Product Information

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Products and Businesses — ASIC

ASIC Services

Proposing the best customized solutions for our customers through collaboration with the world's most advanced companies, using MegaChips' technology and expertise and knowledge of systems

ASIC (Application Specific Integrated Circuit) is an LSI designed exclusively for a particular application. Many ASICs are used in various electronic products and devices as well as in infrastructure systems such as wired and wireless communication networks. MegaChips has built an integrated support system from development of product specifications and logic design to physical design, production, and quality, which is capable of quickly responding to customers' needs.

Main Features

ASIC Development Flow

As a fabless semiconductor manufacturer, building strong partnerships with our outside foundries

> A wide range of selections of the best customized fabs in Japan and overseas suited for features and functions of products to be manufactured

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Achieving high-quality product supply under a strict quality assurance system in cooperation with outside foundries



Review of FY2021

Supply of Large-Volume Products

Due to the impact of various social conditions, the global shortage of semiconductor production capacity, that has been apparent for the past 2 years, is continuing. Although MegaChips has also been affected by this, sales of ASIC products exceeded that of the previous fiscal year owing to our efforts to ensure production capacity, with the cooperation of our customers. In addition to the core applications for game machines, office automation, and communication equipment, the shipments for industrial and factory automation (FA) applications, which we have been focusing on in recent years, are gradually increasing.

Future Initiatives

Targeted Expansion Areas

Pursuit of Low-Power Consumption for Industrial/FA, 5G Communications, OA Equipment MegaChips will continue to focus on proposing optimal LSI solutions for office automation equipment, which is our conventional business field, LSI for industrial and factory automation (FA), with respect to which we have been strengthening our business activities in recent years, and LSI for 5G communications, which is a new endeavor for us. In particular, low-power consumption of the entire system including LSI is a major issue common to all fields, while at the same time, we will select manufacturing processes dedicated to low-power consumption from foundries throughout the world, and promote the development of low-energy consumption intellectual property.

Expanding High-Voltage Resistance Analog Products MegaChips has been providing many kinds of digital/analog mixed ASICs with our own analog design technology. In the future, MegaChips will also expand the analog custom LSI in

New ASIC Developments

In FY2021, we acquired a greater number of new development projects than in the previous fiscal year. Among these, we have embarked on R&D for 5G communication networks, which we have been promoting as a new initiative, as well as development in fields that are new to us, such as edge AI and high-voltage resistance analog.



the areas that need high-voltage resistance (power supply voltage of 10V and above). Specifically, MegaChips targets motor control, LED control, AC/DC power peripheral circuits to contribute to the fields of industrial and FA, infrastructure, and IoT.

Strengthening Specifications Design and Upstream Design / Customer-Oriented Development

MegaChips believes that, as an ASIC vendor, it should contribute to society by highlighting the capabilities of semiconductors to the greatest extent possible. To achieve this, MegaChips aims to go even one step further by deepening its understanding of customers' products and systems and participating in specifications design and upstream design. Specifically, the first steps include optimizing the functions integrated into the ASIC and "eliminating waste in specifications." Looking beyond that, MegaChips will continue to develop products that provide new value to the environment, society, and people's lives.

Telecommunication LSI

Enhance high-speed wired and wireless communication technology and provide communication solutions to achieve high performance network society

The demand for communication LSI products is rapidly increasing due to the advancement in the development of communication infrastructure for the IoT era, swift progress of the automation and smart technologies of industrial equipment, and the development of connected cars equipped with communication functions.

MegaChips will contribute to the transformation of the industrial world by meeting the needs of the equipment sector taking advantage of our product development capabilities through collaboration with startup companies.

Capital and Business Alliance with Morse Micro

MegaChips pursues a strategic partnership and business investment with startups that have cutting-edge technology and innovative ideas and are actively working to launch new businesses.



We have formed a strategic alliance with Morse Micro in Australia and

are working to drive market growth, create new solutions, and accelerate the go-to-market strategy of the fastest, smallest, lowest power, and longest range Wi-Fi HaLow[™] solutions available today.

Products of Morse Micro

Morse Micro (www.morsemicro.com) is a rapidly growing fabless semiconductor company developing Wi-Fi HaLow™; the low-power, long-range wireless communication standard designed for IoT environments.

The company is pushing the boundaries of IoT connectivity with a roadmap of silicon and platforms that satisfy the scalability, robustness and security demands required to address the most challenging IoT environments.

What is Wi-Fi HaLow[™]

Wi-Fi HaLow™ is a low-power, wide-range wireless communication standard mainly targeting the IoT. It uses 920 MHz band to realize "long-distance", "high-speed", and "low-power" Wi-Fi that conventional products could not achieve. Wi-Fi HaLow™ is expected to be adopted in a wide range of areas in the future.

Feature of Wi-Fi HaLow[™]

1) Expanded Wi-Fi transmission area, both long-range and greater penetration through obstacles 2) Battery-operable and low power consumption

3) High connectivity due to superior transmission and good diffraction of 900MHz band

4) High data rate and adaptability to other IoT wireless standard

5) No license for a station or monthly usage fees like mobile networks

6) High blocking performance that makes easy coexistence with different wireless standards (e.g.: LTE)

7) Leverages market-proven WPA3 security protocol to ensure the wireless link is secured

aim to integrate them into various industrial equipment.

Target applications

Target applications include video, home & building automation, retail and logistics, access point and home gateway, consumer IoT, and mobile devices.

Wi-Fi HaLow[™]'s applications are endless. We





We will expand business areas through collaboration with Morse Micro.

Through joint promotion with Morse Micro of LSI products, development and sales of wireless modules, we will spread Wi-Fi HaLow™ across Japan and develop new markets and customers.



We will expand business fusing technologies of Morse Micro and MegaChips

Morse Micro is a company with excellent diversity and inclusion, with engineers from all over the world and has a dynamic atmosphere while each and every one of them has excellent skills, and the entire company has an efficient and systematic design and development flow.

Morse Micro's Wi-Fi HaLow[™] solutions are expected to be adopted in a wide range of fields including factory and building automation and security cameras. Wi-Fi HaLow™ has a high affinity with industrial IoT applications, and it is mutually complementary to our wired communication products. Also, we believe we can broaden our product range and deliver solutions that satisfy more customers through the combination of our module and patterned antenna technologies that we have been working on in the past couple of years.





Home network

We will continuously work with Morse Micro and strive to promote Wi-Fi HaLow[™] more widely to grow our telecommunications business.

Keishi Kajiwara Telecommunication Division

Product Information

Products and Businesses — MODULE

Module Service

Provide high-added-value solutions capable of reducing time-to-market and development costs

A module is a single package that contains electronic components on a circuit board to suit the application. Designers can save time and effort in designing and assembling electronic circuits from scratch and reduce the number of parts, which results in smaller, lighter equipment, thereby achieving cost reduction. MegaChips provides modular products that meet customers' needs and applications with an integrated support system we have built from product concept design to circuit diagram design, physical design, production, and quality.

Main Features

Comprehensive Support System

Integrated support from examining concept and module specifications based on the customer's product image and idea through to manufacturing

Modularization of In-house and Partners' Semiconductor Products

Commercialization of modules using Ethernet PHY or wireless communication LSI that we have been working on to date and provision of module products to customers for immediate use

Customization

Customization when changes or additions to specifications or peripheral module boards are required for module products sold by MegaChips as standard products

Future Development







Product Information Products and Businesses — MODULE

Edge Al

Edge AI is a technology that performs learning and making inferences using terminals, such as devices and sensors. With a declining workforce due to the declining birth rate and aging society, various devices are expected to be equipped with edge AI that enables autonomous operation in the future.

We will componentize edge AI functions that are commonly needed in a broad range of edge AI application fields, such as medical and nursing care, construction, infrastructure inspection, logistics and transportation, offices and stores, agriculture, and provide services as solutions.

Main Features

Provision of various solutions

that integrate modules and

Collaboration with leading

edge AI partners in Japan and

Full one-stop support system by

an expert edge AI team

as core technology

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