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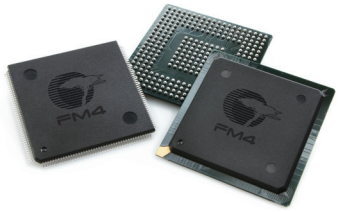
What is "Embedded - Microcontrollers"?

"Embedded - Microcontrollers" refer to small, integrated circuits designed to perform specific tasks within larger systems. These microcontrollers are essentially compact computers on a single chip, containing a processor core, memory, and programmable input/output peripherals. They are called "embedded" because they are embedded within electronic devices to control various functions, rather than serving as standalone computers. Microcontrollers are crucial in modern electronics, providing the intelligence and control needed for a wide range of applications.

Applications of "Embedded - Microcontrollers"

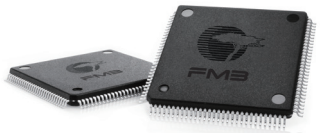
Details	
Product Status	Obsolete
Core Processor	F²MC-8FX
Core Size	8-Bit
Speed	16MHz
Connectivity	I²C, LINbus, SIO, UART/USART
Peripherals	LVD, POR, PWM, WDT
Number of I/O	29
Program Memory Size	20KB (20K x 8)
Program Memory Type	FLASH
EEPROM Size	-
RAM Size	1K x 8
Voltage - Supply (Vcc/Vdd)	1.8V ~ 5.5V
Data Converters	A/D 8x8/10b
Oscillator Type	External
Operating Temperature	-40°C ~ 85°C (TA)
Mounting Type	-
Package / Case	-
Supplier Device Package	-
Purchase URL	https://www.e-xfl.com/product-detail/infineon-technologies/mb95f634k-chip32

Consumer and Industrial MCU Family



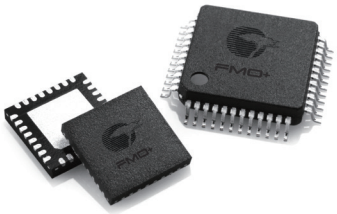
FM4 FAMILY

Cypress ARM® Cortex®-M4F microcontroller family is a high range line providing maximum CPU frequency of 200MHz, a high speed flash memory with DSP and FPU hardware instructions. Customers can select the best fitting device from a range of products, coming in packages from 48 pin to 216 pin and flash memory densities between 256KB and 2MB. The wide operation supply voltage range up to 5.5V which improves the signal to noise ratio, results in a robust design and is unique among Cortex-M4F microcontroller families. The MCUs are designed for applications that require advanced, high-speed computing performance such as general-purpose inverters, servomotors, PLCs and other industrial equipment, as well as inverter-based home appliances such as washing machines and air conditioners.



FM3 FAMILY

Cypress ARM Cortex-M3 microcontroller family is a scalable platform for many industrial applications. Customers can select the best fitting device from a range of products, coming in packages from 32 pin to 176 pin and flash memory densities between 32KB and 1MB. With a maximum CPU frequency of 144MHz and high speed flash memory, FM3 supports the fastest ARM Cortex-M3 devices on the market. The wide operation supply voltage range up to 5.5V, which improves the signal to noise ratio, results in a robust design and is quite unique among Cortex-M3 microcontroller families. The FM3 MCU family is split into four groups: high performance, basic, low power and ultra low leakage groups. The main differences between the groups are CPU operation frequency and supply voltage. All products are based on the same architecture (software compatible), use the same peripherals and are pin compatible in most cases. The ultra low leakage line products are based on an optimized low leakage process technology. Development tools and evaluation boards are offered from different vendors and Cypress.



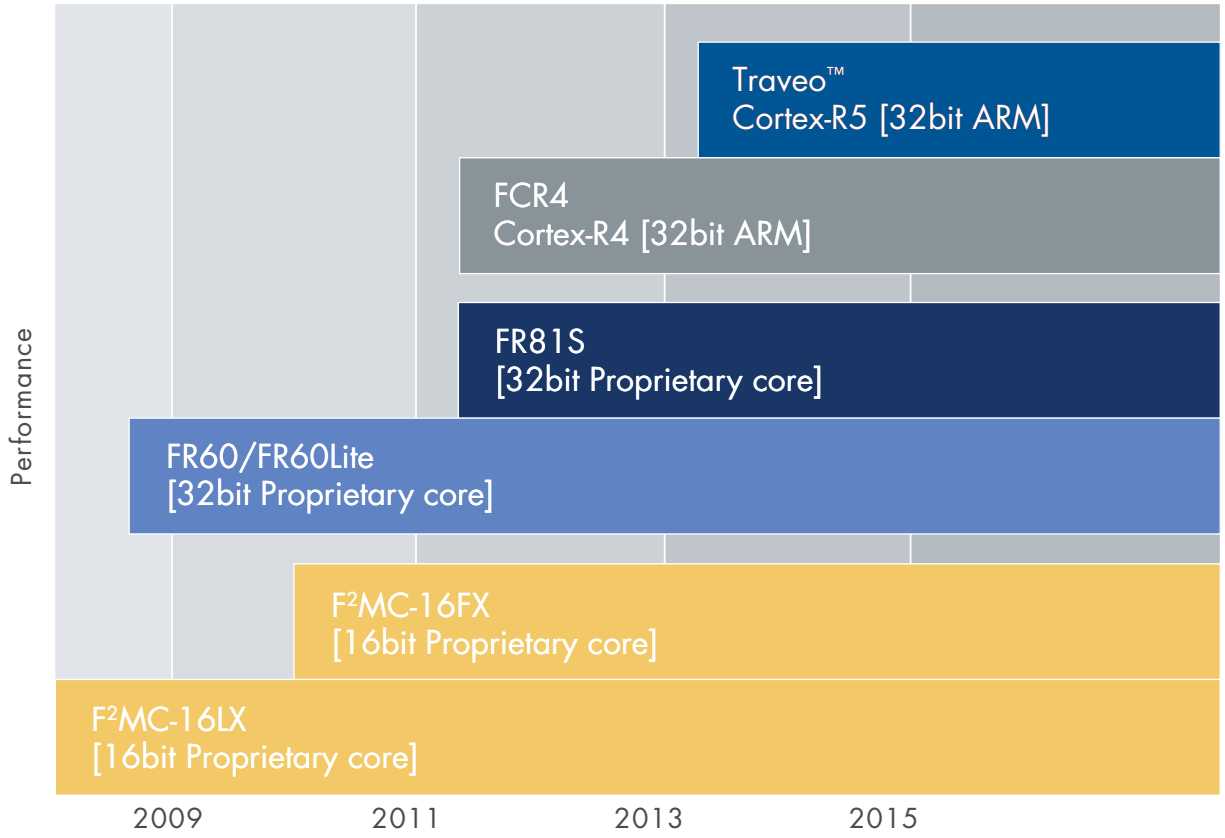
FM0+ FAMILY

The Cypress FM0+ family, which is based on the ARM Cortex-M0+ core, is designed for low power and cost-sensitive applications such as white goods, sensors, meters, HMI systems, power tools and Internet of Things (IoT) battery powered or energy harvesting wearable devices. These microcontrollers can be easily embedded into systems adopting 8-, 16- or 32-bit MCUs, accelerating product development and reducing development costs. The FM0+ family includes two groups for ultra-low-power and cost-effective applications. The devices in the ultra-low-power group have an operating voltage range of 1.65V to 3.6V, and a maximum CPU clock frequency of 40MHz, a RUN mode current of 70 µA/MHz, an RTC mode current of 0.7 µA and wake-up time of approximately 40 µs.

8FX FAMILY

Cypress 8FX MCU family is a high-performance 8-bit microcontroller utilizing a different embedded flash memory size. This series uses the F2MC-8FX CISC CPU, which offers industry leading class performance of an 8-bit microcontroller unit enabling more instructions to be executed per cycle. On top of delivering industry class performance MCUs, the 8FX family also delivers low power efficient MCU products for the customer's usage. This series also features a variety of on-chip timers, A/D converters, analog and digital peripheral and communication interfaces such as LIN-UART (Local Interconnect Network Universal Asynchronous Receiver-Transmitter), CAN (controller area network) and I2C (Inter-Integrated Circuit) interface for various application usages. For easy development, the 8FX family also employs 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. Cypress also provides easy to use and cost competitive development starter kits and development environments for this MCU series.

Automotive MCU Core Roadmap



Automotive MCU Family

TRAVEO FAMILY

The Cypress Traveo™ family expands the company's automotive application coverage, scalability and high performance into one line-up and at the same time adds new features to fulfill the latest requirements of the automotive industry. Based on the powerful ARM® Cortex®-R5 and R5F core in single and dual core operations, it offers state-of-the-art real-time performance, safety and security features.

The family supports the latest in-car networks and offers high performance graphics engines optimized for a minimum memory footprint and embeds dedicated features to increase data security in the car.

High-level Traveo Features

- ARM Cortex-R5 core
- Dual core
- Embedded twin-motor control with internal R/D converter
- Embedded 2D and 3D graphics engines
- High performance embedded flash memory
- Cypress HyperBus™: High speed serial interfaces to connect external memory
- Qualified for automotive use (AEC-Q100)
- Software support for Autosar, graphics drivers and more

FR FAMILY

Cypress 32bit MCU families have been designed in close co-operation with major automotive customers worldwide and inherit the high-performance core of Cypress's proprietary FR MCU architecture. They support communication interfaces such as CAN, FlexRay and LIN as well as up to 2MB on-chip memory capacity. The latest members (MB915xx) also include a single precision Floating Point Unit (FPU) providing additional computing power required by complex control algorithms.

This high computing performance combined with powerful peripheral functions such as on-chip graphics controller and motor control macros, offers a higher grade of flexibility and lower cost for automotive as well as industrial applications.

Many devices offer an external bus interface which can be connected to Cypress's stand alone FlexRay controller or to the latest generation of graphics controllers in order to build full-featured dashboards, driver information systems or advanced body systems.

FCR4 FAMILY

The FCR4 family has been specifically designed to offer an innovative, scalable solution for hybrid instrument clusters, which combine traditional meters and graphical displays. The devices offer a powerful architecture based on the ARM Cortex-R4 core and Cypress's 2D graphics engine.

High-level FCR4 Features

- ARM Cortex-R4 core
- Embedded 2D graphics engine
- 2MB flash, 64KB E2Flash
- Up to 208KB RAM
- Features including real-time clock/auto calibration, sound generator and I2S

F2MC-16FX FAMILY

Cypress 16-bit flexible microcontroller series offers a scalable family concept approach to a variety of automotive and industrial applications. The scalable flash/ROM/RAM sizes with different mixtures of peripherals saves development time and costs. CAN and LIN support, on-chip LCD controller, SMC (stepper motor controller), I^2C bus interface, analog input channels, external bus interface, selectable port levels for CMOS, TTL and Automotive Levels are some of the enhanced features. A security feature is incorporated, preventing unauthorized reading of the contents of the flash memory.

FM4 Family – 32bit Microcontrollers

Series Name	Product Name	Maximum Internal Clock Frequency [MHz]	Package [pin]	Operating Voltage: VCC [V]	Sub Clock	Memory Type	ROM [byte]	RAM [byte]	Cache [Kbyte]	DMAC [ch]	Ext. Interrupt [ch]	External Bus	Maximum I/O port [ch]	10bit AD Converter [ch(unit)]	12bit AD Converter [ch(unit)]	DA Converter [bit x ch]	Timer									Serial				Communication			LCD Controller [seg x com]	Three-phase Inverter	Note	Evaluation Device
																	Output Compare [ch]	Free-Run Timer [ch]	Input Capture [ch]	Reload Timer [ch]	PWM Timer [ch]	PWC Timer [ch]	PPG Timer [ch]	Up/Down Counter [ch]	Other timers [ch]	I^2C [ch]	UART/SI [ch]	SIO [ch]	LIN/UART/SIO [ch]	CAN [ch]	USB-Host [ch]	USB-Function [ch]				
S6E2CC-V	S6E2CCAJGA	200	LQFP-176 BGA-192	2.7 to 5.5	✓	Main Flash +Main Flash	2M	256K	–	8	32	✓	152	–	32 (3)	12 x 2	Multi-Function Timer x3units (Free-Run 3ch/ Output Compare 6ch/ Input Capture 4ch/ PPG 3ch/ Waveform Generator 3ch/ AD Activation Compare 6ch Selectable), PPG 9ch			Base Timer x 16ch (Reload/PPG/PWM/ PWC Selectable)				QPRC x 4	1	Multi Function Serial x 16ch (UART/CSIO/I2C/LIN Selectable)				3 (2 x CAN + CAN FD)	2ch (USB-Host/ USB-Function Selectable)		–	✓	Dual Timer, Real Timer Clock, Unique ID, DSTC×256ch, SDC, I2S 1ch(without 144pin), HDMI-CEC 2ch, High Speed Quad SPI x1(without 144pin), Programmable CRC, Eth1ch, Chipher, Voice	On-Chip Debug (SWJ-DP/ETM/ HTM)
	S6E2CC8JGA		BGA-192				1M	128K																										
	S6E2CCAJFA						2M	256K																										Dual Timer, Real Timer Clock, Unique ID, DSTC×256ch, SDC, I2S 1ch(without 144pin), HDMI-CEC 2ch, High Speed Quad SPI x1(without 144pin), Programmable CRC, Eth1ch, Voice	
	S6E2CC8JFA						1M	128K																											
S6E2CC w/ Security	S6E2CCAHHA	200	LQFP-144	2.7 to 5.5	✓	Main Flash +Main Flash	2M	256K	–	8	32	✓	120	–	24 (3)	12 x 2	Multi-Function Timer x3units (Free-Run 3ch/ Output Compare 6ch/ Input Capture 4ch/ PPG 3ch/ Waveform Generator 3ch/ AD Activation Compare 6ch Selectable), PPG 9ch			Base Timer x 16ch (Reload/PPG/PWM/ PWC Selectable)				QPRC x 4	1	Multi Function Serial x 16ch (UART/CSIO/I2C/LIN Selectable)				3 (2 x CAN + CAN FD)	2ch (USB-Host/ USB-Function Selectable)		–	✓	Dual Timer, Real Timer Clock, Unique ID, DSTC x 256ch, SDC, I2S 1ch(without 144pin), HDMI-CEC 2ch, High Speed Quad SPI x1(without 144pin), Programmable CRC, Eth1ch, Chipher	On-Chip Debug (SWJ-DP/ETM/ HTM)
	S6E2CCAJHA		LQFP-176 BGA-192										152		32 (3)																				
	S6E2CCALHA		LQFP-216										190																						
	S6E2CC9HHA		LQFP-144				1.5M	192K					120		24 (3)																				
	S6E2CC9JHA		LQFP-176 BGA-192										152		32 (3)																				
	S6E2CC9LHA		LQFP-216										190																						
	S6E2CC8HHA		LQFP-144				1M	128K					120		24 (3)																				
	S6E2CC8JHA		LQFP-176 BGA-192										152		32 (3)																				
	S6E2CC8LHA		LQFP-216										190																						
S6E2CC	S6E2CCAH0A	200	LQFP-144	2.7 to 5.5	✓	Main Flash +Main Flash	2M	256K	–	8	32	✓	120	–	24 (3)	12 x 2	Multi-Function Timer x3units (Free-Run 3ch/ Output Compare 6ch/ Input Capture 4ch/ PPG 3ch/ Waveform Generator 3ch/ AD Activation Compare 6ch Selectable), PPG 9ch			Base Timer x 16ch (Reload/PPG/PWM/ PWC Selectable)				QPRC x 4	1	Multi Function Serial x 16ch (UART/CSIO/I2C/LIN Selectable)				3 (2 x CAN + CAN FD)	2ch (USB-Host/ USB-Function Selectable)		–	✓	Dual Timer, Real Timer Clock, Unique ID, DSTC x 256ch, SDC, I2S 1ch(without 144pin), HDMI-CEC 2ch, High Speed Quad SPI x1(without 144pin), Programmable CRC, Eth1ch	On-Chip Debug (SWJ-DP/ETM/ HTM)
	S6E2CCAJ0A		LQFP-176 BGA-192										152		32 (3)																				
	S6E2CCAL0A		LQFP-216										190																						
	S6E2CC9H0A		LQFP-144				1.5M	196K					120		24 (3)																				
	S6E2CC9J0A		LQFP-176 BGA-192										152		32 (3)																				
	S6E2CC9L0A		LQFP-216										190																						
	S6E2CC8H0A		LQFP-144				1M	128K					120		24 (3)																				
	S6E2CC8J0A		LQFP-176 BGA-192										152		32 (3)																				
	S6E2CC8L0A		LQFP-216										190																						
S6E2C5	S6E2C5AH0A	200	LQFP-144	2.7 to 5.5	✓	Main Flash +Main Flash	2M	256K	–	8	32	✓	120	–	24 (3)	12 x 2	Multi-Function Timer x3units (Free-Run 3ch/ Output Compare 6ch/ Input Capture 4ch/ PPG 3ch/ Waveform Generator 3ch/ AD Activation Compare 6ch Selectable), PPG 9ch			Base Timer x 16ch (Reload/PPG/PWM/ PWC Selectable)				QPRC x 4	1	Multi Function Serial x 16ch (UART/CSIO/I2C/LIN Selectable)				3 (2 x CAN + CAN FD)	2ch (USB-Host/ USB-Function Selectable)		–	✓	Dual Timer, Real Timer Clock, Unique ID, DSTC x 256ch, SDC, I2S 1ch(without 144pin), HDMI-CEC 2ch, High Speed Quad SPI x1(without 144pin), Programmable CRC	On-Chip Debug (SWJ-DP/ETM/ HTM)
	S6E2C5AJ0A		LQFP-176 BGA-192										152		32 (3)																				
	S6E2C5AL0A		LQFP-216										190																						
	S6E2C59H0A		LQFP-144				1.5M	192K					120		24 (3)																				
	S6E2C59J0A		LQFP-176 BGA-192										152		32 (3)																				
	S6E2C59L0A		LQFP-216										190																						
	S6E2C58H0A		LQFP-144				1M	128K					120		24 (3)																				
	S6E2C58J0A		LQFP-176 BGA-192										152		32 (3)																				
	S6E2C58L0A		LQFP-216										190																						

** In development; **Planning*

FM4 Family – 32bit Microcontrollers

Series Name	Product Name	Maximum Internal Clock Frequency [MHz]	Package [pin]	Operating Voltage: VCC [V]	Sub Clock	Memory Type	ROM [byte]	RAM [byte]	Cache [Kbyte]	DMAC [ch]	Ext. Interrupt [ch]	External Bus	Maximum I/O port [ch]	10bit AD Converter [ch(unit)]	12bit AD Converter [ch(unit)]	DA Converter [bit x ch]	Timer									Serial				Communication			LCD Controller [seg x com]	Three-phase Inverter	Note	Evaluation Device
																	Output Compare [ch]	Free-Run Timer [ch]	Input Capture [ch]	Reload Timer [ch]	PWM Timer [ch]	PWC Timer [ch]	PPG Timer [ch]	Up/Down Counter [ch]	Other timers [ch]	I^2C [ch]	UART/SI [ch]	SIO [ch]	LIN/UART/SIO [ch]	CAN [ch]	USB-Host [ch]	USB-Function [ch]				
S6E2C4	S6E2C4AH0A	200	LQFP-144	2.7 to 5.5	✓	Main Flash +Main Flash	2M	256K	–	8	32	✓	120	–	24 (3)	12 x 2	Multi-Function Timer x3units (Free-Run 3ch/ Output Compare 6ch/ Input Capture 4ch/ PPG 3ch/ Waveform Generator 3ch/ AD Activation Compare 6ch Selectable), PPG 9ch			Base Timer x 16ch (Reload/PPG/PWM/ PWC Selectable)				QPRC x 4	1	Multi Function Serial x 16ch (UART/CSIO/I2C/LIN Selectable)				3 (2 x CAN + CAN FD)	–	–	–	✓	Dual Timer, Real Timer Clock, Unique ID, DSTC x 256ch, SDC, I2S 1ch(without 144pin), HDMI-CEC 2ch, High Speed Quad SPI x1(without 144pin), Programmable CRC	On-Chip Debug (SWJ-DP/ETM/ HTM)
	S6E2C4AJ0A		LQFP-176 BGA-192										152		32 (3)																			
	S6E2C4AL0A		LQFP-216										190																						
	S6E2C49H0A		LQFP-144				1.5M	196K					120		24 (3)																				
	S6E2C49J0A		LQFP-176 BGA-192										152		32 (3)																				
	S6E2C49L0A		LQFP-216										190																						
	S6E2C48H0A		LQFP-144				1M	128K					120		24 (3)																				
	S6E2C48J0A		LQFP-176 BGA-192										152		32 (3)																				
	S6E2C48L0A		LQFP-216										190																						
S6E2C3	S6E2C3AH0A	200	LQFP-144	2.7 to 5.5	✓	Main Flash +Main Flash	2M	256K	–	8	32	✓	120	–	24 (3)	12 x 2	Multi-Function Timer x3units (Free-Run 3ch/ Output Compare 6ch/ Input Capture 4ch/ PPG 3ch/ Waveform Generator 3ch/ AD Activation Compare 6ch Selectable), PPG 9ch			Base Timer x 16ch (Reload/PPG/PWM/ PWC Selectable)				QPRC x 4	1	Multi Function Serial x 16ch (UART/CSIO/I2C/LIN Selectable)				–	2ch (USB-Host/ USB-Function Selectable)		–	✓	Dual Timer, Real Timer Clock, Unique ID, DSTC x 256ch, SDC, I2S 1ch(without 144pin), HDMI-CEC 2ch, High Speed Quad SPI x1(without 144pin), Programmable CRC	On-Chip Debug (SWJ-DP/ETM/ HTM)
	S6E2C3AJ0A		LQFP-176 BGA-192										152		32 (3)																			
	S6E2C3AL0A		LQFP-216										190																						
	S6E2C39H0A		LQFP-144				1.5M	192K					120		24 (3)																				
	S6E2C39J0A		LQFP-176 BGA-192										152		32 (3)																				
	S6E2C39L0A		LQFP-216										190																						
	S6E2C38H0A		LQFP-144				1M	128K					120		24 (3)																				
	S6E2C38J0A		LQFP-176 BGA-192										152		32 (3)																				
	S6E2C38L0A		LQFP-216										190																						
S6E2C2 w/ Security	S6E2C2AHHA	200	LQFP-144	2.7 to 5.5	✓	Main Flash +Main Flash	2M	256K	–	8	32	✓	120	–	24 (3)	12 x 2	Multi-Function Timer x3units (Free-Run 3ch/ Output Compare 6ch/ Input Capture 4ch/ PPG 3ch/ Waveform Generator 3ch/ AD Activation Compare 6ch Selectable), PPG 9ch			Base Timer x 16ch (Reload/PPG/PWM/ PWC Selectable)				QPRC x 4	1	Multi Function Serial x 16ch (UART/CSIO/I2C/LIN Selectable)				–	2ch (USB-Host/ USB-Function Selectable)		–	✓	Dual Timer, Real Timer Clock, Unique ID, DSTC x 256ch, SDC, I2S 1ch(without 144pin), HDMI-CEC 2ch, High Speed Quad SPI x1(without 144pin), Programmable CRC, Eth1ch, Chipher	On-Chip Debug (SWJ-DP/ETM/ HTM)
	S6E2C2AJHA		LQFP-176 BGA-192										152		32 (3)																			
	S6E2C2ALHA		LQFP-216										190																						
	S6E2C29HHA		LQFP-144				1.5M	196K					120		24 (3)																				
	S6E2C29JHA		LQFP-176 BGA-192										152		32 (3)																				
	S6E2C29LHA		LQFP-216										190																						
	S6E2C28HHA		LQFP-144				1M	128K					120		24 (3)																				
	S6E2C28JHA		LQFP-176 BGA-192										152		32 (3)																				
	S6E2C28LHA		LQFP-216										190																						
S6E2C2	S6E2C2AH0A	200	LQFP-144	2.7 to 5.5	✓	Main Flash +Main Flash	2M	256K	–	8	32	✓	120	–	24 (3)	12 x 2	Multi-Function Timer x3units (Free-Run 3ch/ Output Compare 6ch/ Input Capture 4ch/ PPG 3ch/ Waveform Generator 3ch/ AD Activation Compare 6ch Selectable), PPG 9ch			Base Timer x 16ch (Reload/PPG/PWM/ PWC Selectable)				QPRC x 4	1	Multi Function Serial x 16ch (UART/CSIO/I2C/LIN Selectable)				–	2ch (USB-Host/ USB-Function Selectable)		–	✓	Dual Timer, Real Timer Clock, Unique ID, DSTC x 256ch, SDC, I2S 1ch(without 144pin), HDMI-CEC 2ch, High Speed Quad SPI x1(without 144pin), Programmable CRC, Eth1ch	On-Chip Debug (SWJ-DP/ETM/ HTM)
	S6E2C2AJ0A		LQFP-176 BGA-192										152		32 (3)																			
	S6E2C2AL0A		LQFP-216										190																						
	S6E2C29H0A		LQFP-144				1.5M	192K					120		24 (3)																				
	S6E2C29J0A		LQFP-176 BGA-192										152		32 (3)																				
	S6E2C29L0A		LQFP-216										190																						
	S6E2C28H0A		LQFP-144				1M	128K					120		24 (3)																				
	S6E2C28J0A		LQFP-176 BGA-192										152		32 (3)																				
	S6E2C28L0A		LQFP-216										190																						
S6E2C1	S6E2C1AH0A	200	LQFP-144	2.7 to 5.5	✓	Main Flash +Main Flash	2M	256K	–	8	32	✓	120	–	24 (3)	12 x 2	Multi-Function Timer x3units (Free-Run 3ch/ Output Compare 6ch/ Input Capture 4ch/ PPG 3ch/ Waveform Generator 3ch/ AD Activation Compare 6ch Selectable), PPG 9ch			Base Timer x 16ch (Reload/PPG/PWM/ PWC Selectable)				QPRC x 4	1	Multi Function Serial x 16ch (UART/CSIO/I2C/LIN Selectable)				–	–		–	✓	Dual Timer, Real Timer Clock, Unique ID, DSTC x 256ch, SDC, I2S 1ch(without 144pin), HDMI-CEC 2ch, High Speed Quad SPI x1(without 144pin), Programmable CRC	On-Chip Debug (SWJ-DP/ETM/ HTM)
	S6E2C1AJ0A		LQFP-176 BGA-192										152		32 (3)																			
	S6E2C1AL0A		LQFP-216										190																						
	S6E2C19H0A		LQFP-144				1.5M	196K					120		24 (3)																				
	S6E2C19J0A		LQFP-176 BGA-192										152		32 (3)																				
	S6E2C19L0A		LQFP-216										190																						
	S6E2C18H0A		LQFP-144				1M	128K					120		24 (3)																				
	S6E2C18J0A		LQFP-176 BGA-192										152		32 (3)																				
	S6E2C18L0A		LQFP-216										190																						

** In development; **Planning*

FM4 Family – 32bit Microcontrollers

Series Name	Product Name	Maximum Internal Clock Frequency [MHz]	Package [pin]	Operating Voltage: VCC [V]	Sub Clock	Memory Type	ROM [byte]	RAM [byte]	Cache [Kbyte]	DMAC [ch]	Ext. Interrupt [ch]	External Bus	Maximum I/O port [ch]	10bit AD Converter [ch.(unit)]	12bit AD Converter [ch.(unit)]	DA Converter [bit x ch]	Timer								Serial				Communication			LCD Controller [seg x com]	Three-phase Inverter	Note	Evaluation Device
																	Output Compare [ch]	Free-Run Timer [ch]	Input Capture [ch]	Reload Timer [ch]	PWM Timer [ch]	PWC Timer [ch]	PPG Timer [ch]	Up/Down Counter [ch]	Other timers [ch]	I²C [ch]	UART/SI [ch]	SIO [ch]	LIN/UART/SIO [ch]	CAN [ch]	USB-Host [ch]	USB-Function [ch]				
MB9B160L	MB9BF164K	160	LQFP-48 QFN-48	2.7 to 5.5	✓	Main Flash +Work Flash	256K +32K	32K	–	8	15	–	33	–	8(2)	12 x 2	Multi-Function Timer x 1unit (Free-Run 3ch/ Output Compare 6ch/ Input Capture 4ch/ PPG 3ch/ Waveform Generator 3ch/ AD Activation Compare 6ch Selectable)			Base Timer x 8ch (Reload/PPG/PWM/ PWC Selectable)				QPRC x 1	1	Multi Function Serial x 6ch (UART/CSIO/I2C/LIN Selectable)				–	–	–	–	✓	Dual Timer, Real Time Clock, Unique ID, DSTC x 128ch	On-chip Debug (SWJ-DP)
	MB9BF164L		LQFP-64 QFN-64								16		48		15(2)		Multi-Function Timer x 2units (Free-Run 3ch/ Output Compare 6ch/ Input Capture 4ch/ PPG 3ch/ Waveform Generator 3ch/ AD Activation Compare 6ch Selectable)																				
	MB9BF165K		LQFP-48 QFN-48				384K +32K	48K			15		33		8(2)		Multi-Function Timer x 1unit (Free-Run 3ch/ Output Compare 6ch/ Input Capture 4ch/ PPG 3ch/ Waveform Generator 3ch/ AD Activation Compare 6ch Selectable)																				
	MB9BF165L		LQFP-64 QFN-64								16		48		15(2)		Multi-Function Timer x 2units (Free-Run 3ch/ Output Compare 6ch/ Input Capture 4ch/ PPG 3ch/ Waveform Generator 3ch/ AD Activation Compare 6ch Selectable)																				
	MB9BF166K		LQFP-48 QFN-48				512K +32K	64K			15		33		8(2)		Multi-Function Timer x 1unit (Free-Run 3ch/ Output Compare 6ch/ Input Capture 4ch/ PPG 3ch/ Waveform Generator 3ch/ AD Activation Compare 6ch Selectable)																				
	MB9BF166L		LQFP-64 QFN-64								16		48		15(2)		Multi-Function Timer x 2units (Free-Run 3ch/ Output Compare 6ch/ Input Capture 4ch/ PPG 3ch/ Waveform Generator 3ch/ AD Activation Compare 6ch Selectable)																				

** In development; **Planning*

FM3 Family – 32bit Microcontrollers

Series Name	Product Name	Maximum Internal Clock Frequency [MHz]	Package [pin]	Operating Voltage: VCC [V]	Sub Clock	Memory Type	ROM [byte]	RAM [byte]	Cache [Kbyte]	DMAC [ch]	Ext. Interrupt [ch]	External Bus	Maximum I/O port [ch]	10bit AD Converter [ch(unit)]	12bit AD Converter [ch(unit)]	DA Converter [bit x ch]	Timer: Output Compare [ch]	Timer: Free-Run Timer [ch]	Timer: Input Capture [ch]	Timer: Reload Timer [ch]	Timer: PWM Timer [ch]	Timer: PWC Timer [ch]	Timer: PPG Timer [ch]	Timer: Up/Down Counter [ch]	Timer: Other timers [ch]	Serial: I²C [ch]	Serial: UART/SI [ch]	Serial: SIO [ch]	Serial: LIN/UART/SIO [ch]	Communication: CAN [ch]	Communication: USB-Host [ch]	Communication: USB-Function [ch]	LCD Controller [seg x com]	Three-phase Inverter	Note	Evaluation Device
HIGH-PERFORMANCE GROUP																																			
MB9BD10T	MB9BFD16T	144	LQFP-176 BGA-192	2.7 to 5.5	✓	FLASH	512K	64K	–	8	32	✓	154	–	32(3)	–	Multi-Function Timer x 3units (Free-Run 3ch/ Output Compare 6ch/ Input Capture 4ch/ PPG 3ch/ Waveform Generator 3ch/ AD Activation Compare 3ch Selectable)			Base Timer x 16ch (Reload/PPG/PWM/ PWC Selectable)	QPRC x 3	1	Multi Function Serial x 8ch (UART/CSIO/I²C/LIN Selectable)	2	2ch (USB-Host/ USB-Function Selectable)	–	✓	CAN: 32Msg-buffer, Dual Timer, Ethernet-MAC x 2ch	On-chip Debug (SWJ-DP/ETM)
	MB9BFD16S		LQFP-144										122		24(3)																				
	MB9BFD17T		LQFP-176 BGA-192				768K	96K					154		32(3)																				
	MB9BFD17S		LQFP-144										122		24(3)																				
	MB9BFD18T		LQFP-176 BGA-192				1M	128K					154		32(3)																				
	MB9BFD18S		LQFP-144										122		24(3)																				
MB9B610T	MB9BF616T	144	LQFP-176 BGA-192	2.7 to 5.5	✓	FLASH	512K	64K	–	8	32	✓	154	–	32(3)	–	Multi-Function Timer x 3units (Free-Run 3ch/ Output Compare 6ch/ Input Capture 4ch/ PPG 3ch/ Waveform Generator 3ch/ AD Activation Compare 3ch Selectable)			Base Timer x 16ch (Reload/PPG/PWM/ PWC Selectable)	QPRC x 3	1	Multi Function Serial x 8ch (UART/CSIO/I²C/LIN Selectable)	–	2ch (USB-Host/ USB-Function Selectable)	–	✓	Dual Timer, Ethernet-MAC x 2ch	On-chip Debug (SWJ-DP/ETM)
	MB9BF616S		LQFP-144										122		24(3)																				
	MB9BF617T		LQFP-176 BGA-192				768K	96K					154		32(3)																				
	MB9BF617S		LQFP-144										122		24(3)																				
	MB9BF618T		LQFP-176 BGA-192				1M	128K					154		32(3)																				
	MB9BF618S		LQFP-144										122		24(3)																				
MB9B510T	MB9BF516T	144	LQFP-176 BGA-192	2.7 to 5.5	✓	FLASH	512K	64K	–	8	32	✓	154	–	32(3)	–	Multi-Function Timer x 3units (Free-Run 3ch/ Output Compare 6ch/ Input Capture 4ch/ PPG 3ch/ Waveform Generator 3ch/ AD Activation Compare 3ch Selectable)			Base Timer x 16ch (Reload/PPG/PWM/ PWC Selectable)	QPRC x 3	1	Multi Function Serial x 8ch (UART/CSIO/I²C/LIN Selectable)	2	2ch (USB-Host/ USB-Function Selectable)	–	✓	CAN: 32Msg-buffer, Dual Timer	On-chip Debug (SWJ-DP/ETM)
	MB9BF516S		LQFP-144										122		24(3)																				
	MB9BF517T		LQFP-176 BGA-192				768K	96K					154		32(3)																				
	MB9BF517S		LQFP-144										122		24(3)																				
	MB9BF518T		LQFP-176 BGA-192				1M	128K					154		32(3)																				
	MB9BF518S		LQFP-144										122		24(3)																				
MB9B410T	MB9BF416T	144	LQFP-176 BGA-192	2.7 to 5.5	✓	FLASH	512K	64K	–	8	32	✓	154	–	32(3)	–	Multi-Function Timer x 3units (Free-Run 3ch/ Output Compare 6ch/ Input Capture 4ch/ PPG 3ch/ Waveform Generator 3ch/ AD Activation Compare 3ch Selectable)			Base Timer x 16ch (Reload/PPG/PWM/ PWC Selectable)	QPRC x 3	1	Multi Function Serial x 8ch (UART/CSIO/I²C/LIN Selectable)	2	–	–	–	✓	CAN: 32Msg-buffer, Dual Timer	On-chip Debug (SWJ-DP/ETM)
	MB9BF416S		LQFP-144										122		24(3)																				
	MB9BF417T		LQFP-176 BGA-192				768K	96K					154		32(3)																				
	MB9BF417S		LQFP-144										122		24(3)																				
	MB9BF418T		LQFP-176 BGA-192				1M	128K					154		32(3)																				
MB9B310T	MB9BF316T	144	LQFP-176 BGA-192	2.7 to 5.5	✓	FLASH	512K	64K	–	8	32	✓	154	–	32(3)	–	Multi-Function Timer x 3units (Free-Run 3ch/ Output Compare 6ch/ Input Capture 4ch/ PPG 3ch/ Waveform Generator 3ch/ AD Activation Compare 3ch Selectable)			Base Timer x 16ch (Reload/PPG/PWM/ PWC Selectable)	QPRC x 3	1	Multi Function Serial x 8ch (UART/CSIO/I2C/LIN Selectable)	–	2ch (USB-Host/ USB-Function Selectable)	–	✓	Dual Timer	On-chip Debug (SWJ-DP/ETM)
	MB9BF316S		LQFP-144										122		24(3)																				
	MB9BF317T		LQFP-176 BGA-192				768K	96K					154		32(3)																				
	MB9BF317S		LQFP-144										122		24(3)																				
	MB9BF318T		LQFP-176 BGA-192				1M	128K					154		32(3)																				
	MB9BF318S		LQFP-144										122		24(3)																				
MB9B210T	MB9BF216T	144	LQFP-176 BGA-192	2.7 to 5.5	✓	FLASH	512K	64K	–	8	32	✓	154	–	32(3)	–	Multi-Function Timer x 3units (Free-Run 3ch/ Output Compare 6ch/ Input Capture 4ch/ PPG 3ch/ Waveform Generator 3ch/ AD Activation Compare 3ch Selectable)			Base Timer x 16ch (Reload/PPG/PWM/ PWC Selectable)	QPRC x 3	1	Multi Function Serial x 8ch (UART/CSIO/I2C/LIN Selectable)	–	2ch (USB-Host/ USB-Function Selectable)	–	✓	Dual Timer, Ethernet-MAC x 1ch	On-chip Debug (SWJ-DP/ETM)
	MB9BF216S		LQFP-144										122		24(3)																				
	MB9BF217T		LQFP-176 BGA-192				768K	96K					154		32(3)																				
	MB9BF217S		LQFP-144										122		24(3)																				
	MB9BF218T		LQFP-176 BGA-192				1M	128K					154		32(3)																				
	MB9BF218S		LQFP-144										122		24(3)																				
MB9B110T	MB9BF116T	144	LQFP-176 BGA-192	2.7 to 5.5	✓	FLASH	512K	64K	–	8	32	✓	154	–	32(3)	–	Multi-Function Timer x 3units (Free-Run 3ch/ Output Compare 6ch/ Input Capture 4ch/ PPG 3ch/ Waveform Generator 3ch/ AD Activation Compare 3ch Selectable)			Base Timer x 16ch (Reload/PPG/PWM/ PWC Selectable)	QPRC x 3	1	Multi Function Serial x 8ch (UART/CSIO/I2C/LIN Selectable)	–	–	–	–	✓	Dual Timer	On-chip Debug (SWJ-DP/ETM)
	MB9BF116S		LQFP-144										122		24(3)																				
	MB9BF117T		LQFP-176 BGA-192				768K	96K					154		32(3)																				
	MB9BF117S		LQFP-144										122		24(3)																				
	MB9BF118T		LQFP-176 BGA-192				1M	128K					154		32(3)																				
	MB9BF118S		LQFP-144										122		24(3)																				

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FM3 Family – 32bit Microcontrollers

Series Name	Product Name	Maximum Internal Clock Frequency [MHz]	Package [pin]	Operating Voltage: VCC [V]	Sub Clock	Memory Type	ROM [byte]	RAM [byte]	Cache [Kbyte]	DMAC [ch]	Ext. Interrupt [ch]	External Bus	Maximum I/O port [ch]	10bit AD Converter [ch(unit)]	12bit AD Converter [ch(unit)]	DA Converter [bit x ch]	Timer									Serial				Communication			LCD Controller [seg x com]	Three-phase Inverter	Note	Evaluation Device
																	Output Compare [ch]	Free-Run Timer [ch]	Input Capture [ch]	Reload Timer [ch]	PWM Timer [ch]	PWC Timer [ch]	PPG Timer [ch]	Up/Down Counter [ch]	Other timers [ch]	I²C [ch]	UART/SI [ch]	SIO [ch]	LIN/UART/SIO [ch]	CAN [ch]	USB-Host [ch]	USB-Function [ch]				
HIGH-PERFORMANCE GROUP																																			
MB9B510R	MB9BF512N	144	QFP-100 LQFP-100 BGA-112	2.7 to 5.5	✓	Main Flash +Work Flash	128K +32K	16K	–	8	16	✓	83	–	16(3)	–	Multi-Function Timer x 3units (Free-Run 3ch/ Output Compare 6ch/ Input Capture 4ch/ PPG 3ch/ Waveform Generator 3ch/ AD Activation Compare 3ch Selectable)			Base Timer x 8ch (Reload/PPG/PWM/ PWC Selectable)		QPRC x 3	1	Multi Function Serial x 8ch (UART/CSIO/I²C/LIN Selectable)				2	1ch (USB-Host/ USB-Function Selectable)		–	✓	CAN: 32Msg-buffer, Dual Timer	On-chip Debug (SWJ-DP/ETM)
	MB9BF512R		LQFP-120										103																						
	MB9BF514N		QFP-100 LQFP-100 BGA-112				256K +32K	32K					83																						
	MB9BF514R		LQFP-120										103																						
	MB9BF515N		QFP-100 LQFP-100 BGA-112				384K +32K	48K					83																						
	MB9BF515R		LQFP-120										103																						
	MB9BF516N		QFP-100 LQFP-100 BGA-112				512K +32K	64K					83																						
	MB9BF516R		LQFP-120										103																						
MB9B410R	MB9BF412N	144	QFP-100 LQFP-100 BGA-112	2.7 to 5.5	✓	Main Flash +Work Flash	128K +32K	16K	–	8	16	✓	83	–	16(3)	–	Multi-Function Timer x 3units (Free-Run 3ch/ Output Compare 6ch/ Input Capture 4ch/ PPG 3ch/ Waveform Generator 3ch/ AD Activation Compare 3ch Selectable)			Base Timer x 8ch (Reload/PPG/PWM/ PWC Selectable)		QPRC x 3	1	Multi Function Serial x 8ch (UART/CSIO/I²C/LIN Selectable)				2	–	–	–	✓	CAN: 32Msg-buffer, Dual Timer	On-chip Debug (SWJ-DP/ETM)
	MB9BF412R		LQFP-120										103																						
	MB9BF414N		QFP-100 LQFP-100 BGA-112				256K +32K	32K					83																						
	MB9BF414R		LQFP-120										103																						
	MB9BF415N		QFP-100 LQFP-100 BGA-112				384K +32K	48K					83																						
	MB9BF415R		LQFP-120										103																						
	MB9BF416N		QFP-100 LQFP-100 BGA-112				512K +32K	64K					83																						
	MB9BF416R		LQFP-120										103																						
MB9B310R	MB9BF312N	144	QFP-100 LQFP-100 BGA-112	2.7 to 5.5	✓	Main Flash +Work Flash	128K +32K	16K	–	8	16	✓	83	–	16(3)	–	Multi-Function Timer x 3units (Free-Run 3ch/ Output Compare 6ch/ Input Capture 4ch/ PPG 3ch/ Waveform Generator 3ch/ AD Activation Compare 3ch Selectable)			Base Timer x 8ch (Reload/PPG/PWM/ PWC Selectable)		QPRC x 3	1	Multi Function Serial x 8ch (UART/CSIO/I2C/LIN Selectable)				-	1ch (USB-Host/ USB-Function Selectable)		-	✓	Dual Timer	On-chip Debug (SWJ-DP/ETM)
	MB9BF312R		LQFP-120										103																						
	MB9BF314N		QFP-100 LQFP-100 BGA-112				256K +32K	32K					83																						
	MB9BF314R		LQFP-120										103																						
	MB9BF315N		QFP-100 LQFP-100 BGA-112				384K +32K	48K					83																						
	MB9BF315R		LQFP-120										103																						
	MB9BF316N		QFP-100 LQFP-100 BGA-112				512K +32K	64K					83																						
	MB9BF316R		LQFP-120										103																						
MB9B110R	MB9BF112N	144	QFP-100 LQFP-100 BGA-112	2.7 to 5.5	✓	Main Flash +Work Flash	128K +32K	16K	–	8	16	✓	83	–	16(3)	–	Multi-Function Timer x 3units (Free-Run 3ch/ Output Compare 6ch/ Input Capture 4ch/ PPG 3ch/ Waveform Generator 3ch/ AD Activation Compare 3ch Selectable)			Base Timer x 8ch (Reload/PPG/PWM/ PWC Selectable)		QPRC x 3	1	Multi Function Serial x 8ch (UART/CSIO/I2C/LIN Selectable)				–	–	–	–	✓	Dual Timer	On-chip Debug (SWJ-DP/ETM)
	MB9BF112R		LQFP-120										103																						
	MB9BF114N		QFP-100 LQFP-100 BGA-112				256K +32K	32K					83																						
	MB9BF114R		LQFP-120										103																						
	MB9BF115N		QFP-100 LQFP-100 BGA-112				384K +32K	48K					83																						
	MB9BF115R		LQFP-120										103																						
	MB9BF116N		QFP-100 LQFP-100 BGA-112				512K +32K	64K					83																						

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FM3 Family – 32bit Microcontrollers

Series Name	Product Name	Maximum Internal Clock Frequency [MHz]	Package [pin]	Operating Voltage: VCC [V]	Sub Clock	Memory Type	ROM [byte]	RAM [byte]	Cache [Kbyte]	DMAC [ch]	Ext. Interrupt [ch]	External Bus	Maximum I/O port [ch]	10bit AD Converter [ch(unit)]	12bit AD Converter [ch(unit)]	DA Converter [bit x ch]	Timer								Serial				Communication			LCD Controller [seg x com]	Three-phase Inverter	Note	Evaluation Device
																	Output Compare [ch]	Free-Run Timer [ch]	Input Capture [ch]	Reload Timer [ch]	PWM Timer [ch]	PWC Timer [ch]	PPG Timer [ch]	Up/Down Counter [ch]	Other timers [bit]	I²C [ch]	UART/SI [ch]	SIO [ch]	LIN/UART/SIO [ch]	CAN [ch]	USB-Host [ch]	USB-Function [ch]				
BASIC GROUP																																		
MB9B320T	MB9BF328S*	60	LQFP-144	2.7 to 5.5	✓	Dual Op. Flash (Main area + Work area)	1M +64K	160K	–	8	32	✓	122	–	24(2)	10bit x 2	Multi-Function Timer x 1unit (Free-Run 3ch/ Output Compare 6ch/ Input Capture 4ch/PPG 3ch/ Waveform Generator 3ch/ AD Activation Compare 3ch Selectable)			Base Timer x 16ch (Reload/PPG/PWM/ PWC Selectable)				QPRC x 1	1	Multi Function Serial x 16ch (UART/CSIO/I2C/LIN Selectable)				–	1ch (USB-Host/ USB-Function Selectable)		–	✓	Dual Timer, HDMI-CEC/Remote Control Reception x 2, Real Time Clock, Unique ID	On-chip Debug (SWJ-DP/ETM)
	MB9BF328T*		LQFP-176 BGA-192										154											QPRC x 2											
	MB9BF329S*		LQFP-144				1.5M +64K	192K					122											QPRC x 1											
	MB9BF329T*		LQFP-176 BGA-192										154											QPRC x 2											
MB9B120T	MB9BF128S*	60	LQFP-144	2.7 to 5.5	✓	Dual Op. Flash (Main area + Work area)	1M +64K	160K	–	8	32	✓	122	–	24(2)	10bit x 2	Multi-Function Timer x 1unit (Free-Run 3ch/ Output Compare 6ch/ Input Capture 4ch/PPG 3ch/ Waveform Generator 3ch/ AD Activation Compare 3ch Selectable)			Base Timer x 16ch (Reload/PPG/PWM/ PWC Selectable)				QPRC x 1	1	Multi Function Serial x 16ch (UART/CSIO/I2C/LIN Selectable)				–	–	–	–	✓	Dual Timer, HDMI-CEC/Remote Control Reception x 2, Real Time Clock, Unique ID	On-chip Debug (SWJ-DP/ETM)
	MB9BF128T*		LQFP-176 BGA-192										154											QPRC x 2											
	MB9BF129S*		LQFP-144				1.5M +64K	192K					122											QPRC x 1											
	MB9BF129T*		LQFP-176 BGA-192										154											QPRC x 2											
MB9A420L	MB9AF421K	40	LQFP-48 LQFP-52 QFN-48	2.7 to 5.5	✓	FLASH	64K	4K	–	–	14	–	36	–	8(1)	10bit x 1	Multi-Function Timer x 1unit (Free-Run 3ch/ Output Compare 6ch/ Input Capture 3ch/PPG 3ch/ Waveform Generator 3ch/ AD Activation Compare 3ch Selectable)			Base Timer x 8ch (Reload/PPG/PWM/ PWC Selectable)				–	1	Multi Function Serial x 4ch (UART/CSIO/I2C/LIN Selectable)				1	–	–	–	✓	CAN: 32Msg-buffer, Dual Timer, Real Time Clock, Unique ID	On-chip Debug (SWJ-DP)
	MB9AF421L		LQFP-64 QFN-64								19		51																							
MB9A120L	MB9AF121K	40	LQFP-48 LQFP-52 QFN-48	2.7 to 5.5	✓	FLASH	64K	4K	–	–	14	–	36	–	8(1)	10bit x 1	Multi-Function Timer x 1unit (Free-Run 3ch/ Output Compare 6ch/ Input Capture 3ch/PPG 3ch/ Waveform Generator 3ch/ AD Activation Compare 3ch Selectable)			Base Timer x 8ch (Reload/PPG/PWM/ PWC Selectable)				–	1	Multi Function Serial x 4ch (UART/CSIO/I2C/LIN Selectable)				–	–	–	–	✓	Dual Timer, Real Time Clock, Unique ID	On-chip Debug (SWJ-DP)
	MB9AF121L		LQFP-64 QFN-64								19		51																							

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FM3 Family – 32bit Microcontrollers

Series Name	Product Name	Maximum Internal Clock Frequency [MHz]	Package [pin]	Operating Voltage: VCC [V]	Sub Clock	Memory Type	ROM [byte]	RAM [byte]	Cache [Kbyte]	DMAC [ch]	Timer										Serial				Communication			LCD Controller [seg x com]	Three-phase Inverter	Note	Evaluation Device
											Ext. Interrupt [ch]	External Bus	Maximum I/O port [ch]	10bit AD Converter [ch/unit)]	12bit AD Converter [ch/unit)]	DA Converter [bit x ch]	Output Compare [ch]	Free-Run Timer [ch]	Input Capture [ch]	Reload Timer [ch]	PWM Timer [ch]	PWC Timer [ch]	PPG Timer [ch]	Up/Down Counter [ch]	Other timers [ch]	I²C [ch]	UART/SI [ch]	SIO [ch]	LIN/UART/SIO [ch]	CAN [ch]	USB-Host [ch]	USB-Function [ch]				
BASIC GROUP																																
MB9A310A	MB9AF311LA	40	LQFP-64 QFN-64	2.7 to 5.5	✓	FLASH	64K	16K	-	8	8	-	51	-	9(2)	-	Multi-Function Timer x 1unit (Free-Run 3ch/ Output Compare 6ch/ Input Capture 4ch/PPG 3ch/ Waveform Generator 3ch/ AD Activation Compare 3ch Selectable)	Base Timer x 8ch (Reload/PPG/PWM/ PWC Selectable)	QPRC x 2	1	Multi Function Serial x 8ch (UART/CSIO/I2C/LIN Selectable)	-	1ch (USB-Host/ USB-Function Selectable)	-	✓	Dual Timer	On-chip Debug (SWJ-DP)
	MB9AF311MA		LQFP-80								11		66		12(3)		Multi-Function Timer x 2units (Free-Run 3ch/ Output Compare 6ch/ Input Capture 4ch/PPG 3ch/ Waveform Generator 3ch/ AD Activation Compare 3ch Selectable)																
	MB9AF311NA		LQFP-100 QFP-100 BGA-112								16	✓	83		16(3)																On-chip Debug (SWJ-DP/ETM)
	MB9AF312LA		LQFP-64 QFN-64				128K				8	-	51		9(2)		Multi-Function Timer x 1unit (Free-Run 3ch/ Output Compare 6ch/ Input Capture 4ch/PPG 3ch/ Waveform Generator 3ch/ AD Activation Compare 3ch Selectable)																On-chip Debug (SWJ-DP)
	MB9AF312MA		LQFP-80								11		66		12(3)		Multi-Function Timer x 2units (Free-Run 3ch/ Output Compare 6ch/ Input Capture 4ch/PPG 3ch/ Waveform Generator 3ch/ AD Activation Compare 3ch Selectable)																
	MB9AF312NA		LQFP-100 QFP-100 BGA-112								16	✓	83		16(3)																On-chip Debug (SWJ-DP/ETM)
	MB9AF314LA		LQFP-64 QFN-64				256K	32K			7	-	51		9(2)		Multi-Function Timer x 1unit (Free-Run 3ch/ Output Compare 6ch/ Input Capture 4ch/PPG 3ch/ Waveform Generator 3ch/ AD Activation Compare 3ch Selectable)																On-chip Debug (SWJ-DP)
	MB9AF314MA		LQFP-80								11		66		12(3)		Multi-Function Timer x 2units (Free-Run 3ch/ Output Compare 6ch/ Input Capture 4ch/PPG 3ch/ Waveform Generator 3ch/ AD Activation Compare 3ch Selectable)																
	MB9AF314NA		LQFP-100 QFP-100 BGA-112								16		83		16(3)																On-chip Debug (SWJ-DP/ETM)
	MB9AF315MA		LQFP-80				384K				11		66		12(3)																On-chip Debug (SWJ-DP)
	MB9AF315NA		LQFP-100 QFP-100 BGA-112**								16	✓	83		16(3)																On-chip Debug (SWJ-DP/ETM)
	MB9AF316MA		LQFP-80				512K				11		66		12(3)																On-chip Debug (SWJ-DP)
	MB9AF316NA		LQFP-100 QFP-100 BGA-112**								16		83		16(3)																On-chip Debug (SWJ-DP/ETM)

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FM3 Family – 32bit Microcontrollers

Series Name	Product Name	Maximum Internal Clock Frequency [MHz]	Package [pin]	Operating Voltage: VCC [V]	Sub Clock	Memory Type	ROM [byte]	RAM [byte]	Cache [Kbyte]	DMAC [ch]	Ext. Interrupt [ch]	External Bus	Maximum I/O port [ch]	10bit AD Converter [ch(unit)]	12bit AD Converter [ch(unit)]	DA Converter [bit x ch]	Timer: Output Compare [ch]	Timer: Free-Run Timer [ch]	Timer: Input Capture [ch]	Timer: Reload Timer [ch]	Timer: PWM Timer [ch]	Timer: PWC Timer [ch]	Timer: PPG Timer [ch]	Timer: Up/Down Counter [ch]	Timer: Other timers [ch]	Serial: I²C [ch]	Serial: UART/SI [ch]	Serial: SIO [ch]	Serial: LIN/UART/SIO [ch]	Communication: CAN [ch]	Communication: USB-Host [ch]	Communication: USB-Function [ch]	LCD Controller [seg x com]	Three-phase Inverter	Note	Evaluation Device
LOW-POWER GROUP																																				
MB9A340NA	MB9AF341LB	40	LQFP-64 QFN-64	1.65 to 3.6	✓	Dual Op. Flash (Main area + Work area)	64K +32K	16K	–	8	8	-	51	–	12(2)	–	–	–	–	Base Timer x 8ch (Reload/PPG/PWM/ PWC Selectable)	–	1	Multi Function Serial x 8ch (UART/CSIO/I²C Selectable)	–	1ch (USB-Host/ USB-Function Selectable)		–	–	Dual Timer, HDMI-CEC/Remote Control Reception x 2, Real Time Clock, Unique ID	On-chip Debug (SWJ-DP)
	MB9AF341MB		LQFP-80 BGA-96								11	✓	66		17(2)																				
	MB9AF341NB		LQFP-100 QFP-100 BGA-112								16		83		24(2)																				
	MB9AF342LB		LQFP-64 QFN-64				128K +32K				8	-	51		12(2)																				
	MB9AF342MB		LQFP-80 BGA-96								11	✓	66		17(2)																				
	MB9AF342NB		LQFP-100 QFP-100 BGA-112								16		83		24(2)																				
	MB9AF344LB		LQFP-64 QFN-64				256K +32K	32K			8	-	51		12(2)																				On-chip Debug (SWJ-DP/ETM)
	MB9AF344MB		LQFP-80 BGA-96								11	✓	66		17(2)																				
	MB9AF344NB		LQFP-100 QFP-100 BGA-112								16		83		24(2)																				
MB9A140NA	MB9AF141LB	40	LQFP-64 QFN-64	1.65 to 3.6	✓	Dual Op. Flash (Main area + Work area)	64K +32K	16K	–	8	8	-	51	–	12(2)	–	–	–	–	Base Timer x 8ch (Reload/PPG/PWM/ PWC Selectable)	–	1	Multi Function Serial x 8ch (UART/CSIO/I²C Selectable)	–	–	–	–	–	Dual Timer, HDMI-CEC/Remote Control Reception x 2, Real Time Clock, Unique ID	On-chip Debug (SWJ-DP)
	MB9AF141MB		LQFP-80 BGA-96								11	✓	66		17(2)																				
	MB9AF141NB		LQFP-100 QFP-100 BGA-112								16		83		24(2)																				
	MB9AF142LB		LQFP-64 QFN-64				128K +32K	16K			8	-	51		12(2)																				
	MB9AF142MB		LQFP-80 BGA-96								11	✓	66		17(2)																				
	MB9AF142NB		LQFP-100 QFP-100 BGA-112								16		83		24(2)																				
	MB9AF144LB		LQFP-64 QFN-64				256K +32K	32K			8	-	51		12(2)																				On-chip Debug (SWJ-DP/ETM)
	MB9AF144MB		LQFP-80 BGA-96								11	✓	66		17(2)																				
	MB9AF144NB		LQFP-100 QFP-100 BGA-112								16		83		24(2)																				

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8FX – 8bit Microcontrollers

Series Name	Product Name	Maximum Internal Clock Frequency [MHz]	Package [pin]	Operating Voltage: VCC [V]	Sub Clock	Memory Type	ROM [byte]	RAM [byte]	Cache [Kbyte]	DMAC [ch]	Ext. Interrupt [ch]	External Bus	Maximum I/O port [ch]	10bit AD Converter [ch/unit]	12bit AD Converter [ch/unit]	DA Converter [bit x ch]	Timer									Serial				Communication				LCD Controller [seg x com]	Three-phase Inverter	Note	Evaluation Device
																	Output Compare [ch]	Free-Run Timer [ch]	Input Capture [ch]	Reload Timer [ch]	PWM Timer [ch]	PWC Timer [ch]	PPG Timer [ch]	Up/Down Counter [ch]	Other timers [ch]	I²C [ch]	UART/SI [ch]	SIO [ch]	LIN/UART/SIO [ch]	CAN [ch]	USB-Host [ch]	USB-Function [ch]				
LCD CONTROLLERS																																				
MB95610H	MB95F613H	16	LQFP-80	2.4 to 5.5	✓	Dual Op. Flash	12K	512	-	-	8	-	40	4(1)	-	-	-	Reload Timer x 1ch + 8/16bit Compound Timer x 2ch (Interval Timer/PWM/PWC/ Input Capture Selectable)	2	-	-	1	2	-	-	-	-	-	52 x 4 or 48 x 8	-	Clock Supervisor	On-chip Debug
	MB95F613K												41																					Low-voltage Detection Reset, Clock Supervisor	
	MB95F614H						20K	1024					40																					Clock Supervisor	
	MB95F614K												41																					Low-voltage Detection Reset, Clock Supervisor	
	MB95F616H						36K	1024					40																					Clock Supervisor	
	MB95F616K												41																					Low-voltage Detection Reset, Clock Supervisor	
MB95710M	MB95F714J	16	LQFP-80	1.8 to 5.5	✓	Dual Op. Flash	20K	512	-	-	8	-	75	-	8(1)	-	-	Reload Timer x 1ch + 8/16bit Compound Timer x 2ch (Interval Timer/PWM/PWC/ Input Capture Selectable)	2	-	-	1	3	-	-	-	-	-	40 x 4 or 36 x 8	-	Low-voltage Detection Reset, Clock Supervisor	On-chip Debug
	MB95F714M												74																					Clock Supervisor	
	MB95F716J						36K	1K					75																					Low-voltage Detection Reset, Clock Supervisor	
	MB95F716M												74																					Clock Supervisor	
	MB95F718J						60K	2K					75																					Low-voltage Detection Reset, Clock Supervisor	
	MB95F718M												74																					Clock Supervisor	
MB95770M	MB95F774J	16	LQFP-64	1.8 to 5.5	✓	Dual Op. Flash	20K	512	-	-	8	-	59	-	8(1)	-	-	Reload Timer x 1ch + 8/16bit Compound Timer x 2ch (Interval Timer/PWM/PWC/ Input Capture Selectable)	2	-	-	1	3	-	-	-	-	-	32 x 4 or 28 x 8	-	Low-voltage Detection Reset, Clock Supervisor	On-chip Debug
	MB95F774M												58																					Clock Supervisor	
	MB95F776J						36K	1K					59																					Low-voltage Detection Reset, Clock Supervisor	
	MB95F776M												58																					Clock Supervisor	
	MB95F778J						60K	2K					59																					Low-voltage Detection Reset, Clock Supervisor	
	MB95F778M												58																					Clock Supervisor	
INVERTER																																				
MB95630H	MB95F632H	16	LQFP-32 SH-DIP-32 QFN-32	2.4 to 5.5	✓	Dual Op. Flash	8K	256	-	-	10	-	28	8(1)	-	-	-	Reload Timer x 1ch + 8/16bit Compound Timer x 2ch (Interval Timer/PWM/PWC/ Input Capture Selectable)	3	-	1	1	1	-	1	-	-	-	-	-	-	✓	Low-voltage Detection Reset, Multi-pulse Generator (Reload/PPG/Waveform Sequencer), Clock Supervisor	On-chip Debug
	MB95F632K												29																							
	MB95F633H						12K	512					28																							
	MB95F633K												29																							
	MB95F634H						20K	1024					28																							
	MB95F634K												29																							
	MB95F636H						36K						28																							
	MB95F636K												29																							
MB95690K	MB95F694K	16	LQFP-44 LQFP-48 LQFP-52 QFN-48	2.88 to 5.5	✓	Dual Op. Flash	20K	512	-	-	8	-	45 LQFP44 only: 41	12(1) LQFP44 only: 8(1)	-	-	-	Reload Timer x 1ch + 8/16bit Compound Timer x 2ch (Interval Timer/PWM/PWC/ Input Capture Selectable)	3	-	1	1	1	-	1	-	-	-	-	-	-	✓	Low-voltage Detection Reset, Multi-pulse Generator (Reload/PPG/Waveform Sequencer), Clock Supervisor	On-chip Debug
	MB95F696K						36K	1K																												
	MB95F698K						60K	2K																												
STANDARD																																				
MB95560H	MB95F562H	16	SOP-20 TSSOP-20 QFN-32	2.4 to 5.5	✓	Dual Op. Flash	8K	240	-	-	6	-	16	6(1)	-	-	-	8/16bit Compound Timer x 2ch (Interval Timer/PWM/PWC/ Input Capture Selectable)	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	Clock Supervisor	On-chip Debug
	MB95F562K												17																					Low-voltage Detection Reset, Clock Supervisor	
	MB95F563H						12K	496					16																					Clock Supervisor	
	MB95F563K												17																					Low-voltage Detection Reset, Clock Supervisor	
	MB95F564H						20K						16																					Clock Supervisor	
	MB95F564K												17																					Low-voltage Detection Reset, Clock Supervisor	
MB95570H	MB95F572H	16	SOP-8	2.4 to 5.5	✓	Dual Op. Flash	8K	240	-	-	2	-	4	2(1)	-	-	-	8/16bit Compound Timer x 2ch (Interval Timer/PWM/PWC/ Input Capture Selectable)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Clock Supervisor	On-chip Debug
	MB95F572K												5																					Low-voltage Detection Reset, Clock Supervisor	
	MB95F573H						12K	496					4																					Clock Supervisor	
	MB95F573K												5																					Low-voltage Detection Reset, Clock Supervisor	
	MB95F574H						20K						4																					Clock Supervisor	
	MB95F574K												5																					Low-voltage Detection Reset, Clock Supervisor	
MB95580H	MB95F582H	16	SOP-16 TSSOP-16 QFN-32	2.4 to 5.5	✓	Dual Op. Flash	8K	240	-	-	6	-	12	5(1)	-	-	-	8/16bit Compound Timer x 2ch (Interval Timer/PWM/PWC/ Input Capture Selectable)	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	Clock Supervisor	On-chip Debug
	MB95F582K												13																					Low-voltage Detection Reset, Clock Supervisor	
	MB95F583H						12K	496					12																					Clock Supervisor	
	MB95F583K												13																					Low-voltage Detection Reset, Clock Supervisor	
	MB95F584H						20K						12																					Clock Supervisor	
	MB95F584K												13																					Low-voltage Detection Reset, Clock Supervisor	

** In development; **Planning*

Traveo Family – 32bit Microcontrollers

Series Name	Product Name	Maximum Internal Clock Frequency [MHz]	Package [pin]	Operating Voltage: VCC [V]	Sub Clock	Memory Type	ROM [byte]	RAM [byte]	Cache [Kbyte]	DMAC [ch]	Ext. Interrupt [ch]	External Bus	Maximum I/O port [ch]	12bit AD Converter [ch/(unit)]	12bit AD Converter with 4-ch sample & hold	DA Converter [bit x ch]	Timer: Output Compare [ch]	Timer: Free-Run Timer [ch]	Timer: Input Capture [ch]	Timer: Reload Timer [ch]	Timer: PWM Timer [ch]	Timer: PWC Timer [ch]	Timer: PPG Timer [ch]	Timer: Up/Down Counter [ch]	Timer: Other timers [ch]	Serial: I2C [ch]	Serial: UART/SI [ch	Serial: SIO [ch]	Serial: LIN/UART/SIO [ch]	Communication: CAN [ch]	Communication: USB-Host [ch]	Communication: USB-Function [ch]	LCD Controller [seg x com]	Three-phase Inverter	Note	Evaluation Device
CAN/AUTOMOTIVE																																			
MB9D560	MB9DF564MA	200	TEQFP -208	1.1 to 1.3 4.5 to 5.5	–	Main Flash +Work Flash	(640K +64K) x2	64K x2	–	16	8	-	125	32(1)	8(2)	10bit x 2	32bitFree-Run Timer x 5ch 32bitInput Capture x 3unit 6ch 16bitFree-Run Timer x 20ch 16bit Input Capture x 8unit 15ch 16bitOutput Compare x 12unit 24ch Waveform Generator x 4unit 24ch	16bit Base Timer x 12ch (PWM/PPG/Reload/PWC Selectable)	4	–	Multi Function Serial x 5ch (LIN/UART/SIO Selectable)	3	–	–	–	✓	ARM Cortex-R5 CAN: 64msb, RDC x 2unit, Motor vector accelaretor x 2unit Models with A suffix on part number have no built-in FlexRay. Models with G suffix on part number have built-in FlexRay.	On-Chip Debug
	MB9DF564MG						(896K +64K) x2	96K x2																											
	MB9DF565MA																																		
	MB9DF565MG																																		
	MB9DF566MA						(1152K +64K) x2	128K x2																											
	MB9DF566MG																																		
	MB9DF564ML						(640K + 64K) x 2	64K x 2					149																							
	MB9DF564MQ																																		
	MB9DF565ML						(896K + 64K) x 2	96K x 2																											
	MB9DF565MQ																																		
	MB9DF566ML						(1152K + 64K) x 2	128K x 2																											
	MB9DF566MQ																																		
	MB9DF564LA		TEQFP -176				(640K + 64K) x 2	64K x 2					98				32bitFree-Run Timer x 5ch 32bitInput Capture x 3unit 6ch 16bitFree-Run Timer x 20ch 16bit Input Capture x 7unit 13ch 16bitOutput Compare x 9unit 18ch Waveform Generator x 3unit 18ch	16bit Base Timer x 6ch (PWM/PPG/Reload/PWC Selectable)			Multi Function Serial x 3ch (LIN/UART/SIO Selectable)						ARM Cortex-R5 RDC x 2unit Motor vector accelaretor x 2unit Models with A suffix on part number have no built-in FlexRay. Models with G suffix on part number have built-in FlexRay.	
	MB9DF564LG																																		
	MB9DF565LA						(896K + 64K) x 2	96K x 2																											
	MB9DF565LG																																		
	MB9DF566LA						(1152K + 64K) x 2	128K x 2																											
	MB9DF566LG																																		
	MB9DF564LL						(640K + 64K) x 2	64K x 2					122																							
	MB9DF564LQ																																		
	MB9DF565LL						(896K + 64K) x 2	96K x 2																											
	MB9DF565LQ																																		
	MB9DF566LL						(1152K + 64K) x 2	128K x 2																											
	MB9DF566LQ																																		

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Traveo Family – 32bit Microcontrollers

Series Name	Product Name	Maximum Internal Clock Frequency [MHz]	Package [pin]	Operating Voltage: VCC [V]	Sub Clock	Memory Type	ROM [byte]	RAM [byte]	Cache [Kbyte]	DMAC [ch]	Ext. Interrupt [ch]	External Bus	Maximum I/O port [ch]	12bit AD Converter [ch/(unit)]	12bit AD Converter with 4-ch sample & hold	DA Converter [bit x ch]	Timer									Serial				Communication			LCD Controller [seg x com]	Three-phase Inverter	Note	Evaluation Device
																	Output Compare [ch]	Free-Run Timer [ch]	Input Capture [ch]	Reload Timer [ch]	PWM Timer [ch]	PWC Timer [ch]	PPG Timer [ch]	Up/Down Counter [ch]	Other timers [ch]	I2C [ch]	UART/SI [ch	SIO [ch]	LIN/UART/SIO [ch]	CAN [ch]	USB-Host [ch]	USB-Function [ch]				
CAN/AUTOMOTIVE																																			
S6J3110	S6J3118HA	96	TEQFP -144	4.5 to 5.25	-	Main Flash +Work Flash	576K + 48K	TC-RAM: 32KB System - RAM: 16KB Backup - RAM: 8KB	Instruction: 16 Data: 16	16	16	-	116	56(2)	-	-	12	6	12	16bit Base Timer x 30ch (PWM/PPG/Reload/PWC Selectable)	-	RTC x 1ch	Multi Function Serial x 4ch (LIN/UART/SIO Selectable)				CAN - FD x 1ch	-	-	-	-	ARM Cortex-R5, SHE(Secure Hardware Extension),	On-Chip Debug
	S6J3119HA						832K + 48K	TC-RAM: 48KB System - RAM: 16KB Backup - RAM: 8KB																												
	S6J311AHA						1088K + 48K	TC-RAM: 64KB System - RAM: 16KB Backup - RAM: 8KB																												
	S6J311BHA	144					1600K + 112K	192K						64(2)									Multi Function Serial x 22ch (LIN/UART/SIO Selectable)				CAN - FD x 2ch	-	-	-	-	ARM Cortex-R5, SHE(Secure Hardware Extension),	
	S6J311CHA						2112K + 112K	256K																												
	S6J311DHA						3136K + 112K	320K																												
	S6J311EHA						4160K + 112K	TC-RAM: 64KB System - RAM: 256KB Backup - RAM: 64KB																												
	S6J311BJA		TEQFP -176				1600K + 112K	192K					150																							
	S6J311CJA						2112K + 112K	256K																												
	S6J311DJA						3136K + 112K	320K																												
	S6J311EJA						4160K + 112K	TC-RAM: 64KB System - RAM: 256KB Backup - RAM: 64KB																												

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Traveo Family – 32bit Microcontrollers

Series Name	Product Name	Maximum Internal Clock Frequency [MHz]	Package [pin]	Operating Voltage: VCC [V]	Sub Clock	Memory Type	ROM [byte]	RAM [byte]	Cache [Kbyte]	DMAC [ch]	Ext. Interrupt [ch]	External Bus	Maximum I/O port [ch]	12bit AD Converter [ch.(unit)]	12bit AD Converter with-4-ch sample & hold	DA Converter [bit x ch]	Timer: Output Compare [ch]	Timer: Free-Run Timer [ch]	Timer: Input Capture [ch]	Timer: Reload Timer [ch]	Timer: PWM Timer [ch]	Timer: PWC Timer [ch]	Timer: PPG Timer [ch]	Timer: Up/Down Counter [ch]	Timer: Other timers [ch]	Serial: I2C [ch]	Serial: UART/SI [ch	Serial: SIO [ch]	Serial: LIN/UART/SIO [ch]	Communication: CAN [ch]	Communication: USB-Host [ch]	Communication: USB-Function [ch]	LCD Controller [seg x com]	Three-phase Inverter	Note	Evaluation Device
CAN/AUTOMOTIVE																																			
S6J3120	S6J3128HA	112	TEQFP -144	4.5 to 5.25	–	Main Flash +Work Flash	576K + 48K	TC-RAM: 32KB System - RAM: 16KB Backup - RAM: 8KB	Instruction: 16 Data: 16	16	16	A24/ D16	112	50(2)	–	–	12	6	12	16bit Base Timer x 30ch (PWM/PPG/Reload/PWC Selectable)	2	RTC x 1ch	Multi Function Serial x 10ch (LIN/UART/SIO Selectable)	CAN - FD x 3ch	–	–	32 x 4	–	ARM Cortex-R5, SHE(Secure Hardware Extension), SMC x 4ch, Sound generator x 3ch	On-Chip Debug
	S6J3129HA						832K + 48K	TC-RAM: 48KB System - RAM: 16KB Backup - RAM: 8KB																											
	S6J312AHA						1088K +112K	TC-RAM: 64KB System- RAM: 16KB Backup- RAM: 8KB																											
S6J3200	S6J32AAKS	160	TEQFP -208	1.1 to 1.3 3.0 to 3.6 4.5 to 5.5	✓	Main Flash +Work Flash	1088K + 112K	TC-RAM: 64KB System - RAM: 128KB Backup - RAM: 16KB VRAM: 1024KB	Instruction: 16 Data: 16	16	16	-	120	46(1)	-	-	24	12	24	Reload Timer x 14ch 16bit Base Timer x 24ch (PWM/PPG/Reload/PWC Selectable)	2	RTC x 1ch	Multi Function Serial x 12ch (LIN/UART/SIO/I2C Selectable)	CAN-FD x 4ch	-	-	30 x 4	-	ARM Cortex-R5, SHE(Secure Hardware Extension), SMC x 6ch, Sound generator x 4ch, 2D Graphic Engine, Display Output x 1ch	On-Chip Debug
	S6J32AAKU												128	50(1)																		32 x 4			
	S6J32AALS		TEQFP -216 (0.4mm pitch)										120	46(1)																		30 x 4		ARM Cortex-R5, SHE(Secure Hardware Extension), SMC x 6ch, Sound generator x 4ch, 2D Graphic Engine, Display Output x 1ch, Sound system,	
	S6J32AALU												128	50(1)																		32 x 4			
	S6J32BAKS		TEQFP -208										120	46(1)																		30 x 4		ARM Cortex-R5, SHE(Secure Hardware Extension), SMC x 6ch, Sound generator x 4ch, 2D+3D Graphic Engine, Display Output x 1ch,	
	S6J32BAKU												128	50(1)																		32 x 4			
	S6J32BALS		TEQFP -216 (0.4mm pitch)										120	46(1)																		30 x 4		ARM Cortex-R5, SHE(Secure Hardware Extension), SMC x 6ch, Sound generator x 4ch, 2D+3D Graphic Engine, Display Output x 1ch, Sound system,	
	S6J32BALU												128	50(1)																		32 x 4			
	S6J32CAKS		TEQFP -208										120	46(1)																		30 x 4		ARM Cortex-R5, SHE(Secure Hardware Extension), SMC x 6ch, Sound generator x 4ch, 2D+3D Graphic Engine, Display Output x 1ch, Sound system,	
	S6J32CAKU												128	50(1)																		32 x 4			
	S6J32CALS		TEQFP -216 (0.4mm pitch)										120	46(1)																		30 x 4			
	S6J32CALU												128	50(1)																		32 x 4			
	S6J32DAKS		TEQFP -208										120	46(1)																		30 x 4			
	S6J32DAKU												128	50(1)																		32 x 4			
	S6J32DALS		TEQFP -216 (0.4mm pitch)																																	
	S6J32DALU																																			

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FCR4 Family – 32bit Microcontrollers

Series Name	Product Name	Maximum Internal Clock Frequency [MHz]	Package [pin]	Operating Voltage: VCC [V]	Sub Clock	Memory Type	ROM [byte]	RAM [byte]	Cache [KByte]	DMAC [ch]	Ext. Interrupt [ch]	External Bus	Maximum I/O port [ch]	10bit AD Converter [ch/unit]	12bit AD Converter [ch/unit]	DA Converter [bit x ch]	Timer									Serial				Communication			LCD Controller [seg x com]	Three-phase Inverter	Note	Evaluation Device
																	Output Compare [ch]	Free-Run Timer [ch]	Input Capture [ch]	Reload Timer [ch]	PWM Timer [ch]	PWC Timer [ch]	PPG Timer [ch]	Up/Down Counter [ch]	Other timers [ch]	I2C [ch]	UART/SI [ch]	SIO [ch]	LINUART/SIO [ch]	CAN [ch]	USB-Host [ch]	USB-Function [ch]				
HYBRID AUTOMOTIVE INSTRUMENTS CLUSTER																																		
MB9DF125	MB9DF125PMC	128	LQFP-176	1.1 to 1.3 3.0 to 5.5	✓	FLASH	1088	128	8	8	32	-	123	50(1)	–	–	8	8	8	10	–	–	24	2	-	1	2	3	2	2	–	–	–	–	ARM Cortex R4, SHE (Secure Hardware Extension), Real Time Clock, Stepper Motor Controller (SMC): 4 ch, Data Flash: 48KB, Windows Wartchdog, Clock superviser, Sound Generator, I2S: 2 ch, Quad SPI Flash Interface:1 ch, NMI (intern/extern): 32/1 ch, CRC Hardware Module: 1 ch, Protection Unit: MPU, PPU, TPU, various Power Down modes	On-chip Debug
	MB9DF125EPMC																																	ARM Cortex R4, SHE (Secure Hardware Extension), Real Time Clock, Stepper Motor Controller (SMC): 6 ch, Data Flash: 48KB, Windows Wartchdog, Clock superviser, Sound Generator, I2S: 2 ch, Quad SPI Flash Interface:1 ch, NMI (intern/extern): 32/1 ch, CRC Hardware Module: 1 ch, Protection Unit: MPU, PPU, TPU, various Power Down modes	On-chip Debug
MB9DF126	MB9DF126BPMC	128	LQFP-176	1.1 to 1.3 3.0 to 5.5	✓	FLASH	2176	208	16	8	32	-	110	50(1)	–	–	8	8	8	10	–	–	24	2	-	1	2	3	2	3	–	–	–	–	ARM Cortex R4, APIX Remote handler with 2 ch AIC (APIX Inter Connect), APIX1 Phy: 1 ch, Real Time Clock, Stepper Motor Controller (SMC): 6 ch, Data Flash: 64KB, Windows Wartchdog, Clock superviser, Sound Generator, I2S: 2 ch, Quad SPI Flash Interface: 1 ch, NMI (intern/extern): 32/1 ch, CRC Hardware Module: 1 ch, Protection Unit: MPU, PPU, TPU, various Power Down modes	On-chip Debug
MB9EF226	MB9EF226PMC	128	LQFP-176	1.1 to 1.3 3.0 to 5.5	✓	FLASH	2176	128	16	8	32	-	117	50(1)	–	–	8	8	8	10	–	–	24	2	-	1	2	3	2	2	–	–	–	–	ARM Cortex R4, 2D Graphics Engine: scaler, color palette, gamma correction, blending, raster operation, various alpha blending modes, run-length decoding, hor/ver flip and rotation, affine transformations, Embedded Video-RAM: 1MB, TFT Output Interface: RGB888/RSDS Output, SHE (Secure Hardware Extension), Real Time Clock, Stepper Motor Controller (SMC): 4 ch, Data Flash: 48KB, Windows Wartchdog, Clock superviser, Sound Generator, I2S: 2 ch, Quad SPI Flash Interface: 2 ch(1 ch for MCU and 1 ch for Graphic), NMI (intern/extern): 32/1 ch, MediaLB (3 wire): 1 ch, CRC Hardware Module: 1 ch, Protection Unit: MPU, PPU, TPU, various Power Down modes	On-chip Debug
	MB9EF226EPMC																																	ARM Cortex R4, 2D Graphics Engine: scaler, color palette, gamma correction, blending, raster operation, various alpha blending modes, run-length decoding, hor/ver flip and rotation, affine transformations, Embedded Video-RAM: 1MB, TFT Output Interface: RGB888/RSDS Output, SHE (Secure Hardware Extension), Real Time Clock, Stepper Motor Controller (SMC): 6 ch, Data Flash: 48KB, Windows Wartchdog, Clock superviser, Sound Generator, I2S: 2 ch, Quad SPI Flash Interface2 ch(1 ch for MCU and 1 ch for Graphic), NMI (intern/extern): 32/1 ch, MediaLB (3 wire): 1 ch, CRC Hardware Module: 1 ch, Protection Unit: MPU, PPU, TPU, various Power Down modes	On-chip Debug

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FR Family – 32bit Microcontrollers

Series Name	Product Name	Maximum Internal Clock Frequency [MHz]	Package [pin]	Operating Voltage: VCC [V]	Sub Clock	Memory Type	ROM [byte]	RAM [byte]	Cache [Kbyte]	DMAC [ch]	Ext. Interrupt [ch]	External Bus	Maximum I/O port [ch]	10bit AD Converter [ch/unit]	12bit AD Converter [ch/unit]	DA Converter [bit x ch]	Timer: Output Compare [ch]	Timer: Free-Run Timer [ch]	Timer: Input Capture [ch]	Timer: Reload Timer [ch]	Timer: PWM Timer [ch]	Timer: PWC Timer [ch]	Timer: PPG Timer [ch]	Timer: Up/Down Counter [ch]	Timer: Other timers [ch]	Serial: I²C [ch]	Serial: UART/SI [ch]	Serial: SIO [ch]	Serial: LIN/UART/SIO [ch]	Communication: CAN [ch]	Communication: USB-Host [ch]	Communication: USB-Function [ch]	LCD Controller [seg x com]	Three-phase Inverter	Note	Evaluation Device
CAN/AUTOMOTIVE																																				
MB91590	MB91F591B	80	LQFP-208	3.0 to 3.6 4.5 to 5.5 (2 power supplies)	✓	Main Flash +Work Flash	576K +64K	48K	–	16	16	Dedicated for GDC External Memory	61	32(1)	–	–	4	2	6	Reload Timer x 4ch + PPG Timer x 24ch + Base Timer x 2ch (Reload/PPG/PWM/PWC Selectable)	–	–	Multi Function Serial x 2ch (LIN/UART/ SIO/I2C Selectable)	6	3	–	–	–	–	CAN: 32/64Msg-buffer, LIN, FPU, MPU, Sound generator, SMC x 6ch, From among the RAM, 8KB can be used as BackUpRAM, Built-in 2D GDC For models with H suffix on part number, the initial status of the clock supervisor is off	On-chip Debug
	MB91F591BS				–								63																							
	MB91F591BH				✓								61																							
	MB91F591BHS				–								63																							
	MB91F592B				✓								61																							
	MB91F592BS				–								63																							
	MB91F592BH				✓								61																							
	MB91F592BHS				–								63																							
	MB91F594B				✓		1088K +64K	72K					61																							
	MB91F594BS				–								63																							
	MB91F594BH				✓								61																							
	MB91F594BHS				–								63																							
	MB91F59AC	128	BGA-320		✓		1600K +64K	264K					61				4	8	12	Reload Timer x 8ch + PPG Timer x 24ch + Base Timer x 2ch (Reload/PPG/PWM/PWC Selectable)	3		Multi Function Serial x 6ch (LIN/UART SIO/I2C Selectable. However, I2C only supports ch0/ ch1)											
	MB91F59ACS				–								63																							
	MB91F59ACH				✓								61																							
	MB91F59ACHS				–								63																							
	MB91F59BC				✓		2112K +64K	264K					61																							
	MB91F59BCS				–								63																							
	MB91F59BCH				✓								61																							
	MB91F59BCHS				–								63																							

F²MC-16FX – 16bit Microcontrollers

Series Name	Product Name	Maximum Internal Clock Frequency [MHz]	Package [pin]	Operating Voltage: VCC [V]	Sub Clock	Memory Type	ROM [byte]	RAM [byte]	Cache [Kbyte]	DMAC [ch]	Ext. Interrupt [ch]	External Bus	Maximum I/O port [ch]	10bit AD Converter [ch/unit]	12bit AD Converter [ch/unit]	DA Converter [bit x ch]	Timer: Output Compare [ch]	Timer: Free-Run Timer [ch]	Timer: Input Capture [ch]	Timer: Reload Timer [ch]	Timer: PWM Timer [ch]	Timer: PWC Timer [ch]	Timer: PPG Timer [ch]	Timer: Up/Down Counter [ch]	Timer: Other timers [ch]	Serial: I²C [ch]	Serial: UART/SI [ch]	Serial: SIO [ch]	Serial: LIN/UART/SIO [ch]	Communication: CAN [ch]	Communication: USB-Host [ch]	Communication: USB-Function [ch]	LCD Controller [seg x com]	Three-phase Inverter	Note	Evaluation Device
AUTOMOTIVE																																				
MB96310	MB96F313AS	56	LQFP-48	3.0 to 5.5	–	FLASH	96K	8K	–	4	11	–	36	12(1)	–	–	2	4	4 +3 (Dedicated for LIN)	4 +1 (Dedicated for PPG)	–	–	14	–	–	–	–	–	3	–	–	–	–	–	LVD, built-in CR Option without CAN	MB96V300C
	MB96F313AW				✓								34																	1						
	MB96F313RS				–								36																	–						
	MB96F313RW				✓								34																	1						
	MB96F315AS				–		160K						36																							
	MB96F315AW				✓								34																							
	MB96F315RS				–								36																							
	MB96F315RW				✓								34																							
MB96320	MB96F326AS	56	LQFP-80	3.0 to 5.5	–	FLASH	288K	12K	–	4	15	✓	66	18(1)	–	–	6	4	12	4 +1 (Dedicated for PPG)	–	–	20	–	–	1	–	–	4	-	–	–	–	–	LVD, built-in CR Option without CAN	MB96V300C
	MB96F326AW				✓								64																	2						
	MB96F326RS				–								66																							
	MB96F326RW				✓								64																							
MB96330	MB96F336US	48	LQFP-144	3.0 to 5.5	–	FLASH	288K	24K	–	10	16	✓	124	36(1)	–	–	12	4	10	4 +1 (Dedicated for PPG)	–	–	20	–	–	2	–	–	8	1	1ch (USB-Host/ USB-Function Selectable)		–	–	LVD, built-in CR	MB96V300C
	MB96F336UW				✓								122																							
	MB96F338RS				–		544K	32K					124	40(1)																3	–	–				
	MB96F338RW				✓								122																							
	MB96F338US				–								120	36(1)																						
	MB96F338UW				✓								118																		1ch (USB-Host/ USB-Function Selectable)					

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F²MC-16FX – 16bit Microcontrollers

Series Name	Product Name	Maximum Internal Clock Frequency [MHz]	Package [pin]	Operating Voltage: VCC [V]	Sub Clock	Memory Type	ROM [byte]	RAM [byte]	Cache [Kbyte]	DMAC [ch]	Ext. Interrupt [ch]	External Bus	Maximum I/O port [ch]	10bit AD Converter [ch.(unit)]	12bit AD Converter [ch.(unit)]	DA Converter [bit x ch]	Timer									Serial				Communication			LCD Controller [seg x com]	Three-phase Inverter	Note	Evaluation Device
																	Output Compare [ch]	Free-Run Timer [ch]	Input Capture [ch]	Reload Timer [ch]	PWM Timer [ch]	PWC Timer [ch]	PPG Timer [ch]	Up/Down Counter [ch]	Other timers [ch]	I²C [ch]	UART/SI [ch]	SIO [ch]	LIN/UART/SIO [ch]	CAN [ch]	USB-Host [ch]	USB-Function [ch]				
AUTOMOTIVE																																				
MB96610	MB96F612A MB96F612R MB96F613A MB96F613R MB96F615A MB96F615R	32	LQFP-48	2.7 to 5.5	✓	Dual Op. Flash	32.5K +32K 64.5K +32K 128.5K +32K	4K 10K	–	2	11	–	37 (Single clock) 35 (Dual clock)	16(1)	–	–	5	4	4 +3 (Dedicated for LIN)	2 +1 (Dedicated for PPG)	–	–	8bit x 16 16bit x 8	-	QPRC x 2	–	–	-	3	– 1 – 1 – 1	–	–	–	–	Option without CAN	On-chip Debug
MB96620	MB96F622A MB96F622R MB96F623A MB96F623R MB96F625A MB96F625R	32	LQFP-64	2.7 to 5.5	✓	Dual Op. Flash	32.5K +32K 64.5K +32K 128.5K +32K	4K 10K	–	2	13	–	52 (Single clock) 50 (Dual clock)	21(1)	–	–	6	4	6 +2 (Dedicated for LIN)	2 +1 (Dedicated for PPG)	-	-	8bit x 16 16bit x 8	-	QPRC x 2	1	–	–	3	– 1 - 1 – 1	–	–	–	–	Option without CAN	On-chip Debug
MB96630	MB96F633A MB96F633R MB96F635A MB96F635R MB96F636R MB96F637R	32	LQFP-80	2.7 to 5.5	✓	Dual Op. Flash	64.5K +32K 128.5K +32K 256.5K +32K 384.5K +32K	10K 16K 24K 28K	–	4	15	–	64 (Single clock) 66 (Dual clock)	21(1)	–	–	7	3	6 +1 (Dedicated for LIN)	3	–	–	8bit x 20 16bit x 15	-	QPRC x 2	2	–	–	5	– 1 – 1	–	–	–	–	Option without CAN	On-chip Debug
MB96640	MB96F643A MB96F643R MB96F645A MB96F645R MB96F646R MB96F647R	32	LQFP-100	2.7 to 5.5	✓	Dual Op. Flash	64.5K +32K 128.5K +32K 256.5K +32K 384.5K +32K	10K 16K 24K 28K	–	4	16	–	81 (Single clock) 79 (Dual clock)	24(1)	–	–	7	3	6 +1 (Dedicated for LIN)	5	–	–	8bit x 24 16bit x 16	-	QPRC x 2	2	–	–	6	– 1 – 1	–	–	–	–	Option without CAN	On-chip Debug
MB96650	MB96F653A MB96F653R MB96F655A MB96F655R MB96F656R MB96F657R	32	LQFP-120	2.7 to 5.5	✓	Dual Op. Flash	64.5K +32K 128.5K +32K 256.5K +32K 384.5K +32K	10K 16K 24K 28K	-	4	16	-	101 (Single clock) 99 (Dual clock)	29(1)	-	-	7	3	6 +1 (Dedicated for LIN)	5	-	-	8bit x 32 16bit x 16	-	QPRC x 2	2	-	-	6	- 1 - 1	-	-	-	-	Option without CAN	On-chip Debug
MB96670	MB96F673A MB96F673R MB96F675A MB96F675R	32	LQFP-64	2.7 to 5.5	✓	Dual Op. Flash	64.5K +32K 128.5K +32K	4K	-	2	7	-	50 (Single clock) 48 (Dual clock)	12(1)	-	-	-	2	4	3	-	-	8bit x 8 16bit x 4	-	-	1	-	-	2	- 1 - 1	-	-	24 x 4	-	SMC x 2ch Sound generator Option without CAN	On-chip Debug
MB96680	MB96F683A MB96F683R MB96F685A MB96F685R	32	LQFP-80	2.7 to 5.5	✓	Dual Op. Flash	64.5K +32K 128.5K +32K	4K	-	2	7	-	65 (Single clock) 63 (Dual clock)	14(1)	-	-	-	2	4	3	-	-	8bit x 8 16bit x 4	-	-	1	-	-	2	- 1 - 1	-	-	32 x 4	-	SMC x 2ch Sound generator Option without CAN	On-chip Debug
MB96690	MB96F693A MB96F693R MB96F695A MB96F695R MB96F696R	32	LQFP-100	2.7 to 5.5	✓	Dual Op. Flash	64.5K +32K 128.5K +32K 256.5K +32K	8K 16K	-	4	16	-	79 (Single clock) 77 (Dual clock)	27(1)	-	-	4	2	6	5	-	-	8bit x 14 16bit x 10	-	-	1	-	-	5	- 1 - 1	-	-	36 x 4	-	SMC x 4ch Sound generator x 2ch Option without CAN	On-chip Debug
MB966A0	MB96F6A5A MB96F6A5R MB96F6A6R	32	LQFP-120	2.7 to 5.5	✓	Dual Op. Flash	128.5K +32K 256.5K +32K	8K 16K	-	4	16	-	97 (Single clock) 95 (Dual clock)	32(1)	-	-	4	2	8	5	-	-	8bit x 24 16bit x 12	-	-	1	-	-	5	- 1	-	-	44 x 4	-	SMC x 5ch Sound generator x 2ch Option without CAN	On-chip Debug
MB966B0	MB96F6B5A MB96F6B5R MB96F6B6R	32	LQFP-100	2.7 to 5.5	✓	Dual Op. Flash	128.5K +32K 256.5K +32K	8K 16K	-	4	16	-	79 (Single clock) 77 (Dual clock)	27(1)	-	-	4	2	6	5	-	-	8bit x 16 16bit x 12	-	QPRC x 2	1	-	-	5	- 1	-	-	36 x 4	-	Sound generator x 2ch Option without CAN	On-chip Debug
MB966C0	MB96F6C5A MB96F6C5R MB96F6C6R	32	LQFP-120	2.7 to 5.5	✓	Dual Op. Flash	128.5K +32K 256.5K +32K	8K 16K	-	4	16	-	99 (Single clock) 97 (Dual clock)	32(1)	-	-	4	2	8	5	-	-	8bit x 24 16bit x 12	-	QPRC x 2	1	-	-	5	- 1	-	-	44 x 4	-	Sound generator x 2ch Option without CAN	On-chip Debug

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