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.

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)

<table>
<thead>
<tr>
<th>Series</th>
<th>Volume Unit Price</th>
<th>Sample Availability</th>
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<tbody>
<tr>
<td>[8-pin] MB95270H Series</td>
<td>JPY 50</td>
<td>From April 14, 2009</td>
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<tr>
<td>[16-pin] MB95280H Series</td>
<td>JPY 60</td>
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<tr>
<td>[20-pin] MB95260H Series</td>
<td>JPY 70</td>
<td>From April 14, 2009</td>
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</tbody>
</table>

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/

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

<table>
<thead>
<tr>
<th></th>
<th>MB95F264H</th>
<th>MB95F263H</th>
<th>MB95F262H</th>
<th>MB95F284H</th>
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<th>MB95F282H</th>
<th>MB95F274H</th>
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<td>496B</td>
<td>240B</td>
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### CPU

- **CPU core**: F²MC-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

- **I/O**
  - CMOS: 15
  - N-ch Open Drain: 1

### I/O

- **Watch-Dog Timer**: Hardware/Software Watch-Dog Timer
- **LIN-UART**: 1ch
- **A/D Converters**: 6ch
- **Composite Timer**: 8bit×4ch
  - Can select 8bit or 10bit
  - Guaranteed precision over range 4.0V – 5.5V
- **External Interrupts**: 6ch
- **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