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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 MB9B510R Series



MB9B510R series are highly integrated 32-bit microcontrollers dedicated for embedded controllers with high-performance and competitive cost. MB9B510R series are based on the ARM Cortex-M3 Processor with Flash memory and SRAM, and has peripheral functions such as Motor Control timers, ADCs and Communication interfaces.

## ■ FEATURES

- **32bit ARM Cortex-M3 Core**  
Processor version : r2p1
- **Clock**  
Maximum clock frequency : 144MHz
- **Base Timer** : 8 channels (Max.)
- **Watch counter** : 1 unit
- **CRC Accelerator**
- **Multi-function Timer** : 3 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** : 3 channels (Max.)
- **Dual Timer** : 1 unit
- **Watch dog Timer** : 1 channel (SW) + 1 channel (HW)
- **Multi-function Serial Interface** : 8 channels (Max.)  
Selectable from UART/CSI0/LIN/I<sup>2</sup>C
- **External Bus Interface**
- **Real-time clock (RTC)** : 1 unit
- **USB 2.0 (Function/Host)** : 1 channel
- **CAN** : 2 channels (Max.)
- **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 (3 units)
- **Low Power Mode**  
Sleep mode/Timer mode/Stop mode supported
- **General Purpose I/O port**  
MB9BF512N/F514N/F515N/F516N : 83 (Max.)  
MB9BF512R/F514R/F515R/F516R : 103 (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

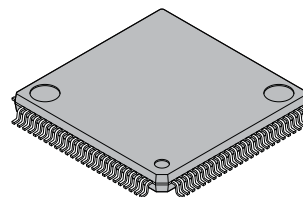
Part number Parameter	MB9BF 512N/R	MB9BF 514N/R	MB9BF 515N/R	MB9BF 516N/R
MainFlash (Byte)	128K	256K	384K	512K
WorkFlash (Byte)	32K	32K	32K	32K
RAM (Byte)	16K	32K	48K	64K

## ■ ORDERING INFORMATION

Part number	Package
MB9BF512NPQC	Plastic · QFP (0.65mm pitch), 100-pin (FPT-100P-M36)
MB9BF514NPQC	
MB9BF515NPQC	
MB9BF516NPQC	
MB9BF512NPMC	Plastic · LQFP (0.5mm pitch), 100-pin (FPT-100P-M20*/M23)
MB9BF514NPMC	
MB9BF515NPMC	
MB9BF516NPMC	
MB9BF512RPMC	Plastic · LQFP (0.5mm pitch), 120-pin (FPT-120P-M21*/M37)
MB9BF514RPMC	
MB9BF515RPMC	
MB9BF516RPMC	
MB9BF512NBGL	Plastic · PFBGA (0.8mm pitch), 112-pin (BGA-112P-M04)
MB9BF514NBGL	
MB9BF515NBGL	
MB9BF516NBGL	

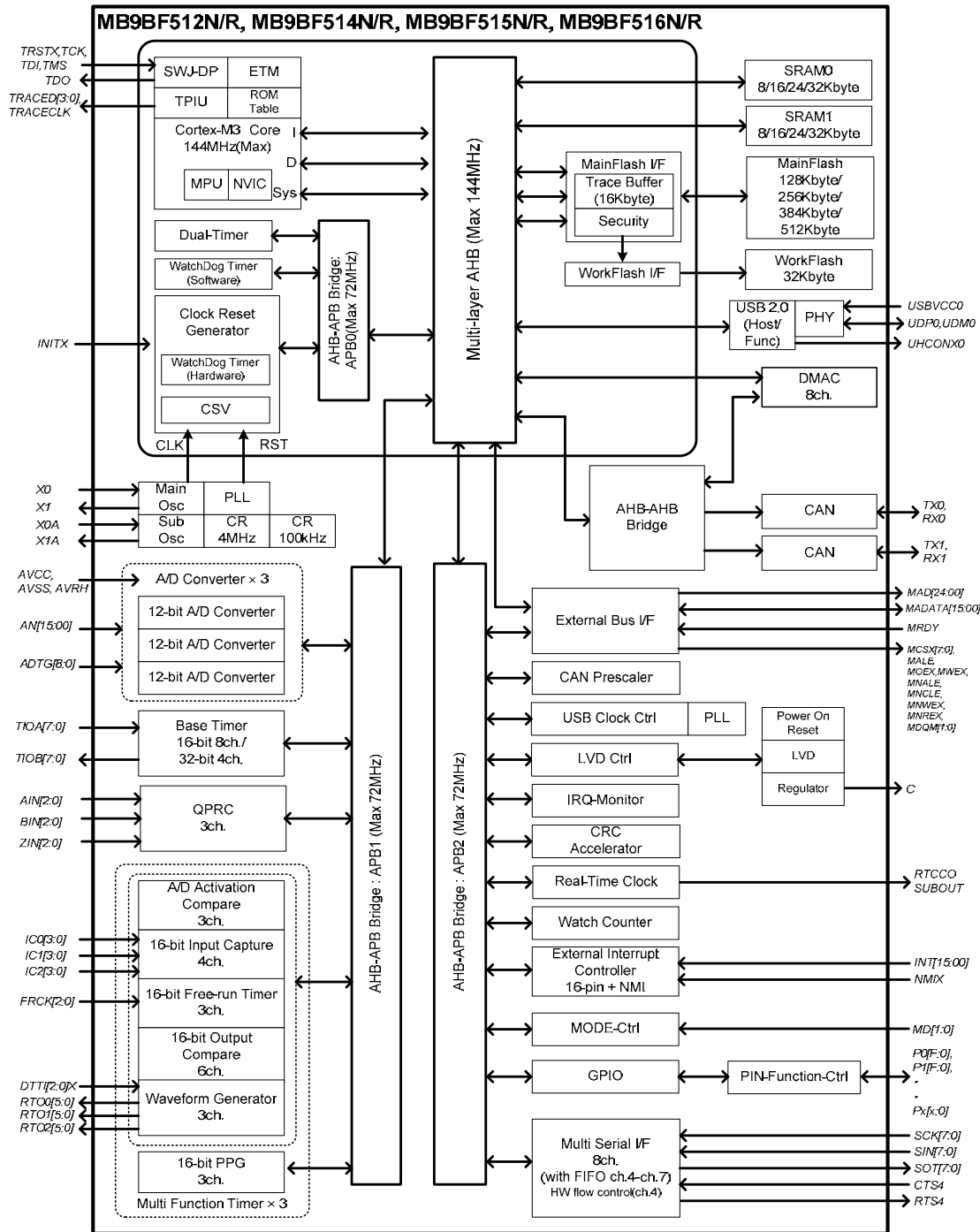
\*: ES product only

## ■ 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.

# Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

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[MB9BF516RPMC-G-JNE2](#)