Fujitsu Expands Lineup of Low Pin Count 8-bit Microcontrollers for Consumer Appliances
- E²PROM emulation reduces total system cost -

Tokyo, April, 14, 2009 - Fujitsu Microelectronics Limited announced today three new series to expand its lineup of low pin count microcontrollers, with 8, 16, and 20 pins, in its F²MC-8FX family of high-performance 8-bit microcontrollers. The new MB95260H series, MB95270H series, and MB95280H series feature embedded dual-operation flash memory and support E²PROM emulation[1]. This enables a reduction in system cost, as an external E²PROM is not required. The launch of the three new series is in response to the rapid rise in demand in the Asian market for low pin count microcontrollers, for use in home appliances and other consumer electronics. Samples of the new series will start shipping from April 14, 2009.
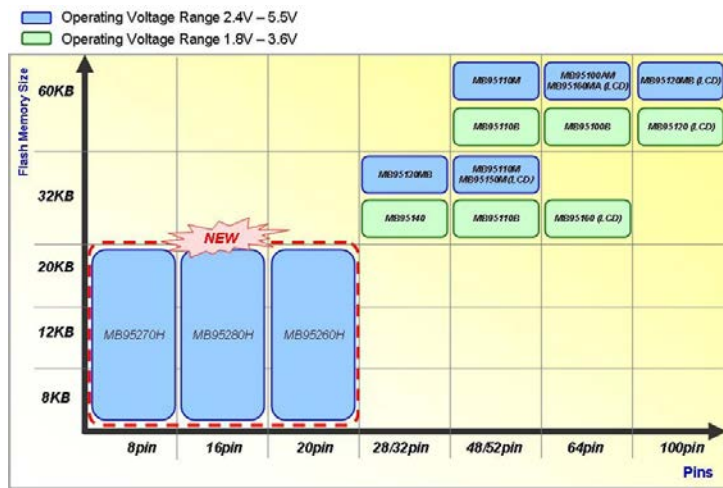

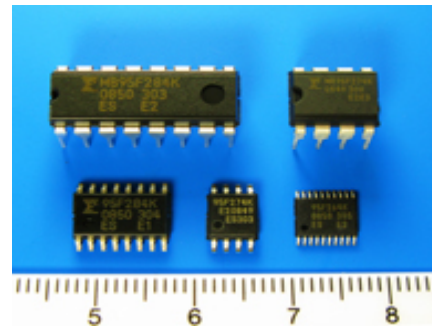Figure 1: Low Pin Count Microcontroller

Figure 2: Selection of the new low pin count microcontrollers (unit:)

In recent years, there has been rapidly growing demand in Asia for low pin count 8-bit microcontrollers for use in small home appliances. In response to these needs, Fujitsu Microelectronics has been providing a lineup of low pin count 8-bit flash microcontrollers in its F²MC-8FX family. In order to accommodate a vaster range of needs, Fujitsu Microelectronics has launched the new MB95260H series, MB95270H series, and MB95280H series with the first-ever addition of embedded dual-operation flash memory in Fujitsu Microelectronics' 8-bit microcontrollers. Dual-operation flash memory provides memory for program data, as well as a memory area for data storage that substitutes the need for external E²PROM, and thus reduces total system cost. Furthermore, the embedded flash memory features an industry-leading guarantee of up to 100,000 re-writes.

Aside from their use as main microcontrollers, the three new series can also be used as sub-microcontrollers - for example when as a result of system specification changes in high-performance audio-visual equipment, the functions of the I/O or A/D converter of the main microcontroller or ASIC are no longer adequate. The new series also employ a 1-line on-chip debug that uses only one pin on the microcontroller, thereby minimizing the number of pins used for debugging in product development.

Furthermore, along with these series, Fujitsu Microelectronics is providing the starter kit, MB2146-420A-01-E, which includes a product development environment in a single package.

Sample Availability and Volume Production Pricing
(for order volumes of 1 million units)

Series	Volume Unit Price	Sample Availability
[8-pin] MB95270H Series	JPY 50	From April 14, 2009
[16-pin] MB95280H Series	JPY 60	From April 14, 2009
[20-pin] MB95260H Series	JPY 70	From April 14, 2009

Sales Target
1 million units per month in 2nd half of fiscal year 2009 (October 2009 to March 2010)

Key Features of the New Series

1. **Dual-operation flash memory**
    Includes Fujitsu Microelectronics' proprietary embedded dual-operation flash memory which emulates E²PROM. The memory contains two regions, one region for program storage, and another region that can be used for data storage and acts as a substitute for E²PROM. This allows a reduction in system area and system cost, as an external E²PROM is not required.

2. **High-performance flash memory**
    The microcontrollers are embedded with Fujitsu's high-reliability, high-performance flash memory that can be rewritten 100,000 times and is guaranteed to hold data for 20 years. Also contains a flash security function[2] that protects the customer's software from being read by unauthorized external programs.

3. **Reduced system cost due to integration of external components**
    Because the internal CR oscillating circuit and the low-voltage detection circuit are built into the microcontrollers, the need for an external oscillator and reset IC is eliminated, thus contributing to a reduction in overall system cost.

4. **"Composite timer" provides flexibility for system requirements**
    For the timer function, in the embedded "composite timer", depending on the program a channel can be selected from any one of the following: pulse width modulation (PWM)[3], pulse width counter (PWC)[4], interval timer or input capture which measures interval times, thereby enabling flexibility to handle customers' varying system requirements.

Glossary and Notes
1 E²PROM emulation:
    The same functionality as E²PROM, but realized with in flash memory.
2 Flash security function:
    Restricts access to embedded flash memory to prevent unauthorized external reading or writing of programs.
3 Pulse width modulation (PWM):
    Modulates the duty cycle of a signal. Used in motor speed control, etc.
4 Pulse width counter (PWC):
    Measures pulse width or cycle time. Used in measuring number of motor revolutions, motor speed, remote control, etc.

About Fujitsu Microelectronics (FML)
Fujitsu Microelectronics Limited designs and manufactures semiconductors, providing highly reliable, optimal solutions and support to meet the varying needs of its customers. Products and services include ASICs/COT, ASSPs, power management ICs, and flash microcontrollers, with wide-ranging expertise focusing on imaging, wireless, automotive and security applications. Fujitsu Microelectronics also drives power efficiency and environmental initiatives. Headquartered in Tokyo, 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 Microelectronics offers semiconductor solutions to the global marketplace. For more information: http://jp.fujitsu.com/group/fml/en/

Specifications of MB95260H series, MB95270H series, and MB95280H series microcontrollers

Series		MB95260H series						MB95270H series						MB95280H series					
Part Number		MB95F264H	MB95F263H	MB95F262H	MB95F264K	MB95F263K	MB95F262K	MB95F284H	MB95F283H	MB95F282H	MB95F284K	MB95F283K	MB95F282K	MB95F274H	MB95F273H	MB95F272H	MB95F274K	MB95F273K	MB95F272K
Memory		Flash Memory																	
ROM Size		20KB	12KB	8KB	20KB	12KB	8KB	20KB	12KB	8KB	20KB	12KB	8KB	20KB	12KB	8KB	20KB	12KB	8KB
RAM Size		496B	496B	240B	496B	496B	240B	496B	496B	240B	496B	496B	240B	496B	496B	240B	496B	496B	240B
CPU	CPU core	F^2MC-8FX (8bit CISC CPU)																	
	Instructions	136 Instructions																	
	Min. Instruction Execution Time	61.5ns																	
	Max. Frequency	16.25MHz																	
Internal CR Oscillator	Main Clock	1/8/10MHz, ±3% precision																	
	Sub-Clock	Typ: 100kHz min 50kHz max:200kHz																	
Low-Power Modes		Sleep mode, Stop mode, Time base timer mode, Clock mode																	
Low-Voltage Detection Circuit		-			Yes			-			Yes			-			Yes		
I/O	CMOS	15						11						3					
	N-ch Open Drain	1			2			1			2			1			2		
Watch-Dog Timer		Hardware/Software Watch-Dog Timer																	
LIN-UART		1ch												-					
A/D Converters		6ch						5ch						2ch					
		Can select 8bit or 10bit * Guaranteed precision over range 4.0V ~ 5.5V																	
Composite Timer * Select from PMC, PWM, Interval timer, Input capture		8bit×4ch Can select 8bit or 16bit timer For 16bit, 2ch						8bit×2ch Can select 8bit or 16bit timer For 16bit, 1ch											
External Interrupts		6ch												2ch					
Clock Supervisor		Yes																	
Operating Voltage		2.4V ~ 5.5V *2.9V ~ 5.5V in debug mode																	
Operating Temperatures		-40°C ~+85°C																	
Package		SDIP-24/SOP-20/TSSOP-20						DIP-16/SOP-16						DIP-8/SOP-8					
		*QFN-32 in development																	