allocated to the cash-generating units of the Group expected to provide future excess earning power arising from synergies of these business combinations.

In the impairment test, goodwill and intangible assets not yet available for use that were allocated to the cash-generating units of the Group are as follows.

(In millions of yen)

	Reportable segments	Cash-generating units	As of December 31, 2021	As of December 31, 2022
Goodwill	Automotive	Automotive	263,408	303,897
	Industrial/ Infrastructure/IoT	Industrial/ Infrastructure/IoT	826,044	954,792
In-process research and development	Automotive	Automotive	2,300	1,991
	Industrial/ Infrastructure/IoT	Industrial/ Infrastructure/IoT	10,467	4,777

(Note) Regarding the goodwill and intangible assets not yet available for use recognized in connection with the acquisitions of Dialog and Celeno in the prior fiscal year, goodwill was 433,273 million yen and in-process research and development was 10,237 million yen as a result of reassessing the allocation of the acquisition cost in the current fiscal year. In addition, in the current fiscal year, goodwill (6,768 million yen) recognized in connection with the acquisition of Steradian is not included in the table above since the recognition and fair value measurement of the identifiable assets acquired and liabilities assumed at the acquisition date have not been finalized, and the allocation to the group of cash-generating units has not been completed. For details, please refer to “Note 7. Business Combinations.”

The recoverable amount of the cash-generating units is measured at the value in use. The value in use is calculated by discounting the cash flows, which is estimated based on the five-year business plan approved by management and the estimated permanent growth rate for the period thereinafter, to the present value using the pre-tax discount rate. Significant assumptions which have an impact to the calculation of the value in use include gross margin in the business plan, permanent growth rate, discount rate and others. These assumptions are determined in the consideration of past experiences and external information.

Additionally, the Group includes the estimated impact of COVID-19 to estimates and assumptions which are based on information available and management believes to be reasonable at the moment.

For cash flows in a period beyond the target period of the future business plan approved by management, the value in use is calculated using the permanent growth rate as 1.8% the current fiscal year (1.7% in the prior fiscal year). The approved permanent growth rate is determined based on the estimated inflation rate of the market to which the cash-generating units belong.

The discount rates are the weighted average capital cost before tax. The discount rates used for the calculation of the value in use are 13.9% in the Automotive Business in the current fiscal year (10.1% in the prior fiscal year) and 15.7% in the Industrial/Infrastructure/IoT Business in the current fiscal year (10.8% in the prior fiscal year).

Because the recoverable amount of cash-generating units sufficiently exceeds the carrying amount in the current fiscal year, management believes that it is unlikely that the recoverable amount of the cash-generating units will be lower than the carrying amount even if the major assumptions (Gross margin/ Permanent growth rate/ Discount rate before tax) used in the impairment test are changed in a reasonable range.

The following table shows the range of reasonably expected fluctuation of the major assumptions (Gross margin/ Permanent growth rate/ Discount rate before tax) used in the impairment test.

Major assumptions	Cash-generating units	Prior fiscal year	Current fiscal year
Gross margin	Automotive	35~45%	35~45%
	Industrial/ Infrastructure/IoT	50~60%	50~60%
Permanent growth rate	Automotive	1.2~2.2%	1.3~2.3%
	Industrial/ Infrastructure/IoT		
Discount rate before tax	Automotive	8.1~12.1%	11.9~15.9%
	Industrial/ Infrastructure/IoT	9.8~11.8%	12.7~18.7%

The Group recognized no impairment losses during the current fiscal year and the prior fiscal year since the value in use of the cash generating units exceeded the carrying amount as a result of the impairment test.

16. Other Financial Assets

(1) Components of other financial assets

The components of other financial assets are as follows.

(In millions of yen)

	As of December 31, 2021	As of December 31, 2022
Stocks (Note 1)	8,849	10,749
Investment trust (Note 2)	5,475	5,900
Long-term accounts receivable (Note 3)	18,794	41,841
Derivative assets (Note 4)	123	21,945
Other (Note 5)	2,129	10,402
Total	35,370	90,837
Current assets	737	6,688
Non-current assets	34,633	84,149

(Note) 1. Stocks are classified either as equity instruments measured at fair value through other comprehensive income or financial assets measured at fair value through profit or loss (see “Note 33. Financial Instruments”).
2. Investment trust is classified as financial assets measured at fair value through profit or loss.
3. “Long-term accounts receivable” mainly includes financial assets measured at amortized cost which are recorded in accordance with the ship and debit programs. For details on the ship and debit programs, please refer to “Note 3. Significant Accounting Policies, (17) Revenue recognition.”
4. Derivative assets are classified as financial assets measured at fair value through profit or loss. For details, please refer to “Note 33. Financial Instruments.”
5. Term deposits with a deposit term of more than three months and security deposits are included in “Other.” These assets are classified as financial assets measured at amortized cost.

(2) Equity instruments measured at fair value through other comprehensive income

Name of major equity instruments and their fair value measured at fair value through other comprehensive income are as follows.

(In millions of yen)

Company name	As of December 31, 2021	As of December 31, 2022
LeddarTech Inc.	1,150	1,327

(3) Derecognized equity instruments measured at fair value through other comprehensive income

There were no derecognized equity instruments measured at fair value through other comprehensive income.

17. Income Taxes

(1) Components of and changes in deferred tax assets and deferred tax liabilities

The components of and changes in deferred tax assets and deferred tax liabilities by major causes of their occurrence are as follows.

The year ended December 31, 2021

(In millions of yen)

	As of January 1, 2021	Recognized in profit or loss	Recognized in other comprehensive income	Business combination	As of December 31, 2021
Deferred tax assets					
Inventories	5,331	(1,104)	—	—	4,227
Property, plant and equipment and other	6,924	404	—	126	7,454
Research and development expense	723	1,506	—	—	2,229
Accrued expenses	11,503	3,670	—	—	15,173
Retirement benefit liability	5,127	(660)	452	—	4,919
Carryforward of unused tax losses	15,591	(381)	—	4,336	19,546
Carryforward of unused tax credits	9,102	(2,108)	—	1,996	8,990
Other	14,255	162	—	680	15,097
Subtotal	68,556	1,489	452	7,138	77,635
Deferred tax liabilities					
Intangible assets and other	(54,947)	5,515	—	(36,721)	(86,153)
Tax on undistributed earnings	(6,150)	(2,526)	—	—	(8,676)
Total income from specified foreign subsidiaries and others	(1,113)	(346)	—	—	(1,459)
Other	(4,426)	3,118	285	(3,575)	(4,598)
Subtotal	(66,636)	5,761	285	(40,296)	(100,886)
Net deferred tax assets (liabilities)	1,920	7,250	737	(33,158)	(23,251)

The year ended December 31, 2022

(In millions of yen)

	As of January 1, 2022	Recognized in profit or loss	Recognized in other comprehensive income	Business combination	As of December 31, 2022
Deferred tax assets					
Inventories	4,227	1,127	—	—	5,354
Property, plant and equipment and other	7,454	(641)	—	79	6,892
Research and development expense	2,229	5,240	—	—	7,469
Accrued expenses	15,173	5,286	—	—	20,459
Retirement benefit liability	4,919	(771)	(829)	1	3,320
Carryforward of unused tax losses	19,546	(15,361)	—	—	4,185
Carryforward of unused tax credits	8,990	(4,391)	—	—	4,599
Other	15,097	6,828	—	—	21,925
Subtotal	77,635	(2,683)	(829)	80	74,203
Deferred tax liabilities					
Intangible assets and other	(86,153)	5,646	—	—	(80,507)
Tax on undistributed earnings	(8,676)	(666)	—	—	(9,342)
Total income from specified foreign subsidiaries and others	(1,459)	607	—	—	(852)
Other	(4,598)	(7,007)	2,456	—	(9,149)
Subtotal	(100,886)	(1,420)	2,456	—	(99,850)
Net deferred tax assets (liabilities)	(23,251)	(4,103)	1,627	80	(25,647)

(Note) The Group considers the possibility that a portion of, or all of, the deductible temporary differences or carryforward of unused tax losses can be utilized against future taxable profits in the recognition of deferred tax assets.

Deferred tax liabilities related to intangible assets and other include those that are related to an uncertain tax position at an overseas subsidiary and calculated using the expected value method.

The Group reflects the impact of COVID-19 to estimates and assumptions to a reasonable extent based on available information. The Group reflects the impact in estimating collectability of deferred tax assets.

The differences between total amount recognized in profit or loss and total amount of the deferred tax expenses are due to changes in foreign exchange rate.

(2) Deductible temporary differences and others for which no deferred tax assets are recognized

The amounts of deductible temporary differences, carryforward of unused tax losses and carryforward of unused tax credits for which no deferred tax assets are recognized are as follows.

(In millions of yen)

	As of December 31, 2021	As of December 31, 2022
Deductible temporary differences	2,689	4,497
Carryforward of unused tax losses	27,558	35,556
Carryforward of unused tax credits	20,432	24,177
Total	50,679	64,230

(Note) Deductible temporary differences and carryforward of unused tax losses are measured on an income basis, and carryforward of unused tax credits is measured on a tax amount basis.

The expiration schedule of the carryforward of unused tax losses for which no deferred tax assets are recognized is as follows.

(In millions of yen)

	As of December 31, 2021	As of December 31, 2022
First year	—	—
Second year	—	—
Third year	—	—
Fourth year	—	—
Fifth year or thereafter	27,558	35,556
Total	27,558	35,556

The expiration schedule of the carryforward of unused tax credits for which no deferred tax assets are recognized is as follows.

(In millions of yen)

	As of December 31, 2021	As of December 31, 2022
First year	45	53
Second year	48	54
Third year	49	55
Fourth year	50	—
Fifth year or thereafter	20,240	24,015
Total	20,432	24,177

The Group adopts the consolidated taxation system in Japan. The above figures do not include the amount of the carryforward of unused tax losses for which no deferred tax asset is recognized for local taxes (residential tax and business tax) that are not subject to the consolidated taxation system in Japan. The amount of the carryforward of unused tax losses for local taxes (residential tax and business tax) was 17,185 million yen for residential tax and 97,101 million yen for business tax in the prior fiscal year (as of December 31, 2021) and 25,820 million yen for residential tax and 77,131 million yen for business tax in the current fiscal year (as of December 31, 2022).

(3) Components of income tax expense

The components of income tax expense are as follows.

(In millions of yen)

	The year ended December 31, 2021	The year ended December 31, 2022
Current tax expense		
Current tax expense	34,228	111,222
Tax expense from previous periods	1,177	489
Total current tax expense	35,405	111,711
Deferred tax expense		
Origination and reversal of temporary differences	1,686	(3,489)
Effects from tax regulation changes	(62)	(10)
Revaluation of deferred tax assets	(13,821)	(2,730)
Other	(177)	30
Total deferred tax expense	(12,374)	(6,199)
Total income tax expense	23,031	105,512

(Note) 1. Current tax expense in the current fiscal year does not include the amount of previously unrecognized tax loss, tax credits or benefits arising from temporary differences in past periods. Current tax expense in the prior fiscal year includes the amount of previously unrecognized tax loss, tax credits or benefits arising from temporary differences in past periods, and current tax expense has decreased by 16,226 million yen.

2. Deferred tax expense in the current fiscal year does not include the amount of previously unrecognized tax loss, tax credits or benefits arising from temporary differences in past periods. Deferred tax expense in the prior fiscal year includes the amount of previously unrecognized tax loss, tax credits or benefits arising from temporary differences in past periods, and deferred tax expense has decreased by 2,369 million yen.

3. Deferred tax expense in the current fiscal year does not include the deferred tax expenses arising from the write-down of deferred tax assets or the reversal of previously recorded write-downs. Deferred tax expense in the prior fiscal year includes the deferred tax expenses arising from the write-down of deferred tax assets or the reversal of previously recorded write-downs, and deferred tax expense has decreased by 2,369 million yen.

(4) Reconciliation of the statutory effective tax rate and the average effective tax rate

The reconciliation of the statutory effective tax rate and the average effective tax rate is as follows.

(%)

	The year ended December 31, 2021	The year ended December 31, 2022
Statutory effective tax rate (Note)	31.5	31.5
Changes in unrecognized deferred tax assets	(11.5)	1.3
Permanent differences	(2.0)	(0.6)
Foreign tax rate differences	(1.3)	(0.5)
Tax credits	(3.9)	(3.7)
Tax on undistributed earnings	1.8	0.2
Other	1.7	1.0
Average effective tax rate	16.1	29.1

(Note) The applicable statutory effective tax rate is the sum of 24.4% for national taxes and 7.1% for local taxes. Major taxes imposed on the Company and its subsidiaries in Japan are income tax, residential tax and business tax. The applicable statutory effective tax rate in Japan is 31.5% in the prior fiscal year and current fiscal year. Income taxes for overseas subsidiaries are calculated based on local tax rates applicable in their jurisdictions.

18. Trade and Other Payables

The components of trade and other payables are as follows.

(In millions of yen)

	As of December 31, 2021	As of December 31, 2022
Trade payables	104,775	105,362
Other payables	59,262	41,206
Electronically recorded obligations	14,808	13,940
Refund liabilities	40,585	65,815
Total	219,430	226,323
Current liabilities	204,330	222,941
Non-current liabilities	15,100	3,382

(Note) Trade and other payables are classified as financial liabilities measured at amortized cost.

19. Bonds and Borrowings

(1) The components of bonds are as follows.

(In millions of yen)

	Issuance date	Maturity date	Interest rate	As of December 31, 2021	As of December 31, 2022
USD-denominated Senior Notes due 2024 (Green Bonds) (Note 3)	November 26, 2021	November 26, 2024	1.543%	57,510	66,350
USD-denominated Senior Notes due 2026 (Note 3)	November 26, 2021	November 25, 2026	2.170%	97,767	112,795
Others (Note 4)				13	—
Total				155,290	179,145
Reclassification to bond issuance costs				(739)	(556)
Current liabilities				13	—
Non-current liabilities				154,538	178,589

(Note) 1. Bonds are classified as financial liabilities measured at amortized cost.

2. For the balance of bonds by maturity, see "Note 33. Financial Instruments."

3. On November 19, 2021, the Company has decided to issue senior notes denominated in USD in multiple tranches (One of the tranches of the notes will be green bonds, proceeds from which will be used solely for projects that are expected to contribute to the global environment).The Company issued USD-denominated Senior Notes due 2024 (Green Bonds, Principal amount: USD 500million, Interest rate: 1.543%, Maturity Date: November 26, 2024) and USD-denominated Senior Notes due 2026 (Principal amount: USD 850 million, Interest rate: 2.170%, Maturity Date: November 25, 2026) on November 26, 2021, raising a total of USD 1,350 million.

4. These are convertible bonds issued by the former IDT in 2015, most of which were purchased and retired in 2019, and the redemption was completed in the current fiscal year.

(2) The breakdown of borrowings is as follows.

(In millions of yen)

	As of December 31, 2021	As of December 31, 2022	Average interest rate (Note 4)	Maturity
Short-term borrowings (Note 5, 6)	1,047	—	—	—
Current portion of long-term borrowings	120,045	120,005	0.632%	—
Long-term borrowings (Excluding current portion)	541,045	458,865	0.700%	From Mar.2024 to Jun.2027
Total	662,137	578,870	—	—
Less: Arrangement fee	(2,600)	(1,716)		
Current liabilities	121,092	120,005		
Non-current liabilities	538,445	457,149		

The components of borrowings are as follows.

(In millions of yen)

	Term of borrowing	As of December 31, 2021	As of December 31, 2022
Syndicated loan A (Note 7)	From Mar.2019 to Mar.2024	44,632	24,796
Syndicated loan B (Note 7)	From Mar.2019 to Mar.2024	232,150	196,434
Syndicated loan C (Note 7)	From Jun.2019 to Jun.2024	144,260	135,545
Loan contract on December 23, 2021 (Note 8)	From Dec.2021 to Dec.2026	96,000	70,220
JBIC loan contract on December 23, 2021 (Note 8)	From Dec.2021 to Dec.2026	144,000	105,331
Loan contract on June 28, 2022 (Note 9)	From Jun.2022 to Jun.2027	—	26,540
Loan contract on June 30, 2022 (Note 9)	From Jun.2022 to Jun.2027	—	20,000
Others (Note 5)	—	1,095	4
Total		662,137	578,870

(Note)
1. Borrowings are classified as financial liabilities measured at amortized cost.
2. For the balance of borrowings by maturity, see “Note 33. Financial Instruments.”
3. The Company’s borrowings have financial covenants that require us to maintain a certain level of net assets, operating profit / loss, and profit / loss, and the ratio of interest-bearing debt to EBITDA should not exceed a certain level. The Company complies with the financial covenants.
4. The average interest rate represents the weighted-average interest rate calculated based on the balance of borrowings as of December 31, 2022.
5. Others mainly include short-term borrowings of overseas subsidiaries.
6. In April 2022, the Company borrowed 50,000 million yen from MUFG Bank, Ltd., Mizuho Bank, Ltd., and Sumitomo Mitsui Trust Bank, Limited. under a commitment line agreement dated January 15, 2019. In July 2022, the Company has fully repaid this borrowing.
7. In order to refinance the existing borrowings to finance partial funds necessary for the acquisition of former IDT and working capital as the medium-and-long term funds, the Company has entered into a syndicated loan agreement with the total amount of 897,000 million yen on January 15, 2019. On March 28, 2019, 698,000 million yen of term loan with availability period (Syndicated loan A and B, Repayment date: March 28, 2024, participating financial institutions: MUFG Bank, Ltd., Mizuho Bank, Ltd., Sumitomo Mitsui Trust Bank, Limited and other 5 financial institutions) has been executed. In addition, on June 28, 2019, borrowings of 149,000 million yen of term loan (Syndicated loan C, Repayment date: June 28, 2024, participating financial institutions: MUFG Bank, Ltd., Mizuho Bank, Ltd., Sumitomo Mitsui Trust Bank, Limited) have been executed to refinance the existing term loan. On November 10, 2021, the Company made the following changes on this loan agreement. (1) Setting the installment repayment date of Syndicated Loan B, (2) Early payment of Syndicated Loan A upon the issuance of US Dollar-Denominated Senior Notes, and (3) Cancellation of guaranteed contract and stock collateral for Syndicated Loans A and B.
8. Based on the loan agreement entered into to finance the acquisition of Dialog, on August 31, 2021, the Company had borrowed 270,000 million yen from MUFG Bank, Ltd. and Mizuho Bank, Ltd. with the last repayment date of February 7, 2022.
   With the purpose of refinancing 240,000 million yen of the above loans (after the repayment of 30,000 million yen) to mid- to long-term funds, on December 23, 2021, the Company has entered into the syndicate loan agreement (Loan amount: 96,000 million yen, Execution date of agreement: December 23, 2021, Borrowing date: December 30, 2021, Repayment date: End of December, 2026, Participating financial institutions: MUFG Bank, Ltd., Mizuho Bank, Ltd., Sumitomo Mitsui Trust Bank, Limited., Resona Bank, Limited., Aozora Bank, Ltd., Shinkin Central Bank, The Norinchukin Bank, Bank of America NA Tokyo Branch) and a JBIC loan agreement (Loan amount: 144,000 million yen, Execution date of agreement: December 23, 2021, Borrowing date: December 30, 2021, Repayment date: End of December, 2026, Participating financial institutions: Japan Bank of International Cooperation). On December 30, 2021, the Company borrowed a total of 240,000 million yen under these agreements and fully repaid the remaining amount of the loans dated August 31, 2021.
9. In June 2022, the Company entered into a term loan agreement dated June 28, 2022 (Loan amount: USD 200 million, Borrowing date: June 30, 2022, Repayment date: June 30, 2027, Participating financial institutions: Bank of America NA Tokyo Branch) and a term loan agreement dated June 30, 2022 (Loan amount: 20,000 million yen, Borrowing date: June 30, 2022, Repayment date: June 30, 2027, Participating financial institutions: MUFG Bank, Ltd.). The Company has borrowed a total of 47,096 million yen under these agreements dated June 30, 2022.

(3) Assets pledged as collateral and corresponding liabilities as of each fiscal year end are as follows.

A. Assets pledged as collateral

(In millions of yen)

	As of December 31, 2021	As of December 31, 2022
Buildings and structures	31,190	30,844
Machinery, equipment and vehicles	36,691	38,912
Land	16,628	16,264
Total	84,509	86,020

(Note) Other than the above, stock of subsidiary (638,826 million yen for December 31, 2021 and 638,841 million yen for December 31, 2022) which are eliminated in the consolidated statement of financial position, are collateralized.

B. Liabilities corresponding to assets pledged as collateral

(In millions of yen)

	As of December 31, 2021	As of December 31, 2022
Current portion of long-term borrowings	120,014	120,001
Long-term borrowings (Excluding current portion)	538,441	457,149
Total	658,455	577,150

20. Other Financial Liabilities

The components of other financial liabilities are as follows.

(In millions of yen)

	As of December 31, 2021	As of December 31, 2022
Derivative liabilities (Note 1)	1,550	8,342
Lease liabilities	17,232	14,269
Contingent consideration (Note 1, 2)	4,681	2,528
Total	23,463	25,139
Current liabilities	11,595	13,838
Non-current liabilities	11,868	11,301

(Note) 1 Derivative liabilities are classified as financial liabilities measured at fair value through profit or loss. For details, please refer to "Note 33. Financial Instruments."
2 For details, please refer to "Note 7. Business Combinations."

To reduce the risk of foreign exchanges in the USD-denominated Senior Notes, the Group uses currency swaps. The currency swap is designated as a hedge. For details on hedge accounting, see "Note 33. Financial Instruments."

21. Provisions

The components of provisions and their changes are as follows.

(In millions of yen)

	Asset retirement obligations	Provision for business restructuring	Provision for loss on litigation	Other provisions	Total
Balances as of December 31, 2021	3,252	3,429	6,956	1,343	14,980
Current liabilities	95	3,297	6,956	837	11,185
Non-current liabilities	3,157	132	—	506	3,795
Increase during the period	199	3,186	1,332	452	5,169
Decrease during the period (payment)	(145)	(4,372)	(2,568)	(970)	(8,055)
Decrease during the period (reversal)	(84)	(1,079)	(598)	(10)	(1,771)
Period interest expense in discount calculation	21	—	—	—	21
Other	(1)	242	619	184	1,044
Balances as of December 31, 2022	3,242	1,406	5,741	999	11,388
Current liabilities	96	1,263	5,741	999	8,099
Non-current liabilities	3,146	143	—	—	3,289

A. Asset retirement obligations

The expected amount related to performing obligations necessary to restore assets to their original state under the real estate lease agreements of offices and plants used by the Group and legal obligations to remove hazardous substances related to non-current assets is recorded as a provision. The amount of asset retirement obligations was computed using an estimated useful life of 3 to 47 years as well as a discount rate of 0.1% to 10.5%, although the timing of payments will be affected by future business plans, and other factors.

B. Provision for business restructuring

Provision for business restructuring is recorded for expected future losses in connection with business structure reform and consolidation. The timing of payments will be affected by future business plans, and other factors.

C. Provision for loss on litigation

The Group records the estimated amount of reasonably calculated losses, considering individual risks, for losses on litigation which could be incurred in the future from lawsuits and disputed cases. For details, please refer to “Note 36. Commitments and Contingent Liabilities, (4) Others.”

D. Other provisions

Other provisions include a provision for product warranties and a provision for an onerous contract.

22. Employee Benefits

The Group adopts post-employment benefit plans such as a defined benefit plan and a defined contribution plan, except for some overseas consolidated subsidiaries.

(1) Defined benefit plans

A. Characteristics of defined benefit plans and related risks

The characteristics of defined benefit plans and related risks are as follows.

(a) Characteristics of defined benefit plans

The defined benefit plans of the Company and its subsidiaries in the Group include (i) a severance indemnity plan and (ii) a defined benefit corporate pension plan. The Group may also provide extra retirement payments upon the retirement of employees.

(i) The severance indemnity plan is an unfunded plan to make a lump-sum payment only with an internal reserve without making an external reserve for the obligations of the retirement benefit plans. As the lump-sum payment is paid in an amount based on salaries and number of service years in accordance with the retirement allowance regulations including the rules of employment of each company.

(ii) The defined benefit corporate pension plan is a defined benefit pension and a funded plan established under the Defined Benefit Corporate Pension Act (enforced in April 2002). It is a fund-type corporate pension, and a lump-sum payment or an annuity is paid from the fund based on salaries and number of service years. In the defined benefit corporate pension plan, administrators of the corporate pension, such as the executive directors of the employer and the fund, abide by laws, regulations and asset management and investment contracts and others and their standards of practice such as the prohibition of acts involving conflicts of interest against the participants in the plan have been clearly defined.

In the defined benefit corporate pension plan, the amount of benefits is calculated based on the cumulative number of points granted to employees according to their job classification. The Company and its subsidiaries in Japan adopt a cash balance pension plan for the defined benefit corporate pension plan. Some of the Company's overseas subsidiaries adopt externally funded pension plans such as trust funds for the defined benefit corporate pension plan. Under those pension plans, each participant has an account in which a certain amount calculated by the revaluation rate that is determined based on the current base salary, the job classification and the market interest rate is accumulated. (b) Risks to which an entity is exposed by the plan.

The Group is exposed to actuarial risks such as price fluctuation risk by plan assets and interest rate risk by present value of obligations of the defined benefit plans.

B. Amounts recognized in the consolidated statement of financial position

The amounts recognized in the consolidated statement of financial position are as follows.

(In millions of yen)

	As of December 31, 2021	As of December 31, 2022
Present value of obligations of the funded defined benefit plans (with plan assets)	120,091	102,909
Fair value of plan assets	(152,382)	(134,727)
Funded status	(32,291)	(31,818)
Impact of asset ceiling	32,929	32,378
Present value of obligations of the unfunded defined benefit plans (without plan assets)	27,288	23,542
Net amount of liabilities (assets) pertaining to defined benefits recognized in the consolidated statement of financial position	27,926	24,102
Retirement benefit liability	27,926	24,102
Retirement benefit asset	—	—

As of December 31, 2021, the present value of obligations of the funded defined benefit plans (with and without plan assets) was 116,990 million yen for domestic plans and 30,389 million yen for overseas plans. The fair value of plan assets was (129,925) million yen for domestic plans and (22,457) million yen for overseas plans.

As of December 31, 2022, the present value of obligations of the funded defined benefit plans (with and without plan assets) was 105,643 million yen for domestic plans and 20,808 million yen for overseas plans. The fair value of plan assets was (120,553) million yen for domestic plans and (14,174) million yen for overseas plans.

C. Changes in the present value of defined benefit obligation

The changes in the present value of defined benefit obligation are as follows.

(In millions of yen)

	The year ended December 31, 2021	The year ended December 31, 2022
Present value of defined benefit obligation (beginning)	153,107	147,379
Service cost	2,360	2,370
Interest expenses	1,000	1,082
Benefits paid	(10,088)	(8,689)
Remeasurements of defined benefit plans		
(i) Actuarial differences arising from changes in demographic assumptions	(670)	(691)
(ii) Actuarial differences arising from changes in financial assumptions	(535)	(16,806)
(iii) Revisions to other results	(908)	286
Effects of business combination and disposal	525	5
Exchange differences	2,411	1,435
Other	177	80
Present value of defined benefit obligation (ending)	147,379	126,451

The weighted average duration of the defined benefit obligation in each fiscal year is as follows.

	The year ended December 31, 2021	The year ended December 31, 2022
Weighted average duration	12.0 years	10.7 years

D. Changes in the fair value of plan assets

Changes in the fair value of plan assets are as follows.

(In millions of yen)

	The year ended December 31, 2021	The year ended December 31, 2022
Fair value of plan assets (beginning)	145,862	152,382
Interest income	1,016	1,061
Remeasurement – Return on plan assets	8,453	(15,199)
Contributions by employer (Note 1)	2,323	2,234
Benefits paid	(7,805)	(6,515)
Effects of business combination and disposal	434	—
Exchange differences	2,194	723
Other	(95)	41
Fair value of plan assets (ending)	152,382	134,727

(Note)

1. Contributions to the defined benefit plans in the Group are made in consideration of factors such as the financial position of the Group, the funding situation of plan assets and actuarial factors based on laws and regulations. In the fiscal year ending December 31, 2023, 1,958 million yen is planned to be contributed to the defined benefit pension plans.
2. The purpose of the investment of plan assets of the Group is to secure necessary revenue in the long term within the acceptable range of risks in order to provide benefits to beneficiaries reliably in the future. The target rate of return aims to exceed the assumed interest rate required for the financial position of the pension scheme on a stable basis for the long term. The Group has set a “policy asset mix” to achieve the investment target and attempts to make an investment to maintain the asset mix based on the policy asset mix. The asset mix is reviewed as necessary and tailored to changes in the situation of the Group and the institution and the environment surrounding the Group.
3. Some consolidated subsidiaries participate in a multi-employer defined benefit pension plan.

E. Changes in the impact of the asset ceiling

The changes in the impact of the asset ceiling are as follows.

(In millions of yen)

	The year ended December 31, 2021	The year ended December 31, 2022
Impact of asset ceiling (beginning)	22,767	32,929
Interest income	131	196
Remeasurement – Changes in the impact of the asset ceiling	10,042	(814)
Exchange differences	161	57
Other	(172)	10
Impact of the asset ceiling (ending)	32,929	32,378

(Note) The Group sets the asset ceiling and calculates liabilities in some of its pension plans because economic benefits could not be enjoyed as a result of contributions that will not be reduced or returned in the future.

F. Components of fair value of plan assets by type

The components of the fair value of plan assets by type are as follows.

(In millions of yen)

	As of December 31, 2021	As of December 31, 2022
Equity instruments		
Domestic equity securities	11,750	10,201
Foreign equity securities	25,787	22,048
Debt instruments		
Domestic bonds	12,743	9,312
Foreign bonds	28,368	23,998
General accounts of life insurance company	35,714	31,287
Cash and cash equivalents	5,650	6,258
Other	32,370	31,623
Total	152,382	134,727

(Note) Most of plan assets are operated through commingled funds and classified as those with no public market price in active markets. These commingled funds are appropriately diversified into stocks and debts that generally listed in active market based on corporate pension fund code. “General accounts of life insurance company” are the accounts that the life insurance company jointly manages the funds with several contracts and includes a guaranteed interest rate and return of capital. The major components of "Other" represent alternative instruments that are invested using long/short positions and securitized products.

G. Major actuarial assumptions

Major actuarial assumptions (weighted average) are as follows.

	As of December 31, 2021	As of December 31, 2022
Discount rate	0.7%	1.7%

H. Sensitivity analysis

In the calculation of the defined benefit obligation in the sensitivity analysis, the same method as the calculation method for the defined benefit obligation recognized in the consolidated statement of financial position is used.

The sensitivity analysis is made based on changes in assumptions that can be reasonably presumed at the end of the reporting period. In addition, although the sensitivity analysis assumes that all actuarial assumptions other than those that are subject to the sensitivity analysis remain constant, changes in those other actuarial assumptions could have an impact in reality.

The impact of a 0.5% change in actuarial assumptions on the defined benefit obligation is as follows.

(In millions of yen)

		As of December 31, 2021	As of December 31, 2022
Discount rate	0.5% increase	(7,323)	(6,235)
	0.5% decrease	7,955	6,559

(2) Defined contribution plans

The Group has adopted defined contribution pension plans. The amount recognized as an expense in relation to the defined contribution plans, including employee pension premiums paid by the employer under the Employees' Pension Insurance Act, is as follows.

(In millions of yen)

	The year ended December 31, 2021	The year ended December 31, 2022
Contributions	8,795	8,542

(Note) This amount is included in "Cost of sales" and "Selling, general and administrative expenses" in the consolidated statement of profit or loss.

(3) Employee benefit expenses

The components of the employee benefit expenses are as follows.

(In millions of yen)

	The year ended December 31, 2021	The year ended December 31, 2022
Personnel expenses	185,953	225,952
Retirement benefit expenses	11,270	11,129
Extra retirement payments and others	1,262	1,189
Other	2,409	2,649
Total	200,894	240,919

(Note) This amount is included in "Cost of sales," "Selling, general and administrative expenses" and "Other expenses" in the consolidated statement of profit or loss.

23. Share Capital and Other Equity Items

(1) Share capital and treasury shares

Ordinary shares

	Total number of authorized shares (shares)	Total number of issued shares (shares)	Treasury shares (shares)
As of December 31, 2021	3,400,000,000	1,943,805,775	2,581
Changes (Note 2, 3)	—	14,648,248	161,485,586
As of December 31, 2022	3,400,000,000	1,958,454,023	161,488,167

(Note) 1. All the shares issued by the Company are non-par value ordinary shares with no restrictions on rights.

2. Based on the resolution at the Board of Directors' meeting held on April 27, 2022, the Company conducted a tender offer to acquire its own shares and purchased 168,067,250 shares from April 28, 2022 to May 31, 2022. As a result, treasury shares increased by 200,000 million yen. In addition, the number of treasury shares decreased by 6,581,664 shares, due to disposals of treasury shares based on the exercise of stock options and the vesting of Restricted Stock Unit (RSU) for the year ended December 31, 2022. As a result, treasury shares decreased by 7,840 million yen. The amount of treasury shares held was 192,171 million yen as of December 31, 2022.

3. Changes in the number of issued shares are due to the exercise of stock options and the vesting of Restricted Stock Unit (RSU). For details on stock options and RSU, see "Note 32. Share-based Payments."

4. Total number of issued shares has been already paid-up.

(2) Surplus

A. Capital surplus

The Companies Act of Japan stipulates that one half or more of the paid-in amount from the issue of shares shall be accounted for as share capital, and the remainder shall be accounted for as capital reserve included in capital surplus. Under the Companies Act, the amount of such capital reserve may be transferred to shared capital by the resolution of a shareholders meeting.

B. Retained earnings

The Companies Act of Japan stipulates that one tenth of the amount of the distributions of surplus shall be accumulated as capital reserve or legal reserve until the sum of the capital reserve and legal reserve reaches one fourth of the share capital. The accumulated retained earnings reserve may be appropriated to cover a loss. The Companies Act also states that the retained earnings reserve may be used by the resolution of a shareholders meeting.

24. Revenue

(1) Disaggregation of revenue

Disaggregation of revenue recognized from contracts with customers are stated in “Note 6. Business Segments, (2) Information on reportable segments and (4) Information on regions and countries.” Also, all of the revenue arises from contracts with customers.

The Group engages in research, development, design, manufacturing, sales and services related to various kinds of semiconductors as a manufacturer specializing in semiconductors, and the revenue is mainly due to sales of semiconductor products.

Regarding the sales of these products, the Group recognizes revenue when the customer obtains control over the product which is at the time of delivery of a product because legal title of the product, physical possession of the asset, the significant risks and rewards of ownership are transferred to the customer, and the customer has an obligation to pay for the products at the time of delivery of the product.

Revenue is measured at the amount of promised consideration in contracts with customers.

With regard to sales contract including variable consideration such as rebate and discounts, the transaction price is estimated and determined using the most-likely-amount method based largely on historical data, considering variable prices within a range that will not result in significant deviation between estimate and historical data.

Consideration under sales contracts is recovered mainly within one year from satisfaction of a performance obligation and includes no significant financing components.

(2) Accounts arising from contracts

(In millions of yen)

	As of December 31, 2021	As of December 31, 2022
Contract assets	695	375
Contract liabilities	351	460

(Note) 1. Contract assets are company's rights to the consideration received in exchange for goods or services transferred to the customer by the company, on condition of something other than the passage of time (for example, future performance of the company). Contract assets are transferred to receivables when the right to consideration becomes unconditional. Contract assets are included in “Trade and other receivables” in the consolidated statement of financial position.

2. Contract liabilities relate to the payment received in advance of performance under the contract. The contract liabilities are reclassified to revenue when the Group satisfies a performance obligation based on the contract. Contract liabilities are included in “Other current liabilities” in the consolidated statement of financial position.

3. The amounts of revenues recognized during the prior fiscal year and the current fiscal year from the performance obligations satisfied in the past periods were immaterial.

4. Of the revenues recognized in the prior fiscal year, 168 million yen was included in the balance of contract liabilities as of January 1, 2021. Of the revenues recognized in the current fiscal year, 299 million yen was included in the balance of contract liabilities as of January 1, 2022.

(3) Transaction price allocated to the remaining performance obligation

The Group uses the practical expedient of omitting the disclosure of information on the remaining performance obligations because it has no significant transactions with individual expected contractual terms exceeding one year. In addition, there are no significant amounts in consideration from contracts with customers that are not included in transaction prices.

(4) Assets recognized from the cost to obtain or fulfill contracts with customers

There are no assets recognized from the cost to obtain or fulfill contracts with customers.

25. Selling, General and Administrative Expenses

The components of selling, general and administrative expenses are as follows.

(In millions of yen)

	The year ended December 31, 2021	The year ended December 31, 2022
Research and development expenses (Note)	154,330	205,963
Depreciation and amortization	73,856	111,930
Personnel expenses	53,118	67,569
Retirement benefit expenses	2,780	2,723
Other	33,115	38,676
Total	317,199	426,861

(Note) Research and development expenses are included in selling, general and administrative expenses. Related expenses such as outsourcing costs, personnel expenses, depreciation costs and material costs are mainly included in research and development expenses.

26. Other Income

The components of other income are as follows.

(In millions of yen)

	The year ended December 31, 2021	The year ended December 31, 2022
Gain on sales of property, plant and equipment (Note 1)	5,618	9,749
Fair value remeasurements on contingent considerations (Note 2)	—	2,464
Insurance claim income	460	1,467
Reversal of provision for business restructuring	684	1,068
Other	1,269	2,929
Total	8,031	17,677

(Note) 1. Gain on sales of property, plant and equipment for the year ended December 31, 2022 is mainly due to the sale of Yamaguchi Factory (Ube, Yamaguchi Prefecture) of Renesas Semiconductor Manufacturing Co., Ltd., a wholly owned subsidiary of the Company, which completed consolidation on June 30, 2022.

2. For details, please refer to “7. Business Combinations.”

27. Other Expenses

The components of other expenses are as follows.

(In millions of yen)

	The year ended December 31, 2021	The year ended December 31, 2022
Impairment losses (Note 1)	135	7,719
Settlement packages (Note 2)	327	5,488
Business restructuring expenses (Note 3)	3,934	3,928
Provision for loss on litigation (Note 4)	4,737	14
Other	4,000	3,486
Total	13,133	20,635

(Note) 1. For details of Impairment losses, please refer to “15. Impairment of Non-financial Assets.”

2. Settlements packages are mainly related to past license agreements for the year ended December 31, 2022.

3. The Group has reformed its business and structures of production to strengthen its financial basis, and the related expenses are shown as business restructuring expenses. The main items of business restructuring expenses were personnel expenses such as additional retirement benefits and expenses related to disposition of property, plant and equipment associated with consolidating the operating bases.

4. Provision for loss on litigation is recorded for the payment of lawsuits and compensation.

28. Finance Income and Finance Costs

The components of finance income and finance costs are as follows.

(1) Finance income

(In millions of yen)

	The year ended December 31, 2021	The year ended December 31, 2022
Valuation gain of investment securities		
Financial assets measured at fair value through profit or loss	3,529	—
Interest income		
Financial assets measured at amortized cost	243	1,084
Other	368	325
Total	4,140	1,409

(2) Finance costs

(In millions of yen)

	The year ended December 31, 2021	The year ended December 31, 2022
Interest expenses		
Financial liabilities measured at amortized cost	9,946	6,867
Foreign exchange loss (Note)	24,167	51,912
Other	1,136	4,501
Total	35,249	63,280

(Note) Foreign exchange loss includes losses on valuation of currency derivatives.

29. Other Comprehensive Income

Reclassification adjustments and tax effects of other comprehensive income by component are as follows.

(In millions of yen)

	The year ended December 31, 2021	The year ended December 31, 2022
Items that will not be reclassified to profit or loss:		
Remeasurements of defined benefit plans		
Amount incurred during the period	450	2,742
Tax effect	452	(829)
After tax effect	902	1,913
Equity financial assets measured at fair value through other comprehensive income		
Amount incurred during the period	(382)	(35)
Tax effect	71	(95)
After tax effect	(311)	(130)
Total of items that will not be reclassified to profit or loss	591	1,783
Items that may be reclassified subsequently to profit or loss:		
Exchange differences on translation of foreign operations		
Amount incurred during the period	168,975	312,707
Reclassification	—	—
Before tax effect	168,975	312,707
Tax effect	—	—
After tax effect	168,975	312,707
Cash flow hedges		
Amount incurred during the period	(3,348)	13,716
Reclassification	(818)	(31,202)
Before tax effect	(4,166)	(17,486)
Tax effect	144	5,540
After tax effect	(4,022)	(11,946)
Cost of hedges		
Amount incurred during the period	(226)	9,618
Reclassification	3	24
Before tax effect	(223)	9,642
Tax effect	70	(2,989)
After tax effect	(153)	6,653
Total of items that may be reclassified subsequently to profit or loss	164,800	307,414
Total other comprehensive income	165,391	309,197

30. Earnings Per Share

Basic earnings per share attributable to owners of parent and diluted earnings per share are as follows.

(1) Basic earnings per share

	The year ended December 31, 2021	The year ended December 31, 2022
Profit attributable to owners of parent used for the calculation of basic earnings per share (million yen)	119,536	256,632
Weighted average number of ordinary shares during the year (thousands of shares)	1,845,524	1,864,152
Basic earnings per share (yen)	64.77	137.67

(2) Diluted earnings per share

	The year ended December 31, 2021	The year ended December 31, 2022
Profit attributable to owners of parent used for the calculation of basic earnings per share (million yen)	119,536	256,632
Adjustments on earnings (million yen)	—	—
Profit used for the calculation of diluted earnings per share (million yen)	119,536	256,632
Weighted average number of ordinary shares during the year before dilution (thousands of shares)	1,845,524	1,864,152
Increase in common stock		
Share acquisition rights (thousands of shares)	35,233	20,907
Restricted Stock Unit (thousands of shares)	6,239	18,101
Weighted average number of ordinary shares during the year after dilution (thousands of shares)	1,886,996	1,903,161
Diluted earnings per share (yen)	63.35	134.85

31. Consolidated Statement of Cash Flows

(1) Changes in liabilities in financing activities

The components of liabilities in financing activities and their changes during the fiscal year are as follows.

(For the year ended December 31, 2021)

(In millions of yen)

	As of December 31, 2020	Cash flows	Non-cash transactions			As of December 31, 2021
			Acquisitions	Increase due to business combination	Other (Note 2)	
Long-term borrowings (Note 1)	679,733	(22,777)	—	71	1,463	658,490
Short-term borrowings	—	—	—	2,185	(1,138)	1,047
Bonds	11	154,359	—	—	181	154,551
Lease liabilities	13,977	(4,571)	2,781	4,663	382	17,232
Total	693,721	127,011	2,781	6,919	888	831,320

(For The year ended December 31, 2022)

(In millions of yen)

	As of December 31, 2021	Cash flows	Non-cash transactions			As of December 31, 2022
			Acquisitions	Increase due to business combination	Other (Note 2)	
Long-term borrowings (Note 1)	658,490	(81,671)	—	—	335	577,154
Short-term borrowings	1,047	(1,180)	—	—	133	—
Bonds	154,551	—	—	—	24,038	178,589
Lease liabilities	17,232	(5,901)	3,097	—	(159)	14,269
Total	831,320	(88,752)	3,097	—	24,347	770,012

(Note)
1. Current portion of long-term borrowings are included in long-term borrowings.
2. Non-cash transactions for long-term borrowings includes the arrangement fees.
3. To reduce the risk of foreign exchanges in the USD-denominated Senior Notes, the Group uses currency swaps. The currency swap is designated as a hedge. For details on hedge accounting, see “Note 33. Financial Instruments.”

(2) Non-cash transactions

Significant non-cash transactions are as follows.

(In millions of yen)

Type	The year ended December 31, 2021	The year ended December 31, 2022
Purchase of intangible assets through installment purchase contracts	435	309

(3) Principal assets and liabilities of a company that became a consolidated subsidiary due to acquisition of stock

(For the year ended December 31, 2021)

For details of assets and liabilities for Dialog, Celeno and these subsidiaries at time of its consolidation resulting from the acquisition of stock as well as the relationship between the acquisition price of stock and expenditures (net) for its acquisition, see “Note 7. Business Combinations.”

(For the year ended December 31, 2022)

For details of assets and liabilities for Steradian at time of its consolidation resulting from the acquisition of stock as well as the relationship between the acquisition price of stock and expenditures (net) for its acquisition, see “Note 7. Business Combinations.”

32. Share-based Payments

The Group has adopted share-based payment plans as an incentive plan for directors, senior vice presidents and employees.

Share-based payment expenses included in the consolidated statement of profit or loss totaled 1,392 million yen in "Cost of sales" and 13,511 million yen in "Selling, general and administrative expenses" in the previous fiscal year, and 1,548 million yen in "Cost of sales" and 16,596 million yen in "Selling, general and administrative expenses" in the current fiscal year.

(1) Restricted Stock Unit (RSU) and Performance Share Unit (PSU)

A. Overview of RSU and PSU

(a) RSU

RSU is a share-based payment plan in which the Company provides recipients with the number of units that corresponds to the number of years determined by the Board of Directors (basically three years, except one year for the Outside Directors) and annually delivers to the recipients common stock for the number of units that vested (the units vest by one third of total units provided every year after the grant date, except that the units vest after one year for the outside directors), subject to continued employment with the Group.

(b) PSU

PSU is a share-based payment plan in which the Company provides the recipients (excluding outside directors) with the number of units determined by the Board of Directors and delivers to the recipients common stock for the number of the units that vested in response to the extent of the growth rate of total shareholder return over the three-year performance period from April 1 of the year when the PSUs are granted.

B. Details for RSU and PSU

The details of RSU and PSU granted for the year ended December 31, 2021 and December 31, 2022 are as follows.

Date of grant	Category and number of grantees	Number of units		Fair value (Yen)	
		RSU	PSU	RSU	PSU
April 9, 2021	Outside directors 2 Director and corporate officer 1 Corporate officers 10 Employees of the Company and subsidiaries 2,862	7,458,400	1,195,800	1,258.0	1,605.2
July 16, 2021	Employees of the Company and subsidiaries 241	487,200	—	1,233.0	—
August 31, 2021 (Note 4, 5)	Corporate officer 1 Employees of subsidiaries 2,192	13,468,700	—	1,189.0	—
October 15, 2021	Employees of subsidiaries 209	630,800	—	1,337.0	—
November 12, 2021	Employees of subsidiaries 1,973	2,491,100	—	1,486.0	—
January 14, 2022	Employees of the Company and subsidiaries 276	624,700	—	1,434.0	—
February 9, 2022	Employees of subsidiaries 6	399,300	—	1,332.0	—
April 14, 2022	Outside directors 2 Director and corporate officer 1 Corporate officers 10 Employees of the Company and subsidiaries 3,571	9,781,100	1,376,600	1,371.0	2,004.6
July 15, 2022	Employees of the Company and subsidiaries 225	1,048,400	—	1,215.0	—
October 14, 2022	Corporate officer 1 Employees of the Company and subsidiaries 344	2,026,600	—	1,230.0	—
October 26, 2022	Employees of subsidiaries 6	10,200	—	1,235.0	—
December 16, 2022	Employees of the Company and subsidiaries 47	24,100	—	1,265.5	—

(Note) 1. The fair value of RSU is calculated based on the Company's stock price on the date of grant.

2. The fair value of PSU is calculated based on the results of comparing the fluctuation rate of the Company's stock with that of stock indexes over a certain period.

3. Our common stock (1 unit = 1 share) is delivered based on the number of units at the time of vesting. There is no payment from Directors, Corporate Officers and employees at the time of delivering the stock.

4. Based on the agreements regarding the acquisition of Dialog, the unvested portion of Dialog's Employee Share Plan Award was replaced by Renesas share plans (RSU) as of the acquisition date.

5. The rights are based on the vesting conditions originally provided by Dialog except for certain awards that will be vested earlier than scheduled.

C. Changes of the number of RSU and PSU

Changes of the number of RSU and PSU in the prior fiscal year and the current fiscal year are as follows (1 right = 1 share).

Grant date	The year ended December 31, 2021		The year ended December 31, 2022	
	RSU	PSU	RSU	PSU
Beginning balance	—	—	21,888,800	1,133,200
Granted	24,536,200	1,195,800	13,914,400	1,376,600
Forfeited	(808,615)	(62,600)	(3,738,644)	(197,600)
Vested	(1,838,785)	—	(8,766,712)	(28,900)
Ending balance	21,888,800	1,133,200	23,297,844	2,283,300

(2) Stock option

A. Overview of the stock option plan

Under the stock option plan, warrants have been granted to eligible persons in accordance with the resolution of the Board of Directors of the Company based on the arrangement approved at the shareholders meeting of the Company. The exercise period of the stock options is set by an allotment contract, and if they are not exercised during the exercise period, the stock options will lapse. In addition, if an eligible person has left the Company before the vesting date, the options will also lapse. However, this does not apply to certain cases addressed in the warrants allotment contract, such as resignation due to the expiration of the term of office.

The stock option plan of the Company is accounted for as equity-settled share-based payments.

B. Details for the stock option plan

The stock option plan in effect during the current fiscal year is as follows.

	Category and number of grantees	Type of stock and number of shares	Grant date	Vesting conditions	Vesting period	Exercise period
Fiscal year 2017 Stock options No.1 – 1 No.2 – 1	Directors of the Company 2 Corporate officers and executive officers of the Company 11 Employees of the Company 342 Directors of subsidiaries 20 Employees of subsidiaries 890	Common stock 3,549,500 shares	April 3, 2017	The rights vest in stages as follows One third vests on April 4, 2018 One third vests on April 4, 2019 The remaining vests on April 4, 2020	From April 3, 2017 to April 4, 2020	From April 4, 2017 to April 3, 2027
Fiscal year 2017 Stock options No.1 – 2 No.2 – 2	Directors of the Company 2 Corporate officers and executive officers of the Company 11 Employees of the Company 78 Directors of	Common stock 2,112,000 shares	April 3, 2017	The Company sets the upper limit number of shares expected to vest by multiplying the number of allocated stock subscription rights with the rate calculated by comparing total shareholder return fluctuation rate of the Company and companies that are the components of PHLX Semiconductor Sector Index and Tokyo Stock	From April 3, 2017 to April 3, 2020	From April 4, 2017 to April 3, 2027

	subsidiaries 14 Employees of subsidiaries 59			Price Index.		
Fiscal year 2017 Stock options No.4	Employees of subsidiaries 13	Common stock 52,200 shares	July 12, 2017	The rights vest in stages as follows One third vests on April 4, 2018 One third vests on April 4, 2019 The remaining vests on April 4, 2020	From July 12, 2017 to April 4, 2020	From July 13, 2017 to July 12, 2027
Fiscal year 2018 Stock options No.1 – 1 No.2 – 1	Directors of the Company 3 Corporate officers and executive officers of the Company 10 Employees of the Company 472 Directors of subsidiaries 18 Employees of subsidiaries 743	Common stock 3,607,200 shares	April 2, 2018	The rights vest in stages as follows One third vests on April 3, 2019 One third vests on April 3, 2020 The remaining vests on April 3, 2021	From April 2, 2018 to April 3, 2021	From April 3, 2018 to April 2, 2028
Fiscal year 2018 Stock options No.1 – 2 No.2 – 2	Directors of the Company 3 Corporate officers and executive officers of the Company 10 Employees of the Company 95 Directors of subsidiaries 13 Employees of subsidiaries 47	Common stock 2,047,200 shares	April 2, 2018	The Company sets the upper limit number of shares expected to vest by multiplying the number of allocated stock subscription rights with the rate calculated by comparing total shareholder return fluctuation rate of the Company and companies that are the components of PHLX Semiconductor Sector Index and Tokyo Stock Price Index.	From April 2, 2018 to April 2, 2021	From April 3, 2018 to April 2, 2028
Fiscal year 2018 Stock options No.3 No.4	Employees of the Company 257 Directors of subsidiaries 1 Employees of subsidiaries 181	Common stock 534,600 shares	July 31, 2018	The rights vest in stages as follows One third vests on April 3, 2019 One third vests on April 3, 2020 The remaining vests on April 3, 2021	From July 31, 2018 to April 3, 2021	From August 1, 2018 to July 31, 2028
Fiscal year 2018 Stock options	Employees of subsidiaries 22	Common stock 182,700	October 31, 2018	The rights vest in stages as follows Certain amount vests on	From October 31, 2018	From November 1, 2018 to

No.5		shares		April 3, 2019 Certain amount vests on April 3, 2020 Certain amount vests on April 3, 2021 The remaining vests on April 3, 2022	to April 3, 2022	October 31, 2028
Fiscal year 2019 Stock options No.1 No.2 No.3	Corporate officers and executive officers of the Company 1 Directors of subsidiaries 1 Corporate officers and executive officers of subsidiaries 3 Employees of subsidiaries 1,337	Common stock 57,043,500 shares	April 9, 2019	According to completion of the acquisitions with IDT, the existing stock options for IDT allocated to directors of IDT and its subsidiaries, corporate officers and executive officers of subsidiaries, and employees of subsidiaries are converted into the stock options for the Company and issued. The rights are based on the vesting periods for the stock option originally scheduled in IDT.	From April 9, 2019 to March 15, 2023	From April 9, 2019 to April 8, 2029
Fiscal year 2019 Stock options No.4 – 1 No.5 – 1	Corporate officers and executive officers of the Company 1 Employees of the Company 1 Employees of subsidiaries 32	Common stock 659,800 shares	May 31, 2019	The rights vest in stages as follows One third vests on April 1, 2020 One third vests on April 1, 2021 The remaining vests on April 1, 2022	From May 31, 2019 to April 1, 2022	From June 1, 2019 to May 31, 2029
Fiscal year 2019 Stock options No.4 – 2 No.5 – 2	Corporate officers and executive officers of the Company 1 Employees of the Company 1	Common stock 364,300 shares	May 31, 2019	The Company sets the upper limit number of shares expected to vest by multiplying the number of allocated stock subscription rights with the rate calculated by comparing total shareholder return fluctuation rate of the Company and companies that are the components of PHLX Semiconductor Sector Index and Tokyo Stock Price Index.	From May 31, 2019 to April 2, 2022	From June 1, 2019 to May 31, 2029
Fiscal year 2019 Stock options No.6 – 1 No.7 – 1	Employees of the Company 486 Directors of subsidiaries 15 Employees of subsidiaries 1,875	Common stock 16,222,700 shares	July 25, 2019	The rights vest in stages as follows One third vests on April 1, 2020 One third vests on April 1, 2021 The remaining vests on April 1, 2022	From July 25, 2019 to April 1, 2022	From July 26, 2019 to July 25, 2029
Fiscal year 2019 Stock options No.6 – 2	Employees of the Company 90	Common stock 3,203,800 shares	July 25, 2019	The Company sets the upper limit number of shares expected to vest by multiplying the	From July 25, 2019 to April 2, 2022	From July 26, 2019 to July 25, 2029

No.7 – 2	Directors of subsidiaries 10 Employees of subsidiaries 46			number of allocated stock subscription rights with the rate calculated by comparing total shareholder return fluctuation rate of the Company and companies that are the components of PHLX Semiconductor Sector Index and Tokyo Stock Price Index.		
Fiscal year 2019 Stock options No.8 – 1 No.9 – 1	Directors of the Company 2 Corporate officers and executive officers of the Company 12 Employees of the Company 2	Common stock 985,900 shares	August 23, 2019	The rights vest in stages as follows One third vests on April 1, 2020 One third vests on April 1, 2021 The remaining vests on April 1, 2022	From August 23, 2019 to April 1, 2022	From August 24, 2019 to August 23, 2029
Fiscal year 2019 Stock options No.8 – 2 No.9 – 2	Directors of the Company 2 Corporate officers and executive officers of the Company 12	Common stock 1,963,800 shares	August 23, 2019	The Company sets the upper limit number of shares expected to vest by multiplying the number of allocated stock subscription rights with the rate calculated by comparing total shareholder return fluctuation rate of the Company and companies that are the components of PHLX Semiconductor Sector Index and Tokyo Stock Price Index.	From August 23, 2019 to April 2, 2022	From August 24, 2019 to August 23, 2029
Fiscal year 2019 Stock options No.10	Employees of subsidiaries 441	Common stock 351,600 shares	September 20, 2019	The rights vest in stages as follows One third vests on April 1, 2020 One third vests on April 1, 2021 The remaining vests on April 1, 2022	From September 20, 2019 to April 1, 2022	From September 21, 2019 to September 20, 2029
Fiscal year 2019 Stock options No.11 – 1 No.12 – 1	Corporate officers and executive officers of the Company 1 Employees of the Company 122 Employees of subsidiaries 123	Common stock 887,700 shares	October 31, 2019	The rights vest in stages as follows Certain amount vests on April 1, 2020 Certain amount vests on April 1, 2021 Certain amount vests on April 1, 2022 The remaining vests on April 1, 2023	From October 31, 2019 to April 1, 2023	From November 1, 2019 to October 31, 2029
Fiscal year 2019 Stock options No.11 – 2 No.12 – 2	Corporate officers and executive officers of the Company 1 Employees of	Common stock 73,800 shares	October 31, 2019	The Company sets the upper limit number of shares expected to vest by multiplying the number of allocated stock subscription rights with the rate calculated	From October 31, 2019 to April 2, 2023	From November 1, 2019 to October 31, 2029

	subsidiaries 1			by comparing total shareholder return fluctuation rate of the Company and companies that are the components of PHLX Semiconductor Sector Index and Tokyo Stock Price Index.		
Fiscal year 2019 Stock options No.13	Employees of subsidiaries 15	Common stock 204,800 Shares	December 25, 2019	The rights vest in stages as follows One third vests on April 1, 2020 One third vests on April 1, 2021 The remaining vests on April 1, 2022	From December 25, 2019 to April 1, 2022	From December 26, 2019 to December 25, 2029
Fiscal year 2019 Stock options No.14	Employees of subsidiaries 23	Common stock 210,000 Shares	January 31, 2020	The rights vest in stages as follows Certain amount vests on April 1, 2020 Certain amount vests on April 1, 2021 Certain amount vests on April 1, 2022 The remaining vests on April 1, 2023	From January 31, 2020 to April 1, 2023	From February 1, 2020 to January 31, 2030
Fiscal year 2020 Stock options No.1 – 1 No.2 – 1	Directors of the Company 4 Corporate officers and executive officers of the Company 10 Employees of the Company 467 Directors of subsidiaries 14 Employees of subsidiaries 1,888	Common stock 17,068,000 Shares	June 30, 2020	The rights vest in stages as follows One third vests on July 1, 2021 One third vests on July 1, 2022 The remaining vests on July 1, 2023	From June 30, 2020 to July 1, 2023	From July 1, 2020 to June 30, 2030
Fiscal year 2020 Stock options No.1 – 2 No.2 – 2	Directors of the Company 1 Corporate officers and executive officers of the Company 10 Employees of the Company 88 Directors of subsidiaries 9 Employees of subsidiaries 41	Common stock 5,211,600 Shares	June 30, 2020	The Company sets the upper limit number of shares expected to vest by multiplying the number of allocated stock subscription rights with the rate calculated by comparing total shareholder return fluctuation rate of the Company and companies that are the components of PHLX Semiconductor Sector Index and Tokyo Stock Price Index.	From June 30, 2020 to June 30, 2023	From July 1, 2020 to June 30, 2030
Fiscal year	Directors of the	Common	August 31,	The rights vest in stages	From	From

2020 Stock options No.3 No.4	Company 1 Corporate officers and executive officers of the Company 8 Employees of the Company 916 Directors of subsidiaries 6 Employees of subsidiaries 1,614	stock 4,725,300 Shares	2020	as follows One third vests on August 31, 2020 One third vests on September 1, 2020 The remaining vests on October 1, 2020	August 31, 2020 to October 31, 2020	August 31, 2020 to August 30, 2030
Fiscal year 2020 Stock options No.5 No.6	Employees of the Company 219 Employees of subsidiaries 161	Common stock 665,800 Shares	August 31, 2020	The rights vest in stages as follows One third vests on September 1, 2021 One third vests on September 1, 2022 The remaining vests on September 1, 2023	From August 31, 2020 to September 1, 2023	From September 1, 2020 to August 31, 2030
Fiscal year 2020 Stock options No.7 – 1 No.8 – 1	Employees of the Company 3 Employees of subsidiaries 94	Common stock 910,100 Shares	November 30, 2020	The rights vest in stages as follows Certain amount vests on July 1, 2021 Certain amount vests on July 1, 2022 Certain amount vests on July 1, 2023 The remaining vests on July 1, 2024	From November 30, 2020 to July 1, 2023	From December 1, 2020 to November 30, 2030
Fiscal year 2020 Stock options No.7 – 2 No.8 – 2	Employees of subsidiaries 10	Common stock 82,000 Shares	November 30, 2020	The rights vest in stages as follows One third vests on September 1, 2021 One third vests on September 1, 2022 The remaining vests on September 1, 2023	From November 30, 2020 to September 1, 2023	From December 1, 2020 to November 30, 2030
Fiscal year 2020 Stock options No.7 – 3	Employees of the Company 1	Common stock 22,600 Shares	November 30, 2020	The Company sets the upper limit number of shares expected to vest by multiplying the number of allocated stock subscription rights with the rate calculated by comparing total shareholder return fluctuation rate of the Company and companies that are the components of PHLX Semiconductor Sector Index and Tokyo Stock Price Index.	From November 30, 2020 to June 30, 2023	From December 1, 2020 to November 30, 2030
Fiscal year 2021 Stock options No.1 No.2	Employees of the Company 6 Employees of subsidiaries 52	Common stock 320,400 Shares	February 26, 2021	The rights vest in stages as follows Certain amount vests on July 1, 2021 Certain amount vests on July 1, 2022 Certain amount vests on July 1, 2023	From February 26, 2021 to July 1, 2024	From February 27, 2021 to February 26, 2031

				The remaining vests on July 1, 2024		
Fiscal year 2021 Stock options No.3	Employees of subsidiaries 4	Common stock 13,200 Shares	February 26, 2021	The rights vest in stages as follows One third vests on September 1, 2021 One third vests on September 1, 2022 The remaining vests on September 1, 2023	From February 26, 2021 To September 1, 2023	From February 27, 2021 to February 26, 2031

(Note) 1. Vesting conditions include a requirement for award beneficiaries to provide services to the Company until the stock vesting date. However, this does not apply to certain cases such as mandatory retirement, resignation due to the expiration of the term of office or the other justifiable reasons.

2. Grantees cannot exercise options during the time from the day after the grant date until when the stock is vested. Also, the option will be forfeited if the target retires or resigns from the Company or subsidiary by the vesting date. However, if allowed under the Stock Acquisition Rights Allocation Agreement, those options may be exercised. For example, if awards are not forfeited upon retirement or resignation due to the expiration of terms of office under the Stock Acquisition Rights Allocation Agreement, the said person may exercise the said stock options starting on the day following said loss of eligibility until 13 months after.

3. If grantees forfeit their share acquisition rights, they may not exercise their stock options.

C. Number and weighted average exercise price of stock options

Changes of the number and the weighted average exercise price of stock options granted in the prior fiscal year and the current fiscal year are as follows. The number of stock options is stated by converting them to the number of shares.

	The year ended December 31, 2021		The year ended December 31, 2022	
	Number of options (shares)	Weighted average exercise price (yen)	Number of options (shares)	Weighted average exercise price (yen)
Beginning balance of unexercised options	49,952,600	1	30,692,900	1
Granted	333,600	1	—	1
Exercised	15,747,600	1	12,423,200	1
Forfeited	3,756,200	1	2,781,900	1
Expired	89,500	1	267,600	1
Ending balance of unexercised options	30,692,900	1	15,220,200	1
Ending balance of exercisable options	6,520,700	1	6,796,000	1

(Note) 1. For the stock options exercised during the period, the weight average share price as of the exercise date was 1,269 yen for the year ended December 31, 2021 and 1,336 yen for the year ended December 31, 2022.

2. Remaining weighted average contractual life outstanding as of December 31, 2021 and 2022 was 3 years and 2 years, respectively.

D. Fair value of stock options granted and estimation method of fair value

The valuation techniques used for the stock options granted for the year ended December 31, 2021 are the Binomial model, and the major basic assumptions and estimation method are as follows. There were no stock options granted during the year ended December 31, 2022.

Date of grant	Fair value per share at the grant date (yen)	Share price on date of grant (yen)	Exercise price (yen)	Expected volatility (Note 1)	Expected holding period (Note 2)	Expected dividend (Note 3)	Risk-free interest rate (Note 4)
February 2021	1,168	1,169	1	49.744%	5 years	No dividend	(0.048%)

(Note) 1. The expected volatility is calculated using the actual share prices during the expected holding period from the grant date.

2. The expected holding period is based on the number of years from the grant date to the last day of the principle exercise period.

3. The expected dividend is calculated based on the actual annual dividend for the year.

4. The risk-free interest rate is the yield on Japanese government bonds for the period that corresponds to the remaining life of the option.

33. Financial Instruments

(1) Capital management

The Group aims to achieve sustainable growth and maximize its corporate value. Investments of surplus funds are limited to short-term deposits and financial assets with a high level of safety. Regarding financing sources, the Group mainly uses borrowings from banks. The Group mainly uses derivative financial instruments to manage fluctuations in foreign currency exchange rates, and the Group's policies prohibit holding or issuing derivative financial instruments for speculative transactions. Items subject to management are net interest-bearing liabilities obtained by deducting cash and cash equivalents from interest-bearing liabilities and equity. Their balances and the major indicators that the Group uses for its capital management are as follows.

(In millions of yen)

	As of December 31, 2021	As of December 31, 2022
Interest-bearing liabilities	831,320	770,012
Less: Cash and cash equivalents	(221,924)	(336,068)
Net interest-bearing liabilities	609,396	433,944
Total equity attributable to owners of parent	1,150,081	1,533,750
Total liabilities and equity	2,426,301	2,812,272
Equity ratio attributable to owners of parent (%)	47.4	54.5

Equity ratio attributable to owners of parent: Total equity attributable to owners of parent /Total liabilities and equity.

(2) Basic policies for financial risk management

The Group is exposed to financial risks (credit risk, liquidity risk and market risk) in the process of executing its business activities. Accordingly, the Group regularly monitors the financial risks based on internal management regulations and takes measures to avoid or reduce the risks as required.

The Group does not engage in derivative transactions for speculative purposes.

A. Credit risk

(a) Credit risk management

Notes and trade receivables are exposed to the credit risk of customers. Conforming to the internal rules for the management of receivables, the Group regularly monitors major customers' credit and manages the due dates of collection and the balance for each customer. Other receivables are exposed to the credit risk of customers, but most of them are settled in the short term. Short-term investments are financial assets invested on a short-time basis, and the Group transacts with highly creditworthy financial institutions. Trade receivables are regarded as non-performing if all or part of them cannot be collected or if collection is deemed extremely difficult. The Group does not have any exposure to the significant credit risk of certain customers, and there is no excessive concentration of credit risk that requires special management.

The largest exposure to credit risk at the end of the reporting period is the carrying amount of financial assets after impairment, but there is no historical experience of recognizing a significant credit loss in previous years.

Regarding debt guarantees, the balance of debt guarantees presented in “Note 36. Commitments and Contingent Liabilities” is the largest exposure of the Group to credit risk.

(b) Analysis of changes in loss allowance

The changes in the loss allowance are as follows.

The year ended December 31, 2021

(In millions of yen)

	12-month expected credit losses	Lifetime expected credit losses		
	Loss allowance for financial assets other than trade receivables	Loss allowance for trade receivables	Loss allowance for financial assets whose credit risk has increased significantly	Loss allowance for credit-impaired financial assets
Beginning balance	—	119	—	—
Increases	—	61	—	—
Decreases due to reversal	—	(119)	—	—
Other	—	8	—	—
Ending balance	—	69	—	—

The year ended December 31, 2022

(In millions of yen)

	12-month expected credit losses	Lifetime expected credit losses		
	Loss allowance for financial assets other than trade receivables	Loss allowance for trade receivables	Loss allowance for financial assets whose credit risk has increased significantly	Loss allowance for credit-impaired financial assets
Beginning balance	—	69	—	—
Increases	—	146	—	—
Decreases due to reversal	—	(69)	—	—
Other	—	11	—	—
Ending balance	—	157	—	—

(c) Carrying amount of financial assets for the loss allowance

The carrying amount (before the loss allowance) of financial assets for the loss allowance as of each fiscal year end is as follows.

(In millions of yen)

	12-month expected credit losses	Lifetime expected credit losses		
	Loss allowance for financial assets other than trade receivables	Loss allowance for trade receivables	Loss allowance for financial assets whose credit risk has increased significantly	Loss allowance for credit-impaired financial assets
As of December 31, 2021	3,737	155,604	—	—
As of December 31, 2022	4,538	200,083	—	—

(d) Analysis of credit risk

The aging analysis of trade receivables as of each fiscal year end is as follows.

(In millions of yen)

	As of December 31, 2021	As of December 31, 2022
Before due date	148,040	186,776
Up to 30 days past due	7,142	9,586
Over 30 days past due and up to 90 days past due	372	3,008
Over 90 days past due	50	713
Total	155,604	200,083

For trade receivables, the Group’s major counterparties consist of specific distributors with high credit ratings and there is no material balance of loss allowance based on expected loss rate. For financial assets other than trade receivables, there is no credit risk that is concentrated around credit ratings.

B. Liquidity risk

The Group is exposed to liquidity risk whereby the performance of payment obligations could become difficult. To limit its exposure to liquidity risk, however, the Group works to maintain fund management through the optimization of capital efficiency through the efficient management of working capital and the central management of funds by the Company. The Group also manages the liquidity risk by appropriately maintaining liquidity on hand through the timely preparation and updating of the financing plan and taking the external financial environment into account.

The balance of financial liabilities by due date is as follows.

As of December 31, 2021

(In millions of yen)

	Carrying amount	Contractual cash flows	Due within one year	Due after one year but within two years	Due after two years but within three years	Due after three years but within four years	Due after four years but within five years	Due after five years
Non-derivative financial liabilities								
Trade and other payables	219,430	219,430	204,330	12,308	2,792	—	—	—
Bonds and borrowings	814,088	840,156	128,366	126,503	413,823	36,931	134,533	—
Lease liabilities	17,232	17,683	5,654	4,098	3,021	2,232	1,075	1,603
Contingent consideration (Note)	4,681	5,176	5,176	—	—	—	—	—
Derivative liabilities	1,550	1,550	1,384	—	—	—	166	—
Total	1,056,981	1,083,995	344,910	142,909	419,636	39,163	135,774	1,603

As of December 31, 2022

(In millions of yen)

	Carrying amount	Contractual cash flows	Due within one year	Due after one year but within two years	Due after two years but within three years	Due after three years but within four years	Due after four years but within five years	Due after five years
Non-derivative financial liabilities								
Trade and other payables	226,323	226,323	222,941	3,364	18	—	—	—
Bonds and borrowings	755,743	776,248	127,154	425,478	51,909	164,466	7,241	—
Lease liabilities	14,269	14,622	4,762	3,603	2,557	1,401	788	1,511
Contingent consideration (Note)	2,528	2,528	2,528	—	—	—	—	—
Derivative liabilities	8,342	8,342	6,441	1,284	—	—	617	—
Total	1,007,205	1,028,063	363,826	433,729	54,484	165,867	8,646	1,511

(Note) For details, please refer to “Note 7. Business Combinations.”

C. Market risk

(a) Foreign currency exchange risk

(i) Foreign currency exchange risk management

Foreign currency receivables and obligations arising from the global business development of the Group are exposed to the risk of foreign exchange rate fluctuations. To reduce the risk of foreign exchange rate fluctuations, the Group uses forward exchange contracts, currency options and currency swaps.

(ii) Net foreign exchange risk exposure

The Group’s exposure to the risk of foreign exchange rate fluctuations (net amount) is as follows. This excludes derivative transactions and the amount entered into to hedge foreign exchange rate fluctuation risk using foreign currency deposits.

(In millions of yen)

Currency	The year ended December 31, 2021	The year ended December 31, 2022
US dollar	(311,239)	(15,293)
Euro	37,680	58,677

(iii) Sensitivity analysis of foreign exchange rates

Based on the assumption that all other variables are constant for foreign currency financial instruments held by the Group in the previous fiscal year and the current fiscal year, the amount of the impact of the 1.0% appreciation of the yen against the US dollar and the euro on profit before tax in the consolidated statement of profit or loss is as follows.

(In millions of yen)

Currency	The year ended December 31, 2021	The year ended December 31, 2022
US dollar	3,112	153
Euro	(377)	(587)

(b) Interest rate risk

Although the Group raises funds through borrowings for the purpose of securing funds for long-term working capital and the promotion of growth strategies, the Group is exposed to the risk of interest rate fluctuations because some borrowings are made mainly at floating interest rates. To reduce the risk of changes in the interest paid on borrowings, the Group uses interest rate swaps as required. Accordingly, the Group has decided that the impact of the risk of interest rate fluctuations on the Company is limited and insignificant and does not conduct a sensitivity analysis for interest rate risk.

(c) Stock price risk

The Group has adopted an incentive plan for its employees for the purpose of securing excellent human resources, particularly at subsidiaries. To operate the incentive plan, the Group holds shares and other financial instruments for the long term and is exposed to the risk of changes in their market prices. Please note that, following the introduction of a stock option plan, the incentive plan was abolished and there was no new issuance.

The Group does not conduct a sensitivity analysis for the risk of changes in share prices since the impact of changes in share prices are immaterial.

(3) Fair value of financial instruments

A. Calculation method of fair value

The calculation method of the fair value of financial instruments is as follows.

(a) Cash and cash equivalents, and trade and other receivables

The fair value of these instruments approximates their carrying amount due to short term maturities.

(b) Trade and other payables

For trade and other payables that will mature within a short amount of time, the fair value approximates the carrying amount. The fair value of trade and other payables that will not mature in a short amount of time is calculated by the present value that is discounted by an interest rate assumed for the case where a similar borrowing is newly made and classified as Level 2.

(c) Securities

If the market price of a security is available in an active market, the securities are measured using this market price and classified as Level 1. If the market price is not available, the fair value is measured mainly by a method based on net assets (method of calculating by making adjustments to the market value as required based on the net assets of the entity that issues shares) and others, and classified as Level 3.

(d) Long-term borrowings

The fair value of long-term borrowings is calculated at the present value that is discounted using an interest rate assumed for the case where a similar borrowing is newly made and classified as Level 2.

(e) Derivative transactions

Forward exchange contracts, currency options and currency swaps are calculated based on the price presented by the customers’ financial institution and classified as Level 2. In addition, the fair value calculated using unobservable inputs is classified as Level 3.

(f) Bonds
The fair value of bonds is calculated by referring to a market price and classified as Level 2.
(g) Contingent consideration
The fair value of the contingent consideration is calculated as the present value of the payments in the future using appropriate valuation methods with consideration of the probability of occurrence and is classified as Level 3.
(h) Other financial assets and liabilities
Time deposits with maturities of more than three months, long-term accounts receivable, security deposits and guarantee deposits received that are measured at amortized cost are classified as Level 2. Because their fair value approximates their carrying amount, they are omitted from the following table.

B. Classification of financial instruments measured at fair value by levels
In the fair value hierarchy, financial instruments are classified from Level 1 to Level 3 as follows.
Level 1: Fair value measured using unadjusted quoted prices in the active markets
Level 2: Fair value other than quoted prices include within Level 1 that are observable, either directly or indirectly
Level 3: Fair value calculated by using a valuation technique including inputs that are not based on observable market data
Transfers between the levels in the fair value hierarchy are recognized on the assumption that the transfers occur at the end of each reporting period.

(a) Financial instruments measured at amortized cost
The carrying amount and the fair value of financial instruments measured at amortized cost are as follows. Financial instruments measured at fair value and financial instruments whose carrying amount closely approximates fair value are not included in the table below.

As of December 31, 2021

(In millions of yen)

	Carrying amount	Fair value			
		Level 1	Level 2	Level 3	Total
Financial liabilities					
Borrowings	659,537	—	661,181	—	661,181
Bonds	154,551	—	154,551	—	154,551
Other payables	59,262	—	58,987	—	58,987
Total	873,350	—	874,719	—	874,719

As of December 31, 2022

(In millions of yen)

	Carrying amount	Fair value			
		Level 1	Level 2	Level 3	Total
Financial liabilities					
Borrowings	577,154	—	575,563	—	575,563
Bonds	178,589	—	178,589	—	178,589
Other payables	41,206	—	40,941	—	40,941
Total	796,949	—	795,093	—	795,093

(b) Financial instruments measured at fair value

The components of financial assets and financial liabilities measured at fair value on a recurring basis that are classified as each level of the fair value hierarchy are as follows.

As of December 31, 2021

(In millions of yen)

	Level 1	Level 2	Level 3	Total
Financial assets				
Financial assets measured at fair value through profit or loss				
Derivative assets	—	123	—	123
Investment trust	5,475	—	—	5,475
Unlisted securities	—	—	6,018	6,018
Equity instruments measured at fair value through other comprehensive income				
Listed securities	250	—	—	250
Unlisted securities	—	—	2,581	2,581
Total	5,725	123	8,599	14,447
Financial liabilities				
Financial liabilities measured at fair value through profit or loss				
Derivative liabilities	—	1,550	—	1,550
Contingent consideration (Note)	—	—	4,681	4,681
Total	—	1,550	4,681	6,231

As of December 31, 2022

(In millions of yen)

	Level 1	Level 2	Level 3	Total
Financial assets				
Financial assets measured at fair value through profit or loss				
Derivative assets	—	21,945	—	21,945
Investment trust	5,900	—	—	5,900
Unlisted securities	—	—	4,134	4,134
Equity instruments measured at fair value through other comprehensive income				
Listed securities	1,091	—	—	1,091
Unlisted securities	—	—	5,524	5,524
Total	6,991	21,945	9,658	38,594
Financial liabilities				
Financial liabilities measured at fair value through profit or loss				
Derivative liabilities	—	8,342	—	8,342
Contingent consideration (Note)	—	—	2,528	2,528
Total	—	8,342	2,528	10,870

(Note) For details, please refer to “Note 7. Business Combinations.”

C. Changes in financial assets that are classified as Level 3 are as follows.

(In millions of yen)

	The year ended December 31, 2021	The year ended December 31, 2022
Beginning balance	4,740	8,599
Total gains or losses in the period	4,438	(616)
Profit or loss (Note 1)	3,072	(2,745)
Other comprehensive income (Note 2)	1,366	2,129
Purchases	—	2,638
Settlement	(623)	—
Transfer to Level 1	—	(120)
Acquisition due to business combination	44	—
Changes due to changes in the scope of consolidation	—	(843)
Ending balance	8,599	9,658

Changes in financial liabilities that are classified as Level 3 are as follows.

(In millions of yen)

	The year ended December 31, 2021	The year ended December 31, 2022
Beginning balance	—	4,681
Total gains or losses in the period	—	(1,348)
Profit or loss (Note 3)	—	(1,348)
Settlement	—	(2,205)
Acquisition due to business combination	4,681	1,400
Ending balance	4,681	2,528

(Note) 1. Amounts relate to financial assets measured at fair value through profit or loss and included in “Finance income” and “Finance costs” in the consolidated statement of profit or loss.
2. Amounts relate to equity instruments measured at fair value through other comprehensive income and presented in “Equity instruments measured at fair value through other comprehensive income” in the consolidated statement of comprehensive income.
3. Amounts relate to financial liabilities measured at fair value through profit or loss and included in “Finance income” and “Finance costs” in the consolidated statement of profit or loss.
4. Financial instruments that are classified as Level 3 consist of unlisted securities and contingent consideration due to business combination. Unlisted securities are mainly investments in funds, and the fair value of the unlisted securities is measured based on the value of net asset as a valuation technique. In addition, the fair value of contingent consideration is measured in consideration of the possibility of achieving for developmental milestones and the time value of money. The measurement results of the fair value are reviewed and approved by an appropriate authorized person. Since these estimates are uncertain, fair value may increase if significant unobservable development milestones become more likely to be achieved.

(4) Derivative transactions and hedging activities

A. Overview of hedges

The Group uses forward exchange contracts, currency options and currency swaps for the purpose of hedging transactions against the risk of foreign exchange rate fluctuations in foreign currency cash flows. Hedge accounting is applied to those transactions that meet the requirements for hedge accounting. Even if the requirements for hedge accounting are not met, the Group uses derivative transactions if they are economically reasonable. Changes in the fair value of the derivative transactions are recognized in profit or loss. The Group has also set a policy of not engaging in derivative transactions for speculative purposes.

Cash flow hedges

Cash flow hedges are hedging transactions to avoid the risk of changes in future cash flows, and changes in the fair value of derivative transactions that are designated as cash flow hedges are recognized in other comprehensive income. The amount that is recognized in accumulated other comprehensive income is reclassified to profit or loss at the time when the hedged transactions affect profit or loss. If the hedged items give rise to the recognition of non-financial assets or non-financial liabilities, the amount that is recognized in other comprehensive income is reclassified as an adjustment to the initial carrying amount of non-financial assets or non-financial liabilities. Derivatives that are designated as cash flow hedges include forward exchange contracts, currency options and currency swaps to hedge the risk of changes in cash flows due to changes in the foreign exchange rates for foreign currency transactions.

In the previous fiscal year and the current fiscal year, the amount recognized in profit or loss for the ineffective portion of the hedge and the portion that was excluded from the assessment of hedge effectiveness was not material.

B. Information on items that are designated as hedging instruments

The impact of hedging instruments that are designated as hedges on the consolidated statement of financial position is as follows. Derivative assets and liabilities are included in “Other financial assets” and “Other financial liabilities,” respectively, in the consolidated statement of financial position.

As of December 31, 2021

(In millions of yen)

	Contract amount	Book value of hedging instruments (Fair value)		Changes in fair value used as the basis for recognizing the ineffective portion of hedges
		Assets	Liabilities	
Cash flow hedges				
Foreign currency exchange risk				
Currency options	74,919	—	918	—
Currency swaps	155,156	123	166	(1,151)

As of December 31, 2022

(In millions of yen)

	Contract amount	Book value of hedging instruments (Fair value)		Changes in fair value used as the basis for recognizing the ineffective portion of hedges
		Assets	Liabilities	
Cash flow hedges				
Foreign currency exchange risk				
Currency options	332,855	12,026	7,050	—
Currency swaps	182,252	9,919	617	(11,708)

C. Information on items designated as hedged items

The amount of the impact of hedged items that are designated as hedges on the consolidated statement of financial position is as follows.

As of December 31, 2021

(In millions of yen)

	Changes in fair value used as the basis for recognizing the ineffective portion of hedges	Surplus for cash flow hedges related to ongoing hedging	Surplus for cash flow hedges related to the suspension of hedge accounting
Cash flow hedges			
Foreign currency exchange risk			
Plan on purchasing	—	(684)	—
Bonds	(1,151)	(111)	—

As of December 31, 2022

(In millions of yen)

	Changes in fair value used as the basis for recognizing the ineffective portion of hedges	Surplus for cash flow hedges related to ongoing hedging	Surplus for cash flow hedges related to the suspension of hedge accounting
Cash flow hedges			
Foreign currency exchange risk			
Plan on purchasing	—	(3,868)	—
Bonds and borrowings	(11,708)	(8,651)	—

D. Impact of the application of hedge accounting on the consolidated statement of profit and loss and the consolidated statement of comprehensive income

The impact of hedging instruments that are designated as cash flow hedges on the consolidated statement of profit and loss and the consolidated statement of comprehensive income is as follows.

As of December 31, 2021

(In millions of yen)

	Changes in the value of hedging instruments recognized in other comprehensive income (Note)	Ineffective portion recognized in profit or loss	Amount after basis adjustment to cash flow hedges (Note)
Cash flow hedges			
Foreign currency exchange risk			
Currency options	(4,329)	—	—
Currency swaps	162	—	(223)

(Note) Amount before tax effect.

As of December 31, 2022

(In millions of yen)

	Changes in the value of hedging instruments recognized in other comprehensive income (Note)	Ineffective portion recognized in profit or loss	Amount after basis adjustment to cash flow hedges (Note)
Cash flow hedges			
Foreign currency exchange risk			
Currency options	(5,427)	—	10,559
Currency swaps	(12,622)	(87)	(1,140)

(Note) Amount before tax effect.

E. Fair value of derivatives to which hedge accounting is not applied

The fair value and contract amount of derivatives to which hedge accounting is not applied are as follows.

As of December 31, 2021

Not applicable.

As of December 31, 2022

(In millions of yen)

	Contract amount	Book value of hedging instruments (Fair value)	
		Assets	Liabilities
Currency options	385,174	—	675

(5) Transfer of financial assets

Accelerating from restructuring to growth stage, the Group provides diversified financing to achieve these growth strategies and liquidates certain trade receivables by transferring receivables.

The expenses arising from transfer of trade receivables derecognized in their entirety were 61 million yen in the prior fiscal year and 39 million yen in the current fiscal year.

34. Related Parties

(1) Transactions with related parties

The year ended December 31, 2021

Innovation Network Corporation of Japan, which was a principal shareholder of the Group, was established in July 2009 with the Japanese government as the principal shareholder, and the total amount of investments by the Japanese government accounts for 95% or more of the capital of Innovation Network Corporation of Japan. As a result, the Japanese government and the government-related entities have become related parties of the Group.

In addition, Innovation Network Corporation of Japan conducted a business divestiture on September 21, 2018 and newly created INCJ, Ltd. INCJ, Ltd. succeeded to all of the Group's shares of Innovation Network Corporation of Japan and became a principal shareholder of the Group.

Between the Group and these related parties, there are neither significant transactions individually nor significant transactions on aggregate although not significant individually.

Furthermore, there were no related party transactions with INCJ, Ltd. and other related parties.

The year ended December 31, 2022

Transactions with related parties for the year ended December 31, 2022 is as follows.

(In millions of yen)

Attribute	Company name	Ratio of Share-Holding (Owned)	Relation with related parties	Contents of transaction	Amounts of transaction	Account	Balance as of December 31, 2022
Major corporate shareholders	INCJ, Ltd.	(Owned) Direct 12.52% (Note 1)	—	Purchases of treasury shares (Note 2)	200,000	—	—

(Note) 1. Ratio of share holding of INCJ, Ltd. has decreased to 12.52% due to a Tender Offer conducted for its treasury shares during the period from April 28, 2022 to May 31 based on the resolution of the Board of Directors held on April 27. As a result, it is no longer a related party of the Group under IFRS.

2. Based on the resolution of the Board of Directors held on April 27, 2022, the Company conducted a Tender Offer for its treasury shares during the period from April 28, 2022 to May 31, 2022 and acquired 168,067,250 shares. For details, see "Note 23 Share Capital and Other Equity Items."

(2) Compensation to key management

Compensation paid to key management personnel is as follows.

(In millions of yen)

Category	The year ended December 31, 2021	The year ended December 31, 2022
Remuneration and bonuses	226	254
Share-based payments	384	384
Total	610	638

(Note) The exercise price and other key terms of share-based payment arrangements are as stated in "Note 32. Share-based Payments."

35. Major Subsidiaries

All subsidiaries are included in the scope of consolidation for our consolidated financial statements.

Major subsidiaries as of December 31, 2022 are as follows.

Company	Location	Descriptions of Principal Businesses	Percentage Ownership and Voting Interest (%)	
			The year ended December 31, 2021	The year ended December 31, 2022
Renesas Semiconductor Manufacturing Co., Ltd.	Hitachinaka, Ibaraki	Manufacturing and Engineering Service Companies	100.0	100.0
Renesas Electronics Hong Kong Limited	Hong Kong, China	Sales Companies	100.0	100.0
Renesas Electronics America Inc.	California, U.S.A.	Design, Applications, Manufacturing and Sales Companies	100.0	100.0
Renesas Electronics Europe GmbH (Germany)	Dusseldorf, Germany	Design, Applications and Sales Companies	100.0	100.0
Renesas International Operations Sdn. Bhd.	Selangor, Malaysia	Management of parts of consignment business of our Group companies	100.0 (100.0) (Note)	100.0 (100.0) (Note)
Renesas Electronics (Penang) Sdn. Bhd.	Penang, Malaysia	Engineering, Manufacturing and Sales Companies	100.0 (100.0) (Note)	100.0 (100.0) (Note)
Renesas Electronics Germany GmbH	Dresden, Germany	Engineering, Manufacturing and Sales Companies	100.0 (100.0) (Note)	100.0 (100.0) (Note)
IDT Bermuda Ltd.	Bermuda	Business Corporations and Others	100.0 (100.0) (Note)	100.0 (100.0) (Note)
GigPeak, Inc.	Delaware, U.S.A.	Business Corporations and Others	100.0 (100.0) (Note)	100.0 (100.0) (Note)
Dialog	Buckinghamshire, U.K.	Engineering, Manufacturing and Sales Companies	100.0	100.0
Celeno	Delaware, U.S.A.	Business Corporations and Others	100.0	100.0

(Note) Numbers in parentheses represent indirect voting rights.

There are no subsidiaries with significant non-controlling interests.

36. Commitments and Contingent Liabilities

(1) Commitments for the acquisition of assets

The Group's commitments for the acquisition of assets are as follows.

(In millions of yen)

	As of December 31, 2021	As of December 31, 2022
Property, plant and equipment (Note)	25,771	119,625
Intangible assets	447	942
Total	26,218	120,567

(Note) These amounts relate primarily to the unperformed contracts regarding investment in facilities for resuming operations at Kofu Factory plant and enhancing production capacity at Naka Factory and others.

(2) Loan commitments

The Group has entered into a contract for setting commitment lines with its main banks for the purpose of securing long-term working capital, and the balance of unused loans is as follows.

(In millions of yen)

	As of December 31, 2021	As of December 31, 2022
Total amount of commitment lines	50,000	50,000
Balance of used loans	—	—
Balance of unused loans	50,000	50,000

(3) Debt guarantees

The Group provides debt guarantees against bank loans of its employees as follows.

(In millions of yen)

	As of December 31, 2021	As of December 31, 2022
Guarantees of employees' obligations	26	11
Total	26	11

(Guarantees of employees' obligations)

The Group provides guarantees for the housing loans of employees as part of its welfare program. If an employee cannot repay a housing loan covered by a debt guarantee, the Group must assume the obligation. These debt guarantees are secured by the houses of the employees.

(4) Others

As the Group conducts business worldwide, it is possible that the Group may become a party to lawsuits, investigation by regulatory authorities and other legal proceedings in various countries.

Though it is difficult to predict the outcome of the legal proceedings to which the Group is presently a party or to which it may become a party in future, the resolution of such proceedings may require considerable time and expense. There is a possibility that the Group's business, performance, financial condition, cash flow, reputation and creditability to have significant adverse effects by the outcome.

The Group records provision for loss on litigation for several cases written below to the extent possible to make a reasonable estimation. Additionally, the Group records loss on litigation for cases other than below, to prepare for payments regarding lawsuits against other companies and compensation for damages. In accordance with IAS 37 "Provisions, Contingent Liabilities and Contingent Assets" Article 92, the Group does not disclose detailed information of these cases since it is likely to lead the Group to an unfavorable position.

(Civil lawsuit related to the alleged patent infringement and trade secret violation)

The Group's subsidiary in the U.S has been named as a defendant in a lawsuit filed in November 2008 in the United States of America District Court for the Eastern District of Texas (hereinafter "the Court of First Instance") related to the alleged patent infringement and trade secret violation. The Group's subsidiary filed a notice of appeal at the Court of Appeals for the Federal Circuit (hereinafter "the Court of Second Instance") against the Court of First Instance judgment of June 2016, and in July 2018, the Court of Second Instance rejected the judgement of the Court of First Instance for payment of compensation and conducted the retrial order at the Court of First Instance. After the retrial, in March 2022, the Court of First Instance issued judgement ordering compensation of 48.3 million US dollars. Subsequently, in August 2022, the Group's subsidiary filed an appeal with the Court of Second Instance.

(Civil lawsuits related to the alleged violations of the competition law)
In July 2019, the Group has been named in the United Kingdom as a defendant in civil lawsuits related to possible violations of competition law involving smartcard chips brought by purchaser of such products. Supreme Court of the United Kingdom has made a decision not to allow an appeal regarding the lower court judgment to dismiss the claim.

(Indemnification claim related to environmental pollution)
The Group’s subsidiary in Taiwan has been subjected to requests for restitution for environmental pollution associated with a factory in Taiwan owned by the subsidiary’s predecessor company.

Since June 2004, the Group’s subsidiary has been notified that a company reserved its right to seek indemnification from us for all costs associated with the remediation of the contamination related to environmental pollution found at a factory in Taiwan owned by the subsidiary’s predecessor company, and the costs associated with the lawsuit as well as the costs relating to those retained environmental liabilities in a toxic tort class action lawsuit filed by ex-employees worked at the factory. Though the Group’s subsidiary is not a defendant in the class action lawsuit, the claimant initiated arbitration proceedings against us related to all claims arising out of the contamination, including the remediation, the toxic tort claims, and attorneys’ fees in December 2017, but afterward, the arbitration was ordered to stay by the arbitrator on a unilateral request by the claimant.

37. Government Grants

Government grants related to employment or other actions taken by the Group are recognized in profit or loss. Government grants of 286 million yen and 1,051 million yen were deducted from cost of sales and selling, general and administrative expenses, respectively for the year ended December 31, 2021.

In addition, government grants related to research and development are recognized in profit or loss and recorded in “Other income” for the year ended December 31, 2021 and December 31, 2022.

38. Additional Information

(Fire outbreak in a wholly-owned manufacturing subsidiary)

On March 19, 2021, a fire broke out at a manufacturing line of Naka Factory (located in Hitachinaka, Ibaraki Prefecture) of Renesas Semiconductor Manufacturing Co., Ltd, a wholly-owned manufacturing subsidiary of the Company. Due to this fire, the Group recorded 18,216 million yen for restoration and repairment costs of property, plant and equipment, disposal costs and reinspection fees of inventories and fixed costs during the shutdown for the year ended December 31, 2021. These are included in cost of sales of 18,108 million yen and other expenses of 108 million yen in the consolidated statement of profit or loss. In addition, other payables of the fire related costs are recorded in trade and other payables and other liabilities of 6,147 million yen in the consolidated statement of financial position as of December 31, 2021.

The Group recorded 942 million yen for restoration and repairment costs of property, plant and equipment for the year ended December 31, 2022. These are included in cost of sales in the consolidated statement of profit or loss. In addition, the Group received part of fire insurance payments and recorded the amount received as “Other income” for the year ended December 31, 2022. The remaining part of fire insurance payments is to be recorded as “Other income” of 29,610 million yen for the three months ending March 31, 2023. This insurance payments include the amount for loss of profits in the event of fire damage.

39. Subsequent Events

(Acquisition of and Tender Offer for Treasury Shares)

The Company has resolved at the Meeting of Board of Directors dated February 9, 2023, to authorize an acquisition of its own shares pursuant to the provisions of Article 156, Paragraph 1 of the Companies Act, as applied by replacing certain terms pursuant to the provisions of Article 165, Paragraph 3 of the Companies Act and the provisions of its Articles of Incorporation and conduct a tender offer to acquire treasury shares (hereinafter the “Tender Offer”) under the specific acquisition method as follows. The Tender Offer was concluded on March 10, 2023.

(1) Purposes of Tender Offer

The Company concluded, in the middle of December 2022, that the Company’s financial structure was robust enough to conduct an additional measure, following the tender offer for treasury shares with a purchase period from April 28, 2022 to May 31, 2022 (hereinafter the “2022 Tender Offer”), for returning profits to shareholders and decided to specifically consider whether or not, when, how and the extent to which it would implement the further acquisition of its treasury shares for the purpose of returning profits to shareholders and improving capital efficiency. Additionally, as stated above, INCJ, Ltd. (hereinafter “INCJ”), needs to divest all of its shares of the Company’s common stock in the future and therefore, after the implementation of the 2022 Tender Offer, the Company continued to discuss with INCJ the method and timing of divestments of the shares of the Company’s common stock owned by INCJ and was aware that INCJ had the intention to further divest its shares of the Company’s common stock. As a method of it, in light of the following points, the Company believed that purchasing a part of the shares of the Company’s common stock owned by INCJ at a price discounted from the market price through a tender offer would be the reasonable option for the Company and its shareholders in order to return profits to shareholders.

Regarding the specific acquisition method of its treasury shares, as a result of consideration of equality among shareholders, the transparency of transactions, the likelihood of being able to acquire the intended number of shares of common stock of the Company from INCJ, and the possibility to curb the amount of funds required to acquire treasury stock, the Company has determined that a tender offer is the most appropriate method.

Regarding the calculation of the purchase price per share in the Tender Offer (hereinafter the “Tender Offer Price”), the Company believed that priority should be given to the market price of the shares of its common stock, because the Company’ common stock is listed on a financial instruments exchange and the basis for calculating the Tender Offer Price should be clear and objective. In addition, by setting a certain discount rate, the Company believed that it will improve the likelihood of acquiring common stock of the Company from INCJ and curb the funds required for the acquisition of treasury stock.

As a result of discussions with INCJ, the Company entered into the Tender Agreement with INCJ on February 9, 2023 by which INCJ will tender 40,000,000 shares (ownership ratio: 2.23%) of the Company’s common stock owned by INCJ through the Tender Offer. As of February 9, 2023, INCJ is the largest shareholder among other major shareholders of the Company, and even if the INCJ Tendering Shares are tendered in the Tender Offer and the Company purchases all such INCJ Tendering Shares, the largest shareholder among other major shareholders is not expected to change.

The Company has not decided on the policy of disposing of the treasury shares acquired through the Tender Offer.

(2) Resolution of the Meeting of the Board of Directors on the Acquisition of Treasury Shares

a. Class of shares to be acquired:	Common stock
b. Total number of shares to be acquired:	40,453,174 shares (upper limit)
c. Total acquisition price:	50,000,123,064 yen (upper limit)
d. Acquisition period:	From February 10, 2023 to April 28, 2023

(3) Outline of the Tender Offer

a. Number of shares to be purchased:	40,453,074 shares
b. Price of purchase:	1,236 yen per share of common stock
c. Period of Tender Offer:	From February 10, 2023 to March 10, 2023
d. Date of public notice of commencement of tender offer:	February 10, 2023
e. Commencement date of settlement:	April 4, 2023

(4) Completion of the Acquisition of Treasury Shares

a. Class of shares acquired:	Common stock
b. Total number of shares acquired:	40,453,107 shares
c. Total acquisition price:	50,000,040,252 yen
d. Acquisition period:	From February 10, 2023 to March 10, 2023
e. Acquisition method:	Tender Offer

With the completion of the Tender Offer, the acquisition of treasury shares authorized by the resolution of the Meeting of Board of Directors adopted on February 9, 2023 pursuant to the provisions of Article 156, Paragraph 1 of the Companies Act, as applied by replacing certain terms pursuant to the provisions of Article 165, Paragraph 3 of the Companies Act and the provisions of its Articles of Incorporation has been completed.

(Acquisition of Stock of Panthronics AG)
On March 21, 2023, the Company has entered into a definitive agreement with the shareholders of Panthronics AG (hereinafter “Panthronics”), a fabless semiconductor company in Austria, under which the Company will acquire Panthronics in an all-cash transaction through its wholly owned subsidiary (hereinafter “the Acquisition”).

(1) Purpose of acquisition
NFC (Near-Field Communication) has emerged as a de facto standard in the digital economy and touches many aspects of daily life. Fintech, such as mobile point-of-sale (mPoS) terminals and contactless payment, IoT, asset tracking, and wireless charging are highlights of NFC’s increasing presence.

Panthronics has been offering advanced NFC chipsets and software that are easy to apply, innovative, small-in-size, and highly efficient for payment, IoT, and NFC wireless charging.

The Company and Panthronics have been addressing the rising demand of NFC as partners since 2018. Acquiring Panthronics’ competitive NFC technology will provide the Company with in-house capability to instantly capture growing and emerging market opportunities for NFC. The Acquisition will enrich the Company’s portfolio of connectivity technology, extending its reach into high-demand NFC applications in fintech, IoT, asset tracking, wireless charging, and automotive applications.

(2) Overview of the acquiree

a. Name	Panthronics AG
b. Business description	Development, design and sales of high-performance wireless products such as NFC chipsets and software

(3) Acquisition Method
Acquisition of shares for cash consideration.

(4) Schedule
The Acquisition is expected to close by the end of December 2023, after obtaining required regulatory approval and completing customary closing conditions.

(2) Other

Quarterly information for the year ended December 31, 2022

(Cumulative period)		First quarter	Second quarter	Third quarter	The year ended December 31, 2022
Revenue	(Million yen)	346,288	722,908	1,110,040	1,500,853
Profit before tax	(Million yen)	78,742	147,423	243,098	362,299
Profit attributable to owners of parent	(Million yen)	59,883	110,437	185,148	256,632
Basic earnings per share	(Yen)	30.79	56.96	98.07	137.67

(Accounting period)		First quarter	Second quarter	Third quarter	Fourth quarter
Basic earnings per share	(Yen)	30.79	26.15	41.79	39.86

(Note) The Group has finalized the provisional accounting treatment related to the business combinations for the year ended December 31, 2022. Therefore, regarding the amounts related to Quarterly information, the significant revision of the purchase price allocation has been reflected.

Independent Auditor's Report

To the Board of Directors of Renesas Electronics Corporation

Opinion

We have audited the consolidated financial statements of Renesas Electronics Corporation (the Company) and its subsidiaries (the Group), which comprise the consolidated statement of financial position as at December 31, 2022, and the consolidated statement of profit or loss, consolidated statement of comprehensive income, consolidated statement of changes in equity and consolidated statement of cash flows for the year then ended, and notes to the consolidated financial statements.

In our opinion, the accompanying consolidated financial statements present fairly, in all material respects, the consolidated financial position of the Group as at December 31, 2022, and its consolidated financial performance and its consolidated cash flows for the year then ended in accordance with International Financial Reporting Standards.

Basis for Opinion

We conducted our audit in accordance with auditing standards generally accepted in Japan. Our responsibilities under those standards are further described in the *Auditor's Responsibilities for the Audit of the Consolidated Financial Statements* section of our report. We are independent of the Group in accordance with the ethical requirements that are relevant to our audit of the consolidated financial statements in Japan, and we have fulfilled our other ethical responsibilities in accordance with these requirements. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Key Audit Matters

Key audit matters are those matters that, in our professional judgment, were of most significance in our audit of the consolidated financial statements of the current period. These matters were addressed in the context of our audit of the consolidated financial statements as a whole, and in forming our opinion thereon, and we do not provide a separate opinion on these matters.

PricewaterhouseCoopers Aarata LLC
Otemachi Park Building, 1-1-1 Otemachi, Chiyoda-ku, Tokyo 100-0004, Japan
T: +81 (3) 6212 6800, F: +81 (3) 6212 6801, www.pwc.com/jp/assurance

<table>
<tr><td colspan="2">Impairment analysis of goodwill (Notes to Consolidated Financial Statements: 15. Impairment of Non-financial Assets)</td></tr>
<tr><td>Key audit matter description</td><td>How our audit addressed the key audit matter</td></tr>
<tr><td>The Company is a semiconductor manufacturing company, engaging in semiconductor-related research, development, design, manufacturing, sales and services. The Company consists of the “Automotive Business” and the “Industrial/Infrastructure/IoT Business” and makes efforts to expand and strengthen its product portfolio and technologies.
The Company has recently completed multiple acquisitions in order to expand its business and strengthen its competitiveness, including a US-based business Intersil Corporation (hereafter “former Intersil”) in February 2017, a US-based business Integrated Device Technology, Inc. (hereafter “former IDT”) in March 2019, a UK-based business Dialog Semiconductor Plc (hereafter “Dialog”) in August 2021, and a US-based business Celeno Communications Inc. (hereafter “Celeno”) in December 2021 and recorded goodwill, which is allocated to each of the cash-generating units that is expected to benefit from the synergies of the combination, as a result of these acquisitions in its consolidated financial statements.
The Company recorded goodwill of 1,265,457 million yen as of December 31, 2022. Of this amount, 303,897 million yen and 954,792 million yen are allocated to the “Automotive Business” and the “Industrial/Infrastructure/IoT Business”, respectively. The recorded amount of goodwill comprised approximately 45% of consolidated total assets.
The Company tests goodwill for impairment annually and more often at an interim date if indicators of impairment exist. In testing goodwill for impairment, the Company measures the recoverable amount of the cash-generating units including goodwill at its value-in-use. The value-in-use is determined by discounting to present value the estimated future cash flows, which are estimated based on the five-year business plan that was approved by management, and estimated perpetual growth rates in revenue for the period thereafter. Key assumptions in estimating the value-in-use include gross margins in the business plan, the perpetual growth rates in revenue, and the discount rates.
We have determined that the impairment analysis of goodwill constitutes a key audit matter because of</td><td>In auditing the impairment analysis of goodwill allocated to the “Automotive Business” and the “Industrial/Infrastructure/IoT Business” cash-generating units, we performed the following principal audit procedures:
● We assessed the effectiveness of the design and tested the operating effectiveness of internal controls over the preparation and approval of the business plan.
● We primarily performed the following procedures for the business plan approved by management:
• We examined the gross margins used by management in determining the business plan through procedures including comparing those forecasted to the historical results.
• We compared the gross margins in the business plan used in the impairment analysis in the previous fiscal year with the actual gross margins, examined the reasons for the discrepancy between the actual results and the plan, and confirmed that it was properly reflected in the business plan for the current fiscal year.
● In verifying the perpetual growth rates in revenue and the discount rates that were used to determine the recoverable amount, we primarily performed the following procedures with the assistance of our valuation specialists:
• We assessed the appropriateness of the methods that management used to determine the perpetual growth rates in revenue and the discount rates.
• We obtained relevant source documents that were used to determine the discount rates and the perpetual growth rates in revenue and verified them by agreeing to third-party information.
● We examined the reasonableness of the recoverable amount determined by management by comparing the concluded</td></tr>
</table>

pwc

the materiality of such goodwill to the consolidated financial statements, the complexity of impairment testing of goodwill, the uncertainty in estimating gross margins, the perpetual growth rates in revenue, and the discount rates, and the necessity of significant judgments made by management.	recoverable amount to the Company's market capitalization.
Measurement of developed technology acquired in a business combination with Dialog (Notes to Consolidated Financial Statements: 7. Business Combinations and 13. Goodwill and Intangible Assets)	
Key audit matter description	How our audit addressed the key audit matter
The Company is a semiconductor manufacturing company, engaging in semiconductor-related research, development, design, manufacturing, sales and services. The Company consists of “Automotive Business” and “Industrial/Infrastructure/IoT Business” and makes efforts to expand and strengthen its product portfolio and technologies. In connection with the “Automotive Business” and “Industrial/Infrastructure/IoT Business”, the Company acquired all common shares issued and to be issued of Dialog on August 31, 2021 for 631,075 million yen (“the Transaction”). The Transaction is a business combination accounted for under IFRS 3 “Business combinations”, and the difference between the acquisition-date fair value of the consideration transferred and the net of the acquisition-date fair value of the identifiable assets acquired and the liabilities assumed is accounted for as goodwill. During the fiscal period ended December 31, 2022, the Company completed the measurement of the accounting for the acquisition within one year from the acquisition date. One of the important identifiable assets acquired was the developed technology. The book value of developed technology acquired in the Transaction was 134,474 million yen (4.8% of total consolidated assets) in the consolidated financial statements as of December 31, 2022. The Company used the excess earnings method to determine the acquisition-date fair value of the developed technology, which is the present value of residual income calculated as future cash flows expected to be derived from existing technologies, less future cash flows expected to be derived from contributing assets, such as working capital and fixed assets. The determination of the acquisition-date fair value of the developed technology involves complexity as it is based on a lot of consistent input data. The sales growth rates and EBITDA included in Dialog’s	We mainly performed the following audit procedures over the measurement of developed technology acquired in the Transaction: ● We inquired of management and inspected relevant documents, including the Board of Directors’ meeting minutes and purchase agreement, to obtain an understanding of overview and objective of the Transaction. ● We assessed the appropriateness of the model used in the measurement of the acquisition-date fair value of developed technology acquired in the Transaction according to the purpose, the reasonableness of the assumptions used and the reliability of underlying data used. We performed the following procedures: • Compared sales growth rates based on Dialog’s future business plan with the projected market growth rates obtained from external sources. • Evaluated the reasonableness of EBITDA based on Dialog’s future business plan by examining elements such as gross profit rates, selling, general and administrative expenses rates, and depreciation and amortization rates are forecasted based on the actual results. • Examined the economic useful lives, which is a basis for the technology obsolescence rates of Dialog's developed technologies, are determined based on useful lives of past and present products which use those technologies. • Engaged a valuation specialist to perform the procedures including: · Evaluating the reasonableness of the input data used to calculate

future business plan, technology obsolescence rates and discount rate involve a high degree of estimation uncertainty and significant management's judgments. A valuation specialist was needed to perform the audit procedures for the estimation. In addition, the developed technology acquired in the Transaction is considered quantitatively material. Based on the above, we determined that the measurement of developed technology acquired in the Transaction constitutes a key audit matter.	weighted average cost of capital, which is a basis for the discount rate for the developed technology. In addition, examining the discount rate was determined based on the weighted average cost of capital. · Developing a reasonable range of the fair value of developed technology and determining management's point estimate was within the range. • Compared the ratio of developed technology acquired to goodwill with the sum of the identifiable intangible assets acquired and goodwill between the Transaction and the other combination cases of industry peers.

Other Information

The other information comprises the information included in FINANCIAL REPORT 2022, but does not include the consolidated financial statements and our auditor's report thereon. Management is responsible for the other information. In addition, the Corporate Auditors and Board of Corporate Auditors are responsible for overseeing the Group's reporting process of the other information.
Our opinion on the consolidated financial statements does not cover the other information and we do not express any form of assurance conclusion thereon.
In connection with our audit of the consolidated financial statements, our responsibility is to read the other information and, in doing so, consider whether the other information is materially inconsistent with the consolidated financial statements or our knowledge obtained in the audit or otherwise appears to be materially misstated.
If, based on the work we have performed, we conclude that there is a material misstatement of this other information, we are required to report that fact.
We have nothing to report in this regard.

Responsibilities of Management and The Corporate Auditors and Board of Corporate Auditors for the Consolidated Financial Statements

Management is responsible for the preparation and fair presentation of the consolidated financial statements in accordance with International Financial Reporting Standards, and for such internal control as management determines is necessary to enable the preparation of consolidated financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the consolidated financial statements, management is responsible for assessing the Group's ability to continue as a going concern, disclosing, as applicable, matters related to going concern, and using the going concern basis of accounting unless management either intends to liquidate the Group or to cease its operations, or has no realistic alternative but to do so.

The Corporate Auditors and Board of Corporate Auditors are responsible for overseeing the Group's financial reporting process.

Auditor's Responsibilities for the Audit of the Consolidated Financial Statements

Our objectives are to obtain reasonable assurance about whether the consolidated financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with auditing standards generally accepted in Japan will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these consolidated financial statements.

As part of an audit in accordance with auditing standards generally accepted in Japan, we exercise professional judgment and maintain professional skepticism throughout the audit. We also:

- Identify and assess the risks of material misstatement of the consolidated financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.
- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, while the purpose of the consolidated financial statement audit is not to express an opinion on the effectiveness of the Group's internal control.
- Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by management.
- Conclude on the appropriateness of management's use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Group's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditor's report to the related disclosures in the consolidated financial statements or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditor's report. However, future events or conditions may cause the Group to cease to continue as a going concern.
- Evaluate whether the presentation and disclosures of the consolidated financial statements are in accordance with International Financial Reporting Standards, the overall presentation, structure and content of the consolidated financial statements, including the disclosures, and whether the consolidated financial statements represent the underlying transactions and events in a manner that achieves fair presentation.
- Obtain sufficient appropriate audit evidence regarding the financial information of the entities or business activities within the Group to express an opinion on the consolidated financial statements. We are responsible for the direction, supervision and performance of the group audit. We remain solely responsible for our audit opinion.

We communicate with the Corporate Auditors and Board of Corporate Auditors regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.

We also provide the Corporate Auditors and Board of Corporate Auditors with a statement that we have complied with relevant ethical requirements regarding independence, and to communicate with them all relationships and other matters that may reasonably be thought to bear on our independence, and where applicable, related safeguards.
From the matters communicated with the Corporate Auditors and Board of Corporate Auditors, we

determine those matters that were of most significance in the audit of the consolidated financial statements of the current period and are therefore the key audit matters. We describe these matters in our auditor's report unless law or regulation precludes public disclosure about the matter or when, in extremely rare circumstances, we determine that a matter should not be communicated in our report because the adverse consequences of doing so would reasonably be expected to outweigh the public interest benefits of such communication.

Interest required to be disclosed by the Certified Public Accountants Act of Japan

Our firm and its designated engagement partners do not have any interest in the Group which is required to be disclosed pursuant to the provisions of the Certified Public Accountants Act of Japan.

DocuSigned by:
澤山 宏行
7DA967F451AD4DB...

Hiroyuki Sawayama

Designated Engagement Partner
Certified Public Accountant

DocuSigned by:
近藤 仁
1AF71E894F944A0...

Hitoshi Kondo

Designated Engagement Partner
Certified Public Accountant

DocuSigned by:
新保 智巳
3411DE36DFA9493...

Satoshi Shimbo

Designated Engagement Partner
Certified Public Accountant

March 30, 2023