Extending Collaboration with TSMC in the MCU Market

In May 2012, Renesas and Taiwan Semiconductor Manufacturing Company Limited (TSMC) agreed to extend their microcontroller (MCU) technology collaboration to 40 nanometer (nm) embedded flash process technology for manufacturing MCU products used in next-generation automotive and consumer applications such as home appliances.

Renesas already outsources MCU production to TSMC under an existing agreement, but under the 40nm MCU collaboration, Renesas will be outsourcing MCU production at 40nm and future technologies to TSMC as well.

Renesas and TSMC will collaborate to lead in advanced technologies for MCU platforms and production by combining Renesas’ MONOS technology supporting both high reliability and high speed, and high-quality technical support with TSMC’s advanced CMOS process technologies and flexible production capacity.

Building on a history of strong collaboration, this latest agreement will provide Renesas with a cost-effective, highly reliable way to successfully realize 40nm flash MCUs.

PROMOTING COLLABORATION IN THE CONSTRUCTION OF AN ECOSYSTEM* FOR MCUs

For MCUs, the core competence of Renesas, there is a vast worldwide ecosystem that encompasses more than 700 companies. Tool vendors, software vendors, foundries and many other companies belong to this ecosystem. Members of the ecosystem use our MCUs as a base for collaboration that draws on each company’s technologies and financial resources. The objective is to facilitate mutual harmony and benefit for the whole MCU industry. TSMC possesses a great many ecosystems, covering system-on-chip (SoC) and other markets as well. For this partnership, the two companies will each leverage their own ecosystems; Renesas and TSMC plan to use these resources to conduct a joint development program to produce an expansive ecosystem that includes a MONOS embedded MCU platform. Both companies will make the resulting MCU platform available to semiconductor suppliers worldwide. Another goal of the Renesas-TSMC collaboration is to enlarge the new ecosystem to cover the SoC domain in addition to MCUs. Extending coverage will allow targeting of potential market needs of flash MCUs, which are currently included in the SoC market. Broader coverage is expected to lead to more growth in the number of customers and expansion of the entire MCU market.

*The meaning of “Ecosystem”

Originally, the term referred to a biological system consisting of all the living organisms and the environment with which the organisms interact.

As a business term, the word refers to a system in which multiple companies within a certain industry unite and cooperate for mutual harmony and benefit.
The Group has been working to improve the performance of the large-sized display driver IC business by implementing various measures, including reducing manufacturing cost through process miniaturization and promoting development efficiency. However, the slowdown of the flat-panel display market, particularly for TVs, and falling prices have placed the Group in a very challenging situation to secure profitability. With no short-term recovery in sight, the Group concluded it is difficult to stay in the large-sized display driver IC business and decided to withdraw from the business as part of its structural reform measures.

The Group has withdrawn from the development of driver ICs for large-sized displays effective March 31, 2012. For large-sized display driver ICs already in mass production, the Group will discontinue the supply of these products following consultations with existing customers affected effective March 31, 2013.

Renesas SP Drivers Inc., a consolidated subsidiary of Renesas Electronics, will continue to supply small- and mid-sized display driver ICs as in the past.

### WITHDRAWAL FROM THE LARGE-SIZED DISPLAY DRIVER IC BUSINESS

### TRANSFER OF HIGH-POWER AMPLIFIER BUSINESS TO MURATA MANUFACTURING

With the growing demand for smartphones worldwide and the expansion of low-end models in emerging economies, the market for mobile phones, which is the major user of power amplifiers, is seeing a growing trend toward all-in-one module and platform solutions that integrate basic communication functions in a device. In particular, demand is growing for modules that incorporate high-power amplifiers with radio frequency (RF) components, such as filters and switches.

In light of this changing business environment, Murata Manufacturing Co., Ltd., while maintaining a world-leading market share of front-end modules (FEMs), has been examining measures to strengthen its power amplifier technology in order to promote the integration of analog front-end modules, including power amplifiers, and to expand its business. The Renesas Group, meanwhile, has until now been supplying power amplifier modules to mobile handset makers without RF filters and switches. To further strengthen its business structure, the Group has been urgently studying ways to respond to the demand for an all-in-one module that incorporates an FEM.

Following discussions by the two parties of the possibility of collaborating on the complementary supply of parts for communication devices, the Renesas Group transferred its power amplifier business and the business operation of Nagano Device Division of a wholly owned subsidiary, Renesas Eastern Japan Semiconductor, Inc. to Murata Manufacturing on March 1, 2012.

### TRANSFER OF A FRONT-END MANUFACTURING SITE OF A WHOLLY OWNED SUBSIDIARY TO FUJI ELECTRIC

To improve in-house, front-end manufacturing efficiency by promoting larger wafers and miniaturization, the Group has been reviewing various measures for its manufacturing sites. As part of the review process, an agreement was reached in March 2012 to transfer the Tsugaru Factory (location: Goshogawara, Aomori; wafer size: 6 inches) of a wholly owned subsidiary, Renesas Northern Japan Semiconductor, Inc. to Fuji Electric, which had been considering a new manufacturing facility to further expand the supply capacity of its power semiconductor business. As originally intended following the agreement, Renesas Northern Japan Semiconductor transferred its business operation of the Tsugaru Factory to a wholly owned subsidiary, which was newly established on July 1, 2012 through an absorption-type separation (Kyushu-bunkatsu), with all new shares of common stock for the new company allocated to Fuji Electric also on July 1, 2012.

The supply of products manufactured at the facility will remain uninterrupted following the transfer of the Tsugaru Factory to Fuji Electric, with Renesas Electronics and Renesas Northern Japan Semiconductor continuing to provide products of the same quality and via the same sales channels as before to customers.

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