

Features of the High Performance Group: MB9B610/510/410/310/210/110 Series

1. Higher performance with high-speed flash memory

The new additions to this group have dramatically increased processing capacity, more than double previous products in the group. The access speed of reliable, fast NOR-type flash memory allows read operations with no wait time, and this high-speed memory access results in class-leading processing capacity that makes the most of the CPU's innate performance. The new products inherit the reliability of their predecessors, handling 100,000 write operations and 20-year retention performance.

2. Dramatically strengthened communications functions, Ethernet-MAC support newly added

The new products in the group bring greatly expanded communications functions, including a new 2-channel Ethernet-MAC controller, as well as 2-channel USB2.0 host functionality (MB9BF610), 2-channel CAN (MB9BF510/410). This makes them ideal for a wide range of networked applications, including industrial systems equipment, inverter controllers, servomotor controllers, BEMS/HEMS and other eco-management equipment, and office equipment.

Also, with built-in support for IEEE1588, these products can be used for time-synced communications between machinery in an automated factory setting.

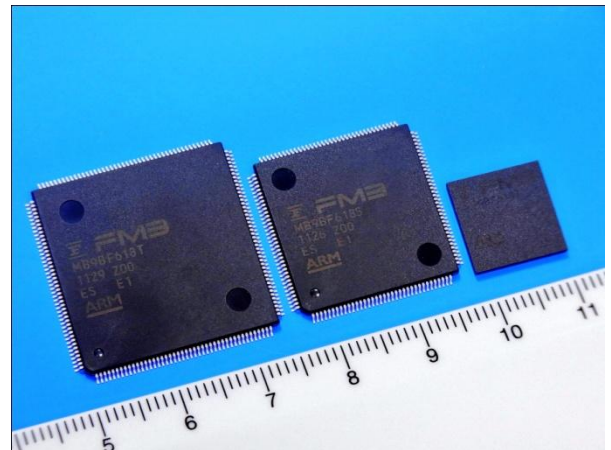


Figure 1. MB9B610 Series

3. Runs on wide range of operating voltages for maximum power-supply compatibility

The FM3 family runs on operating voltages ranging from 2.7V to 5.5V. The 5V range is preferable for power supplies in factory equipment as is more resistant to noise, and likewise for use in control equipment and motor controllers, which are often used in noisy environments. Support for this voltage range makes these products ideal for such noisy environments.

4. Ancillary macro set implements high-precision motor control

These new products inherit the ancillary functions set from the FR microcontrollers, which have an established reputation for motor control, and they also have been optimized for precision motor control with a new set of ancillary macros. In particular, a high-precision, high-speed changing 12-bit A/D converter is effective for use

in high-precision, high-speed servomotors and the like. With 3 units and up to 16 channels, motor-phase precision is improved for very fine-grained control.

While a motor's rotation phase can be detected using existing software, the built-in quad counter (motor rotation-phase detection counter) can handle this at the hardware level, reducing the load on the CPU. This product can reduce power demands in inverter systems.

Products Line-up

High Performance Group: MB9B610/510/410/310/210/110 Series

Operating Frequency (Max.)	Package	Peripheral			FLASH/RAM		
		Ethernet-MAC	USB2.0 Host/Function	CAN	512KB/64KB	768KB/96KB	1MB/128KB
144MHz	BGA-192pin 0.8mm pitch	2	2	–	MB9BF616TBGL	MB9BF617TBGL	MB9BF618TBGL
		–	2	2	MB9BF516TBGL	MB9BF517TBGL	MB9BF518TBGL
		–	–	2	MB9BF416TBGL	MB9BF417TBGL	MB9BF418TBGL
		–	2	–	MB9BF316TBGL	MB9BF317TBGL	MB9BF318TBGL
		1	2	–	MB9BF216TBGL	MB9BF217TBGL	MB9BF218TBGL
		–	–	–	MB9BF116TBGL	MB9BF117TBGL	MB9BF118TBGL
	LQFP-176pin 0.5mm pitch	2	2	–	MB9BF616TPMC	MB9BF617TPMC	MB9BF618TPMC
		–	2	2	MB9BF516TPMC	MB9BF517TPMC	MB9BF518TPMC
		–	–	2	MB9BF416TPMC	MB9BF417TPMC	MB9BF418TPMC
		–	2	–	MB9BF316TPMC	MB9BF317TPMC	MB9BF318TPMC
		1	2	–	MB9BF216TPMC	MB9BF217TPMC	MB9BF218TPMC
		–	–	–	MB9BF116TPMC	MB9BF117TPMC	MB9BF118TPMC
	LQFP-144pin 0.5mm pitch	2	2	–	MB9BF616SPMC	MB9BF617SPMC	MB9BF618SPMC
		–	2	2	MB9BF516SPMC	MB9BF517SPMC	MB9BF518SPMC
		–	–	2	MB9BF416SPMC	MB9BF417SPMC	MB9BF418SPMC
		–	2	–	MB9BF316SPMC	MB9BF317SPMC	MB9BF318SPMC
		1	2	–	MB9BF216SPMC	MB9BF217SPMC	MB9BF218SPMC
		–	–	–	MB9BF116SPMC	MB9BF117SPMC	MB9BF118SPMC

Features of the Ultra Low Leak Group: MB9A130 Series

1. Handles wide range of operating voltages

Products in this group can run on operating voltages ranging from 1.8V to 5.5V. While 5V power supplies are used in home appliance and office equipment destined for emerging nations, 1.8V driving voltages are suited to battery-powered devices. Support for this range of voltages gives these products a broader range of potential applications.

2. Easy-to-use power-saving mode

This product group incorporates six kinds of power-saving technologies to suit different kinds of power-saving requirements. These are: sleep mode, timer mode, RTC mode, stop mode, deep-standby RTC mode, and deep-standby stop mode.

When using RTC mode under date and time management, the product draws an extremely low 1.6 μ A of power. In deep-standby RTC mode, where power to the flash memory is shut off, it draws an even lower 1.2 μ A, among the lowest power requirements in the industry.

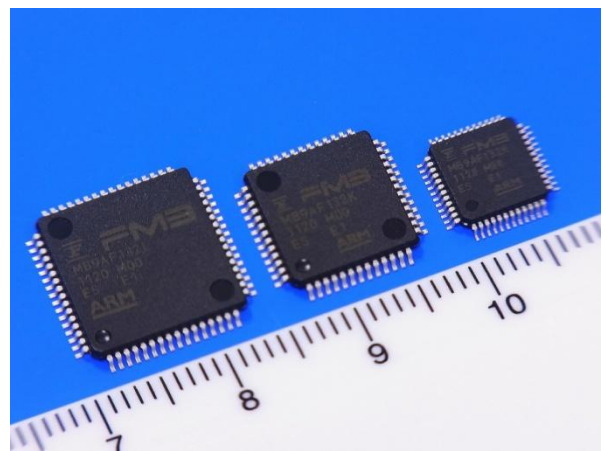


Figure 2. MB9A310 Series

3. High-reliability, high-speed flash for industry-leading performance

Highly reliable NOR-type flash memory can handle up to 100,000 write operations and has 20-year retention performance. High-speed memory access allows fast access with no wait times up to 40 MHz.

4. Ancillary macro set implements high-precision motor control

These new products inherit the ancillary functions set from the FR microcontrollers, which have an established reputation for motor control, and they also have been optimized for precision motor control with a new set of ancillary macros. In particular, a high-precision, high-speed changing 12-bit A/D converter is effective for use in sensing and sensor network equipment, as well as smart grids. With 1 unit and up to 8 channels, every type of sensor can be traced quickly and accurately.

Products Line-up

Ultra Low Leak Group: MB9A130 Series

Operating Frequency (Max.)	Package	FLASH/RAM	
		64KB/8KB	128KB/8KB
20MHz	LQFP-64pin 0.5mm pitch	MB9AF131LPMC1	MB9AF132LPMC1
	LQFP-64pin 0.65mm pitch	MB9AF131LPMC	MB9AF132LPMC
	QFN-64pin 0.5mm pitch	MB9AF131LQN	MB9AF132LQN
	LQFP-48pin 0.5mm pitch	MB9AF131KPMC	MB9AF132KPMC
	QFN-48pin 0.5mm pitch	MB9AF131KQN	MB9AF132KQN