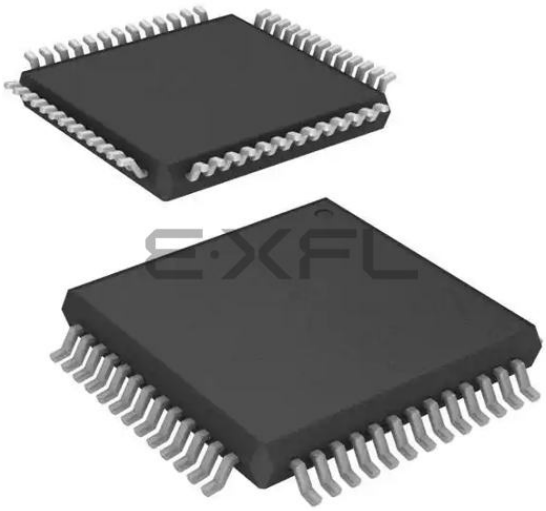
Infineon Technologies - MB95F698KNPMC1-G-101SNE2 Datasheet



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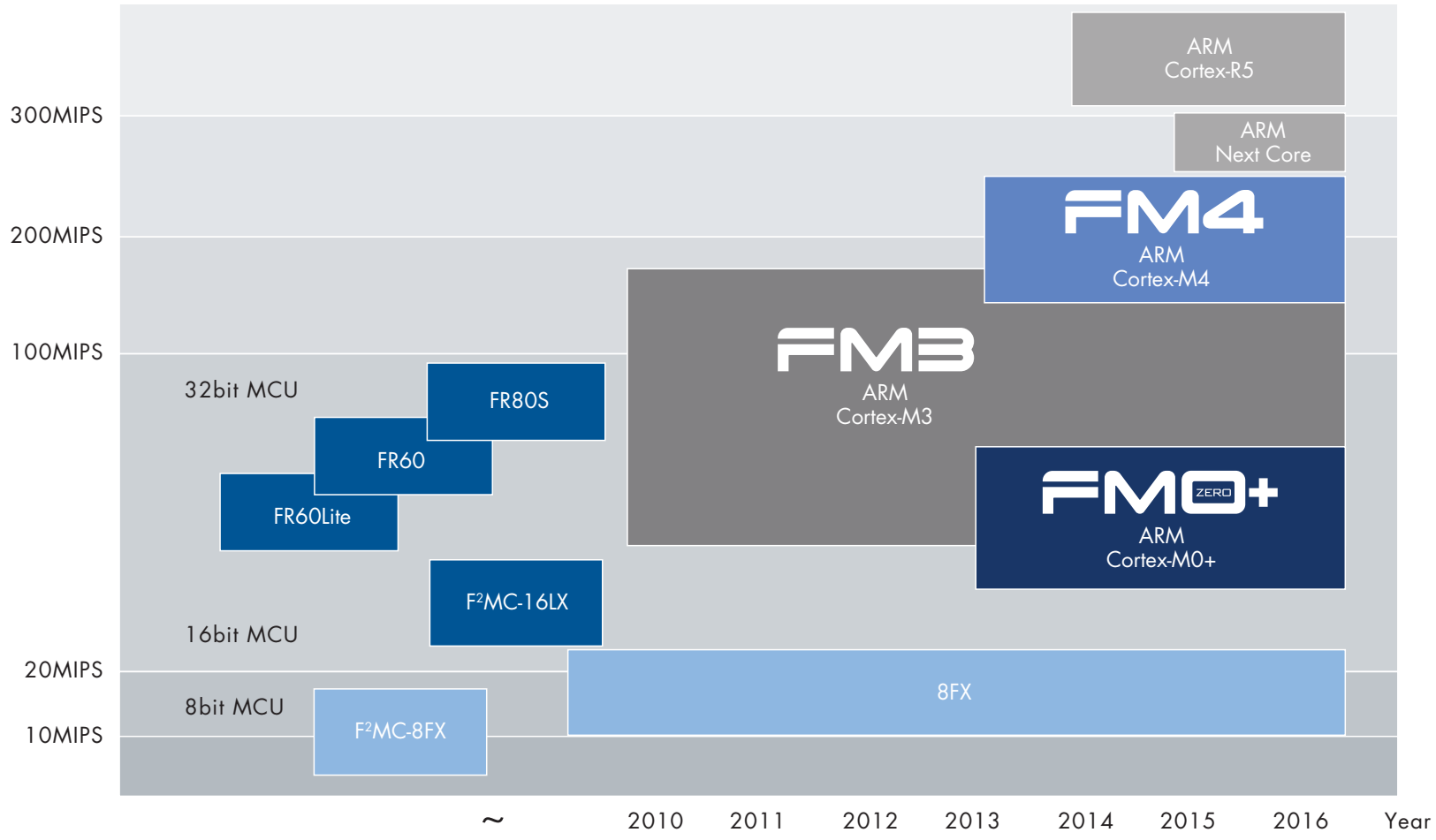
What is "Embedded - Microcontrollers"?

"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.

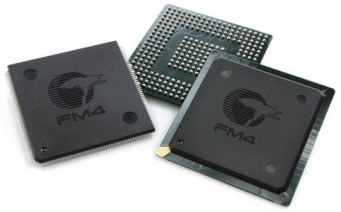
Applications of "Embedded - Microcontrollers"

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	45
Program Memory Size	60KB (60K x 8)
Program Memory Type	FLASH
EEPROM Size	-
RAM Size	2K x 8
Voltage - Supply (Vcc/Vdd)	2.88V ~ 5.5V
Data Converters	A/D 12x8/10b
Oscillator Type	External
Operating Temperature	-40°C ~ 85°C (TA)
Mounting Type	Surface Mount
Package / Case	52-LQFP
Supplier Device Package	52-LQFP (10x10)
Purchase URL	https://www.e-xfl.com/product-detail/infineon-technologies/mb95f698knpmc1-g-101sne2

Consumer and Industrial MCU Core Roadmap

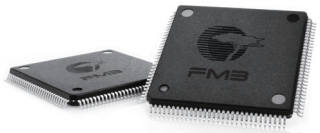


Consumer and Industrial MCU Family



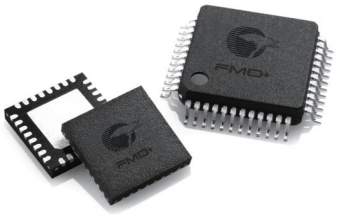
FM4 FAMILY

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.



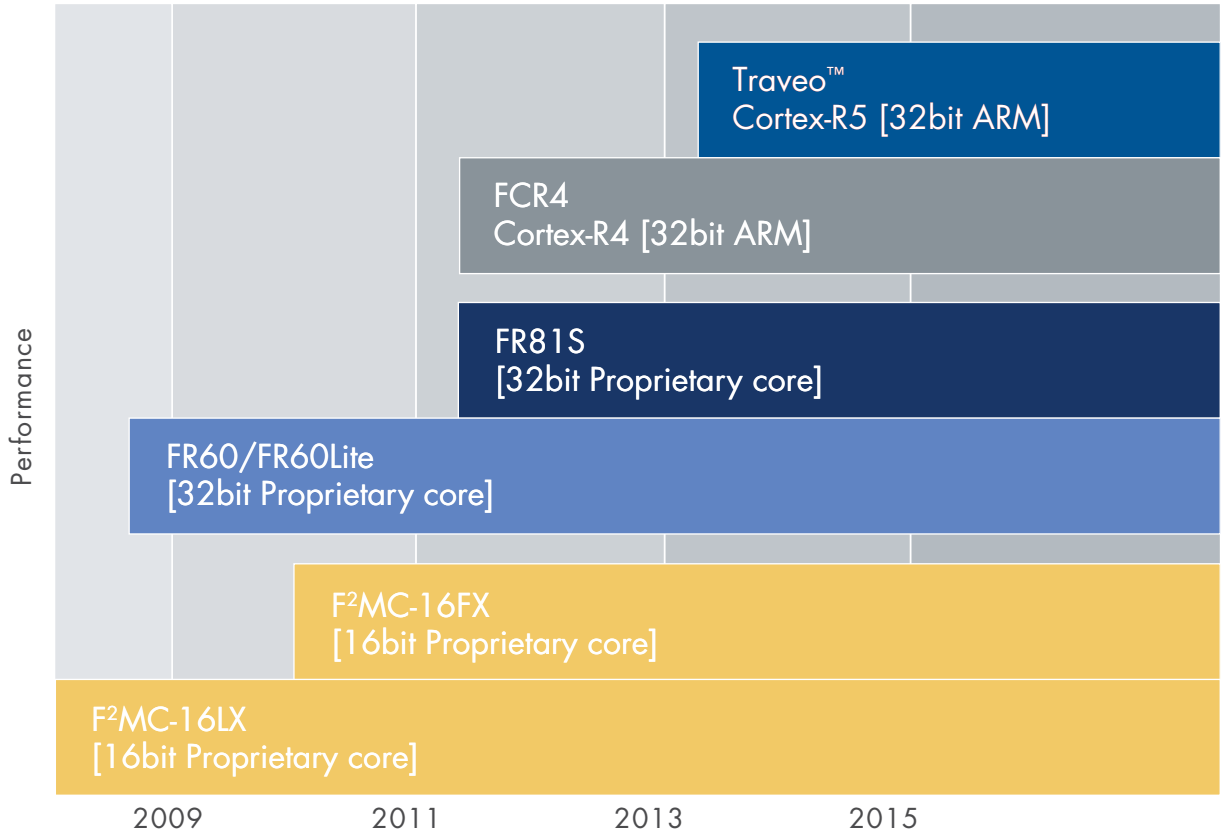
FM0+ FAMILY

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



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]				
S6E2GH	S6E2GH8H0A	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 Timer Clock, Unique ID, DSTC×256ch, Tiny I2S, Smart Card I/F, SDC	On-Chip Debug (SWJ-DP/ ETM)
	S6E2GH8J0A		LQFP-176										153		32 (3)																			
	S6E2GH6H0A		LQFP-144				512K	128K					121		24 (3)																			
	S6E2GH6J0A		LQFP-176										153		32 (3)																			
S6E2G3	S6E2G38H0A	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 Timer Clock, Unique ID, DSTC×256ch, Tiny I2S, Smart Card I/F	On-Chip Debug (SWJ-DP/ ETM)
	S6E2G38J0A		LQFP-176										153		32 (3)																			
	S6E2G36H0A		LQFP-144				512K	128K					121		24 (3)																			
	S6E2G36J0A		LQFP-176										153		32 (3)																			
S6E2G2 w/security	S6E2G28HHA	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 Timer Clock, Unique ID, DSTC×256ch, Tiny I2S, Smart Card I/F, ETH, Chipher	On-Chip Debug (SWJ-DP/ ETM)
	S6E2G28JHA		LQFP-176										153		32 (3)																			
	S6E2G26HHA		LQFP-144				512K	128K					121		24 (3)																			
	S6E2G26JHA		LQFP-176										153		32 (3)																			
S6E2G2	S6E2G28H0A	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 Timer Clock, Unique ID, DSTC×256ch, Tiny I2S, Smart Card I/F, ETH	On-Chip Debug (SWJ-DP/ ETM)
	S6E2G28J0A		LQFP-176										153		32 (3)																			
	S6E2G26H0A		LQFP-144				512K	128K					121		24 (3)																			
	S6E2G26J0A		LQFP-176										153		32 (3)																			
S6E2DH	S6E2DH5G0A	160	LQFP-120 TEQFP-120 BGA-161	2.7-3.6	✓	Main Flash	384K	36K	-	8	16	✓	98	-	24 (3)	-	Multi-Function Timer x 3units (Free-Run 3ch/Output Compare 6ch/Input Capture 4ch /Waveform Generator 3ch/ AD Activation Compare 6ch Selectable), PPG6ch			Base Timer x 8ch (Reload/PPG/PWM/PWC Selectable)				QPRC x 1	1	Multi Function Serial x 8ch (UART/CSIO/I2C/LIN Selectable)				1	1ch (USB-Host/ USB-Function Selectable)		-	-	Dual Timer, Real Timer Clock, Unique ID, DSTC x128ch, CAN-FD 1ch, SDC, I2S 2ch, High Speed Quad SPI x1, Hyper Bus x1, GDC	On-Chip Debug (SWJ-DP/ETM)
	S6E2DH5GJA		LQFP-120 (SiP)										90																					
	S6E2DH5J0A		LQFP-176										154																					
S6E2DF	S6E2DF5G0A	160	LQFP-120 TEQFP-120 BGA-161	2.7-3.6	✓	Main Flash	384K	36K	-	8	16	✓	98	-	24 (3)	-	Multi-Function Timer x 3units (Free-Run 3ch/Output Compare 6ch/Input Capture 4ch /Waveform Generator 3ch/ AD Activation Compare 6ch Selectable), PPG6ch			Base Timer x 8ch (Reload/PPG/PWM/PWC Selectable)				QPRC x 1	1	Multi Function Serial x 8ch (UART/CSIO/I2C/LIN Selectable)				1	1ch (USB-Host/ USB-Function Selectable)		-	-	Dual Timer, Real Timer Clock, Unique ID, DSTC x128ch, CAN-FD 1ch, I2S 2ch, High Speed Quad SPI x1, Hyper Bus x1, GDC	On-Chip Debug (SWJ-DP/ETM)
	S6E2DF5GJA		LQFP-120 (SiP)										90																					
	S6E2DF5J0A		LQFP-176										154																					
S6E2D5	S6E2D55G0A	160	LQFP-120 TEQFP-120 BGA-161	2.7-3.6	✓	Main Flash	384K	36K	-	8	16	✓	98	-	24 (3)	-	Multi-Function Timer x 3units (Free-Run 3ch/Output Compare 6ch/Input Capture 4ch /Waveform Generator 3ch/ AD Activation Compare 6ch Selectable), PPG6ch			Base Timer x 8ch (Reload/PPG/PWM/PWC Selectable)				QPRC x 1	1	Multi Function Serial x 8ch (UART/CSIO/I2C/LIN Selectable)				-	1ch (USB-Host/ USB-Function Selectable)		-	-	Dual Timer, Real Timer Clock, Unique ID, DSTC x128ch, SDC, I2S 2ch, High Speed Quad SPI x1, Hyper Bus x1, GDC	On-Chip Debug (SWJ-DP/ETM)
	S6E2D55GJA		LQFP-120 (SiP)										90																					
	S6E2D55J0A		LQFP-176										154																					
S6E2D3	S6E2D35G0A	160	LQFP-120 TEQFP-120 BGA-161	2.7-3.6	✓	Main Flash	384K	36K	-	8	16	✓	98	-	24 (3)	-	Multi-Function Timer x 3units (Free-Run 3ch/Output Compare 6ch/Input Capture 4ch /Waveform Generator 3ch/ AD Activation Compare 6ch Selectable), PPG6ch			Base Timer x 8ch (Reload/PPG/PWM/PWC Selectable)				QPRC x 1	1	Multi Function Serial x 8ch (UART/CSIO/I2C/LIN Selectable)				-	1ch (USB-Host/ USB-Function Selectable)		-	-	Dual Timer, Real Timer Clock, Unique ID, DSTC x128ch, I2S 2ch, High Speed Quad SPI x1, Hyper Bus x1, GDC	On-Chip Debug (SWJ-DP/ETM)
	S6E2D35GJA		LQFP-120 (SiP)										90																					
	S6E2D35J0A		LQFP-176										154																					

** 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*

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]				
MB9B360L	MB9BF364K	160	LQFP-48 QFN-48	2.7 to 5.5 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)				–	1ch (USB-Host/ USB-Function Selectable)		–	✓	Dual Timer, Real Time Clock, Unique ID, DSTC x 128ch	On-chip Debug (SWJ-DP)
	MB9BF364L		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)																				
	MB9BF365K		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)																				
	MB9BF365L		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)																				
	MB9BF366K		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)																				
	MB9BF366L		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]				
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									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: 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																																				
MB9B320M	MB9BF321K	72	LQFP-48 QFN-48	2.7 to 5.5	✓	Dual Op. Flash (Main area + Work area)	64K +32K	16K	–	8	14	–	35	–	14(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 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, Unique ID, Real Time Clock	On-chip Debug (SWJ-DP)
	MB9BF321L		LQFP-64 QFN-64								19		50		23(2)									QPRC x 2		Multi Function Serial x 8ch (UART/CSIO/I2C/LIN Selectable)										
	MB9BF321M		LQFP-80 BGA-96								23		65		26(2)																					
	MB9BF322K		LQFP-48 QFN-48				128K +32K				14		35		14(2)									QPRC x 1		Multi Function Serial x 4ch (UART/CSIO/I2C/LIN Selectable)										
	MB9BF322L		LQFP-64 QFN-64								19		50		23(2)									QPRC x 2		Multi Function Serial x 8ch (UART/CSIO/I2C/LIN Selectable)										
	MB9BF322M		LQFP-80 BGA-96								23		65		26(2)																					
	MB9BF324K		LQFP-48 QFN-48				256K +32K	32K			14		35		14(2)									QPRC x 1		Multi Function Serial x 4ch (UART/CSIO/I2C/LIN Selectable)										
	MB9BF324L		LQFP-64 QFN-64								19		50		23(2)									QPRC x 2		Multi Function Serial x 8ch (UART/CSIO/I2C/LIN Selectable)										
	MB9BF324M		LQFP-80 BGA-96								23		65		26(2)																					
MB9B120M	MB9BF121K	72	LQFP-48 QFN-48	2.7 to 5.5	✓	Dual Op. Flash (Main area + Work area)	64K +32K	16K	–	8	14	–	35	–	14(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 8ch (Reload/PPG/PWM/ PWC Selectable)				QPRC x 1	1	Multi Function Serial x 4ch (UART/CSIO/I2C/LIN Selectable)				–	–	–	–	✓	Dual Timer, Unique ID, Real Time Clock	On-chip Debug (SWJ-DP)
	MB9BF121L		LQFP-64 QFN-64								19		50		23(2)									QPRC x 2		Multi Function Serial x 8ch (UART/CSIO/I2C/LIN Selectable)										
	MB9BF121M		LQFP-80 BGA-96								23		65		26(2)																					
	MB9BF122K		LQFP-48 QFN-48				128K +32K				14		35		14(2)									QPRC x 1		Multi Function Serial x 4ch (UART/CSIO/I2C/LIN Selectable)										
	MB9BF122L		LQFP-64 QFN-64								19		50		23(2)									QPRC x 2		Multi Function Serial x 8ch (UART/CSIO/I2C/LIN Selectable)										
	MB9BF122M		LQFP-80 BGA-96								23		65		26(2)																					
	MB9BF124K		LQFP-48 QFN-48				256K +32K	32K			14		35		14(2)									QPRC x 1		Multi Function Serial x 4ch (UART/CSIO/I2C/LIN Selectable)										
	MB9BF124L		LQFP-64 QFN-64								19		50		23(2)									QPRC x 2		Multi Function Serial x 8ch (UART/CSIO/I2C/LIN Selectable)										
	MB9BF124M		LQFP-80 BGA-96								23		65		26(2)																					
MB9B120J	MB9BF121J	72	LQFP-32 QFN-32	2.7 to 5.5	✓	FLASH	64K	8K	–	4	7	–	23	–	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)				QPRC x 1	1	Multi Function Serial x 4ch (UART/CSIO/I2C/LIN Selectable)				–	–	–	–	✓	Dual Timer, Real Time Clock, Unique ID	On-chip Debug (SW-DP)
MB9B520T	MB9BF528S*	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)				1	1ch (USB-Host/ USB-Function Selectable)		–	✓	CAN: 32Msg-buffer, Dual Timer, HDMI-CEC/Remote Control Reception x 2, Real Time Clock, Unique ID	On-chip Debug (SWJ-DP/ETM)
	MB9BF528T*		LQFP-176 BGA-192										154											QPRC x 2												
	MB9BF529S*		LQFP-144				1.5M +64K	192K					122											QPRC x 1												
	MB9BF529T*		LQFP-176 BGA-192										154											QPRC x 2												
MB9B420T	MB9BF428S*	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)				1	–	–	–	✓	CAN: 32Msg-buffer, Dual Timer, HDMI-CEC/Remote Control Reception x 2, Real Time Clock, Unique ID	On-chip Debug (SWJ-DP/ETM)
	MB9BF428T*		LQFP-176 BGA-192										154											QPRC x 2												
	MB9BF429S*		LQFP-144				1.5M +64K	192K					122											QPRC x 1												
	MB9BF429T*		LQFP-176 BGA-192										154											QPRC x 2												

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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
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)																	
	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)

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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																																				
MB9A150R	MB9AF154MA	40	LQFP-80 BGA-96	1.65 to 3.6	✓	Dual Op. Flash (Main area + Work area)	256K +32K	32K	–	8	23	✓	66	–	17(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 15ch (Reload/PPG/PWM/ PWC Selectable)	QPRC x 2	1	Multi Function Serial x 10ch (UART/CSIO/I2C Selectable)	–	–	–	–	✓	Dual Timer, HDMI-CEC/Remote Control Reception x 2, Real Time Clock, Unique ID	On-chip Debug (SWJ-DP)
	MB9AF154NA		LQFP-100 BGA-112								24		83		24(2)					Base Timer x 16ch (Reload/PPG/PWM/ PWC Selectable)			Multi Function Serial x 14ch (UART/CSIO/I2C Selectable)										On-chip Debug (SWJ-DP/ETM)
	MB9AF154RA		LQFP-120										103										Multi Function Serial x 16ch (UART/CSIO/I2C Selectable)										
	MB9AF155MA		LQFP-80 BGA-96				384K +32K	48K			23		66		17(2)					Base Timer x 15ch (Reload/PPG/PWM/ PWC Selectable)			Multi Function Serial x 10ch (UART/CSIO/I2C Selectable)										On-chip Debug (SWJ-DP)
	MB9AF155NA		LQFP-100 BGA-112								24		83		24(2)					Base Timer x 16ch (Reload/PPG/PWM/ PWC Selectable)			Multi Function Serial x 14ch (UART/CSIO/I2C Selectable)										On-chip Debug (SWJ-DP/ETM)
	MB9AF155RA		LQFP-120										103										Multi Function Serial x 16ch (UART/CSIO/I2C Selectable)										
	MB9AF156MA		LQFP-80 BGA-96				512K +32K	64K			23		66		17(2)					Base Timer x 15ch (Reload/PPG/PWM/ PWC Selectable)			Multi Function Serial x 10ch (UART/CSIO/I2C Selectable)										On-chip Debug (SWJ-DP)
	MB9AF156NA		LQFP-100 BGA-112								24		83		24(2)					Base Timer x 16ch (Reload/PPG/PWM/ PWC Selectable)			Multi Function Serial x 14ch (UART/CSIO/I2C Selectable)										On-chip Debug (SWJ-DP/ETM)
	MB9AF156RA		LQFP-120										103										Multi Function Serial x 16ch (UART/CSIO/I2C Selectable)										
MB9AB40NA	MB9AFB41LB	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)			20 x 8	–	Dual Timer, HDMI-CEC/Remote Control Reception x 2, Real Time Clock, Unique ID	On-chip Debug (SWJ-DP)
	MB9AFB41MB		LQFP-80 BGA-96								11	✓	66		17(2)														33 x 8				
	MB9AFB41NB		LQFP-100 QFP-100 BGA-112								16		83		24(2)														40 x 8				
	MB9AFB42LB		LQFP-64 QFN-64				128K +32K				8	-	51		12(2)														20 x 8				
	MB9AFB42MB		LQFP-80 BGA-96								11	✓	66		17(2)														33 x 8				
	MB9AFB42NB		LQFP-100 QFP-100 BGA-112								16		83		24(2)														40 x 8				
	MB9AFB44LB		LQFP-64 QFN-64				256K +32K	32K			8	-	51		12(2)														20 x 8				On-chip Debug (SWJ-DP/ETM)
	MB9AFB44MB		LQFP-80 BGA-96								11	✓	66		17(2)														33 x 8				
	MB9AFB44NB		LQFP-100 QFP-100 BGA-112								16		83		24(2)														40 x 8				
MB9AA40NA	MB9AFA41LB	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)	–	–	–	–	20 x 8	–	Dual Timer, HDMI-CEC/Remote Control Reception x 2, Real Time Clock, Unique ID	On-chip Debug (SWJ-DP)
	MB9AFA41MB		LQFP-80 BGA-96								11	✓	66		17(2)														33 x 8				
	MB9AFA41NB		LQFP-100 QFP-100 BGA-112								16		83		24(2)														40 x 8				
	MB9AFA42LB		LQFP-64 QFN-64				128K +32K				8	-	51		12(2)														20 x 8				
	MB9AFA42MB		LQFP-80 BGA-96								11	✓	66		17(2)														33 x 8				
	MB9AFA42NB		LQFP-100 QFP-100 BGA-112								16		83		24(2)														40 x 8				
	MB9AFA44LB		LQFP-64 QFN-64				256K +32K	32K			8	-	51		12(2)														20 x 8				On-chip Debug (SWJ-DP/ETM)
	MB9AFA44MB		LQFP-80 BGA-96								11	✓	66		17(2)														33 x 8				
	MB9AFA44NB		LQFP-100 QFP-100 BGA-112								16		83		24(2)														40 x 8				

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FM0 + 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]				
S6E1A	S6E1A11B0A	40	LQFP-32 QFN-32	2.7 to 5.5	✓	Flash	56K	6K	–	2	8	–	23	–	5(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 4ch (Reload/PPG/PWM/ PWC Selectable)				QPRC x 1	1	Multi Function Serial x 3ch (UART/CSIO/I²C/LIN Selectable)				–	–	–	–	✓	Dual Timer, Real Time Clock, Unique ID, Fast I/O	On-chip Debug (SW-DP/MTB)
	S6E1A11C0A		LQFP-48 LQFP-52 QFN-48										37		8(1)																				
	S6E1A12B0A		LQFP-32 QFN-32				88K						23		5(1)																				
	S6E1A12C0A		LQFP-48 LQFP-52 QFN-48										37		8(1)																				
S6E1B8 w/security	S6E1B86GHA	40	LQFP-120	1.65 to 3.6	✓	Main Flash +Work Flash	512K + 40K	64K	–	–	24	–	102	–	24	-	Multi-Function Timer x 1units (Free-Run 3ch/Output Compare 6ch/Input Capture 4ch /PPG3ch/Waveform Generator 3ch /AD Activation Compare 6ch Selectable), PPG3ch			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)		40 SEG x 8 COM / 44 SEG x 4 COM	–	Dual Timer, Real Time Clock, Unique ID, DSTC x 64ch, Tiny I2S, HDMI-CEC 2ch, CRC, Smart Card I/F, Chipher	On-Chip Debug (SWJ-DP/ Boundary SCAN)
	S6E1B84GHA						256K + 40K	32K																										
	S6E1B86FHA		LQFP-100				512K + 40K	64K					82		23																	32 SEG x 8 COM / 36 SEG x 4 COM					
	S6E1B84FHA						256K + 40K	32K																										
	S6E1B86EHA		BGA-96/ LQFP-80/ WLCSP-80				512K + 40K	64K					65		16																	20 SEG x 8 COM / 24 SEG x 4 COM					
	S6E1B84EHA						256K + 40K	32K																										
S6E1B8	S6E1B86G0A	40	LQFP-120	1.65 to 3.6	✓	Main Flash +Work Flash	512K + 40K	64K	–	–	24	–	102	–	24	-	Multi-Function Timer x 1units (Free-Run 3ch/Output Compare 6ch/Input Capture 4ch /PPG3ch/Waveform Generator 3ch /AD Activation Compare 6ch Selectable), PPG3ch			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)		40 SEG x 8 COM / 44 SEG x 4 COM	–	Dual Timer, Real Time Clock, Unique ID, DSTC x 64ch, Tiny I2S, HDMI-CEC 2ch, CRC, Smart Card I/F	On-Chip Debug (SWJ-DP/ Boundary SCAN)
	S6E1B84G0A						256K + 40K	32K																										
	S6E1B86F0A		LQFP-100				512K + 40K	64K					82		23																	32 SEG x 8 COM / 36 SEG x 4 COM					
	S6E1B84F0A						256K + 40K	32K																										
	S6E1B86E0A		BGA-96/ LQFP-80/ WLCSP-80				512K + 40K	64K					65		16																	20 SEG x 8 COM / 24 SEG x 4 COM					
	S6E1B84E0A						256K + 40K	32K																										
S6E1B3	S6E1B36G0A	40	LQFP-120	1.65 to 3.6	✓	Main Flash +Work Flash	512K + 40K	64K	–	–	24	–	102	–	24	-	Multi-Function Timer x 1units (Free-Run 3ch/Output Compare 6ch/Input Capture 4ch /PPG3ch/Waveform Generator 3ch /AD Activation Compare 6ch Selectable), PPG3ch			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, Real Time Clock, Unique ID, DSTC x 64ch, Tiny I2S, HDMI-CEC 2ch, CRC, Smart Card I/F	On-Chip Debug (SWJ-DP/ Boundary SCAN)
	S6E1B34G0A						256K + 40K	32K																										
	S6E1B36F0A		LQFP-100				512K + 40K	64K					82		23																	–			
	S6E1B34F0A						256K + 40K	32K																										
	S6E1B36E0A		BGA-96/ LQFP-80/ WLCSP-80				512K + 40K	64K					65		16																	–			
	S6E1B34E0A						256K + 40K	32K																										
S6E1B1	S6E1B16G0A	40	LQFP-120	1.65 to 3.6	✓	Main Flash +Work Flash	512K + 40K	64K	–	–	24	–	102	–	24	-	Multi-Function Timer x 1units (Free-Run 3ch/Output Compare 6ch/Input Capture 4ch /PPG3ch/Waveform Generator 3ch /AD Activation Compare 6ch Selectable), PPG3ch			Base Timer x 8ch (Reload/PPG/PWM/PWC Selectable)				–	1	Multi Function Serial x 8ch (UART/CSIO/I2C Selectable)				–	–		–	–	Dual Timer, Real Time Clock, Unique ID, DSTC x 64ch, Tiny I2S, HDMI-CEC 2ch, CRC, Smart Card I/F	On-Chip Debug (SWJ-DP/ Boundary SCAN)
	S6E1B14G0A						256K + 40K	32K																										
	S6E1B16F0A		LQFP-100				512K + 40K	64K					82		23																	–			
	S6E1B14F0A						256K + 40K	32K																										
	S6E1B16E0A		LQFP-80				512K + 40K	64K					65		16																	–			
	S6E1B14E0A						256K + 40K	32K																										

** In development; **Planning*

FM0 + 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]				
S6E1C3	S6E1C32D0A	40	LQFP-64	1.65 to 3.6	✓	Main Flash	128K	16K	–	–	12	–	54	–	8	–	–	–	–	Base Timer x 8ch (Reload/PPG/PWM/PWC Selectable)	–	–	–	–	1	Multi Function Serial x 6ch (UART/CSIO/I2C Selectable)				–	1ch (USB-Host/ USB-Function Selectable)		–	–	Dual Timer, Real Timer Clock, Unique ID, DSTC×64ch, Tiny I2S, Wakeup I2C, HDMI-CEC 2ch, CRC, Smart Card I/F	On-Chip Debug (SWJ-DP)
	S6E1C31D0A						64K	12K																											
	S6E1C32C0A		LQFP-48				128K	16K			9		38							Base Timer x 5ch (Reload/PPG/PWM/PWC Selectable)																
	S6E1C31C0A						64K	12K																											
	S6E1C32B0A		WLCSP-26				128K	16K			5		20		4					Base Timer x 3ch (Reload/PPG/PWM/PWC Selectable)						Multi Function Serial×4ch (UART/CSIO/I2C Selectable)											
	S6E1C31B0A		LQFP-32				64K	12K			7		24		6											Multi Function Serial×2ch (UART/CSIO/I2C Selectable)											
	S6E1C32D0A		QFN-64				128K	16K			12		54		8					Base Timer x 8ch (Reload/PPG/PWM/PWC Selectable)						Multi Function Serial×6ch (UART/CSIO/I2C Selectable)											
	S6E1C31D0A						64K	12K																											
	S6E1C32C0A		QFN-48				128K	16K			9		38							Base Timer x 5ch (Reload/PPG/PWM/PWC Selectable)																
	S6E1C31C0A						64K	12K																											
	S6E1C32B0A		QFN-32				128K	16K			7		24							Base Timer x 3ch (Reload/PPG/PWM/PWC Selectable)						Multi Function Serial×4ch (UART/CSIO/I2C Selectable)											
	S6E1C31B0A						64K	12K																											
S6E1C1	S6E1C12D0A	40	LQFP-64	1.65 to 3.6	✓	Main Flash	128K	16K	-	-	12	-	54	-	8	-	-	-	-	Base Timer x 8ch (Reload/PPG/PWM/PWC Selectable)	-	-	-	-	1	Multi Function Serial x 6ch (UART/CSIO/I2C Selectable)				-	-		-	-	Dual Timer, Real Timer Clock, Unique ID, DSTC x 64ch, Tiny I2S, HDMI-CEC 2ch, CRC, Smart Card I/F	On-Chip Debug (SWJ-DP)
	S6E1C11D0A						64K	12K																											
	S6E1C12C0A		LQFP-48				128K	16K			9		38							Base Timer x 5ch (Reload/PPG/PWM/PWC Selectable)																
	S6E1C11C0A						64K	12K																											
	S6E1C12B0A		LQFP-32				128K	16K			7		24		6					Base Timer x 3ch (Reload/PPG/PWM/PWC Selectable)						Multi Function Serial×4ch (UART/CSIO/I2C Selectable)											
	S6E1C11B0A						64K	12K																											
	S6E1C12D0A		QFN-64				128K	16K			12		54		8					Base Timer x 8ch (Reload/PPG/PWM/PWC Selectable)						Multi Function Serial×6ch (UART/CSIO/I2C Selectable)											
	S6E1C11D0A						64K	12K																											
	S6E1C12C0A		QFN-48				128K	16K			9		38							Base Timer x 5ch (Reload/PPG/PWM/PWC Selectable)																
	S6E1C11C0A						64K	12K																											
	S6E1C12B0A		QFN-32				128K	16K			7		24		6					Base Timer x 3ch (Reload/PPG/PWM/PWC Selectable)						Multi Function Serial×4ch (UART/CSIO/I2C Selectable)											
	S6E1C11B0A						64K	12K																											

** 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																																				
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*

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

** 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 MB91F523B MB91F524B MB91F525B MB91F526B	80	LQFP-64	2.7 to 5.5	* See "part number suffix" in Note	Main Flash +Work Flash	320K+64K 448K+64K 576K+64K 832K+64K 1088K+64K	56K 72K 104K 136K	–	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 Dual clock system: xWC / xJC; CSV initial value: ON / OFF Single clock system: xSC / xHC; CSV initial value: ON / OFF	On-chip Debug
	MB91F522D MB91F523D MB91F524D MB91F525D MB91F526D		LQFP-80				320K+64K 448K+64K 576K+64K 832K+64K 1088K+64K	56K 72K 104K 136K					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)										
	MB91F522F MB91F523F MB91F524F MB91F525F MB91F526F		LQFP-100				320K+64K 448K+64K 576K+64K 832K+64K 1088K+64K	56K 72K 104K 136K					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)										
	MB91F522J MB91F523J MB91F524J MB91F525J MB91F526J		LQFP-120				320K+64K 448K+64K 576K+64K 832K+64K 1088K+64K	56K 72K 104K 136K					96		16(1) 26(1)					Reload Timer x 8ch + PPG Timer x 38ch + Base Timer x 2ch (Reloa d/PPG/PWM/ PWC Selectable)													
	MB91F522K MB91F523K MB91F524K MB91F525K MB91F526K	80	LQFP-144	2.7 to 5.5	* See "part number suffix" in Note	Main Flash +Work Flash	320K+64K 448K+64K 576K+64K 832K+64K 1088K+64K	56K 72K 104K 136K	–	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	–	–	–	✓						
	MB91F527R MB91F528R		LQFP-144 TEQFP-144				1600K+64K 2112K+64K	192+16K 320K;16K					115																				
	MB91F522L MB91F523L MB91F524L MB91F525L MB91F526L		LQFP-176				320K+64K 448K+64K 576K+64K 832K+64K 1088K+64K	56K 72K 104K 136K					152		16(1) 32(1)					Reload Timer x 8ch + PPG Timer x 48ch + Base Timer x 2ch (Reload/PPG/PWM/PWC Selectable)													
	MB91F527U MB91F528U		LQFP-176 TEQFP-176				1600K+64K 2112K+64K	192+16K 320K;16K					147																				
	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)										
	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)													
	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

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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: 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																						

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