❏ MN102L25G , MN102LF25Z , MN102L25Z , MN102L25D , MN102L25A , MN102L2503 , MN102L62G

■ Type	MN102L25G , MN102LF25Z , MN102L25Z , MN102L25D , MN102L25A , MN102L2503 , MN102L62G
■ ROM ($\times$8-Bit / $\times$16-Bit)	128 K / 128 K (Flash) / 128 K / 64 K / 32 K / External / 128 K
■ RAM ($\times$8-Bit / $\times$16-Bit)	5 K / 3 K / 3 K / 3 K / 3 K / 3 K / 5 K

■ Minimum Instruction Execution Time

All models : 100 ns (at 4.5 V to 5.5 V, 20 MHz)
All models except MN102LF25Z and MN102L62G: 200 ns (at 2.7 V to 3.6 V, 10 MHz)
MN102L62G : 148 ns (at 3 0 V to 3.6 V, 13.5MHz)

■ 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, 1Reception

• NMI Pin • A/D Conversion finish

■ Timer Counter

Timer Counter 0 : 8-Bit $\times$ 1 (Timer Output, Event Count)
Clock Source .. . 1/1, 1/128 of System Clock, 1/4 of Low Speed Clock, External Clock
Interrupt Source Underflow of Timer Counter 0

Timer Counter 1 : 8-Bit $\times$ 1 (Timer Output, Event Count, A/D Conversion Start up)
Clock Source System Clock, 1/4 of Low Speed Clock, External Clock,
Timer Counter 0 Output
Interrupt Source Underflow of Timer Counter 1

Timer Counter 2 to 3 : 8-Bit $\times$ 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 $\times$ 1 (Timer Output, Event Count)
Clock Source . 1/4 of Low Speed Clock, 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 $\times$ 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 $\times$ 1 (Common use with UART, Transfer direction of MSB/LSB selectable)
Clock Source 1/16 of Timer Counter 2, 1/16 of Timer Counter 3,
External Clock, 1/2 of Timer Counter 2

Serial 1 : 7, 8-Bit $\times$ 1 (Common use with UART, Transfer direction of MSB/LSB selectable)
Clock Source 1/16 of Timer Counter 2, 1/16 of Timer Counter 3,
External Clock, 1/2 of Timer Counter 3

UART $\times$ 2 (Common use with Serial 0, 1)

$I^2C \times 2$ (Single master)

■ I/O Pins	I/O	80	• Common use 16 (by 8-Bit), 8 (by 4-Bit), 56 (by-bit) (all models except MN102L2503)
		48	• Common use 8 (by 4-Bit), 40 (by-bit) (MN102L2503)
■ A/D Inputs			8-Bit $\times$ 8ch (with S/H)
■ PWM			16-Bit $\times$ 2ch

■ Notes

Burst ROM interface support, ATC (between serial 0ch and internal RAM) support

■ Package

LQFP100-P-1414

■ Electrical Characteristics

A/D Characteristics (at VDD = 5 V)

Parameter	Symbol	Condition		Limit			Unit
				min	typ	max	
A/D Conversion Relative Error		VDD = 5 V, VSS = 0 V	ch0 to 3			±3	LSB
			ch4 to 7			+4	
A/D Conversion Time					4 8		μs
Analog Input Voltage	VIA			VSS		VDD	V

(Ta = 25 °C, VDD = 5.0 V, VSS = 0 V)

A/D Characteristics (at VDD=3V)

Parameter	Symbol	Condition		Limit			Unit
				min	typ	max	
A/D Conversion Relative Error		VDD = 3 V, VSS = 0 V	ch0 to 3			±3	LSB
			ch4 to 7			+4	
A/D Conversion Time					9 6		μs
Analog Input Voltage	VIA			VSS		VDD	V

(Ta = 25 °C, VDD = 3.0 V, VSS = 0 V)

■ Pin Assignment

MN102L25xx
MN102L62G
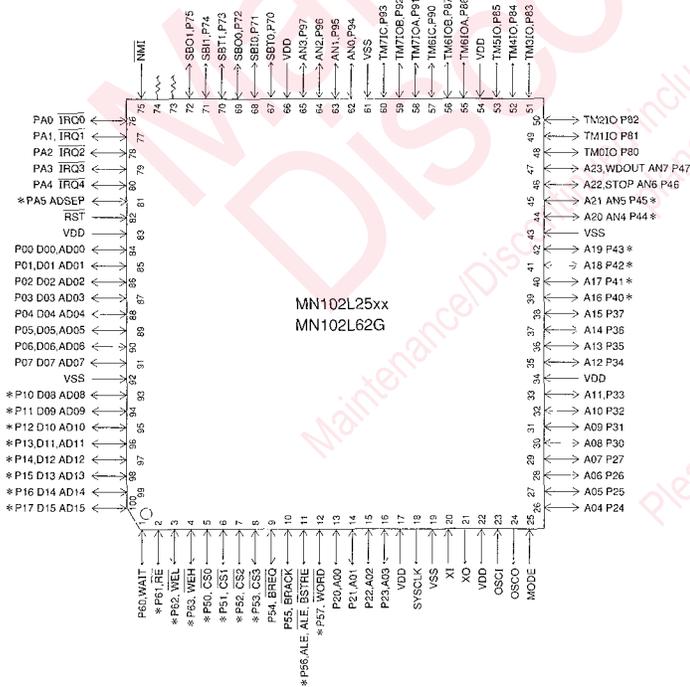
LQFP100-P-1414

MN102L25xx (100-pin version) series
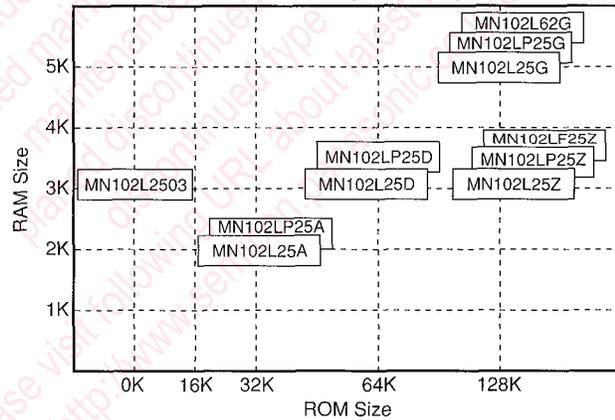
* Use of these ports are disabled for MN102L2503

* The MN102LF25Z is manufactured and sold under license agreement with BULL CP8 Inc   Note that MN102LF25Z cannot be used as the IC card

See the next page for support tool.

Support Tool

In-Circuit Emulator	PX-ICE102L00 + PX-PRB102L25

EPROM built-in Type	Type	MN102LP25G , MN102LP25Z , MN102LP25A [ES (Engineering Sample) available]
	ROM (× 8-Bit / × 16-Bit)	128 K / 128 K / 32 K
	RAM (× 8-Bit / × 16-Bit)	5 K / 3 K / 3 K
	Minimum Instruction Execution Time	100 µs (at 4 5 V to 5 5 V, 20 MHz) 200 µs (at 2 7 V to 3.6 V, 10 MHz)
	Package	LQFP100-P-1414

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