

High-performance General-purpose 32-bit Microcontrollers with High Versatility Achieved by Switchable Peripheral Functions

MB91625 Series

Products in MB91625 Series are high-performance 32-bit microcontrollers with various switchable timer functions and serial interfaces.

As the 32-bit standard microcontroller with the greatest versatility in the industry, a 100-pin package version has been added to the lineup of conventional 144-pin and 176-pin package products.

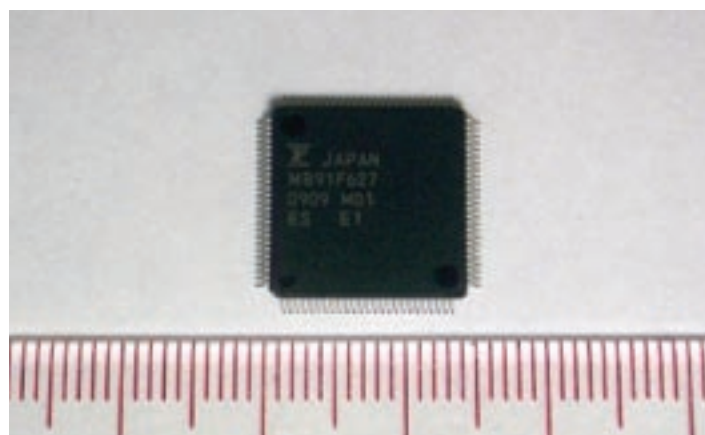
Overview

In recent years, numerous digital home appliances and AV devices that have various additional features have been released into the market. To develop products that meet market needs in a timely fashion, there is a growing demand for devices with a high degree of design freedom.

To address this market demand, we have added “MB91625 Series,” a 100-pin package version for general-purpose microcontrollers that can address various applications as a new series of microcontrollers with built-in “FR80,” our proprietary 32-bit high-performance CPU core.

This series has numerous built-in timer functions and serial interface functions that can be switched by software. It is a product that has a high degree of design freedom as it allows a wide range of choices for peripheral functions.

Photo 1 External View



Product Features

16 channels of built-in base timers with 4 switchable functions

For the built-in base timers used as timer functions, it is possible to select one of the following 4 types for each channel: pulse-width modulation (PWM) timer, programmable pulse generation (PPG) timer, pulse-width count (PWC) timer, or interval timer, which generates interrupts at a certain interval, using a program. Substantiation of these timer functions enables minute motor control, contributing to reduced power consumption and noise in home appliances with motor applications.

Connection to various peripheral functions realized by 12-channel switchable serial interfaces

This product has 12 channels of multifunction interfaces for serial communication. One of the 3 types of communication methods (SIO, UART, or I²C) can be selected for each channel of the multifunction interfaces by software switching. Since numerous serial interfaces are required for connection with peripheral devices when video and audio data are processed, this is a particularly useful function for application in digital AV devices.

Realizes high-speed processing through the adoption of a high-performance 32-bit CPU core FR80

This product adopts FR80 with processing performance improved

by more than 30% compared to our conventional 32-bit CPU core FR60. It is capable of the high-speed real-time processing of a large amount of data.

Lineup

We have released “MB91F627” as the first product from this series.

Figure 1 presents the product lineup of our 32-bit standard microcontrollers and **Table 1** the main specifications of this product.

Development Environment

Table 2 presents the configuration of the development environment for this series.

Future Development

To address the diverse demands of our customers, in the future we will substantiate the product lineup further with mask ROM versions and memory size expansions. *

Figure 1 Lineup of 32-bit Standard Microcontroller Products

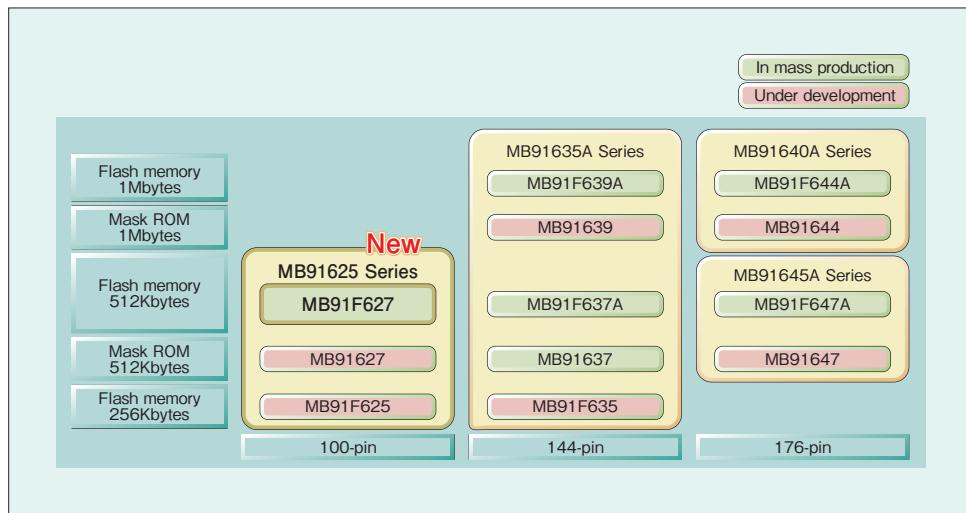


Table 1 Main Specifications

Model	MB91F627	MB91F625 (under development)	MB91627 (under development)
CPU core	FR80 Family 32-bit RISC CPU		
Pin number	100-pin		
Process technology	0.18 μ m		
Max. operating frequency	CPU: 60 MHz, peripheral: 40 MHz		
Power supply voltage	3.3V		
ROM/RAM capacity	Flash memory 512 Kbytes/48 Kbytes	Flash memory 256 Kbytes/32 Kbytes	Mask ROM 512 Kbytes/48 Kbytes
I/O port (Max.)	86		
DMAC	8 channels		
External interrupt	32 channels		
A/D converter (10-bit)	16 channels (1 unit)		
D/A converter (8-bit)	2 channels		
16-bit base timer	16 channels (selectable from PWM/PWC/PPG/reload timer)		
32-bit freerun timer	2 channels		
32-bit input capture	8 channels		
32-bit output compare	8 channels		
Up-down counter	4 channels		
16-bit reload timer	3 channels		
Clock counter	1 channel		
Multifunction serial	12 channels (selectable from UART/SIO/I ² C)		
Package	LQFP-100 (0.5mm-pitch, 14mm×14mm)		

Table 2 Development Environment Configuration

Models		MB91F627, MB91F625 (under development)
Development environment hardware	ICE	MB2198-01-E
	Adapter board	MB2198-700-E (includes configuration board MB2198-790-01-E)
	Evaluation chip	MB91V650
	Header board	MB2198-704-E LQFP-100 (0.5mm pitch, 14mm×14mm)
	Evaluation board	BBF2004-FR100SQF2-NS manufactured by Sunhayato
Development environment software	Integrated development environment	SOFTUNE V6 Professional Package (SP365030118QAC)
Flash programmer	Serial writer	Fujitsu USB Programmer (writing using MB2146-09): Under development Fujitsu MCU Programmer (writing using RS232C I/F): Under development AF9101 manufactured by Flash Support Group: Under development
	Adapter for parallel writer	LQFP-100: In planning