

## Fujitsu Expands Line of 8-bit Microcontrollers for Motor Control - Ideal for applications such as microwave ovens, food processors, hair dryers -

Yokohama, Japan, June 16, 2010 – Fujitsu Semiconductor Limited today announced that it has expanded its F2MC-8FX(1) family of high-performance 8-bit microcontrollers with embedded flash memory to include six products from the MB95390H series of 48-pin chips, which feature functions for controlling brushless DC motors(2). Samples of the new series will be available from late June 2010, with volume shipping to start in September 2010.

In order to respond to rapidly rising demand in the Japanese and other Asian markets for motor controller microcontrollers with low pin counts, the MB95390H series was designed to be used in kitchen appliances, office equipment, personal care products and other products that require brushless DC motor controllers.

DC motors are utilized in a wide spectrum of electrical products sold in the Japanese and other Asian markets, including kitchen appliances such as microwave ovens and food processors, office equipment such as printers and copiers, and personal-care products such as electric razors and blow dryers. These DC motors account for a significant percentage of a product's overall cost, and reducing this cost is a high priority for manufacturers. At the same time, requests for reduced noise and greater product longevity have spurred a shift in demand away from brushed DC motors, with their simple construction, towards electronically-controlled brushless DC motors. As a result, it is anticipated that there will be a further expanded market for 8-bit microcontrollers that enable brushless DC motor controllers to be produced at a low cost.

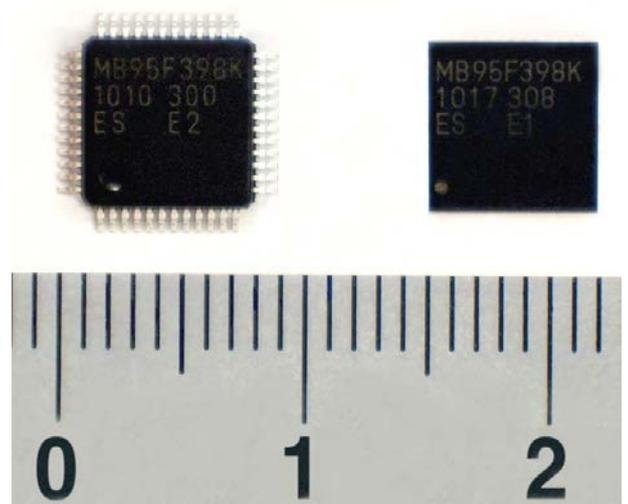


Figure 1. MB95390H Series (unit: cm)

In addition, there is heightened demand not only for brushless DC motor controllers, but also for fine-grained system controllers - including temperature sensors and light sensors - that monitor the various environments surrounding a device. This also includes demand for these controllers to be used in relatively high-end products.

This March, Fujitsu Semiconductor introduced the MB95330H series of 32-pin chips, which feature functions for controlling brushless DC motors, as an addition to its F2MC-8FX family of microcontrollers with embedded secure flash memory.

The company is now offering the MB95390H series, which features a memory capacity of up to 60 KB and 48-pin packaging. Equipped with up to 12 channels of high-precision A/D converters, chips in this series can receive multiple sensor inputs and run complex processing programs.

In addition to functions for controlling brushless DC motors, the new series includes various timer and communications functions that are useful for general-purpose applications, along with high-precision oscillators, thereby significantly contributing to the reduction of parts used in system architectures.

## Sample Price and Availability

Series	Price	Sample Availability
MB95390H Series	JPY 400	From end of June 2010

## Line-up

Product	ROM capacity	RAM capacity
MB95F394H, MB95F394K	20 Kbyte	496 byte
MB95F396H, MB95F396K	36 Kbyte	1008 byte
MB95F398H, MB95F398K	60 Kbyte	2032 byte

## Sales Target

2 million units (total for all six products) in fiscal year 2010 (April 2010 - March 2011)

## Series Features

### 1. Brushless DC motor controller

The new series enables formation of suitable three-phase waves for brushless DC motor control, for use in various brushless DC motors including for turntables in microwave ovens and air-cooling fans in copiers.

### 2. Reduced system cost

By embedding CR oscillation, a low voltage detection circuit and watchdog timer, the microcontrollers successfully reduce required external components by two to three components, such as eliminating the need for an external oscillator and reset IC. This helps to reduce customers' overall system cost.

### 3. High-performance flash memory

The microcontrollers embed high-performance flash memory which can be re-written/read 100,000 times even while running a program, and is guaranteed to retain data for 20 years. Furthermore, a flash security function protects the customer's software from unauthorized external programming.

## Glossary and Notes

### 1 F<sup>2</sup>MC-8FX Family:

Product family name of 8-bit microcontrollers from Fujitsu Semiconductor.

### 2 Brushless DC Motor:

Synchronous electric motor powered by direct-current electricity (DC) and which has an electronically controlled commutation system, instead of a mechanical commutation system comprising brushes and a commutator.

### For more information:

[Fujitsu Semiconductor:](http://www.fujitsu.com)

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

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

## **About Fujitsu Semiconductor**

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/>

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Appendix

Specifications of “MB95390H Series”

SPEC	MB95F394H	MB95F396H	MB95F398H	MB95F394K	MB95F396K	MB95F398K
ROM capacity	20Kbyte	36Kbyte	60Kbyte	20Kbyte	36Kbyte	60Kbyte
RAM capacity	496byte	1008byte	2032byte	496byte	1008byte	2032byte
Low-voltage detection reset	No			Yes		
Reset input	Dedicated			Selected by software		
Operating volt.	2.4V~5.5V					
Clock	Selectable from external OSC clock, or On-chip CR OSC (after implementation: accuracy assurance ±2%)					
Motor control	Output 3-phase waves for brushless DC motor control					
Timers	8/16-bit composite timers(selectable from PWC, PWM, Capture), 8/16-bit PPG timer,16-bit reload timer, time-base timer					
Communicatio	LIN-UART, UART/SIO, I <sup>2</sup> C					
A/D converter	12ch (8-bit/10-bit resolution)					
Package	LQFP,48 pins QFN,48 pins					

Road Map

