

Industrial Microcontrollers



just some of the core
benefits inside our
ARM Cortex-M3 MCUs

Description

Fujitsu's FM3 microcontroller family incorporates the ARM® Cortex™-M3 standard core. It is a scalable platform, ranging from low pin count, low power microcontrollers (MCUs) to high performance products with up to 1MB flash memory and a rich set of peripherals, including USB, CAN and Ethernet.

The MCUs are based on Fujitsu's highly reliable (100k erase/write cycles, up to 20 years data retention) and high speed embedded flash process. All MCUs are produced in Fujitsu's own wafer fabs enabling control over quality, availability and costs.

The ARM Cortex-M3 architecture extends the existing MCU lineup and fills the gap between Fujitsu's 16-bit CISC and 32-bit RISC CPU cores. Both proprietary MCU families 16FX and FR will be continued and further developed.

High Performance

- High speed operating frequency: Up to 144MHz CPU clock
- High speed flash: True zero wait state Flash operation at 72MHz, prefetch buffer for zero wait state operation at 144MHz
- Wide range of power supply voltages supported: 1.65 to 3.6V (low power products), 1.8 to 5.5V (ultra low-leakage products) and 2.7 to 5.5V (high performance products)
- DMA controller with dedicated bus layer and up to 8 independent channels

High Quality Flash Memory

- Memory densities up to 1MB flash / 128kB RAM
- Highly reliable flash memory: 100,000 write/erase cycles, up to 20 years data retention
- Flash security function
- Dual Operation Flash for EEPROM emulation

Functional safety

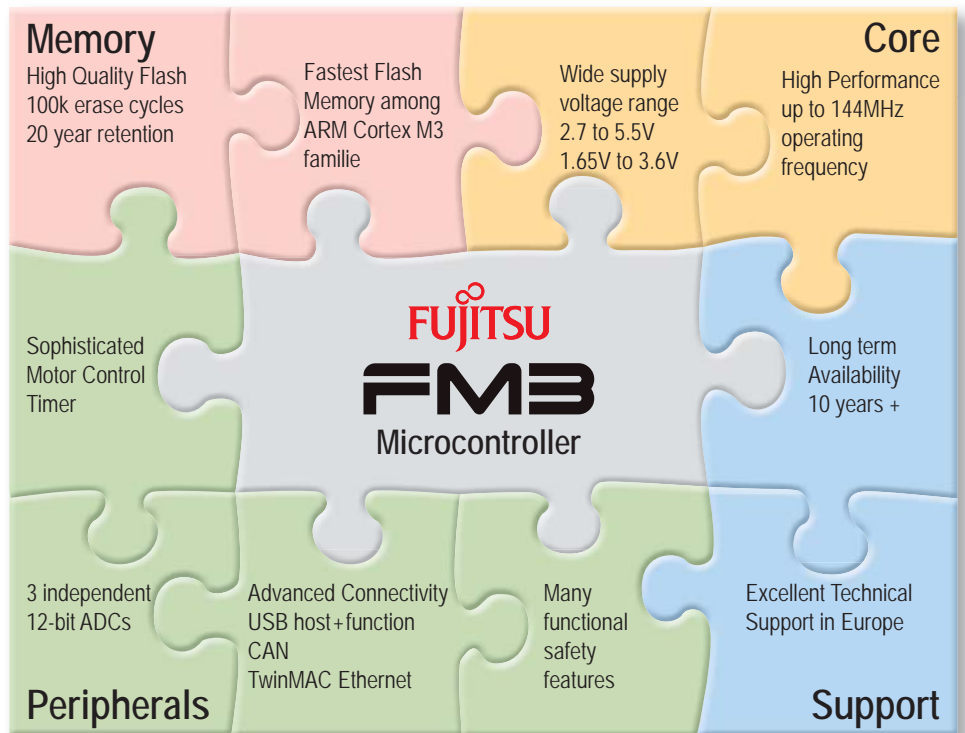
- Internal, trimmed RC oscillator
- Clock supervisor
- Two stage (interrupt and reset), programmable LVD (Low Voltage Detector)
- CRC hardware module
- MPU (Memory Protection Unit)
- Programmable Emergency Stop Input for Motor Control PWM

Connectivity

- Up to 2 channels CAN controller
- Full Speed USB host & function
- Up to 2 channels Ethernet MAC
- 3 independent (synchronously triggerable) high-speed 12-bit A/D converter

IO Ports

- Internal pull up resistors (enable/disable)
- Flexible resource relocation, most peripheral functions can be routed to two or more MCU pins
- 12mA general purpose IOs



Fujitsu FM3 features

Advanced peripherals

- Multi-function serial (UART, SIO, SPI and I²C)
- Up to 3 Multi-function timer (for motor control)
- Quadrature Decoder Unit for Motor Control feedback and HMI input devices, multiturn capable
- Base timer (PWM, PWC, PPG and reload timer)
- 8/16-bit external bus interface with NAND flash support
- Sub-clock option

Debug interface

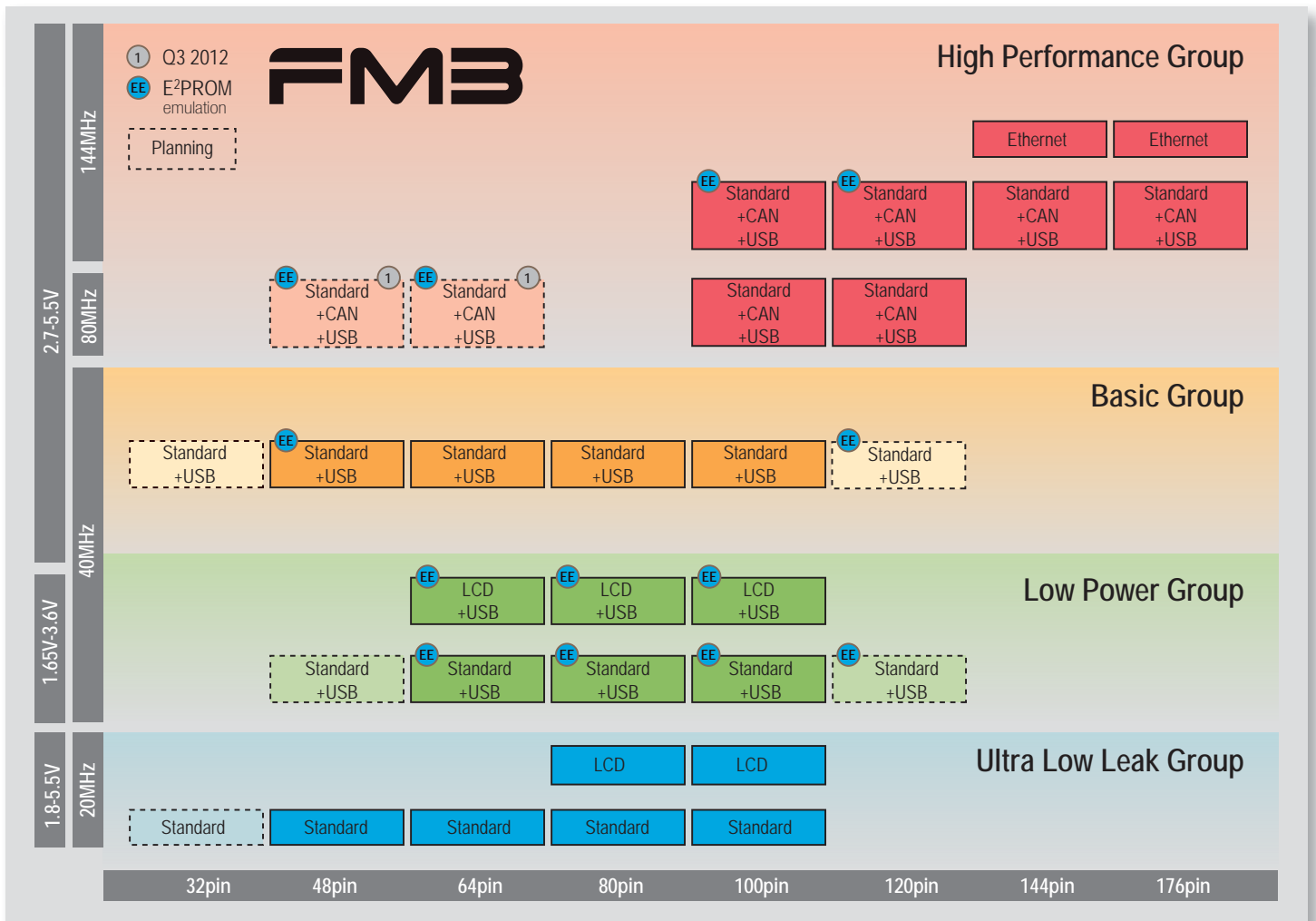
- JTAG and SWJ debug interfaces
- Embedded Trace Macrocell

Applications

- Industrial applications
- Motor control
- Factory automation
- White goods
- Power tools
- Medical and healthcare
- Hand-held devices



**'Right-Sized Solutions'
at the Heart of your applications**

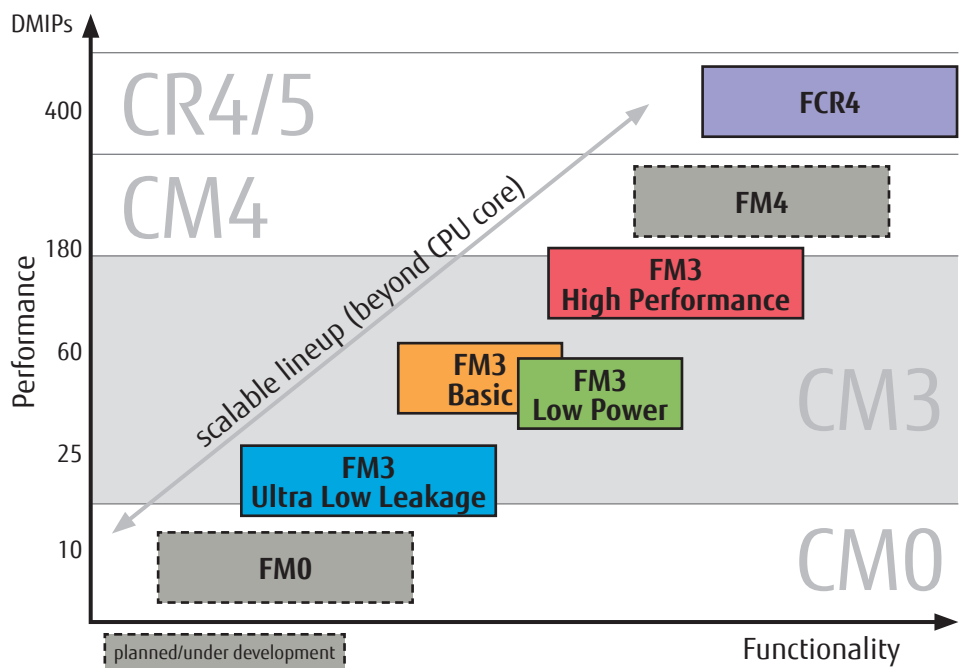


Fujitsu FM3 line-up

Roadmap/Line-up

The Fujitsu FM3 family is split into 4 groups: High Performance, Basic, Low Power and Ultra Low Leakage. The main differences are CPU operating frequency and supply voltage. Beside this, 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 group products are based on an optimised low-leakage process technology. The MCU Lineup will be extended with ARM Cortex-M0 and Cortex-M4 products towards lower and higher performance and functionality.

Fujitsu CPU Core roadmap



Series	Pins	Packages (planned)	Flash	2nd Flash	RAM	CPU [MHz]	Debug ETM	MPU	sub clock	Flash Security	External Bus	12-bit ADC (units) ch
High Performance Line												
MB9B500N	100	LQFP,QFP,BGA	512K/384K/256K	-	64K/48K/32K	80	✓	✓	✓	✓	✓	(3) 16
MB9B400N	100	LQFP,QFP,BGA	512K/384K/256K	-	64K/48K/32K	80	✓	✓	✓	✓	✓	(3) 16
MB9B300N	100	LQFP,QFP,BGA	512K/384K/256K	-	64K/48K/32K	80	✓	✓	✓	✓	✓	(3) 16
MB9B100N	100	LQFP,QFP,BGA	512K/384K/256K	-	64K/48K/32K	80	✓	✓	✓	✓	✓	(3) 16
MB9B500R	120	LQFP	512K/384K/256K	-	64K/48K/32K	80	✓	✓	✓	✓	✓	(3) 16
MB9B400R	120	LQFP	512K/384K/256K	-	64K/48K/32K	80	✓	✓	✓	✓	✓	(3) 16
MB9B300R	120	LQFP	512K/384K/256K	-	64K/48K/32K	80	✓	✓	✓	✓	✓	(3) 16
MB9B100R	120	LQFP	512K/384K/256K	-	64K/48K/32K	80	✓	✓	✓	✓	✓	(3) 16
MB9BD10S	144	LQFP	1024K/768K/512K	-	128K/96K/64K	144	✓	✓	✓	✓	✓	(3) 24
MB9B610S	144	LQFP	1024K/768K/512K	-	128K/96K/64K	144	✓	✓	✓	✓	✓	(3) 24
MB9B210S	144	LQFP	1024K/768K/512K	-	128K/96K/64K	144	✓	✓	✓	✓	✓	(3) 24
MB9B510S	144	LQFP	1024K/768K/512K	-	128K/96K/64K	144	✓	✓	✓	✓	✓	(3) 24
MB9B410S	144	LQFP	1024K/768K/512K	-	128K/96K/64K	144	✓	✓	✓	✓	✓	(3) 24
MB9B310S	144	LQFP	1024K/768K/512K	-	128K/96K/64K	144	✓	✓	✓	✓	✓	(3) 24
MB9B110S	144	LQFP	1024K/768K/512K	-	128K/96K/64K	144	✓	✓	✓	✓	✓	(3) 24
MB9BD10T	176	LQFP, BGA	1024K/768K/512K	-	128K/96K/64K	144	✓	✓	✓	✓	✓	(3) 32
MB9B610T	176	LQFP, BGA	1024K/768K/512K	-	128K/96K/64K	144	✓	✓	✓	✓	✓	(3) 32
MB9B210T	176	LQFP, BGA	1024K/768K/512K	-	128K/96K/64K	144	✓	✓	✓	✓	✓	(3) 32
MB9B510T	176	LQFP, BGA	1024K/768K/512K	-	128K/96K/64K	144	✓	✓	✓	✓	✓	(3) 32
MB9B410T	176	LQFP, BGA	1024K/768K/512K	-	128K/96K/64K	144	✓	✓	✓	✓	✓	(3) 32
MB9B310T	176	LQFP, BGA	1024K/768K/512K	-	128K/96K/64K	144	✓	✓	✓	✓	✓	(3) 32
MB9B110T	176	LQFP, BGA	1024K/768K/512K	-	128K/96K/64K	144	✓	✓	✓	✓	✓	(3) 32
MB9B510N	100	LQFP,QFP,BGA	512K/384K/256K/128K	32K	64K/48K/32K	144	✓	✓	✓	✓	✓	(3) 16
MB9B410N	100	LQFP,QFP,BGA	512K/384K/256K/128K	32K	64K/48K/32K	144	✓	✓	✓	✓	✓	(3) 16
MB9B310N	100	LQFP,QFP,BGA	512K/384K/256K/128K	32K	64K/48K/32K	144	✓	✓	✓	✓	✓	(3) 16
MB9B110N	100	LQFP,QFP,BGA	512K/384K/256K/128K	32K	64K/48K/32K	144	✓	✓	✓	✓	✓	(3) 16
MB9B510R	120	LQFP	512K/384K/256K/128K	32K	64K/48K/32K	144	✓	✓	✓	✓	✓	(3) 16
MB9B410R	120	LQFP	512K/384K/256K/128K	32K	64K/48K/32K	144	✓	✓	✓	✓	✓	(3) 16
MB9B310R	120	LQFP	512K/384K/256K/128K	32K	64K/48K/32K	144	✓	✓	✓	✓	✓	(3) 16
MB9B110R	120	LQFP	512K/384K/256K/128K	32K	64K/48K/32K	144	✓	✓	✓	✓	✓	(3) 16
Basic Line												
MB9A310K	48	LQFP (QFN)	128K/64K	32K	16K/16K	40	-	-	✓	✓	-	(2) 8
MB9A110K	48	LQFP (QFN)	128K/64K	32K	16K/16K	40	-	-	✓	✓	-	(2) 8
MB9A310L	64	LQFP (QFN)	256K/128K/64K	-	32K/16K/16K	40	-	-	✓	✓	-	(2) 9
MB9A110L	64	LQFP (QFN)	256K/128K/64K	-	32K/16K/16K	40	-	-	✓	✓	-	(2) 9
MB9A310M	80	LQFP	512KB/384K/256K/128K/64K	-	32K/32K/32K/16K/16K	40	-	-	✓	✓	✓	(3) 12
MB9A110M	80	LQFP	512KB/384K/256K/128K/64K	-	32K/32K/32K/16K/16K	40	-	-	✓	✓	✓	(3) 12
MB9A310N	100	LQFP,QFP,BGA	512KB/384K/256K/128K/64K	-	32K/32K/32K/16K/16K	40	✓	-	✓	✓	✓	(3) 16
MB9A110N	100	LQFP,QFP,BGA	512KB/384K/256K/128K/64K	-	32K/32K/32K/16K/16K	40	✓	-	✓	✓	✓	(3) 16
Low Power Line												
MB9AB40L	64	LQFP	256K/128K/64K	32K	32K/16K/16K	40	-	-	✓	✓	-	(2) 12
MB9AA40L	64	LQFP	256K/128K/64K	32K	32K/16K/16K	40	-	-	✓	✓	-	(2) 12
MB9A340L	64	LQFP	256K/128K/64K	32K	32K/16K/16K	40	-	-	✓	✓	-	(2) 12
MB9A140L	64	LQFP	256K/128K/64K	32K	32K/16K/16K	40	-	-	✓	✓	-	(2) 12
MB9AB40M	80	LQFP	256K/128K/64K	32K	32K/16K/16K	40	-	-	✓	✓	✓	(2) 17
MB9AA40M	80	LQFP	256K/128K/64K	32K	32K/16K/16K	40	-	-	✓	✓	✓	(2) 17
MB9A340M	80	LQFP	256K/128K/64K	32K	32K/16K/16K	40	-	-	✓	✓	✓	(2) 17
MB9A140M	80	LQFP	256K/128K/64K	32K	32K/16K/16K	40	-	-	✓	✓	✓	(2) 17
MB9AB40N	100	LQFP	256K/128K/64K	32K	32K/16K/16K	40	✓	-	✓	✓	✓	(2) 24
MB9AA40N	100	LQFP	256K/128K/64K	32K	32K/16K/16K	40	✓	-	✓	✓	✓	(2) 24
MB9A340N	100	LQFP	256K/128K/64K	32K	32K/16K/16K	40	✓	-	✓	✓	✓	(2) 24
MB9A140N	100	LQFP	256K/128K/64K	32K	32K/16K/16K	40	✓	-	✓	✓	✓	(2) 24
Ultra Low Power Leakage												
MB9A130K	48	LQFP (QFN)	128K/64K	-	8K/8K	20	-	-	✓	✓	-	(1) 6
MB9A130L	64	LQFP (QFN)	128K/64K	-	8K/8K	20	-	-	✓	✓	-	(1) 8
MB9AA30M	80	LQFP	128K/64K	-	16K/12K	20	-	-	✓	✓	-	(1) 12
MB9A130M	80	LQFP	128K/64K	-	16K/12K	20	-	-	✓	✓	✓	(1) 12
MB9AA30N	100	LQFP, BGA	128K/64K	-	16K/12K	20	✓	-	✓	✓	-	(1) 16
MB9A130N	100	LQFP, BGA	128K/64K	-	16K/12K	20	✓	-	✓	✓	✓	(1) 16

WDG Watchdog
 RTC Real Time Clock
 BT Base Timer (Reload, PPG, PWM, PWC)

MFT Multi Function Timer (e.g. for motor control)
 QDU Quadrature Decoder Unit
 MFS Multi Function Serial (USART, I2C, SPI)

10-bit DAC	MFT + QDU	BT	WDG	RTC	MFS (USART, SPI, I2C)	USB Host+Funct. Full Speed	CAN	Ethernet MAC	CRC	LCD	max I/O's	supply voltage	temperature range	Special Features
-	2	8	✓	-	8	1	2	-	✓	-	80	2.7...5.5V	-40°C ... +85°C	RC osc. +/-2%, NAND Flash I/F
-	2	8	✓	-	8	-	2	-	✓	-	80	2.7...5.5V	-40°C ... +85°C	RC osc. +/-2%, NAND Flash I/F
-	2	8	✓	-	8	1	-	-	✓	-	80	2.7...5.5V	-40°C ... +85°C	RC osc. +/-2%, NAND Flash I/F
-	2	8	✓	-	8	-	-	-	✓	-	80	2.7...5.5V	-40°C ... +85°C	RC osc. +/-2%, NAND Flash I/F
-	2	8	✓	-	8	1	2	-	✓	-	100	2.7...5.5V	-40°C ... +85°C	RC osc. +/-2%, NAND Flash I/F
-	2	8	✓	-	8	-	2	-	✓	-	100	2.7...5.5V	-40°C ... +85°C	RC osc. +/-2%, NAND Flash I/F
-	2	8	✓	-	8	1	-	-	✓	-	100	2.7...5.5V	-40°C ... +85°C	RC osc. +/-2%, NAND Flash I/F
-	2	8	✓	-	8	-	-	-	✓	-	100	2.7...5.5V	-40°C ... +85°C	RC osc. +/-2%, NAND Flash I/F
-	3	16	✓	-	8	2	2	2	✓	-	122	2.7...5.5V	-40°C ... +85°C	RC osc. +/-2%, NAND Flash I/F
-	3	16	✓	-	8	2	-	2	✓	-	122	2.7...5.5V	-40°C ... +85°C	RC osc. +/-2%, NAND Flash I/F
-	3	16	✓	-	8	2	-	1	✓	-	122	2.7...5.5V	-40°C ... +85°C	RC osc. +/-2%, NAND Flash I/F
-	3	16	✓	-	8	2	2	-	✓	-	122	2.7...5.5V	-40°C ... +85°C	RC osc. +/-2%, NAND Flash I/F
-	3	16	✓	-	8	-	2	-	✓	-	122	2.7...5.5V	-40°C ... +85°C	RC osc. +/-2%, NAND Flash I/F
-	3	16	✓	-	8	2	-	-	✓	-	122	2.7...5.5V	-40°C ... +85°C	RC osc. +/-2%, NAND Flash I/F
-	3	16	✓	-	8	-	-	-	✓	-	122	2.7...5.5V	-40°C ... +85°C	RC osc. +/-2%, NAND Flash I/F
-	3	16	✓	-	8	2	2	2	✓	-	154	2.7...5.5V	-40°C ... +85°C	RC osc. +/-2%, NAND Flash I/F
-	3	16	✓	-	8	2	-	2	✓	-	154	2.7...5.5V	-40°C ... +85°C	RC osc. +/-2%, NAND Flash I/F
-	3	16	✓	-	8	2	-	1	✓	-	154	2.7...5.5V	-40°C ... +85°C	RC osc. +/-2%, NAND Flash I/F
-	3	16	✓	-	8	2	2	-	✓	-	154	2.7...5.5V	-40°C ... +85°C	RC osc. +/-2%, NAND Flash I/F
-	3	16	✓	-	8	-	2	-	✓	-	154	2.7...5.5V	-40°C ... +85°C	RC osc. +/-2%, NAND Flash I/F
-	3	16	✓	-	8	2	-	-	✓	-	154	2.7...5.5V	-40°C ... +85°C	RC osc. +/-2%, NAND Flash I/F
-	3	16	✓	-	8	-	-	-	✓	-	154	2.7...5.5V	-40°C ... +85°C	RC osc. +/-2%, NAND Flash I/F
-	3	8	✓	✓	8	1	2	-	✓	-	80	2.7...5.5V	-40°C ... +85°C	RC osc. +/-2%, NAND Flash I/F
-	3	8	✓	✓	8	-	2	-	✓	-	80	2.7...5.5V	-40°C ... +85°C	RC osc. +/-2%, NAND Flash I/F
-	3	8	✓	✓	8	1	-	-	✓	-	80	2.7...5.5V	-40°C ... +85°C	RC osc. +/-2%, NAND Flash I/F
-	3	8	✓	✓	8	-	-	-	✓	-	80	2.7...5.5V	-40°C ... +85°C	RC osc. +/-2%, NAND Flash I/F
-	3	8	✓	✓	8	1	2	-	✓	-	100	2.7...5.5V	-40°C ... +85°C	RC osc. +/-2%, NAND Flash I/F
-	3	8	✓	✓	8	-	2	-	✓	-	100	2.7...5.5V	-40°C ... +85°C	RC osc. +/-2%, NAND Flash I/F
-	3	8	✓	✓	8	1	-	-	✓	-	100	2.7...5.5V	-40°C ... +85°C	RC osc. +/-2%, NAND Flash I/F
-	3	8	✓	✓	8	-	-	-	✓	-	100	2.7...5.5V	-40°C ... +85°C	RC osc. +/-2%, NAND Flash I/F
-	1	8	✓	✓	4	1	-	-	✓	-	36	2.7...5.5V	-40°C ... +105°C	RC osc. +/-2%
-	1	8	✓	✓	4	-	-	-	✓	-	36	2.7...5.5V	-40°C ... +105°C	RC osc. +/-2%
-	2	8	✓	-	8	1	-	-	✓	-	51	2.7...5.5V	-40°C ... +105°C	RC osc. +/-2%
-	2	8	✓	-	8	-	-	-	✓	-	51	2.7...5.5V	-40°C ... +105°C	RC osc. +/-2%
-	2	8	✓	-	8	1	-	-	✓	-	66	2.7...5.5V	-40°C ... +105°C	RC osc. +/-2%, NAND Flash I/F
-	2	8	✓	-	8	-	-	-	✓	-	66	2.7...5.5V	-40°C ... +105°C	RC osc. +/-2%, NAND Flash I/F
-	2	8	✓	-	8	1	-	-	✓	-	83	2.7...5.5V	-40°C ... +105°C	RC osc. +/-2%, NAND Flash I/F
-	2	8	✓	-	8	-	-	-	✓	-	83	2.7...5.5V	-40°C ... +105°C	RC osc. +/-2%, NAND Flash I/F
-	-	8	✓	✓	8	1	-	-	✓	20x8	51	1.65...3.6V	-40°C ... +105°C	RC osc. +/-2%
-	-	8	✓	✓	8	-	-	-	✓	20x8	51	1.65...3.6V	-40°C ... +105°C	RC osc. +/-2%
-	-	8	✓	✓	8	1	-	-	✓	-	51	1.65...3.6V	-40°C ... +105°C	RC osc. +/-2%
-	-	8	✓	✓	8	-	-	-	✓	-	51	1.65...3.6V	-40°C ... +105°C	RC osc. +/-2%
-	-	8	✓	✓	8	1	-	-	✓	33x8	66	1.65...3.6V	-40°C ... +105°C	RC osc. +/-2%
-	-	8	✓	✓	8	-	-	-	✓	33x8	66	1.65...3.6V	-40°C ... +105°C	RC osc. +/-2%
-	-	8	✓	✓	8	1	-	-	✓	-	66	1.65...3.6V	-40°C ... +105°C	RC osc. +/-2%
-	-	8	✓	✓	8	-	-	-	✓	-	66	1.65...3.6V	-40°C ... +105°C	RC osc. +/-2%
-	-	8	✓	✓	8	1	-	-	✓	40x8	83	1.65...3.6V	-40°C ... +105°C	RC osc. +/-2%
-	-	8	✓	✓	8	-	-	-	✓	40x8	83	1.65...3.6V	-40°C ... +105°C	RC osc. +/-2%
-	-	8	✓	✓	8	1	-	-	✓	-	83	1.65...3.6V	-40°C ... +105°C	RC osc. +/-2%
-	-	8	✓	✓	8	-	-	-	✓	-	83	1.65...3.6V	-40°C ... +105°C	RC osc. +/-2%
-	1	8	✓	✓	4	-	-	-	-	-	37	1.8...5.5V	-40°C ... +85°C	RC osc. +/-2%
-	1	8	✓	✓	8	-	-	-	-	-	52	1.8...5.5V	-40°C ... +85°C	RC osc. +/-2%
2	-	8	✓	✓	8	-	-	-	-	28x8	66	1.8...5.5V	-40°C ... +105°C	RC osc. +/-2%
2	1	8	✓	✓	8	-	-	-	-	-	66	1.8...5.5V	-40°C ... +105°C	RC osc. +/-2%
2	-	8	✓	✓	8	-	-	-	-	40x8	83	1.8...5.5V	-40°C ... +105°C	RC osc. +/-2%
2	1	8	✓	✓	8	-	-	-	-	-	83	1.8...5.5V	-40°C ... +105°C	RC osc. +/-2%

ADC Analogue Digital Converter
 DAC Digital Analogue Converter
 MPU Memory Protection Unit

ETM Embedded Trace Macrocell – Debug Interface
 CRC Cyclic Redundancy Check

Development Tools

IDE, Compiler, Debugger

The Fujitsu FM3 family is supported by market leading tool chain suppliers like IAR Systems, Keil, Mentor Embedded and others. These companies offer enhanced IDEs (integrated development environments) with compiler, assembler, linker and debugger, usable within a common GUI (graphical user interface). A free of charge OpenSource GNU/Eclipse based tool chain is available too.

Popular JTAG emulators like Segger J-Link or Keil ULINK and many low cost FTDI based adapters, can be utilized with FM3 Microcontrollers. FM3 devices with implemented Embedded Trace Macrocell – ETM, feature a trace port interface unit TPIU beside the standard Serial Wire JTAG Debug Port. The TPIU allows the connection of JTAG adapters with trace functionality.

- IAR Embedded Workbench
- Keil MDK
- Sourcery CodeBench
- Atollic TrueSTUDIO
- Rowley CrossWorks
- Altium TASKING
- OpenSource GNU Toolchain

Middleware

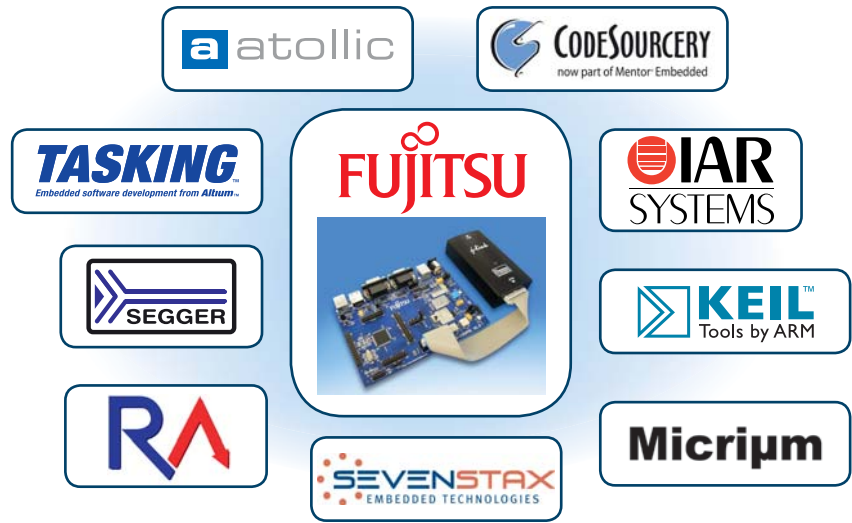
Diverse middleware components are offered from Fujitsu, as well as 3rd parties. In many cases the user can choose between commercial and free of charge solutions. The offering includes Realtime Operating Systems, Low Level Peripheral Libraries and Protocol Stacks.

Operating Systems

- freeRTOS
- Micrium µC/OS-II
- Segger embOS
- Avix/RT

Fujitsu Middleware Components

- Peripheral Library
- USB Library
- Functional Safety Self Test Libraries (IEC60730 – class B, IEC61508 SIL2)
- EEPROM emulation Library
- Motor Control Platform
- Capacitive Touch Library



Partner Middleware Components

- USB Library
- Ethernet TCP/IP stacks and Application Layers
- CANopen protocol stacks



USB Solutions for FM3

The Fujitsu USB Library allows the user to easily start with USB communication without the need to go into details of the USB protocol itself. The library consists of: the microcontroller library containing USB low level drivers for both Host and Function and a .NET wrapper library on top LibUSB to cover vendor specific USB classes on PC side.

Fujitsu USB Assistant

This configuration tool allows the easy creation of software examples and project templates based.

Example Software and Application Notes

USB-Function

- HID Class – Mouse
- HID Class – Joystick
- HID Class – Data Transfer
- Virtual COM port
- Vendor specific Class – data transfer based on LibUSB driver
- Vendor specific Class – USB Oscilloscope

USB-Host

- Human Interface Device Class – Mouse
- Human Interface Device Class – Keyboard
- Mass Storage Class – Memory Stick
- Mass Storage Class – Bootloader for firmware update via USB stick

FM3 motor control software libraries

Always striving to offer system solutions, in addition to the sophisticated FM3 microcontrollers, Fujitsu offers field proven software libraries to drive different types of motors in diverse target applications.

A PC GUI (FM3 Inverter Platform) supports development and debugging of customers drive. It offers real-time control of motor and PFC module function, real-time setting of motor functions and parameters, real-time observation of motor running state, used variables and current waveform shape.

Evaluation Boards

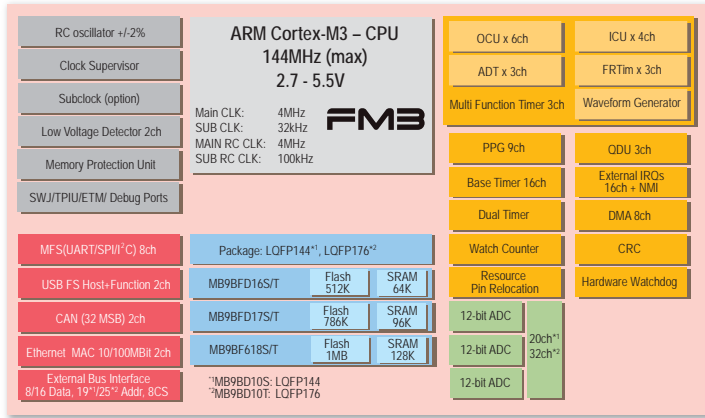
Developers can select the right sized solution from a wide range of MCU evaluation boards, offered by Fujitsu and partners. Beside the basic MCU motherboards, application specific adapter boards are offered. The specific boards come with example software and libraries to

guarantee a true out of the box experience. Some boards are available as bundles with a JTAG adapter.

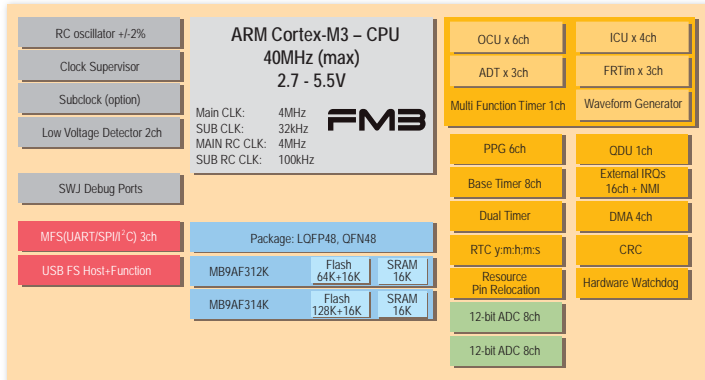
Selection of available Evaluation Boards

TOOL	Features	TOOL	Features
SK-FM3-100PMC-JLINK 	Starter-Kit with MB9BF506N MCU (100pin MCU) Segger J-Link JTAG adapter <ul style="list-style-type: none"> same as SK-FM3-100PMC plus Segger J-Link JTAG adapter	ADA-FM3-100PMC-MEMORY 	External 4 MByte FLASH and 512 KByte SRAM memory <ul style="list-style-type: none"> Extension board for SK-FM3-100PMC (not included) supports TFT Display control via GPIO (connector on PCB)
SK-FM3-176PMC-ETHERNET 	Starter-Kit with MB9BFD18T MCU (176pin MCU) <ul style="list-style-type: none"> JTAG/USB adapter on board all MCU pins accessible Dual EtherMAC I/F USB Host+Func, RS232 CAN 2 x 7seg LEDs, buttons, rotary encoder, poti 3V and 5V operation 	SK-POWER-3P-LV2-MC 	3-phase MOSFET power stage 24V, 8A max. <ul style="list-style-type: none"> Allows the connection of BLDC or PMSM motors (not included) Current and voltage measurements Temperature sensor and overvoltage/ current detection with indicator LEDs Fits to ADA-FM3-100PMC-MC (not included)
KSK-MB9BF506 	Starter-Kit with MB9BF506R MCU (120pin MCU) J-Link lite (on board) <ul style="list-style-type: none"> many peripherals LCD SD-card slot CAN, USB, RS232 Motor Control power stage	ADA-FM3-100PMC-WLAN-RP 	WiFi module for FM3 <ul style="list-style-type: none"> Extension board for SK-FM3-100PMC (not included) Based on Redpine's RS9110-N-11-22, UART/SPI Wireless Device Server Module. Power supply by starter kit: 3V or 5V Software Package
MCB9BF500UME 	Starter-Kit with MB9BF506R MCU (120pin MCU) ULINK-ME JTAG adapter <ul style="list-style-type: none"> limited set of peripherals USB Host+Func Buttons all MCU pins accessible 	ADA-FM3-100PMC-RFID-TAG 	UHF RFID Module with 4KByte FRAM <ul style="list-style-type: none"> Extension board for SK-FM3-100PMC (not included) Based on Dual Interface UHF RFID Chip MB97R804B with SPI interface and 4KByte FRAM The Memory can be accessed from the MCU via a SPI interface and via RFID Reader/Writer Devices
SK-TSC-1127-SB 	Capacitive Touch Sensor board with FMA1127DC-30S <ul style="list-style-type: none"> Can be connected to SK-FM3-100PMC and SK-FM3-64PMC1 (both not included) Software Package 	ADA-FM3-100PMC-RFID-RW 	UHF RFID Reader/Writer Module <ul style="list-style-type: none"> Extension board for SK-FM3-100PMC (not included) Based on AMS reader/writer chip Wireless access to UHF RFID Tags like ADA-FM3-100PMC-RFID-TAG

Block diagram of the MB9BD10S/T series



Block diagram of the MB9A310K series



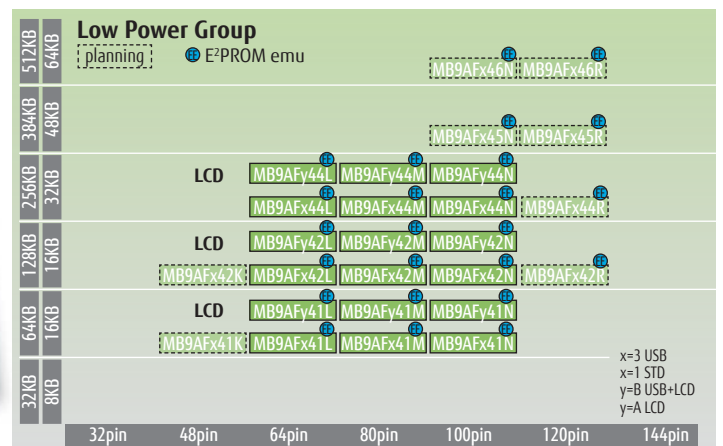
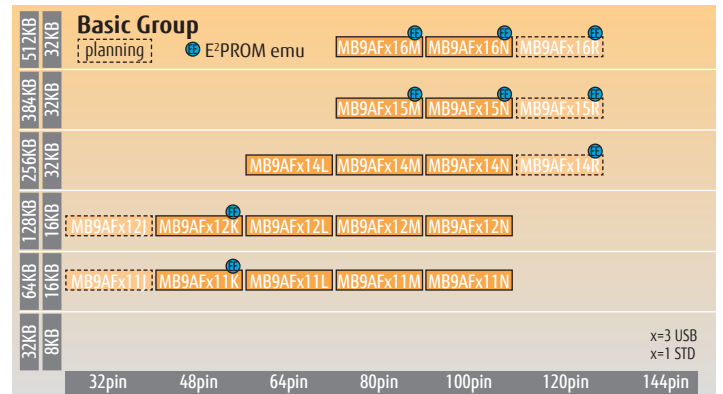
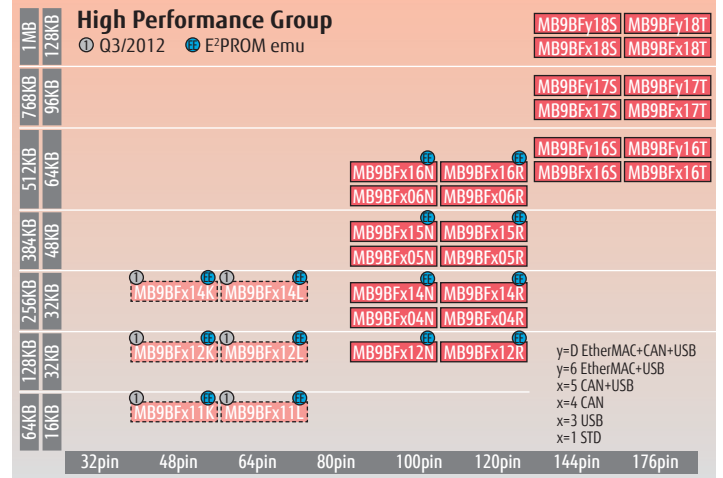
Seminars and Support

- FM3 Seminars, monthly, free of charge
- Motion control workshops
- Experienced AE support



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MCU Series



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