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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 MB9B400A Series



MB9B400A series are highly integrated 32-bit microcontrollers that target for high-performance and cost-sensitive embedded control applications. MB9B400A series are based on the ARM Cortex-M3 Processor and on-chip Flash memory and SRAM, and peripheral functions, including Motor Control timers, ADCs and Communication interfaces.

## FEATURES

- **ARM Cortex-M3 CPU**  
Processor version : r2p0
- **Clock**  
Maximum clock frequency : 80MHz
- **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
- **Watch dog timer** : 1 channel (SW) + 1 channels (HW)
- **Multi-function Serial Interface** : 8 channels  
Selectable from UART/CSI0/LIN/I<sup>2</sup>C
- **External bus interface**
- **DMA Controller** : 8 channels
- **CAN Interface** : 2 channels
- **External interrupt Controller Unit**
  - Up to 16 external vectors
  - Include one non-maskable interrupt (NMI)
- **12-bit A/D converter** : 16 channels (3 units)
- **Low power mode**
  - Sleep mode
  - Timer mode
  - Stop mode
- **General Purpose I/O port**
  - MB9BF404NA/F405NA/F406NA : 80 (Max.)
  - MB9BF404RA/F405RA/F406RA : 100 (Max.)
- **Debug**
  - Serial Wire JTAG Debug Port (SWJ-DP)
  - Embedded Trace Macrocells (ETM)
- **Low Voltage Detector**
- **Clock Super Visor**
- **Power supply** : 2.7~5.5V

## PRODUCT LINEUP

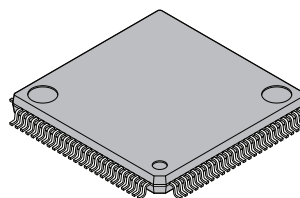
Part number	MB9BF404NA	MB9BF405NA	MB9BF406NA	MB9BF404RA	MB9BF405RA	MB9BF406RA
Parameter	Flash memory product					
Type						
Flash (Byte)	256K	384K	512K	256K	384K	512K
RAM (Byte)	32K	48K	64K	32K	48K	64K

## ORDERING INFORMATION

Part number	Package
MB9BF404NAPMC	Plastic • LQFP (0.5mm pitch), 100-pin (FPT-100P-M20*/M23)
MB9BF405NAPMC	
MB9BF406NAPMC	
MB9BF404RAPMC	Plastic • LQFP (0.5mm pitch), 120-pin (FPT-120P-M21/M37)
MB9BF405RAPMC	
MB9BF406RAPMC	
MB9BF404NABGL	Plastic • PFBGA (0.8mm pitch), 112-pin (BGA-112P-M04)
MB9BF405NABGL	
MB9BF406NABGL	

\*: ES product only

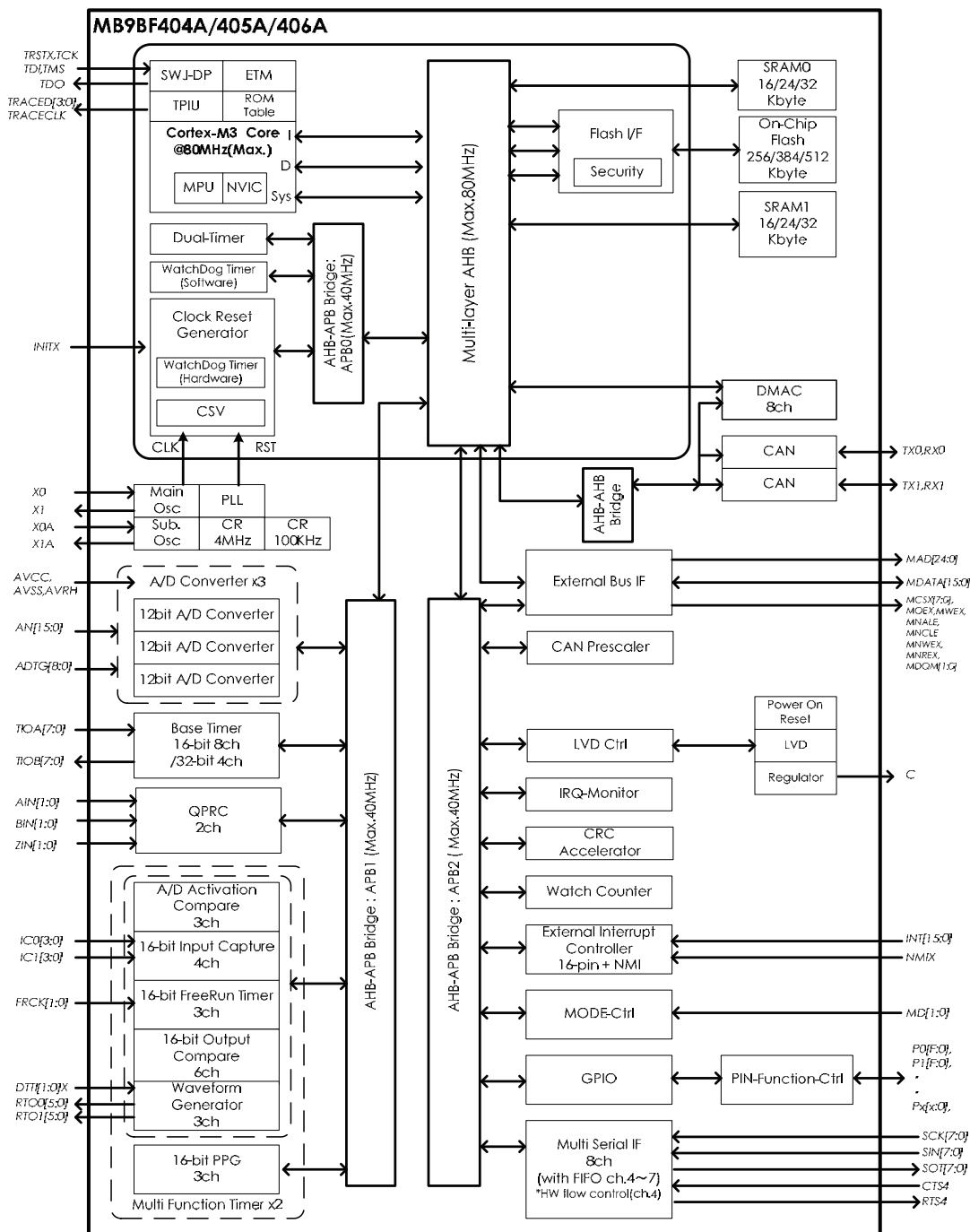
## PACKAGE EXAMPLE OF REFERENCE



Plastic • LQFP, 100-pins  
(FPT-100P-M23)

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## ■ BLOCK DIAGRAM



## ■ 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.