



The following document contains information on Cypress products. Although the document is marked with the name "Spansion" and "Fujitsu", the company that originally developed the specification, Cypress will continue to offer these products to new and existing customers.

Continuity of Specifications

There is no change to this document as a result of offering the device as a Cypress product. Any changes that have been made are the result of normal document improvements and are noted in the document history page, where supported. Future revisions will occur when appropriate, and changes will be noted in a document history page.

Continuity of Ordering Part Numbers

Cypress continues to support existing part numbers. To order these products, please use only the Ordering Part Numbers listed in this document.

For More Information

Please contact your local sales office for additional information about Cypress products and solutions.

About Cypress

Cypress (NASDAQ: CY) delivers high-performance, high-quality solutions at the heart of today's most advanced embedded systems, from automotive, industrial and networking platforms to highly interactive consumer and mobile devices. With a broad, differentiated product portfolio that includes NOR flash memories, F-RAM™ and SRAM, Traveo™ microcontrollers, the industry's only PSoC® programmable system-on-chip solutions, analog and PMIC Power Management ICs, CapSense® capacitive touch-sensing controllers, and Wireless BLE Bluetooth® Low-Energy and USB connectivity solutions, Cypress is committed to providing its customers worldwide with consistent innovation, best-in-class support and exceptional system value.

32-bit Microcontrollers FM3 Family MB9A110A Series



MB9A110A series are highly integrated 32-bit microcontrollers that target for high-performance and cost-sensitive embedded control applications. MB9A110A series are based on the ARM Cortex-M3 Processor with on-chip Flash memory and SRAM, and have peripheral functions such as Motor Control timers, ADCs and Communication interfaces.

FEATURES

- **32bit ARM Cortex-M3 Core**
Processor version : r2p1
- **Clock**
Maximum clock frequency : 40MHz
- **Base Timer** : 8 channels (Max.)
- **Multi-function Timer** : 2 units (Max.)
16-bit free-run timer ×3channels/unit
Input capture ×4channels/unit
Output compare ×6channels/unit
A/D activating compare ×3channels/unit
Waveform generator 3channels/unit
16-bit PPG timer ×3channels/unit
- **QPRC** : 2 channels (Max.)
- **Dual Timer** : 1 unit
- **Watchdog Timer** : 1 channel (SW) + 1 channel (HW)
- **Multi-function Serial Interface** : 8 channels (Max.)
Selectable from UART/CSI0/LIN/I²C
- **External Bus Interface**
- **DMA Controller** : 8 channels
- **External Interrupt Controller Unit**
 - Up to 16 external vectors
 - Include one non-maskable interrupt (NMI)
- **12-bit A/D Converter** : 16 channels (Max.)
- **Low Power Mode**
Sleep mode/Timer mode/Stop mode supported
- **General Purpose I/O port**
MB9AF111LA/112LA/114LA : 51 (Max.)
MB9AF111MA/112MA/114MA/115MA/116MA : 66 (Max.)
MB9AF111NA/112NA/114NA/115NA/116NA : 83 (Max.)
- **Debug**
 - Serial Wire JTAG Debug Port (SWJ-DP)
 - Embedded Trace Macrocells (ETM)
- **Low Voltage Detector**
- **Clock Super Visor**
- **Power Supply** : 2.7V to 5.5V

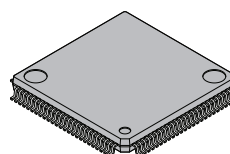
PRODUCT LINEUP

Part number	MB9AF111LA /111MA /111NA	MB9AF112LA /112MA /112NA	MB9AF114LA /114MA /114NA	MB9AF115MA /115NA	MB9AF116MA /116NA
Flash (Byte)	64K	128K	256K	384K	512K
RAM (Byte)	16K	16K	32K	32K	32K

ORDERING INFORMATION

Part number	Package
MB9AF111LAPMC1 MB9AF112LAPMC1 MB9AF114LAPMC1	Plastic • LQFP (0.5mm pitch), 64-pin (FPT-64P-M24/M38)
MB9AF111LAPMC MB9AF112LAPMC MB9AF114LAPMC	Plastic • LQFP (0.65mm pitch), 64-pin (FPT-64P-M23/M39)
MB9AF111LAQN MB9AF112LAQN MB9AF114LAQN	Plastic • QFN (0.5mm pitch), 64-pin (LCC-64P-M24)
MB9AF111MAPMC MB9AF112MAPMC MB9AF114MAPMC MB9AF115MAPMC MB9AF116MAPMC	Plastic • LQFP (0.5mm pitch), 80-pin (FPT-80P-M21/M37)
MB9AF111NAPMC MB9AF112NAPMC MB9AF114NAPMC MB9AF115NAPMC MB9AF116NAPMC	Plastic • LQFP (0.5mm pitch), 100-pin (FPT-100P-M20/M23)
MB9AF111NAPF MB9AF112NAPF MB9AF114NAPF MB9AF115NAPF MB9AF116NAPF	Plastic • QFP (0.65mm pitch), 100-pin (FPT-100P-M06)
MB9AF111NABGL MB9AF112NABGL MB9AF114NABGL	Plastic • PFBGA (0.8mm pitch), 112-pin (BGA-112P-M04)

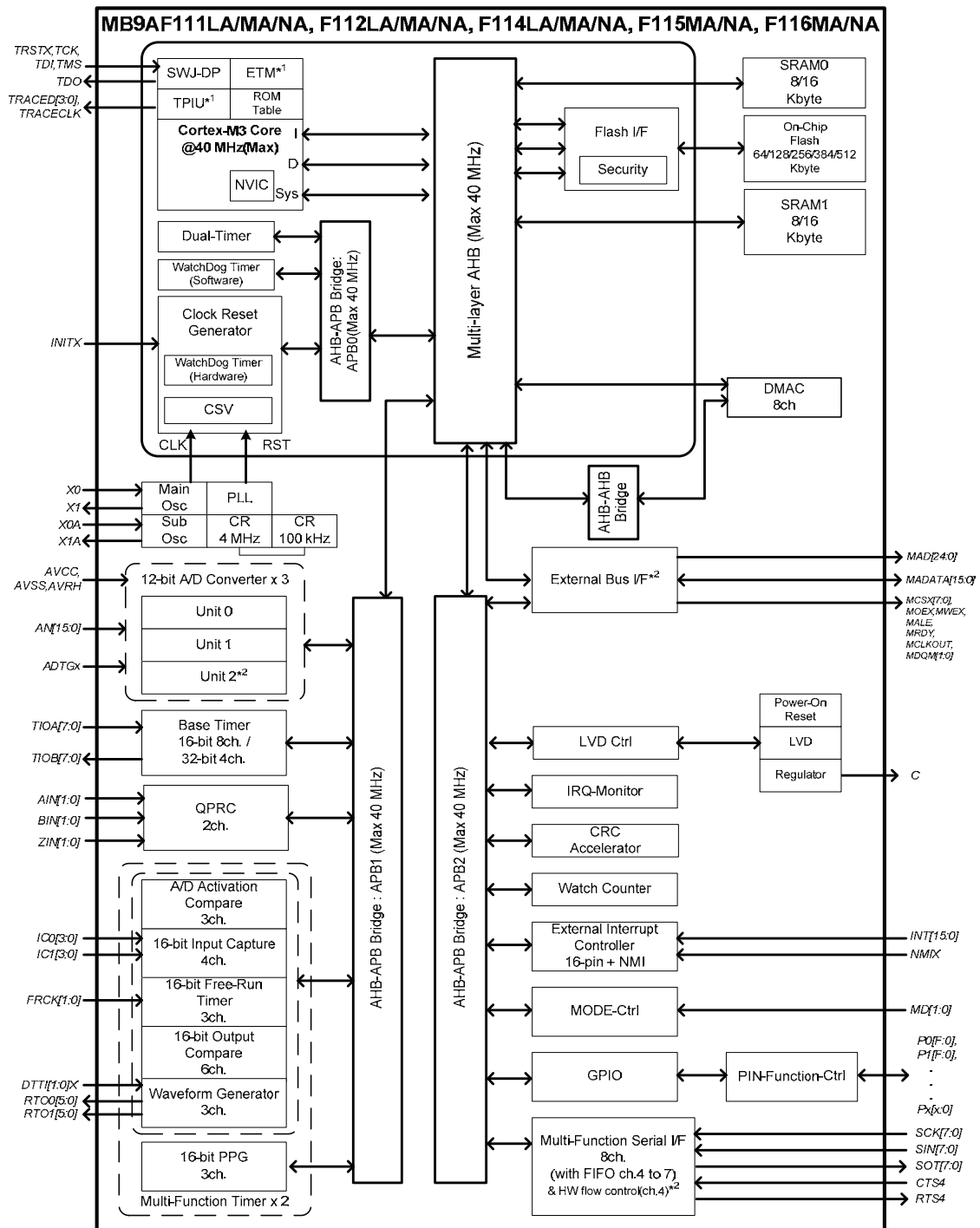
PACKAGE EXAMPLE OF REFERENCE



Plastic • LQFP, 100-pins
(FPT-100P-M20)

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■ BLOCK DIAGRAM



*1:For MB9AF111LA/MA, MB9AF112LA/MA, MB9AF114LA/MA, MB9AF115MA and MB9AF116MA, ETM and TPIU are not available.

*2:For MB9AF111LA, MB9AF112LA and MB9AF114LA, External Bus Interface and 12-bit A/D Converter (Unit 2) are not available.
And Multi-function Serial Interface does not support hardware flow control in these products.

■ STARTER KIT

A starter kit for FM3 family is on sale respectively from IAR Systems and KEIL.

• IAR Systems

With IAR Systems starter kit, a high performance board can be used for evaluation.

• KEIL

With KEIL starter kit, a simple board can be used for evaluation.