# **Press Release**

[DEVICE]



Fujitsu Semiconductor Limited

### Competing driving motor control LSI market for Eco-CAR New release 3 products of 32bit microcontroller for high speed motor control

Yokohama Japan, 27<sup>th</sup> April 2011 – Fujitsu Semiconductor Limited today announced that three products of "MB91580series" which contain driving motor control function for Electrical Vehicle (EV) and Hybrid Vehicle (HV) as a part of high performance 32bit FLASH embedded microcontroller(MCU) "FR family". Sample delivery will start at the end of April 2011.

"MB91580 series" supports the demand for automotive driving motor control MCU with dedicated embedded resolver senor interface as a pioneer to control three phase motor used in EV and HV which demand is growing rapidly and globally as eco-cars. This is first time for Fujitsu Semiconductor to deliver driving motor control LSI for Eco-CAR and support demand for the market.

Nowadays, the interest for environment of the earth is increasing and the demand for eco-cars like electric vehicle and hybrid vehicle is increasing to reduce exhaust gas which infects the air.

In order to familiarize the eco-cars and drive ecology further, three innovations = "improve mobility of motors", "Low energy consumption", and "system cost reduction" is required.

Fujitsu provides 32bit MCU "MB91580 series" for driving motor control to support such demand quickly and start delivery at the end of April.

"MB91580series" contains the best suitable CPU core and peripherals for EV/HV motor control. Especially, in terms of resolver sensor used for EV/HV driving motor, the dedicated interface logics is embedded in order to achieve "System cost reduction" and in order to contribute "Improving mobility of motors", and "low energy consumption" by realizing high torque responsiveness which is required for EV/HV driving motor.



Fig. 1 Motor control MCU Roadmap

#### Sample price and delivery time

Series	Sample price	Sample delivery time	
MB91580series	\$25(*)	Apr 2011	

\* In case of MB91F585

#### Lineup

Part number	Main Flash Capacity	RAM Capacity
MB91F585	576KB	48KB
MB91F586	832KB	64KB
MB91F587	1088KB	96KB

KB : Kilo Byte

#### Sales target

2Milion pcs with 3 products in 2014

#### Feature of this series

#### 1.Peripherals which are suitable for high torque responsiveness

Following peripherals are available for EV/HV driving motor control which needs high torque responsiveness. These peripherals realize "System cost reduction", "Improving mobility of motors", and "Low energy consumption" by realizing high torque responsiveness.

- 12bit A/D converter and R/D converter to detect the power current and position of the motor with high precision are available. R/D converter detects the electrical angle synchronizing with A/D converter which detects three phase power current.
- Automatic feedback circuit which calculates SIN and COS toward the electrical angle detected by R/D converter is available. The information needed for feedback control of motor is generated by hardware.



#### Fig2. Detection of electric current and postion and feedback control

#### 2. High performance CPU core

Dedicated floating point unit (FPU) which is included in 160DMIPS high performance CPU enables to
process vector conversion and PID control calculation using the information generated by peripherals.
This feature contributes "Improving mobility of motor" and "Low power consumption" by realizing further
fast feedback control. In addition, CPU can control periphery systems (e.g. DC/DC convertor for motor,
battery management) to contribute "System cost reduction" by system integration.

For More Infomation
<u>http://www.fujitsu.com/global/group/fsl</u>
(Fujitsu Semiconductor)
<u>http://www.fujitsu.com/global/services/microelectronics/product/micom/roadmap/autmotive</u>
(Automotive microcontroller)

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#### 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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## Append i x

Abstract o	of the	spec	for	MB91580	series
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	MB91580 series				
	MB91F587	MB91F586	MB91F585		
Technology	90nm FLASH technology				
Operating Frequency	128MHz				
Main FLASH	1088KB	832KB	576KB		
Work LASH	64КВ				
Main RAM	96KB	64KB	48KB		
Backup RAM	8KB				
A/D converter	8ch x 3unit (24ch) minimum conversion time 1us				
R/D converter	1unit				
Multi-Function Serial	5ch				
FlexRay	A+Bch				
CAN	3ch				
Hardware Watchdog Timer	Yes				
Low voltage detection	Detection voltage 3.7V-4.1V				
(external voltage)					
Low voltage detection	Detection voltage 0.8V~1.0V				
(internal voltage)					
IO relocation	Available for multi-function serial ch3/ch4				
Power shutdown function	Yes				
CR oscillation stop	Optional (with L suffix)				
function at standby mode					
Package	LQFP-144(0.5mm pitch)				



Photo: MB91580 series