

□ MN1020019 , MN1020219 , MN1020419 , MN1020819

Type	MN1020019	MN1020219	MN1020419	MN1020819
ROM (x8-bit / x16-bit) External memory can be Expandable	External	16 K	32 K	64 K
RAM (x8-bit / x16-bit) External memory can be Expandable	3 K	1 K	2 K	3 K
Package	QFH064-P-1414B			
Minimum Instruction Execution Time	MN1020019 , MN1020219 , MN1020419 , MN1020819 : 100 ns (at 4.5 V to 5.5 V, 20 MHz) MN1020019 , MN1020219 , MN1020419 : 200 ns (at 2.7 V to 3.3 V, 10 MHz)			
Interrupts	<ul style="list-style-type: none"> • RESET • Watchdog • Timer counter 0 to 3 • External 0 to 3 • NMI • Serial ch 0, 1 transmission • Serial ch 0, 1 reception • A/D conversion finish 			
Timer Counter	<p>Timer counter 0,1 : 8-bit × 1 (timer output, event count) Clock source 1/(1 to 256) of system clock frequency; external clock Interrupt source underflow of timer counter 0, 1</p> <p>Timer counter 2 : 8-bit × 1 (timer output, event count, UART baud rate generator, synchronous serial clock generator, DRAM refresh timing generator) Clock source 1/(1 to 256) of system clock frequency; external clock Interrupt source underflow of timer counter 2</p> <p>Timer counter 3 : 8-bit × 1 (timer output, event count, UART baud rate generator, synchronous serial clock generator) Clock source 1/(1 to 256) of system clock frequency; external clock Interrupt source underflow of timer counter 3</p> <p>Connectable timer counter 0, 1</p>			
Serial Interface	<p>Serial 0 : 7,8-bit × 1 (common use with UART, transfer direction of MSB/LSB selectable) Clock source 1/8 of timer counter 2 frequency; 1/8 of timer counter 3 frequency; external clock</p> <p>Serial 1 : 7,8-bit × 1 (common use with UART, transfer direction of MSB/LSB selectable) Clock source 1/8 of timer counter 2 frequency; 1/8 of timer counter 3 frequency; external clock</p> <p>UART × 2 (common use with serial 0, 1)</p>			
I/O Pins	I/O	51	<ul style="list-style-type: none"> • Common use : 51 (35 : by bit, 16 : by byte) (MN1020219 , MN1020419 , MN1020819) 21 (All individual bit control) (MN1020019) 	
	Input	1	<ul style="list-style-type: none"> • Common use : 1 	
A/D Inputs	8-bit × 4-ch. (with S/H)			
Notes	DRAM refresh controller			

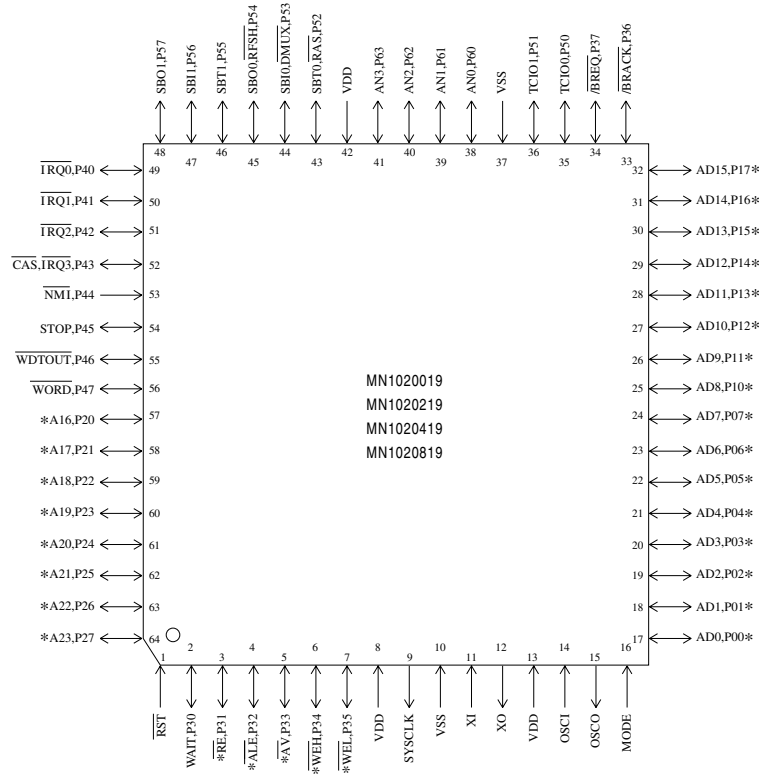
Electrical Characteristics

A/D Characteristics

Parameter	Symbol	Condition	Limit			Unit
			min	typ	max	
A/D conversion relative error		VDD = 5 V, VSS = 0 V			±3	LSB
A/D conversion time		fosc = 20 MHz	4.8			μs
Analog input voltage	VIA		VSS		VDD	V

(Ta = 25°C, VDD = 5.0 V, VSS = 0 V)

Pin Assignment



QFH064-P-1414B

* Use of these ports are disabled for MN1020019.

Support Tool

In-circuit Emulator

PX-ICE102LOO + PX-PRB1020019

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