

□ MN102L59D

Type	MN102L59D
ROM (x8-bit / x16-bit)	64 K
RAM (x8-bit / x16-bit)	2 K
Package	LQFP064-P-1414 *Lead-free
Minimum Instruction Execution Time	With main clock operated: 100 ns (at 4.5 V to 5.5 V, 5 MHz externally, multiplied by 4 internally)
Interrupts	<ul style="list-style-type: none"> • RESET • Watchdog • Timer counter 0 to 11 • External 0 to 5 • Serial ch.0, 1 transfer finish • NMI pin • A/D conversion finish
Timer Counter	<p>Timer counter 0 : 8-bit × 1 (timer output, event count) Clock source 1/1, 1/64, 1/128 of system clock frequency; external clock Interrupt source underflow of timer counter 0</p> <p>Timer counter 1 : 8-bit × 1 (timer output, event count, A/D conversion start up) Clock source 1/1, 1/64 of system clock frequency; external clock; timer counter 0 output Interrupt source underflow of timer counter 1</p> <p>Timer counter 2 : 8-bit × 1 (timer output, event count) Clock source system clock; external clock; timer counter 0, 1 output Interrupt source underflow of timer counter 2</p> <p>Timer counter 3 : 8-bit × 1 (interval timer, UART baud rate generator) Clock source 1/1, 1/2, 1/64 of system clock frequency; timer counter 0 output Interrupt source underflow of timer counter 3</p> <p>Timer counter 4 : 8-bit × 1 (interval timer) Clock source 1/1, 1/64, 1/128 of system clock frequency; timer counter 0 output Interrupt source underflow of timer counter 4</p> <p>Timer counter 5 : 8-bit × 1 (interval timer) Clock source 1/1, 1/64 of system clock frequency; timer counter 0, 4 output Interrupt source underflow of timer counter 5</p> <p>Timer counter 6 : 16-bit × 1 (timer output, event count) Clock source 1/1, 1/128 of system clock frequency; external clock; timer counter 0 output Interrupt source underflow of timer counter 6</p> <p>Timer counter 7 : 16-bit × 1 (timer output, event count) Clock source 1/1, 1/128 of system clock frequency; external clock; timer counter 0 output Interrupt source underflow of timer counter 7</p> <p>Timer counter 8 : 8-bit × 1 (timer output, event count, simple PWM output) Clock source 1/2, 1/8 of system clock frequency; external clock; timer counter 0 output Interrupt source underflow of timer counter 8</p> <p>Timer counter 9 : 8-bit × 1 (timer output, event count, simple PWM output) Clock source 1/2, 1/8 of system clock frequency; external clock; timer counter 0 output Interrupt source underflow of timer counter 9</p> <p>Timer counter 10 : 8-bit × 1 (timer output, simple inverter control [simple 6-phase PWM output]) Clock source high-speed clock (after multiplication); 1/1, 1/2, 1/8 of system clock frequency Interrupt source overflow of timer counter 10</p> <p>Timer counter 11 : 16-bit updown counter × 1 (highly functional inverter control [simple 6-phase PWM output], A/D conversion start) Clock source high-speed clock (after multiplication); 1/1 of system clock frequency Interrupt source overflow of timer counter 11; underflow of timer counter 11</p>

Connectable timer counter 0, 1, 2 timer counter 0, 4, 5

Serial Interface	Serial 0, 1 : 1 to 8-bit × 1 (common use with half-duplex UART, transfer direction of MSB/LSB selectable) Clock source 1/2, 1/4, 1/16 of system clock, 1/2 of timer counter 3, external clock Half-duplex UART × 2 (common use with serial 0, 1)
I/O Pins	I/O 52 • Common use : 52 (by bit)
A/D Inputs	10-bit × 12-ch. (with S/H) : 4 channels for common use
PWM	16-bit × 2-ch. (common use with timer counter 6,7) simple 6-phase PWM output 8-bit × 1-ch.(common use with timer counter 10) 6-phase PWM output 16-bit × 1ch. (timer counter 11)
Notes	6-phase PWM output support

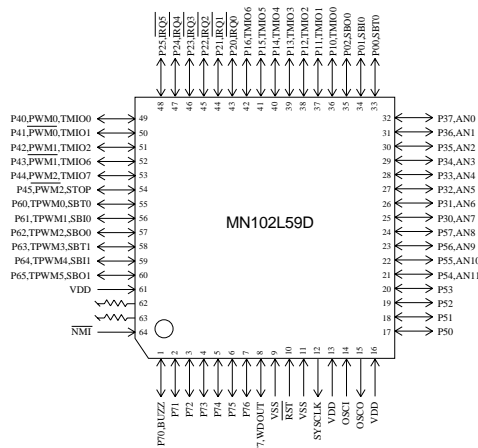
Electric Characteristics

Supply current

Parameter	Symbol	Condition	Limit			Unit
			min	typ	max	
Operating supply current	IDDopr	VI = VDD or VSS, output open f = 5 MHz , VDD = 5.0 V			75	mA
Supply current at STOP	IDDS	Pin with pull-up resistor is open all other input pins and Hi-Z state input/output			50	μA
Supply current at HALT0	IDDH	pins are simultaneously applied VDD or VSS level f = 5 MHz , VDD = 5.0 V, output open			30	mA

(Ta = -20°C to +85°C , VDD = 5.0 V , VSS = 0 V)

Pin Assignment



LQFP064-P-1414 *Lead-free

* The MN102LF59D is manufactured and sold under license agreement with BULL CP8 Inc.

Support Tool

Note that MN102LF59D cannot be used as the IC card.

In-circuit Emulator	PX-ICE102L00 + PX-PRB102L59-LQFP064-P-1414
Flash Memory Built-in Type	Type MN102LF59D [ES (Engineering Sample) available]
	ROM (× 8-bit / × 16-bit) 64 K
	RAM (× 8-bit / × 16-bit) 2 K
	Minimum instruction execution time 100 ns (at 4.5 V to 5.5 V, 5 MHz externally, multiplied by 4 internally)
	Package LQFP064-P-1414 *Lead-free

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