Infineon Technologies - MB95F654ENPFT-G-SNERE2 Datasheet

Welcome to E-XFL.COM

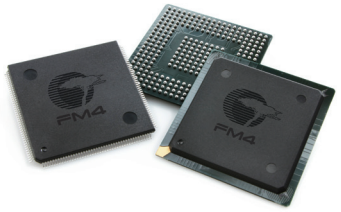
What is "Embedded - Microcontrollers"?

"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"

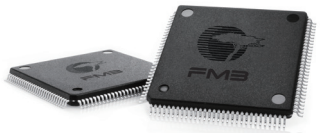
Details	
Product Status	Obsolete
Core Processor	F²MC-8FX
Core Size	8-Bit
Speed	16MHz
Connectivity	I²C, LINbus, SIO, UART/USART
Peripherals	LVD, POR, PWM, WDT
Number of I/O	21
Program Memory Size	20KB (20K x 8)
Program Memory Type	FLASH
EEPROM Size	-
RAM Size	1K x 8
Voltage - Supply (Vcc/Vdd)	1.8V ~ 5.5V
Data Converters	A/D 6x8/12b
Oscillator Type	External
Operating Temperature	-40°C ~ 85°C (TA)
Mounting Type	Surface Mount
Package / Case	24-TSSOP (0.173", 4.40mm Width)
Supplier Device Package	24-TSSOP
Purchase URL	https://www.e-xfl.com/product-detail/infineon-technologies/mb95f654enpft-g-snere2

Consumer and Industrial MCU Family



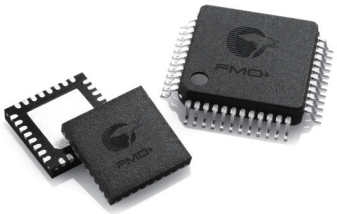
FM4 FAMILY

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.



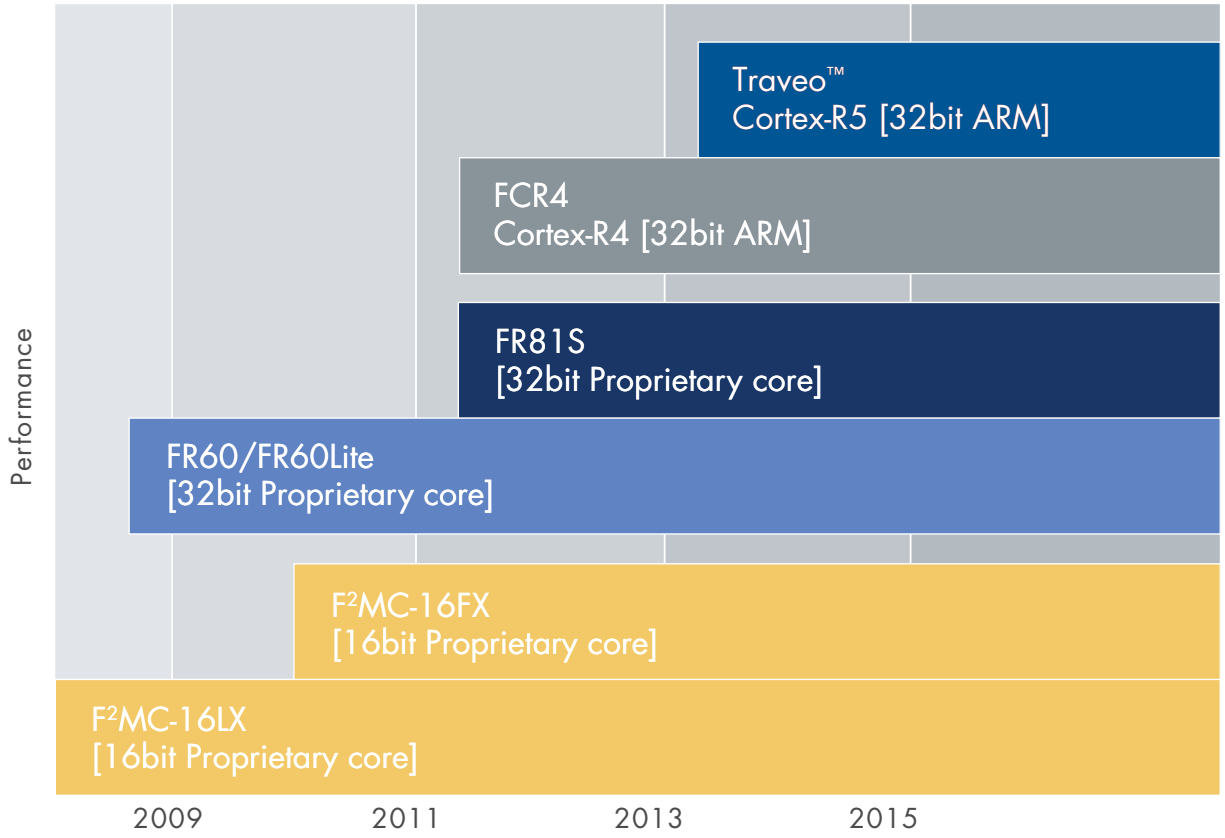
FM0+ FAMILY

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]	I²C [ch]	UART/SI [ch]	SIO [ch]	LIN/UART/SIO [ch]	CAN [ch]	USB-Host [ch]	USB-Function [ch]				
S6E2HG	S6E2HG6E0A	160	LQFP-80	2.7 to 5.5	✓	Main Flash +Work Flash	512K + 32K	64K	–	8	16	✓	63	–	16 (3)	–	Multi-Function Timer x3units (Free-Run 3ch/ Output Compare 6ch/ Input Capture 4ch/Waveform Generator 3ch/ AD Activation Compare 6ch Selectable), PPG 9ch			Base Timer x 8ch (Reload/PPG/PWM/ PWC Selectable)				QPRC x 3	1	Multi Function Serial x 8ch (UART/CSIO/I2C/LIN Selectable)				2	–	–	✓	Dual Timer, Real Time Clock, Unique ID, DSTC x 256ch, SDC	On-Chip Debug (SWJ-DP/ ETM)
	S6E2HG6F0A		LQFP-100										80		24 (3)																				
	S6E2HG6G0A		LQFP-120 BGA-121										100																							
	S6E2HG4E0A	160	LQFP-80				256K + 32K	32K	-				63		16 (3)																				
	S6E2HG4F0A		LQFP-100										80		24 (3)																				
	S6E2HG4G0A		LQFP-120 BGA-121										100																							
S6E2HE	S6E2HE6E0A	160	LQFP-80	2.7 to 5.5	✓	Main Flash +Work Flash	512K + 32K	64K	-	8	16	✓	63	–	16 (3)	–	Multi-Function Timer x3units (Free-Run 3ch/ Output Compare 6ch/ Input Capture 4ch/Waveform Generator 3ch/ AD Activation Compare 6ch Selectable), PPG 9ch			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, Real Time Clock, Unique ID, DSTC x 256ch, SDC	On-Chip Debug (SWJ-DP/ ETM)
	S6E2HE6F0A		LQFP-100										80		24 (3)																				
	S6E2HE6G0A		LQFP-120 BGA-121										100																							
	S6E2HE4E0A	160	LQFP-80				256K + 32K	32K	-				63		16 (3)																				
	S6E2HE4F0A		LQFP-100										80		24 (3)																				
	S6E2HE4G0A		LQFP-120 BGA-121										100																							
S6E2H4	S6E2H46E0A	160	LQFP-80	2.7 to 5.5	✓	Main Flash +Work Flash	512K + 32K	64K	-	8	16	✓	63	–	16 (3)	–	Multi-Function Timer x3units (Free-Run 3ch/ Output Compare 6ch/ Input Capture 4ch/Waveform Generator 3ch/ AD Activation Compare 6ch Selectable), PPG 9ch			Base Timer x 8ch (Reload/PPG/PWM/ PWC Selectable)				QPRC x 3	1	Multi Function Serial x 8ch (UART/CSIO/I2C/LIN Selectable)				2	–	–	✓	Dual Timer, Real Time Clock, Unique ID, DSTC x 256ch	On-Chip Debug (SWJ-DP/ ETM)
	S6E2H46F0A		LQFP-100										80		24 (3)																				
	S6E2H46G0A		LQFP-120 BGA-121										100																							
	S6E2H44E0A	160	LQFP-80				256K + 32K	32K	-				63		16 (3)																				
	S6E2H44F0A		LQFP-100										80		24 (3)																				
	S6E2H44G0A		LQFP-120 BGA-121										100																							
S6E2H1	S6E2H16E0A	160	LQFP-80	2.7 to 5.5	✓	Main Flash +Work Flash	512K + 32K	64K	-	8	16	✓	63	–	16 (3)	–	Multi-Function Timer x3units (Free-Run 3ch/ Output Compare 6ch/ Input Capture 4ch/Waveform Generator 3ch/ AD Activation Compare 6ch Selectable), PPG 9ch			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, Real Time Clock, Unique ID, DSTC x 256ch	On-Chip Debug (SWJ-DP/ ETM)
	S6E2H16F0A		LQFP-100										80		24 (3)																				
	S6E2H16G0A		LQFP-120 BGA-121										100																							
	S6E2H14E0A	160	LQFP-80				256K + 32K	32K	-				63		16 (3)																				
	S6E2H14F0A		LQFP-100										80		24 (3)																				
	S6E2H14G0A		LQFP-120 BGA-121										100																							
S6E2GM w/security	S6E2GM8HHA	180	LQFP-144	2.7 to 5.5	✓	Main Flash	1024K	192K	-	8	32	✓	121	–	24 (3)	–	Multi-Function Timer x2units (Free-Run 3ch/ Output Compare 6ch/ Input Capture 4ch/Waveform Generator 3ch/ AD Activation Compare 6ch Selectable), PPG 6ch			Base Timer x 16ch (Reload/PPG/PWM/ PWC Selectable)				QPRC x 4		Multi Function Serial x 10ch (UART/CSIO/I2C/LIN Selectable)				1	2ch (USB-Host/ USB-Function Selectable)		–	✓	Dual Timer, Real Time Clock, Unique ID, DSTC×256ch, Tiny I2S, Smart Card I/F, ETH, SDC, Chipher	On-Chip Debug (SWJ-DP/ ETM)
	S6E2GM8JHA		LQFP-176										153		32 (3)																				
	S6E2GM6HHA		LQFP-144				512K	128K					121		24 (3)																				
	S6E2GM6JHA		LQFP-176										153		32 (3)																				
S6E2GM	S6E2GM8H0A	180	LQFP-144	2.7 to 5.5	✓	Main Flash	1024K	192K	-	8	32	✓	121	–	24 (3)	–	Multi-Function Timer x2units (Free-Run 3ch/ Output Compare 6ch/ Input Capture 4ch/Waveform Generator 3ch/ AD Activation Compare 6ch Selectable), PPG 6ch			Base Timer x 16ch (Reload/PPG/PWM/ PWC Selectable)				QPRC x 4		Multi Function Serial x 10ch (UART/CSIO/I2C/LIN Selectable)				1	2ch (USB-Host/ USB-Function Selectable)		–	✓	Dual Timer, Real Time Clock, Unique ID, DSTC×256ch, Tiny I2S, Smart Card I/F, ETH, SDC	On-Chip Debug (SWJ-DP/ ETM)
	S6E2GM8J0A		LQFP-176										153		32 (3)																				
	S6E2GM6H0A		LQFP-144				512K	128K					121		24 (3)																				
	S6E2GM6J0A		LQFP-176										153		32 (3)																				
S6E2GK w/security	S6E2GK8HHA	180	LQFP-144	2.7 to 5.5	✓	Main Flash	1024K	192K	-	8	32	✓	121	–	24 (3)	–	Multi-Function Timer x2units (Free-Run 3ch/ Output Compare 6ch/ Input Capture 4ch/Waveform Generator 3ch/ AD Activation Compare 6ch Selectable), PPG 6ch			Base Timer x 16ch (Reload/PPG/PWM/ PWC Selectable)				QPRC x 4		Multi Function Serial x 10ch (UART/CSIO/I2C/LIN Selectable)				–	2ch (USB-Host/ USB-Function Selectable)		–	✓	Dual Timer, Real Time Clock, Unique ID, DSTC×256ch, Tiny I2S, Smart Card I/F, ETH, SDC, Chipher	On-Chip Debug (SWJ-DP/ ETM)
	S6E2GK8JHA		LQFP-176										153		32 (3)																				
	S6E2GK6HHA		LQFP-144				512K	128K					121		24 (3)																				
	S6E2GK6JHA		LQFP-176										153		32 (3)																				
S6E2GK	S6E2GK8H0A	180	LQFP-144	2.7 to 5.5	✓	Main Flash	1024K	192K	-	8	32	✓	121	–	24 (3)	–	Multi-Function Timer x2units (Free-Run 3ch/ Output Compare 6ch/ Input Capture 4ch/Waveform Generator 3ch/ AD Activation Compare 6ch Selectable), PPG 6ch			Base Timer x 16ch (Reload/PPG/PWM/ PWC Selectable)				QPRC x 4		Multi Function Serial x 10ch (UART/CSIO/I2C/LIN Selectable)				–	2ch (USB-Host/ USB-Function Selectable)		–	✓	Dual Timer, Real Time Clock, Unique ID, DSTC×256ch, Tiny I2S, Smart Card I/F, ETH, SDC	On-Chip Debug (SWJ-DP/ ETM)
	S6E2GK8J0A		LQFP-176										153		32 (3)																				
	S6E2GK6H0A		LQFP-144				512K	128K					121		24 (3)																				
	S6E2GK6J0A		LQFP-176										153		32 (3)																				

** 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]				
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]	I²C [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]				
MB9B160R	MB9BF166M	160	LQFP-80	2.7 to 5.5	✓	Main Flash +Work Flash	512K +32K	64K	–	8	16	✓	63	–	16(3)	12 x 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)			Base Timer x 8ch (Reload/PPG/PWM/ PWC Selectable)				QPRC x 2	1	Multi Function Serial x 8ch (UART/CSIO/I²C/LIN Selectable)				–	–	–	–	✓	Dual Timer, Real Time Clock, DSTC x 128ch, Unique ID, SD Card I/F	On-chip Debug (SWJ-DP/ETM)
	MB9BF166N		LQFP-100 QFP-100 BGA-112										80		24(3)																				
	MB9BF166R		LQFP-120 BGA-144										100																						
	MB9BF167M		LQFP-80				768K +32K	96K					63		16(3)																				
	MB9BF167N		LQFP-100 QFP-100 BGA-112										80		24(3)																				
	MB9BF167R		LQFP-120 BGA-144										100																						
	MB9BF168M		LQFP-80				1024K +32K	128K					63		16(3)																				
	MB9BF168N		LQFP-100 QFP-100 BGA-112										80		24(3)																				
	MB9BF168R		LQFP-120 BGA-144										100																						
MB9B560L	MB9BF564K	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)				1	1ch (USB-Host/ USB-Function Selectable)		–	✓	CAN: 32Msg-buffer, Dual Timer, Real Time Clock, Unique ID, DSTC x 128ch	On-chip Debug (SWJ-DP)
	MB9BF564L		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)																				
	MB9BF565K		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)																				
	MB9BF565L		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)																				
	MB9BF566K	160	LQFP-48 QFN-48	2.7 to 5.5	✓	Main Flash +Work Flash	512K +32K	64K	–	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)				1	1ch (USB-Host/ USB-Function Selectable)		–	✓	CAN: 32Msg-buffer, Dual Timer, Real Time Clock, Unique ID, DSTC x 128ch	On-chip Debug (SWJ-DP)
	MB9BF566L		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*

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]				
MB9B460L	MB9BF464K	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)				1	–	–	–	✓	CAN: 32Msg-buffer, Dual Timer, Real Time Clock, Unique ID, DSTC x 128ch	On-chip Debug (SWJ-DP)
	MB9BF464L		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)																				
	MB9BF465K		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)																				
	MB9BF465L		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)																				
	MB9BF466K		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)																				
	MB9BF466L		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									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																						

** 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
BASIC GROUP																																				
MB9A110A	MB9AF111LA	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)	–	–	–	–	✓	Dual Timer	On-chip Debug (SWJ-DP)
	MB9AF111MA		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)																		
	MB9AF111NA		LQFP-100 QFP-100 BGA-112								16	✓	83		16(3)																				On-chip Debug (SWJ-DP/ETM)
	MB9AF112LA		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)
	MB9AF112MA	40	LQFP-80				128K	16K			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)																	On-chip Debug (SWJ-DP)
	MB9AF112NA		LQFP-100 QFP-100 BGA-112								16	✓	83		16(3)																				On-chip Debug (SWJ-DP/ETM)
	MB9AF114LA		LQFP-64 QFN-64				256K	32K			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)
	MB9AF114MA		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)																	On-chip Debug (SWJ-DP)
	MB9AF114NA		LQFP-100 QFP-100 BGA-112								16		83		16(3)																				On-chip Debug (SWJ-DP/ETM)
	MB9AF115MA		LQFP-80				384K				11		66		12(3)																				On-chip Debug (SWJ-DP)
	MB9AF115NA		LQFP-100 QFP-100 BGA-112**								16	✓	83		16(3)																				On-chip Debug (SWJ-DP/ETM)
	MB9AF116MA		LQFP-80				512K				11		66		12(3)																				On-chip Debug (SWJ-DP)
	MB9AF116NA		LQFP-100 QFP-100 BGA-112**								16		83		16(3)																				On-chip Debug (SWJ-DP/ETM)
MB9A310K	MB9AF311K	40	LQFP-48 LQFP-52 QFN-48	2.7 to 5.5	✓	Main Flash +Work Flash	64K +32K	16K	–	4	6	–	36	–	8(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 1	1	Multi Function Serial x 4ch (UART/CSIO/I2C/LIN Selectable)	–	1ch (USB-Host/ USB-Function Selectable)		–	✓	Dual Timer, Real Time Clock	On-chip Debug (SWJ-DP)
	MB9AF312K						128K +32K																												
MB9A110K	MB9AF111K	40	LQFP-48 LQFP-52 QFN-48	2.7 to 5.5	✓	Main Flash +Work Flash	64K+ 32K	16K	–	4	6	–	36	–	8(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 1	1	Multi Function Serial x 4ch (UART/CSIO/I2C/LIN Selectable)	–	–		–	✓	Dual Timer, Real Time Clock	On-chip Debug (SWJ-DP)

** 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
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)																				

** 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
ULTRA LOW LEAK GROUP																																				
MB9AAA0N	MB9AFAA1L	20	LQFP-64 QFN-64	1.8 to 5.5	✓	FLASH	64K	12K	–	–	8	–	52	–	9(1)	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 8ch (Reload/PPG/PWM/ PWC Selectable)			–	–	Multi Function Serial x 8ch (UART/CSIO/I²C Selectable)				–	–	–	24 x 4 or 20 x 8	✓	HDMI-CEC/Remote Control Reception x 2, Real Time Clock	On-chip Debug (SWJ-DP)
	MB9AFAA1M		LQFP-80								11		67		12(1)																	37 x 4 or 33 x 8			
	MB9AFAA1N		LQFP-100 QFP-100								16		84		16(1)																	44 x 4 or 40 x 8			
	MB9AFAA2L		LQFP-64 QFN-64				128K	16K			8		52		9(1)																	24 x 4 or 20 x 8			
	MB9AFAA2M		LQFP-80								11		67		12(1)																	37 x 4 or 33 x 8			
	MB9AFAA2N		LQFP-100 QFP-100								16		84		16(1)																	44 x 4 or 40 x 8			
MB9A1A0N	MB9AF1A1L	20	LQFP-64 QFN-64	1.8 to 5.5	✓	FLASH	64K	12K	–	–	8	–	52	–	9(1)	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 8ch (Reload/PPG/PWM/ PWC Selectable)			–	–	Multi Function Serial x 8ch (UART/CSIO/I²C Selectable)				–	–	–	–	✓	HDMI-CEC/Remote Control Reception x 2, Real Time Clock	On-chip Debug (SWJ-DP)
	MB9AF1A1M		LQFP-80								11		67		12(1)																				
	MB9AF1A1N		LQFP-100 QFP-100								16		84		16(1)																				
	MB9AF1A2L		LQFP-64 QFN-64				128K	16K			8		52		9(1)																				
	MB9AF1A2M		LQFP-80								11		67		12(1)																				
	MB9AF1A2N		LQFP-100 QFP-100								16		84		16(1)																				
MB9A130LA	MB9AF131LB	20	LQFP-64 QFN-64	1.8 to 5.5	✓	FLASH	64K	8K	–	–	8	–	52	–	8(1)	–	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)			–	–	Multi Function Serial x 8ch (UART/CSIO/I2C Selectable)				–	–	–	–	✓	Real Time Clock	On-chip Debug (SWJ-DP)
	MB9AF131KB		LQFP-48 QFN-48								6		37		6(1)										Multi Function Serial x 4ch (UART/CSIO/I2C Selectable, CSIO/I2C up to 3ch)										
	MB9AF132LB		LQFP-64 QFN-64				128K				8		52		8(1)										Multi Function Serial x 8ch (UART/CSIO/I2C Selectable)										
	MB9AF132KB		LQFP-48 QFN-48								6		37		6(1)										Multi Function Serial x 4ch (UART/CSIO/I2C Selectable, CSIO/I2C up to 3ch)										

** In development; **Planning*

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]				
STANDARD																																			
MB95650L	MB95F652E	16	TSSOP-24 SOP-24 QFN-32	1.8 to 5.5	✓	Dual Op. Flash	8K	256	-	-	6	-	21	-	6(1)	-	-	8/16bit Compound Timer x 2ch (Interval Timer/PWM/PWC/ Input Capture Selectable)	-	-	-	2	1	-	1	-	-	-	-	-	Low-voltage Detection Reset, Clock Supervisor	On-chip Debug
	MB95F652L												20																					Clock Supervisor	
	MB95F653E						12K	512					21																					Low-voltage Detection Reset, Clock Supervisor	
	MB95F653L												20																					Clock Supervisor	
	MB95F654E						20K	1024					21																					Low-voltage Detection Reset, Clock Supervisor	
	MB95F654L												20																					Clock Supervisor	
	MB95F656E						36K						21																					Low-voltage Detection Reset, Clock Supervisor	
	MB95F656L												20																					Clock Supervisor	
MB95810K	MB95F814K	16	LQFP-64	2.88 to 5.5	✓	Dual Op. Flash	20K	512	-	-	12	-	58	12(1)	-	-	-	Reload Timer x 1ch + 8/16bit Compound Timer x 2ch (Interval Timer/PWM/PWC/ Input Capture Selectable)	4	-	-	1	1	-	1	-	-	-	-	-	-	-	Low-voltage Detection Reset, Clock Supervisor	On-chip Debug
	MB95F816K						36K	1K																											
	MB95F818K						60K	2K																											

** 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																							ARM Cortex-R5 Motor vector accelaretor x 2unit Models with L suffix on part number have no built-in FlexRay. Models with Q suffix on part number have built-in FlexRay.	
	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																							ARM Cortex-R5 Motor vector accelaretor x 2unit Models with L suffix on part number have no built-in FlexRay. Models with Q suffix on part number have built-in FlexRay.	
	MB9DF564LQ																																			
	MB9DF565LL						(896K + 64K) x 2	96K x 2																													
	MB9DF565LQ																																			
	MB9DF566LL						(1152K + 64K) x 2	128K x 2																													
	MB9DF566LQ																																			

** 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									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																												

** 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																																				
S6J3200	S6J323CKS	240	TEQFP -208	1.1 to 1.3 3.0 to 3.6 4.5 to 5.5	✓	Main Flash +Work Flash	2112K + 112K	TC-RAM: 128KB System - RAM: 128KB Backup - RAM: 16KB VRAM: 2048KB	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, Ethernet AVB, Media-LB, SHE(Secure Hardware Extension), SMC x 6ch, Sound generator x 4ch, 2D Graphic Engine, Display Output x 2ch,	On-Chip Debug
	S6J323CKU																																		
	S6J323CLS																																		
	S6J323CLU		TEQFP -216 (0.4mm pitch)										128	50(1)																			32 x 4			
	S6J324CKS		TEQFP -208										120	46(1)																			30 x 4		ARM Cortex-R5, Ethernet AVB, Media-LB, SHE(Secure Hardware Extension), SMC x 6ch, Sound generator x 4ch, 2D Graphic Engine, Display Output x 2ch, Sound system,	
	S6J324CKU																																		
	S6J324CLS																																		
	S6J324CLU		TEQFP -216 (0.4mm pitch)										128	50(1)																			32 x 4			
	S6J325CKS		TEQFP -208										120	46(1)																			30 x 4		ARM Cortex-R5, Ethernet AVB, Media-LB, SHE(Secure Hardware Extension), SMC x 6ch, Sound generator x 4ch, 2D+3D Graphic Engine, Display Output x 2ch,	
	S6J325CKU																																		
	S6J325CLS																																		
	S6J325CLU		TEQFP -216 (0.4mm pitch)										128	50(1)																			32 x 4			
	S6J326CKS		TEQFP -208										120	46(1)																			30 x 4		ARM Cortex-R5, Ethernet AVB, Media-LB, SHE(Secure Hardware Extension), SMC x 6ch, Sound generator x 4ch, 2D+3D Graphic Engine, Display Output x 2ch, FPD-Link, Sound system,	
	S6J326CKU																																		
	S6J326CLS																																		
	S6J326CLU		TEQFP -216 (0.4mm pitch)										128	50(1)																			32 x 4			
	S6J327CKS		TEQFP -208										120	46(1)																			30 x 4		ARM Cortex-R5, Ethernet AVB, Media-LB, SHE(Secure Hardware Extension) SMC x 6ch, Sound generator x 4ch, 2D Graphic Engine, Display Output x 2ch, Sound system	
	S6J327CKU																																		
	S6J327CLS																																		
	S6J327CLU		TEQFP -216 (0.4mm pitch)										128	50(1)																			32 x 4			
	S6J328CKS		TEQFP -208										120	46(1)																			30 x 4		ARM Cortex-R5, Ethernet AVB, Media-LB, SHE(Secure Hardware Extension), SMC x 6ch, Sound generator x 4ch, 2D+3D Graphic Engine, Display Output x 2ch, FPD-Link, Sound system	
	S6J328CKU																																		
	S6J328CLS																																		
	S6J328CLU		TEQFP -216 (0.4mm pitch)										128	50(1)																			32 x 4			

** In development; **Planning*

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																																			
MB91520	MB91F522B	80	LQFP-64	2.7 to 5.5	* See "part number suffix" in Note	Main Flash +Work Flash	320K+64K	56K	–	16	16	–	44	–	13(1) 13(1)	8bit x 1	16bit x 6 32bit x 4	16bit x 3 32bit x 1	16bit x 4 32bit x 5	Reload Timer x 7ch + PPG Timer x 21ch (Reload/PPG/PWM/PWC Selectable)	2	–	Multi Function Serial x 8ch (LIN/UART/SIO/I2C Selectable)	3	–	–	–	✓	LIN, FPU, MPU, Tuning RAM MB91520B/D/F/J/K/L series: CAN: 64Msg-buffer x 2ch, 128Msg-buffer x 1ch, MB91520R/U/M/Y series: CAN: 128Msg-buffer x 6ch, FlexRay: 1 unit Details of part number suffix	On-chip Debug
	MB91F523B						448K+64K																												
	MB91F524B						576K+64K	72K																												
	MB91F525B						832K+64K	104K																												
	MB91F526B						1088K+64K	136K																												
	MB91F522D		LQFP-80				320K+64K	56K					56		16(1) 16(1)			16bit x 3 32bit x 2		Reload Timer x 7ch + PPG Timer x 27ch + Base Timer x 1ch (Reload/PPG/PWM/PWC Selectable)						Multi Function Serial x 9ch (LIN/UART/SIO/I2C Selectable)										
	MB91F523D						448K+64K																												
	MB91F524D						576K+64K	72K																												
	MB91F525D						832K+64K	104K																												
	MB91F526D						1088K+64K	136K																												
	MB91F522F		LQFP-100				320K+64K	56K					76		16(1) 21(1)	8bit x 2	16bit x 6 32bit x 6	16bit x 3 32bit x 3	16bit x 4 32bit x 6	Reload Timer x 8ch + PPG Timer x 34ch + Base Timer x 1ch (Reload/PPG/PWM/PWC Selectable)						Multi Function Serial x 12ch (LIN/UART/SIO/I2C Selectable)										
	MB91F523F						448K+64K																												
	MB91F524F						576K+64K	72K																												
	MB91F525F						832K+64K	104K																												
	MB91F526F						1088K+64K	136K																												
	MB91F522J		LQFP-120				320K+64K	56K					96		16(1) 26(1)					Reload Timer x 8ch + PPG Timer x 38ch + Base Timer x 2ch (Reloa d/PPG/PWM/ PWC Selectable)																
	MB91F523J						448K+64K																												
	MB91F524J						576K+64K	72K																												
	MB91F525J						832K+64K	104K																												
	MB91F526J						1088K+64K	136K																												
	MB91F522K	80	LQFP-144	2.7 to 5.5	* See "part number suffix" in Note	Main Flash +Work Flash	320K+64K	56K	–	16	16	✓	120	–	16(1) 32(1)	8bit x 2	16bit x 6 32bit x 6	16bit x 3 32bit x 3	16bit x 4 32bit x 6	Reload Timer x 8ch + PPG Timer x 44ch + Base Timer x 2ch (Reload/PPG/PWM/PWC Selectable)	2	–	Multi Function Serial x 12ch (LIN/UART/SIO/I2C Selectable)	3	–	–	–	✓		On-chip Debug
	MB91F523K						448K+64K																												
	MB91F524K						576K+64K	72K																												
	MB91F525K						832K+64K	104K																												
	MB91F526K						1088K+64K	136K																												
	MB91F527R		LQFP-144 TEQFP-144				1600K+64K	192+16K					115																	6						
	MB91F528R						2112K+64K	320K;16K																												
	MB91F522L		LQFP-176				320K+64K	56K					152		16(1) 32(1)					Reload Timer x 8ch + PPG Timer x 48ch + Base Timer x 2ch (Reload/PPG/PWM/PWC Selectable)											3						
	MB91F523L						448K+64K																												
	MB91F524L						576K+64K	72K																												
	MB91F525L						832K+64K	104K																												
	MB91F526L						1088K+64K	136K																												
	MB91F527U		LQFP-176 TEQFP-176				1600K+64K	192+16K					147																	6						
	MB91F528U						2112K+64K	320K;16K																												
	MB91F527M	128	LQFP-208 TEQFP-208				1600K+64K	192+16K			24		177		32(1) 32(1)		16bit x 6 32bit x 8	16bit x 3 32bit x 8	16bit x 4 32bit x 8	Reload Timer x 8ch + PPG Timer x 64ch + Base Timer x 2ch (Reload/PPG/PWM/PWC Selectable)	4		Multi Function Serial x 20ch (LIN/UART/SIO/I2C Selectable)	6									
	MB91F528M						2112K+64K	320K;16K																												
	MB91F527Y		BGA-416				1600K+64K	192+16K					219							Reload Timer x 8ch + PPG Timer x 88ch + Base Timer x 2ch (Reload/PPG/PWM/PWC Selectable)				6										
	MB91F528Y						2112K+64K	320K;16K																												
MB91550	MB91F552	80	LQFP-64	4.5 to 5.5	-	Main Flash +Work Flash	192K+64K	24K	-	8	4	-	30	-	8(1) 4ch S/H(1)	-	-	1	1	Reload Timer ×5ch + PWM Timer ×6ch(2ch×3 pairs) + PWC Timer ×2ch + Base Timer ×4ch (Reload/PPG/PWM/PWC Selectable)	-	-	Multi Function Serial×3ch (UART/SIO/LIN Selectable)	-	1	-	-	-	-	Comparator: 3ch, Slope Compensation: 1ch	On-Chip Debug

Details of part number suffix

	Dual clock system	
	xWC	xJC
CSV initial value	ON	OFF

	Single clock system	
	xSC	xHC
CSV initial value	ON	OFF

** In development; **Planning*

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: I^2C [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																																				
MB96340	MB96345RS	56	LQFP-100	3.0 to 5.5	–	MASK	160K	8K	–	6	16	✓	82	24(1)	–	–	8	2	8	4 +1 (Dedicated for PPG)	–	16	–	–	–	2	–	–	7	2	–	–	–	–	Option without CAN	MB96V300C
	MB96345RW				✓								80																						
	MB96346RS				–		288K	16K					82																						
	MB96346RW				✓								80																						
	MB96F345DS	40			–	FLASH	160K +64K	8K					82																	1					
	MB96F345DW				✓								80																						
	MB96F346AS	56			–		288K	16K					82																	-					
	MB96F346AW				✓								80																						
	MB96F346RS				–								82																	2					
	MB96F346RW				✓								80																						
	MB96F347AS				–		416K						82																	-					
	MB96F347AW				✓								80																						
	MB96F347RS				–								82																	2					
	MB96F347RW				✓								80																						
	MB96F348AS				–		544K	24K					82																	-					
	MB96F348AW				✓								80																						
	MB96F348RS				–								82																	2					
	MB96F348RW				✓								80																						
	MB96F348HS				–		544K +32K						82																4						
	MB96F348HW				✓								80																						
MB96350	MB96F353AS	56	LQFP-64	3.0 to 5.5	–	FLASH	96K	8K	–	4	13	✓	51	15(1)	–	–	4	4	6 +3 (Dedicated for LIN)	4 +1 (Dedicated for PPG)	–	–	20	–	–	1	–	–	4	1	–	–	–	–	Option without CAN	MB96V300C
	MB96F353AW				✓								49																						
	MB96F353RS				–								51																						
	MB96F353RW				✓								49																						
	MB96F355AS				–		160K						51																						
	MB96F355AW				✓								49																						
	MB96F355RS				–								51																						
	MB96F355RW				✓								49																						
	MB96F356AS				–		288K	12K					51																						
	MB96F356AW				✓								49																						
	MB96F356RS				–								51																						
	MB96F356RW				✓								49																						
MB96370	MB96F378HS	40	LQFP-144	3.0 to 5.5	–	FLASH	544K +32K	28K	–	7	8	✓	120	22(1)	–	–	6	2	8	4 +1 (Dedicated for PPG)	–	–	12	–	–	2	–	–	6	2	–	–	72 x 4	-	SMC x 6ch Sound generator x 2ch	MB96V300C
	MB96F378HW				✓								118																						
	MB96F379RS				–		832K	32K					120																						
	MB96F379RW				✓								118																						
MB96380	MB96384RS	56	LQFP-120	3.0 to 5.5	–	MASK	128K	6K	–	7	8	✓	96	16(1)	–	–	4	2	8	4 +1 (Dedicated for PPG)	5	–	8	–	–	1	–	–	5	1	–	–	65 x 4	–	SMC x 5ch Sound generator x 2ch	MB96V300C
	MB96384RW				✓								94																						
	MB96385RS				–		160K	8K					96																						
	MB96385RW				✓								94																						
	MB96F385RS	40			–	FLASH	160K	6K					96																						
	MB96F385RW				✓								94																						
	MB96F386RS	56			–		288K	16K					96																	2					
	MB96F386RW				✓								94																						
	MB96F387RS				–		416K						96																						
	MB96F387RW				✓								94																						
	MB96F388HS	40			–		544K +32K	28K					96																						
	MB96F388HW				✓								94																						
	MB96F389RS				–		544K +288K	32K					96																						
	MB96F389RW				✓								94																						
MB96390	MB96393RS	40	LQFP-100	3.0 to 5.5	–	MASK	96K	5K	–	–	8	–	76	11(1)	–	–	4	2	4	4 +1 (Dedicated for PPG)	4	–	4	–	–	1	–	–	3	1	–	–	49 x 4	–	SMC x 4ch Sound generator x 1ch	MB96V300C
	MB96393RW				✓								74																						
	MB96395RS				–		160K	8K					76																						
	MB96395RW				✓								74																						
	MB96F395RS				–	FLASH	160K						76																						
	MB96F395RW				✓								74																						

** In development; **Planning*

Cypress Semiconductor Corporation
198 Champion Court, San Jose CA 95134
phone +1 408.943.2600 fax +1 408.943.6848
toll free +1 800.858.1810 (U.S. only) Press "1" to reach your local sales representative

Doc# 002-06949 Rev.*A