❑ MN102L610B

Type		MN102L610B
ROM (×8-bit)		External
RAM (×8-bit)		4 K
Package		LQFP100-P-1414 *Lead-free
Minimum Instruction Execution Time		88.5 ns (at 4.5 V to 5.5 V, 22.6 MHz)
Interrupts		• RESET • Watchdog • Timer counter 0 to 5 • Timer counter 6 to 7 • Timer counter 6 to 7 compare capture A • Timer counter 6 to 7 compare capture B • ATC transfer finish • External 0 to 4 • Serial ch.0, 1 transmission • Serial ch.0, 1 reception • NMI pin • A/D conversion finish
Timer Counter		Timer counter 0 : 8-bit × 1 (timer output, event count) Clock source ····· 1/1, 1/128 of system clock frequency; 1/4 of low speed clock frequency; external clock Interrupt source ····· underflow of timer counter 0 Timer counter 1 : 8-bit × 1 (timer output, event count, A/D conversion start up) Clock source ····· system clock; 1/4 of low speed clock frequency; external clock; timer counter 0 output Interrupt source ····· underflow of timer counter 1 Timer counter 2 to 3 : 8-bit × 1 (timer output, event count, UART baud rate generator) Clock source ····· system clock; external clock; timer counter 0 output; timer counter 1, 2 output Interrupt source ····· underflow of timer counter 2, 3 Timer counter 4, 5 : 8-bit × 1 (timer output, event count) Clock source ····· 1/4 of low speed clock frequency; external clock; timer counter 0 output; timer counter 3, 4 output Interrupt source ····· underflow of timer counter 4, 5 Timer counter 6, 7 : 16-bit × 1 (timer output, event count, input capture, output compare, PWM output, 2-phase encoder input) Clock source ····· system clock; external clock; timer counter 4, 5 output Interrupt source ····· coincidence with compare capture A or at capture; coincidence with compare capture B or at capture; underflow of timer counter 6, 7 (Connectable) timer counter 0 to 5
Serial Interface		Serial 0 : 7, 8-bit × 1 (common use with UART, transfer direction of MSB/LSB selectable) Clock source ····· 1/16 of timer counter 2 frequency; 1/16 of timer counter 3 frequency; external clock; 1/2 of timer counter 2 frequency Serial 1 : 7, 8-bit × 1 (common use with UART, transfer direction of MSB/LSB selectable) Clock source ····· 1/16 of timer counter 2 frequency; 1/16 of timer counter 3 frequency; external clock; 1/2 of timer counter 3 frequency UART × 2 (common use with serial 0, 1) I^2C × 2 (single master)
I/O Pins	**I/O**	80 • Common use : 16 (by 8 bits), 8 (by 4 bits), 56 (by bit)(MN102LF61G) 48 • Common use : 8 (by 4 bits), 40 (by bit)(MN102L610B)
A/D Inputs		8-bit × 8-ch. (with S/H)
PWM		16-bit × 2-ch.
Special Ports		LED drive port × 2
Notes		Burst ROM inferface support, ATC (between serial 0ch and internal RAM) support

Maintenance/ Discontinued
Please visit following URL about latest information.
http://panasonic.co.jp/semicon/e-index.html

Downloaded from Elcodis.com electronic components distributor

Electrical Characteristics

A/D characteristics

Parameter	Symbol	Condition		Limit min	Limit typ	Limit max	Unit
A/D conversion relative error		VDD = 5 V , VSS = 0 V	ch.0 to 3			±3	LSB
			ch.4 to 7			±4	
A/D conversion time				4.248			µs
Analog input voltage	VIA			VSS		VDD	V

(Ta = 25°C , VDD = 5.0 V , VSS = 0 V)

Pin Assignment

* Port unusable in MN102L610B

* The MN102LF61G is manufactured and sold under license agreement with BULL CP8 Inc. Note that MN102LF61G cannot be used as the IC card.

Support Tool

In-circuit Emulator	PX-ICE102L00 + PX-PRB102L53-LQFP100-P-1414	
Flash Memory Built-in Type	Type	MN102LF61G
	ROM (× 8-bit)	128 K
	RAM (× 8-bit)	4 K
	Minimum instruction execution time	88.5 ns (at 4.5 V to 5.5 V, 22.6 MHz)
	Package	LQFP100-P-1414 *Lead-free

Maintenance/ Discontinued
Please view following URL about the latest information.
http://panasonic.co.jp/semicon/e-index.html

Downloaded from Elcodis.com electronic components distributor

Request for your special attention and precautions in using the technical information and semiconductors described in this book

(1) If any of the products or technical information described in this book is to be exported or provided to non-residents, the laws and regulations of the exporting country, especially, those with regard to security export control, must be observed.

(2) The technical information described in this book is intended only to show the main characteristics and application circuit examples of the products, and no license is granted under any intellectual property right or other right owned by our company or any other company. Therefore, no responsibility is assumed by our company as to the infringement upon any such right owned by any other company which may arise as a result of the use of technical information described in this book.

(3) The products described in this book are intended to be used for standard applications or general electronic equipment (such as office equipment, communications equipment, measuring instruments and household appliances).
Consult our sales staff in advance for information on the following applications:
- Special applications (such as for airplanes, aerospace, automobiles, traffic control equipment, combustion equipment, life support systems and safety devices) in which exceptional quality and reliability are required, or if the failure or malfunction of the products may directly jeopardize life or harm the human body.
- Any applications other than the standard applications intended.

(4) The products and product specifications described in this book are subject to change without notice for modification and/or improvement. At the final stage of your design, purchasing, or use of the products, therefore, ask for the most up-to-date Product Standards in advance to make sure that the latest specifications satisfy your requirements.

(5) When designing your equipment, comply with the range of absolute maximum rating and the guaranteed operating conditions (operating power supply voltage and operating environment etc.). Especially, please be careful not to exceed the range of absolute maximum rating on the transient state, such as power-on, power-off and mode-switching. Otherwise, we will not be liable for any defect which may arise later in your equipment.
Even when the products are used within the guaranteed values, take into the consideration of incidence of break down and failure mode, possible to occur to semiconductor products. Measures on the systems such as redundant design, arresting the spread of fire or preventing glitch are recommended in order to prevent physical injury, fire, social damages, for example, by using the products.

(6) Comply with the instructions for use in order to prevent breakdown and characteristics change due to external factors (ESD, EOS, thermal stress and mechanical stress) at the time of handling, mounting or at customer's process. When using products for which damp-proof packing is required, satisfy the conditions, such as shelf life and the elapsed time since first opening the packages.

(7) This book may be not reprinted or reproduced whether wholly or partially, without the prior written permission of Matsushita Electric Industrial Co., Ltd.

Downloaded from Elcodis.com electronic components distributor