

Fujitsu Enhances FM3 Family of 32-bit Microcontrollers with the Release of 210 New Products

Address a broad range of applications, from system controls to small mobile products

Yokohama, Japan, JANUARY 31, 2012 – Fujitsu Semiconductor Limited today announced the launch of the fourth wave of products in its FM3 Family of 32-bit RISC microcontrollers based on the ARM® Cortex™-M3 processor core. In total, Fujitsu Semiconductor is releasing 210 new products, which incrementally will be made available in sample quantities starting from January 31st.

The new products are divided into four groups: a High Performance Group with a total of 64 products that includes the MB9B510R/410/310/110 Series, the MB9BF516RPMC, and other products; a Basic Group with a total of 12 products that includes the MB9A310K/110 Series, the MB9AF312KMPC, and other products; a Low Power Group with a total of 108 products that includes the MB9AB40N/A40/340/140 Series, the MB9AFB44NPMC, and other products; and an Ultra Low Leak Group with a total of 26 products that includes the MB9AA30N/130 Series, the MB9AFA32NPMC, and other products.

Fujitsu Semiconductor plans to continue expanding the product line to reach more than 500 products by the end of a fiscal year 2012.

The FM3 Family combines a Cortex™-M3 core with peripheral functions developed for the FR microcontrollers. The addition of the 64 products in the High Performance Group, 12 products in the Basic Group, 108 products in the Low Power Group, and 26 products in the Ultra Low Leak Group to the existing product line brings the FM3 Family to a total of 370 products.

Creating a full set of four groups with the addition of the new Low Power Group, Fujitsu Semiconductor offers a complete lineup of products in the FM3 Family to suit every application. The High Performance Group is designed for processor-intensive system controllers and application-oriented interfaces, such as USB2.0 and CAN, while the Basic Group is specifically designed for single-motor inverter controls.

The newly added Low Power Group product line meets the growing demand for low-power consumption in the marketplace. It contains an optimal range of products for the low-power demands of consumer-lifestyle equipment, such as in battery-powered mobile products, digital entertainment equipment employing LCD technology, home appliances, and in healthcare.

Finally, the Ultra Low Leak Group can be employed in instrumentation machinery utilizing various sensors, as well as in battery-powered applications and in low-cost products.

With the addition of LCD Controllers to the product line, the FM3 Family is optimized for a broad range of applications.

Product Overview

1. High Performance Group: MB9B510R/410/310/110 Series

Fujitsu Semiconductor has added a flagship lineup of product models with improvements in speed, peripheral functions, and communications functions, such as a 144MHz CPU, a full array of peripheral functions, inverter control functions able to control up to three motors, USB2.0, and CAN, all designed to meet market demands for higher processing speeds and multi-functional versatility.

Flash memory is available in 544KB and 160KB alternatives, and packaging in 120-pin and 100-pin alternatives. A real-time clock has also been added.

This group is ideal for applications that require high-speed processing, including factory automation systems, such as system controls, OA equipment, and motor inverter regulation equipment.

2. Basic Group: MB9A310K/110 Series

These are entry-level models that achieve a balance between performance and cost, while retaining the High Performance Group's rich array of peripheral functions.

The MB9A310K/110 Series comes equipped with inverter control functionality for single motor control, USB2.0, and a real-time clock, flash memory is available in 160KB and 96KB alternatives, and 48-pin packaging. Due to the application of specialized inverter control, it is an optimal choice for applications utilizing inverter motor control, such as in factory automation systems and in home appliances in the form of air conditioners and refrigerators requiring power conservation.

3. Low Power Group: MB9AB40N/A40/340/140 Series

With the introduction of the Low Power Group to the FM3 Family, the MB9AB40N/A40/340/140 Series has achieved low-voltage execution oriented towards reductions in power consumption during operation and battery utilization.

Flash memory is available in 288KB and 96KB alternatives, and packaging in 100-pin and 64-pin alternatives. It is equipped with USB, a real-time clock, an LCD controller, and HDMI-CEC. This is the first time the FM3 Family line has been equipped with an LCD controller and HDMI-CEC, making it optimal for a wide range of applications in health care equipment utilizing liquid crystal displays, home appliances with digital displays, and AV applications that require AV equipment connection.

4. Ultra Low Leak Group: MB9AA30N/130 Series

This series inherits and refines the high-performance peripheral functions of its family members in the High Performance Group and Basic Group, in a concise series of products with dramatically lowered power requirements and reduced costs. Its lineup of sensing models specializes in larger utilization of intermittent operation. Flash memory is available in 128KB and 64KB alternatives, and packaging in 100-pin and 64-pin alternatives. An LCD controller and real-time clock have also been added. Because they can be run over a wide range of driving voltages, from 5.5V to 1.8V, these products are well-suited to a wide range of battery-powered applications, including sensor networks, home electronics, and digital entertainment equipment.

Sample: Reference Price and Release Schedule

High Performance Group:

Product Name	Price (With TAX)	Delivery
MB9BF516RPMC	620yen Unit price at 1,000 pieces in order	From January 2012

Basic Group:

Product Name	Price (With TAX)	Delivery
MB9AF312KPMC	220yen Unit price at 1,000 pieces in order	From January 2012

Low Power Group:

Product Name	Price (With TAX)	Delivery
MB9AFB44NPMC	380yen Unit price at 1,000 pieces in order	From February 2012

Ultra Low Leak Group:

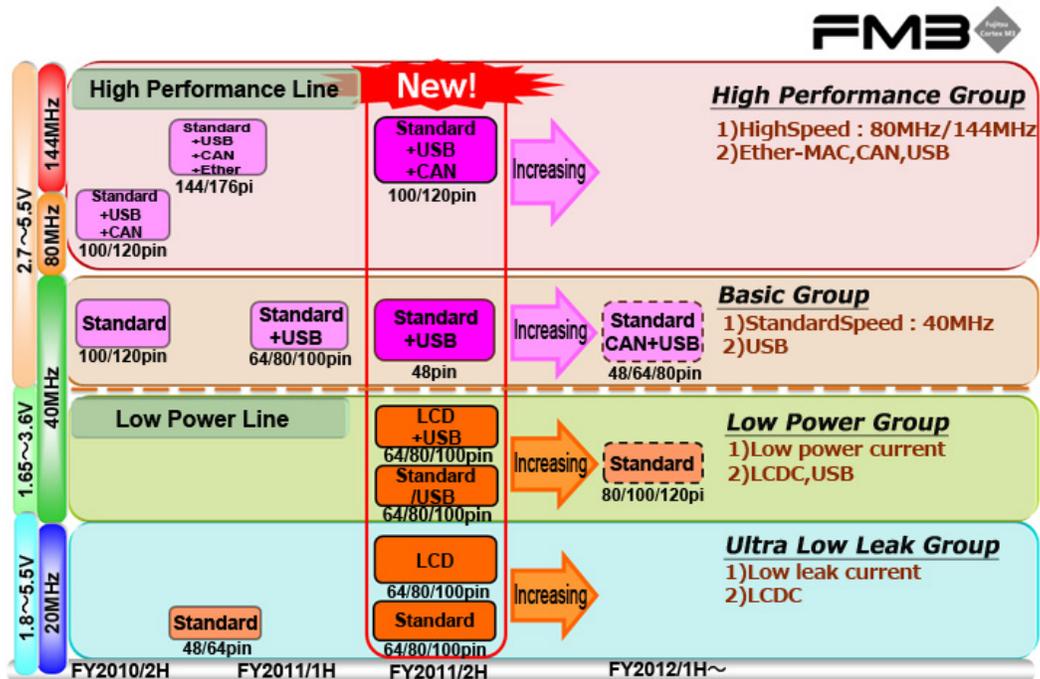
Product Name	Price (With TAX)	Delivery
MB9AFA32NPMC	300yen Unit price at 1,000 pieces in order	From March 2012

*: Please contact sales office about other products

Sales Target

10,000,000 pieces per month when in mass-production. (Total of 210 products)

FM3 Product Roadmap



For More Information:

<http://jp.fujitsu.com/group/fsl/en/> (Fujitsu Semiconductor)

Press Contact:

Fujitsu Semiconductor Limited

Public Relations Department

Inquiries: <https://www-s.fujitsu.com/jp/group/fsl/en/release/inquiry.html>

About Fujitsu Semiconductor Limited

Fujitsu Semiconductor Limited designs, manufactures, and sells semiconductors, providing highly reliable, optimal solutions and support to meet the varying needs of its customers. Products and services include microcontrollers, ASICs, ASSPs, and power management ICs, with wide-ranging expertise focusing on mobile, ecological, automotive, imaging, security, and high-performance applications. Fujitsu Semiconductor also drives power efficiency and environmental initiatives. Headquartered in Yokohama, Fujitsu Semiconductor Limited (formerly named Fujitsu Microelectronics Limited) was established as a subsidiary of Fujitsu Limited on March 21, 2008. Through its global sales and development network, with sites in Japan and throughout Asia, Europe, and the Americas, Fujitsu Semiconductor offers semiconductor solutions to the global marketplace.

For more information: <http://jp.fujitsu.com/group/fsl/en/>

Features of the High Performance Group: MB9B510R/410/310/110 Series**1. Doubling CPU performance with high-speed flash memory**

Compared to the original products in the High Performance Group, the new products have dramatically improved processing capacity of 144MHz, more than double that of previous products in the group, achieving class-leading processing capacity that makes the most of the CPU's performance. The new products inherit the reliability of their predecessors, handling 100,000 write operations and 20-year retention performance. From today, with the exception of Ultra Low Leak group products, all products in the remaining three groups are standardly-equipped with 32KB of built-in flash memory that can be used for either data retention or programs.

2. Runs on wide range of operating voltages for maximum power-supply compatibility

The FM3 family runs on operating voltages ranging from 5.5V to 2.7V. The 5V range is preferable for use in factory automation applications and consumer appliances that use motors, as it is more resilient to electrical noise, and makes these products ideal for use in control equipment and motor controllers, which is often used in noise-filled environments.

3. Peripheral macro set implements high-precision motor control

These products are optimized for precision motor control with a set of peripheral macros. In particular, a high-precision, high speed changing 12-bit A/D converter is effective for use in high-precision, high speed servomotors and similar applications. With 3 units and up to 16 channels, motor-phase precision is improved for very fine-grained control. The built-in quad counter (motor rotation-phase detection counter) can handle rotation-phase detection at the hardware level, reducing load on the CPU. This product can reduce power demands in inverter systems.

Features of the Basic Group: MB9A310K/110 Series**1. Inherits ancestors' peripheral functions while stressing cost performance**

This series inherits the peripheral functions of the high performance series, and limits the CPU clock to 40MHz, thereby achieving a high level of balance between performance and cost. The entry-level model lineup in the Basic Group comes with 48-pin packaging and small-capacity memory, and can be run over a wide range of driving voltages, from 5.5V to 2.7V, making these products well-suited to a wide range of applications. The 5V range is preferable for use in factory automation applications and consumer appliances that use motors, as it is more resilient to electrical noise, and makes these products ideal for use in single-motor inverter control applications.

2. Equipped with a real-time clock

Starting with each of the products in each group mentioned in this announcement, from now on all products will be equipped with a real-time clock with which it is possible to manage the system time. With an interrupt function that can be set to the desired date and time, it is possible to set the timer for use in time-control applications in home appliances and other products.

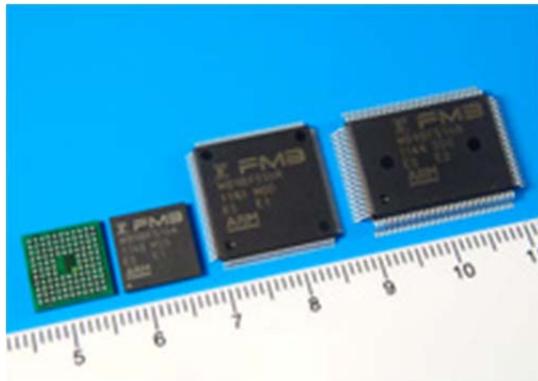


Photo 1. MB9B510R Series

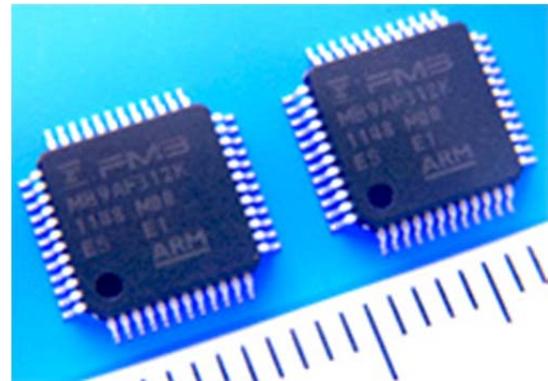


Photo 2. MB9A310K Series

Line-up

High Performance Group: MB9B510R/410/310/110 Series (64products)

Operating Frequency (Max.)	Package	Peripheral		Flash/RAM			
		USB2.0 Host/Function	CAN	160KB /16KB	288KB /32KB	416KB /48KB	544KB /64KB
144MHz	LQFP-120 0.5mm pitch	○	○	MB9BF512RPMC	MB9BF514RPMC	MB9BF515RPMC	MB9BF516RPMC
		-	○	MB9BF412RPMC	MB9BF414RPMC	MB9BF415RPMC	MB9BF416RPMC
		○	-	MB9BF312RPMC	MB9BF314RPMC	MB9BF315RPMC	MB9BF316RPMC
		-	-	MB9BF112RPMC	MB9BF114RPMC	MB9BF115RPMC	MB9BF116RPMC
	BGA-112 0.8mm pitch	○	○	MB9BF512NBGL	MB9BF514NBGL	MB9BF515NBGL	MB9BF516NBGL
		-	○	MB9BF412NBGL	MB9BF414NBGL	MB9BF415NBGL	MB9BF416NBGL
		○	-	MB9BF312NBGL	MB9BF314NBGL	MB9BF315NBGL	MB9BF316NBGL
		-	-	MB9BF112NBGL	MB9BF114NBGL	MB9BF115NBGL	MB9BF116NBGL
	LQFP-100 0.5mm pitch	○	○	MB9BF512NPMC	MB9BF514NPMC	MB9BF515NPMC	MB9BF516NPMC
		-	○	MB9BF412NPMC	MB9BF414NPMC	MB9BF415NPMC	MB9BF416NPMC
		○	-	MB9BF312NPMC	MB9BF314NPMC	MB9BF315NPMC	MB9BF316NPMC
		-	-	MB9BF112NPMC	MB9BF114NPMC	MB9BF115NPMC	MB9BF116NPMC
	QFP-100 0.65mm pitch	○	○	MB9BF512NPF	MB9BF514NPF	MB9BF515NPF	MB9BF516NPF
		-	○	MB9BF412NPF	MB9BF414NPF	MB9BF415NPF	MB9BF416NPF
		○	-	MB9BF312NPF	MB9BF314NPF	MB9BF315NPF	MB9BF316NPF
		-	-	MB9BF112NPF	MB9BF114NPF	MB9BF115NPF	MB9BF116NPF

Basic Group: MB9A310K/110 Series (12 products)

Operating Frequency (Max.)	Package	Peripheral	Flash/RAM	
		USB2.0 Host/Function	96KB /16KB	160KB /16KB
40MHz	LQFP-48 0.5mm pitch	○	MB9AF311KPMC	MB9AF312KPMC
		-	MB9AF111KPMC	MB9AF112KPMC
	LQFP-52 0.65mm pitch	○	MB9AF311KPMC1	MB9AF312KPMC1
		-	MB9AF111KPMC1	MB9AF112KPMC1
	QFN-48 0.5mm pitch	○	MB9AF311KQN	MB9AF312KQN
		-	MB9AF111KQN	MB9AF112KQN

Features of the Low Power Group: MB9AB40N/A40/340/140 Series**1. Variety of power saving modes that is easy to use**

This product group is equipped with six kinds of power-saving modes that use clock gating and power gating technology. These are: sleep mode, timer mode, RTC mode, stop mode, deep-standby RTC mode, and deep-standby stop mode.

When using RTC mode under date and time management, the product draws an extremely low 9.5 μ A of power. In deep-standby RTC mode, where power to the flash memory is shut off, it draws an even lower 1.2 μ A, and just 8mA/40MHz (200 μ A/MHz) for ordinary operations, which is among the lowest power requirements in the industry.

2. Equipped with an LCD controller targeted towards user interfaces for consumer electronics, as well as HDMI-CEC

The Low Power group is equipped with an LCD controller geared towards display equipment. It is able to display up to 40seg x 8com=320 characters.

With just one microcontroller chip, it is now possible to run applications for monitoring and displaying the status of equipment in fields such as consumer electronics, healthcare, and factory automation.

The products are equipped with up to two channels for HDMI-CEC transceiver functions for the HDMI remote control functions, which are the standard interface used in home entertainment equipment, and for remote control receiver functions, enabling controls to be operating between different electronics products, such as IT devices, digital entertainment equipment, and digital home appliances.

Features of the Ultra Low Leak Group: MB9AA30N/130 Series**1. Supports wide range of operating voltages**

Products in this group can be run on operating voltages ranging from 5.5V to 1.8V. While 5V power supplies are used in home appliances, office equipment, and home electronics products for use in emerging countries, 1.8V driving voltages are suited to battery-powered devices. Support for this range of voltages gives these products a broader range of potential applications.

2. Easy-to-use power saving mode

This product group is equipped with six kinds of power-saving modes that use clock gating and power gating technology.

When using RTC mode under date and time management, the product draws an extremely low 1.7 μ A of power. In deep-standby RTC mode, where power to the flash memory is shut off, it draws an even lower 1.3 μ A, making this group ideal for use in sensor-network equipment as well as all kinds of metering devices.

3. Equipped with an LCD controller for status displays on metering and other devices

This group is equipped with an LCD controller for data displays and other status displays. It can display up to 40seg x 8com=320 characters, and can be changed from 8com to 4com in accordance with the display method used. It is ideal for use in all kinds of equipment featuring status displays, such as sensor controls and metering controls.

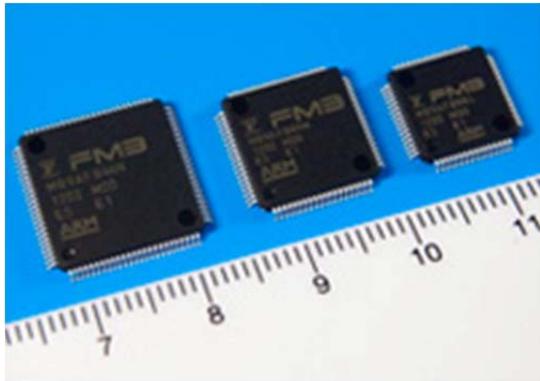


Photo 3. MB9AB40N Series

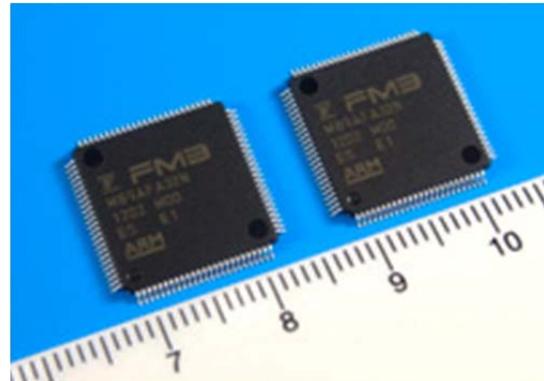


Photo 4. MB9AA30N Series

Line-up

Low Power Group: MB9AB40N/A40/340/140 Series (108 products)

Operating Frequency (Max.)	Package	Peripheral		Flash/RAM		
		USB2.0 Host/Function	LCD	96KB /16KB	160KB /16KB	288KB /32KB
40MHz	LQFP-100 0.5mm pitch	○	○	MB9AFB41NPMC	MB9AFB42NPMC	MB9AFB44NPMC
		-	○	MB9AFA41NPMC	MB9AFA42NPMC	MB9AFA44NPMC
		○	-	MB9AF341NPMC	MB9AF342NPMC	MB9AF344NPMC
		-	-	MB9AF141NPMC	MB9AF142NPMC	MB9AF144NPMC
	QFP-100 0.65mm pitch	○	○	MB9AFB41NPQC	MB9AFB42NPQC	MB9AFB44NPQC
		-	○	MB9AFA41NPQC	MB9AFA42NPQC	MB9AFA44NPQC
		○	-	MB9AF341NPQC	MB9AF342NPQC	MB9AF344NPQC
		-	-	MB9AF141NPQC	MB9AF142NPQC	MB9AF144NPQC
	BGA-112 0.8mm pitch	○	○	MB9AFB41NBGL	MB9AFB42NBGL	MB9AFB44NBGL
		-	○	MB9AFA41NBGL	MB9AFA42NBGL	MB9AFA44NBGL
		○	-	MB9AF341NBGL	MB9AF342NBGL	MB9AF344NBGL
		-	-	MB9AF141NBGL	MB9AF142NBGL	MB9AF144NBGL
	LQFP-80 0.5mm pitch	○	○	MB9AFB41MPMC	MB9AFB42MPMC	MB9AFB44MPMC
		-	○	MB9AFA41MPMC	MB9AFA42MPMC	MB9AFA44MPMC
		○	-	MB9AF341MPMC	MB9AF342MPMC	MB9AF344MPMC
		-	-	MB9AF141MPMC	MB9AF142MPMC	MB9AF144MPMC
	LQFP-80 0.65mm pitch	○	○	MB9AFB41MPMC1	MB9AFB42MPMC1	MB9AFB44MPMC1
		-	○	MB9AFA41MPMC1	MB9AFA42MPMC1	MB9AFA44MPMC1
		○	-	MB9AF341MPMC1	MB9AF342MPMC1	MB9AF344MPMC1
		-	-	MB9AF141MPMC1	MB9AF142MPMC1	MB9AF144MPMC1
	BGA-96 0.5mm pitch	○	○	MB9AFB41MBGL	MB9AFB42MBGL	MB9AFB44MBGL
		-	○	MB9AFA41MBGL	MB9AFA42MBGL	MB9AFA44MBGL
		○	-	MB9AF341MBGL	MB9AF342MBGL	MB9AF344MBGL
		-	-	MB9AF141MBGL	MB9AF142MBGL	MB9AF144MBGL
	LQFP-64 0.5mm pitch	○	○	MB9AFB41LPMC1	MB9AFB42LPMC1	MB9AFB44LPMC1
		-	○	MB9AFA41LPMC1	MB9AFA42LPMC1	MB9AFA44LPMC1
		○	-	MB9AF341LPMC1	MB9AF342LPMC1	MB9AF344LPMC1
		-	-	MB9AF141LPMC1	MB9AF142LPMC1	MB9AF144LPMC1
	LQFP-64 0.5mm pitch	○	○	MB9AFB41LPMC	MB9AFB42LPMC	MB9AFB44LPMC
		-	○	MB9AFA41LPMC	MB9AFA42LPMC	MB9AFA44LPMC
		○	-	MB9AF341LPMC	MB9AF342LPMC	MB9AF344LPMC
		-	-	MB9AF141LPMC	MB9AF142LPMC	MB9AF144LPMC
	QFN-64 0.5mm pitch	○	○	MB9AFB41LWQN	MB9AFB42LWQN	MB9AFB44LWQN
		-	○	MB9AFA41LWQN	MB9AFA42LWQN	MB9AFA44LWQN
		○	-	MB9AF341LWQN	MB9AF342LWQN	MB9AF344LWQN
		-	-	MB9AF141LWQN	MB9AF142LWQN	MB9AF144LWQN

Ultra Low Leak Group: MB9AA30N/130 Series (26 products)

Operating Frequency (Max.)	Package	Peripheral	Flash/RAM	
		LCD	64KB /12KB	128KB /16KB
20MHz	LQFP-100 0.5mm pitch	○	MB9AFA31NPMC	MB9AFA32NPMC
		-	MB9AF131NPMC	MB9AF132NPMC
	BGA-112 0.8mm pitch	○	MB9AFA31NBGL	MB9AFA32NBGL
		-	MB9AF131NBGL	MB9AF132NBGL
	QFP-100 0.65mm pitch	○	MB9AFA31NPF	MB9AFA32NPF
		-	MB9AF131NPF	MB9AF132NPF
	LQFP-80 0.5mm pitch	○	MB9AFA32MPMC	MB9AFA31MPMC
		-	MB9AF132MPMC	MB9AF131MPMC
	LQFP-80 0.65mm pitch	○	MB9AFA31MPMC1	MB9AFA32MPMC1
		-	MB9AF132MPMC1	MB9AF131MPMC1
	LQFP-64 0.5mm pitch	○	MB9AFA31LPMC1	MB9AFA32LPMC1
	LQFP-64 0.65mm pitch	○	MB9AFA31LPMC	MB9AFA32LPMC
QFN-64 0.5mm pitch	○	MB9AFA31LQN	MB9AFA32LQN	