



TOIREX SEMICONDUCTOR LTD.
www.torexsemi.com



Powerfully Small!

If an electronic device's CPU is the "brain," then the power supply is the "heart." And when it comes to the power ICs supporting that "heart," analog technology is essential.

Since its inception, Torex has worked toward improving analog technologies, most specifically analog CMOS technology, anxious to answer the call for smaller, lighter, and higher-performance power ICs.

Torex's ultra-small power management ICs with low power consumption have earned high praise in a variety of fields including mobile devices such as smartphones, digital cameras and PCs, automotive equipment such as car navigation systems and electronic toll-collection systems, industrial equipment such as robots, and even wearable devices. Even though power management ICs contain some very small parts, some no bigger than 1 mm, their impact on the world is infinitely large.

As such, Torex is dedicated to supporting not only the evolution of society but also the future of the global environment in an analog technology of TOREX.

At Torex, our goal is to become power management IC specialists, working hard to keep the "heart" of electronic devices healthy.

Corporate Philosophy

Our Corporate Philosophy is to endeavor to continue to improve on our intellect and to be responsive to market demands by creating highly valuable products. To contribute to the maintenance of our global environment, to the prosperity of our society and at the same time enabling each and everyone involved in our business to prosper.



TOIREX

Technology

Torex's 3 technologies for keeping the "hearts" of electronic devices beating

The first of Torex's three technologies is "circuit design." Power management ICs found in analog products all vary greatly in how they route circuits. The many years of experience and know-how of the highly skilled technicians at Torex have made it possible to create power management ICs with extremely small chip sizes and excellent characteristics.

The second technology concerns "packaging." With the increased demand of wearable and other smaller devices, power ICs have needed to become more compact and lighter. To meet such requirements, Torex is actively engaged in its own technical development of "USP" packaging, which offers ultra-small sizes with high heat dissipation properties. Torex is committed to finding out just how small a package can be managed while continuing to meeting the required specifications.

Torex's third and most important technology, "processing," which falls under production. Although Torex is a fabless manufacturer, we have been able to increase processing technology by enrolling specialized process engineers in-house. This in addition to a thorough process management system that includes quality assurance, allows Torex to deliver safe and high-quality products around the globe.

All of these technologies work to make Torex power management ICs exceptionally useful.

Make more fun with Analog

Meet the experts behind Torex's technological skill.



Takeshi Ikeda
Development Group No.2
Product Development Department No.2
R&D Headquarters

Working toward developing power management ICs capable of enticing consumers

Our main focus at Torex is on the development of general-purpose power management ICs such as DC/DC converters, voltage regulators, voltage detectors and load switches.

Although these products are already being used in a wide variety of applications, manufacturing looking forward will focus on meeting demands for larger currents and higher voltages not only in automotive and industrial fields but also in areas that have remained untapped.

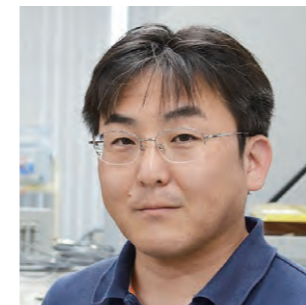
Because Torex is a specialized manufacturer of analog power products, our task extends beyond simply meeting the needs of customers. Taking advantage of the technical expertise and know-how cultivated over the years, our aim is to continue developing power management IC products that have the ability to entice consumers with an eye toward the future.

To develop power saving products to fulfill customer demands

Power supply and peripheral IC products are in our product-line such as Lithium secondary battery chargers, Ultra low power DC/DC converters and etc. which are indispensable for IoT (Internet of Things). They are utilized for wearable devices and smart grid equipment. With existing method of designing conventional single-function general-purpose power supply ICs, product development is focus on the fulfillment of customer demands. We continuously strive to improve our low power consumption technology to maintain our reputation of "Torex is the best in the field of Power IC." We also want to offer wider input voltage range to contribute to the power savings for our customers.



Yosuke Katsushima
Manager, Development Group No.1
Product Development Department No.1
R&D Headquarters



Yojiro Shiina
Manager, Development Group No.3
Product Development Department No.1
R&D Headquarters

Embracing ideas that can't be mimicked to create concepts beyond common sense

The XCL Series integrates Torex power management ICs with a coil for a combination of a reduced mounting area and low noise characteristics, earning these products a good reputation in applications such as portable devices. The structure of XCL products comes in four varieties: pocket, stack, cool post and multi. In particular, the pocket type, which grew from the idea of engineers thinking outside the box, is a structure in which a coil pocket covers the power management IC. The development of these products required collaboration with coil manufacturers, resulting in devotion to a lot of ingenuity right up to production. We are proud to have been able to achieve something impossible for other companies to imitate. In the future, through further expansions of the lineup, our aim is to create even more ultra-compact products while reducing heights for a lower profile.

Products

Incorporating analog technology developed over many years to create ultra-small, low-consumption, high-quality products

DC/DC Converters

Step-up, step-down, step-up/down and negative voltage converter ICs for various switching types

Voltage Regulators

Supplying stable voltage to devices through a lineup ranging from low-consumption devices to high-speed LDOs

Voltage Detector/Reset ICs

Reset ICs for high-accuracy monitoring of power supply lines and CLKs

Push button Controllers

Push-button reboot controller for system freeze protection. Load switch IC that realizes long battery life.

Load Switches

High-speed, high-side switch ICs with various protection circuits and additional functions

Charge Pump ICs

Inverting and step-up DC/DC converter ICs using capacitors

Battery Charge ICs

High-precision linear charge control ICs for single-cell lithium-ion/polymer batteries

Discrete

Schottky Barrier Diodes

Low VF type, low IR type products for small signals to power supply lines are available

Zener Diodes

Small power mold type diode ideal for constant voltage control

Switching Diodes

General-purpose switching diode ideal for small-signal switching applications

Bridge Diodes

Single-phase bridge rectifier

Transient Voltage Suppressors (TVS)

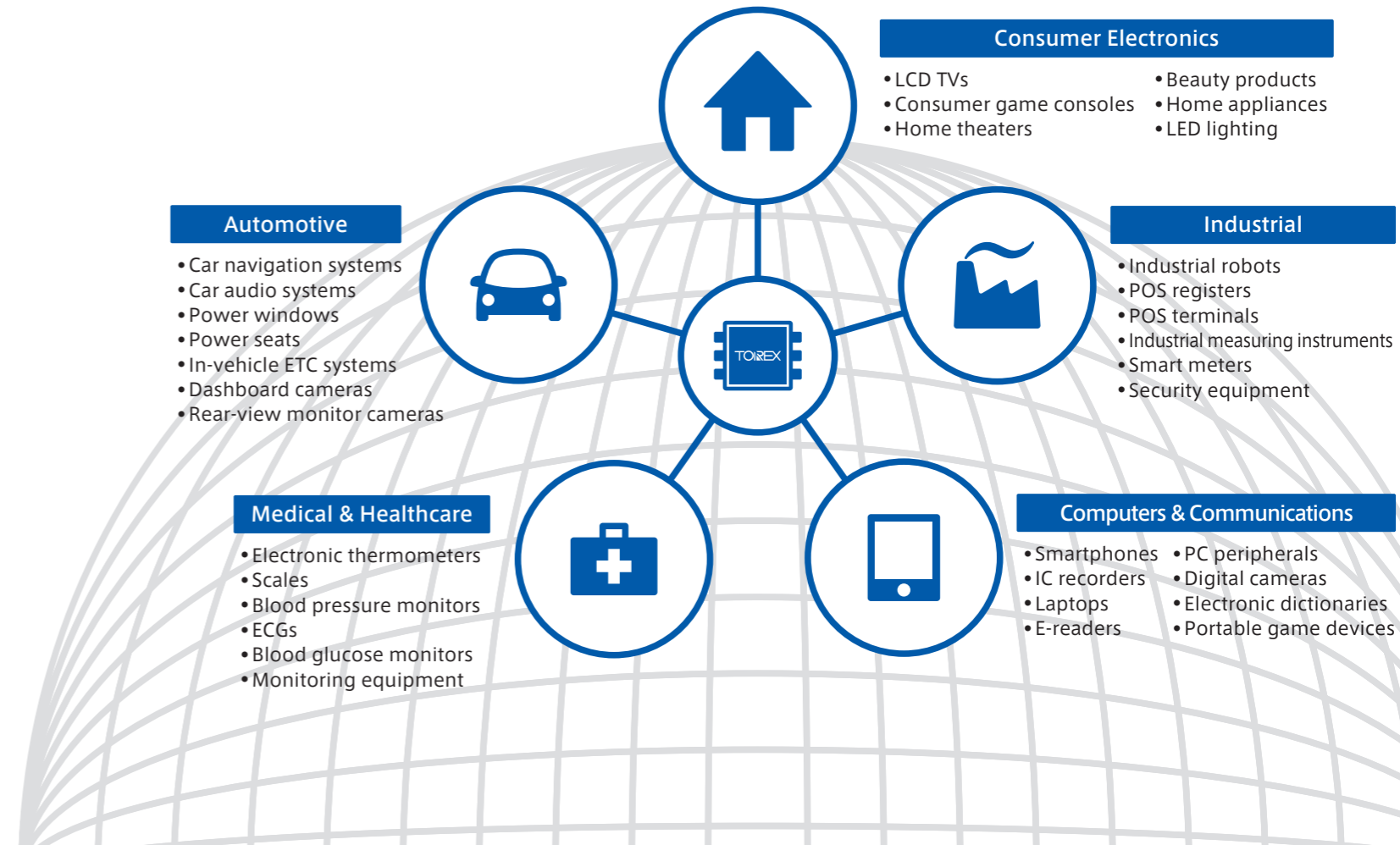
Unidirectional, bidirectional, and array specification transient voltage suppression diodes

Power MOSFETs

Offering low on-resistance, ultrahigh-speed switching characteristics, and high-density packaging

Life is analog.

Torex power management ICs: Supporting electronic devices in every field



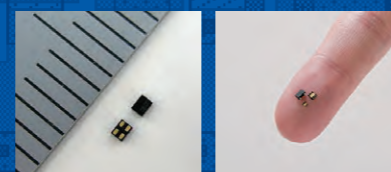
Ultra Small Package

Torex's "Ultra Small Package" products represents an evolution in ultra-small and improved thermal technology

In the quest to eliminate deterioration of heat dissipation efficiency with ultra-compact sizes, Torex used its unique patented technology to develop ultra-compact, low-profile packaging "USP" offering a high heat dissipation function.

Vietnam production base specializing in "USP"

Using ultra-small packaging technology to differentiate ourselves from other companies requires not only an understanding of the technology but also a process for including the technology in packages. As such, Torex began investing in VIETNAM SEIBI SEMICONDUCTOR CO., LTD. in 2009, culminating in the company becoming a wholly owned subsidiary in 2010. (In April 2015, the name was changed to TOREX VIETNAM SEMICONDUCTOR CO., LTD.) This move secures Torex a production base in Vietnam that specializes in proprietary USP technology.



CUSTOMERS' VOICE

CASIO COMPUTER CO., LTD.

Various power circuits in "EX-word" electronic dictionaries employ Torex devices including voltage regulators and voltage detectors. Not only does Torex offer products that meet our needs, but their technical support is also very polite, allowing us to finish with a satisfactory design.



Car audio manufacturer

Many of our car navigation system and audio system products include XCL211, XC9252, XC6505, and XC6123 devices due to their small size. One of Torex's strong points is that they are willing to develop a product according to user requests. I look forward to Torex helping us improve our product quality and cost competitiveness in the future.



*Photo for informational purposes only.

Camera manufacturer

Our digital SLR cameras are created using XC6108, XC6209, and XCM Series products. I think it's accurate to say that Torex is a technology-oriented company. They also offer technological flexibility by also offering customizable and semi-customizable products. In addition, their products offer a balance between device specifications and price.



*Photo for informational purposes only.

Sustainability

We will aim to create ultra low quiescent current, ultra miniaturized power supply ICs, develop human resources to support growth and promote thorough compliance so that our corporate group can continue to grow in step with all stakeholders.



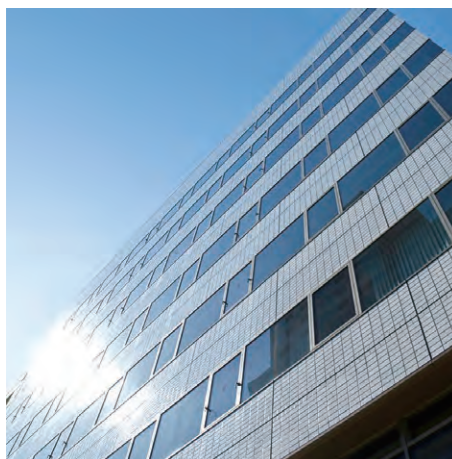
Basic Sustainability Policy

At Torex Semiconductor Group, we are committed to promoting sustainability in collaboration with all our stakeholders. Our business management is centered on contributing to the environment and society, guided by a spirit of coexistence and mutual prosperity. These efforts are aligned with our Corporate Philosophy: "Creating highly valuable products, working to contribute to the maintenance of our global environment as well as the prosperity of our society."

Torex Semiconductor Group's Materiality

1. Providing High Value-Added Products to Address Societal Issues
2. Maintaining an Excellent Working Environment for Diverse and Creative Talent
3. Promoting Environmental Stewardship
4. Building a Strong Management Foundation for Stakeholders

Corporate Data



Company Name	: TOREX SEMICONDUCTOR LTD.
Address	: 3F DAIHO ANNEX, 1-24-1 Shinkawa, Chuo-ku, Tokyo 104-0033 Japan
Establishment	: March 1995
Representative	: Takeshi Kimura, President
Capital	: 2967.93 million JPY (as of March 2024)
Business Activities	: 1. Development, design, and manufacturing of semiconductor devices 2. Sale of semiconductor devices
Fiscal Year-End	: End of March

History

- Mar. 1995 TOREX SEMICONDUCTOR LTD. registered and founded in Okayama Japan
Head office established in Tokyo
- Nov. 1996 TOREX SEMICONDUCTOR (S) PTE LTD founded in Singapore
(81% investment ratio)
- Sep. 2000 TOREX USA Corp. founded (100% subsidiary)
- Mar. 2001 TOREX SEMICONDUCTOR EUROPE LIMITED founded (100% subsidiary)
- May 2002 TOREX SEMICONDUCTOR (S) PTE LTD becomes a wholly owned subsidiary
- Oct. 2002 Kansai branch established
- Mar. 2003 Obtained ISO 14001 certification
- Jun. 2004 TOREX SEMICONDUCTOR DEVICE (Shanghai) CO., LTD. founded
(100% subsidiary)
- Feb. 2007 TOREX (HONG KONG) LIMITED founded
- Apr. 2007 TOREX SEMICONDUCTOR TAIWAN LTD. founded
- Aug. 2008 Obtained ISO 9001 certification
- Sep. 2008 Tokyo Technology Center established
- Dec. 2008 TOREX SEMICONDUCTOR DEVICE (Shanghai) CO., LTD.
SHENZHEN BRANCH founded
- Apr. 2009 Acquired share capital of VIETNAM SEIBI SEMICONDUCTOR CO., LTD.
- Apr. 2014 Listed on the JASDAQ Standard Market
- Apr. 2015 VIETNAM SEIBI SEMICONDUCTOR CO., LTD. company name changed to
TOREX VIETNAM SEMICONDUCTOR CO., LTD.
- Oct. 2015 Listed on the Tokyo Stock Exchange, Second Section
- Apr. 2016 Capital Alliance with Phenitec Semiconductor
- Apr. 2016 TOREX USA Corp. R&D Center established
- May 2016 Kansai Technology Center established
- Jun. 2017 Nagoya Sales Office established
- Mar. 2018 Listed on the Tokyo Stock Exchange, First Section
- Feb. 2019 Phenitec Semiconductor Corp. becomes a wholly owned subsidiary
- Sep. 2019 Registered as a remote support department of
IATF16949 certified factory Phenitec Semiconductor Corp.
- Jun. 2020 Capital Alliance with Novel Crystal Technology, Inc.
- Dec. 2020 Registered as a remote support department of IATF16949 (Head Office)
- Apr. 2022 Transition to Tokyo Stock New Prime Market
- Mar. 2023 TOREX VIETNAM SEMICONDUCTOR CO., LTD certified IATF16949.
Sapporo Technical Center is certified and registered as a remote support
department.

TOREX EPISODE



Starting in 1992: Portable Cassette Player

*Photo for informational purposes only.

The XC61AN Series, using a nickel-hydrogen rechargeable battery, was introduced for use with portable cassette players. At the time, the ability to accurately detect the minimum 0.8 V needed to run the player was a highly requested feature, and our being able to meet this requirement made much longer playability possible.



1996 First Overseas Base Established in Singapore

Following Torex's inception, even though battery-powered ultra-compact and low-consumption power ICs had a small market scale and market entrants were few, Torex founded an established base of business in Singapore within one year, ignoring the cautious theory of prematurity. This was the first step toward Torex's global reach today.



1996 Pager (Wireless Telecommunications Device)

*Photo for informational purposes only.

To mitigate noise, Torex proposed an internal oscillation circuit that marked a conceptual reversal by "cutting back on efficiency". This culminated in the XC6373/XC6383 Series of DC/DC converters.



2010 Vietnam Factory

With the increase of mobile devices, many companies began entering the compact power IC industry. In order to differentiate from its competitors, Torex began its trend toward "ultra compact", developing a unique technology known as USP (ultra small package). Torex secured its own factory in Vietnam as a USP production base.



2016 Capital Alliance with Phenitec Semiconductor

Capital and business alliance with Phenitec Semiconductor Corporation has allowed Torex to establish a long-term stable supply structure for high value-added products for industrial equipment and automotive components.

TOREX VISION

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"Second to none"

Torex's first focus was on power management ICs for portable cassette players. At that time, equipment driven by batteries was still gaining ground, and Torex was the only specialized manufacturer of small power ICs in the world.

Nowadays mobile products that require compact and low- power- consuming power ICs are everywhere and manufacturers all over the world supply compact power supply ICs that take advantage of each manufacturer's strengths.

"What can we do now?"

In answer, the group of professionals specializing in power management ICs took advantage of their cultivated analog-related skills and began honing their "ultra-small" and "low power consumption" skills even further.

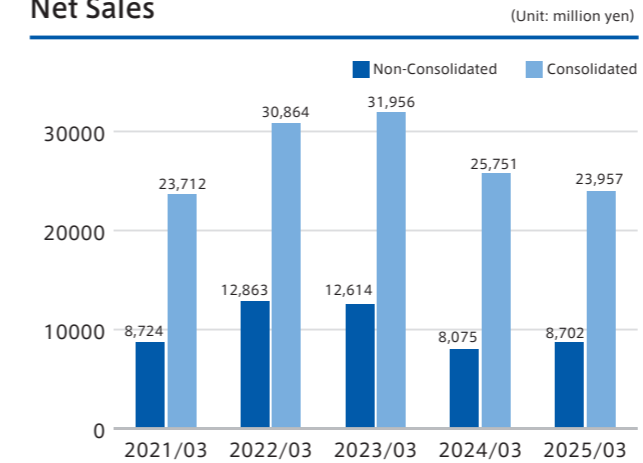
From there, focusing on power ICs in the field of increasingly compact mobile devices, highly functional automotive and industrial equipment, and IoT devices for which demand will expand in the future, Torex set out to become a world-leading manufacturer, the kind of company where customers say,

"No one but Torex can do that."

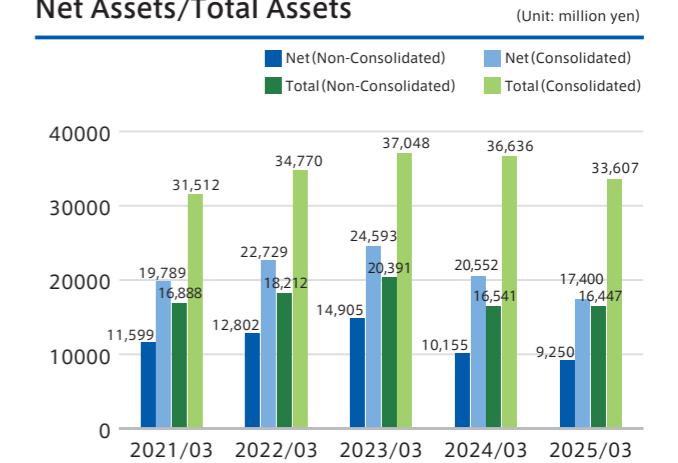
At Torex, our future lies with power management ICs, and the future of power management ICs is our top priority.

Financial Information

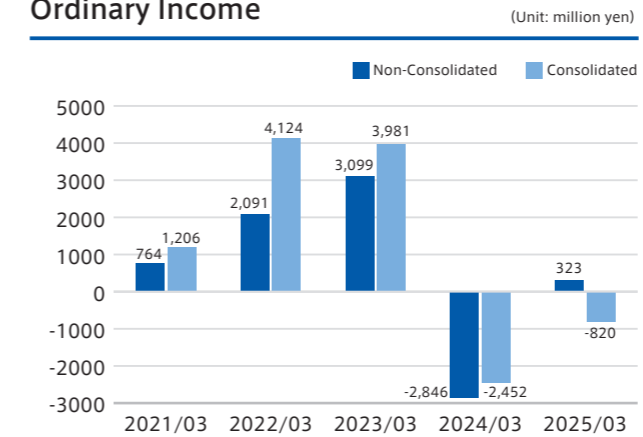
Net Sales



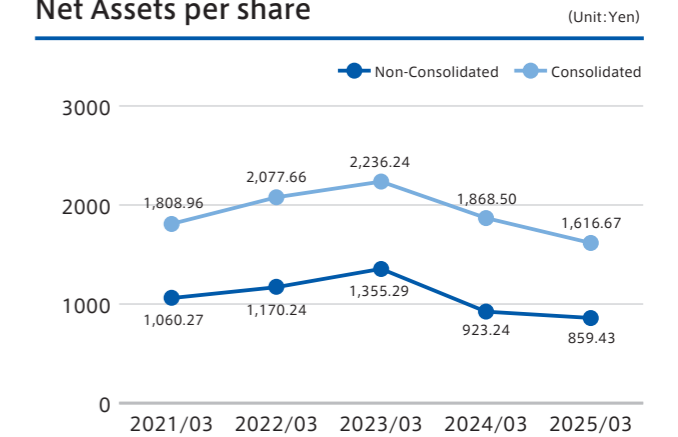
Net Assets/Total Assets



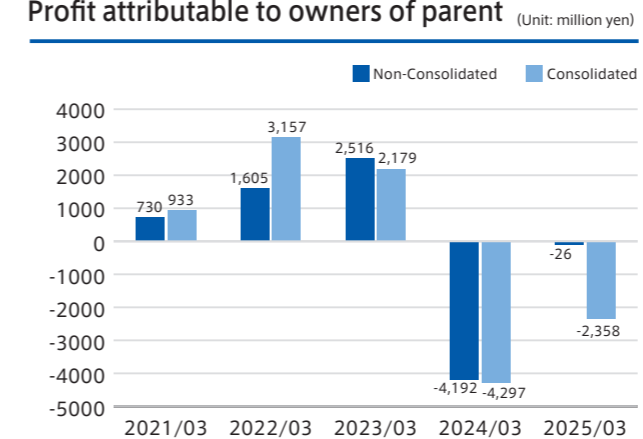
Ordinary Income



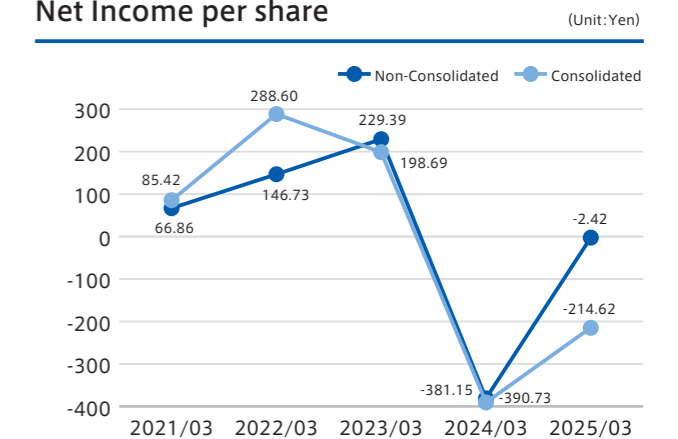
Net Assets per share



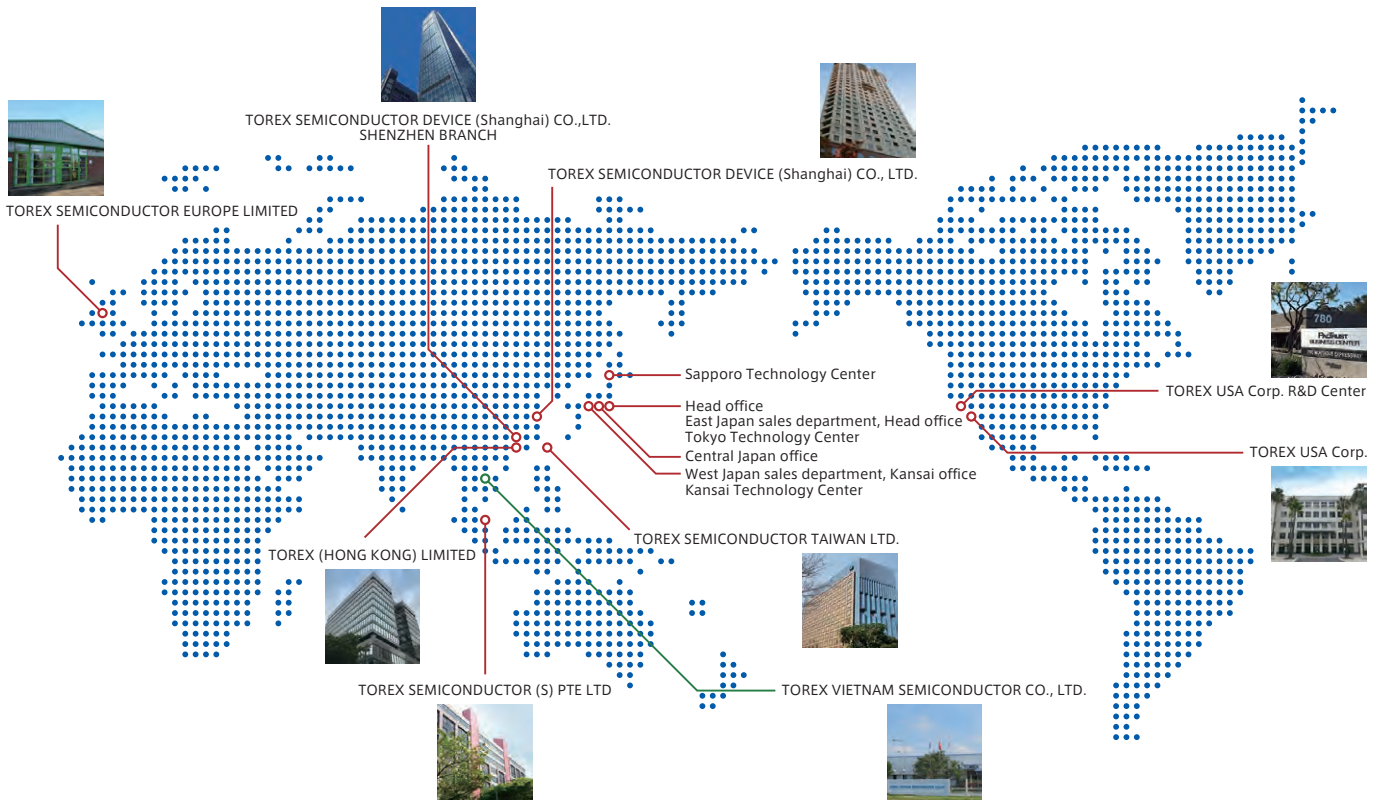
Profit attributable to owners of parent



Net Income per share



TOREX NETWORK



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Manufacturing Factory

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