❑ MN1020019 / 0219 / 0419 / 0819

Type — **MN1020019 / 0219 / 0419 / 0819**

ROM (×8-Bit / ×16-Bit) — External / 16 K / 32 K / 64 K (External Memory Expandable)

RAM (×8-Bit / ×16-Bit) — 3 K / 1 K / 2 K / 3 K (External Memory Expandable)

Minimum Instruction Execution Time — **MN1020019 / 0219 / 0419 / 0819 : 100 ns (at 4.5 V to 5.5 V, 20 MHz)**
MN1020019 / 0219 / 0419 : 200 ns (at 2 7 V to 3.3 V, 10 MHz)

Interrupts
- 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

Timer Counter 0,1 : 8-Bit × 1 (Timer Output, Event Count)
Clock Source . . 1/(1 to 256) of System Clock, External Clock
Interrupt Source . Underflow of Timer Counter 0, 1

Timer Counter 2 · 8-Bit × 1 (Timer Output, Event Count, UART Baud Rate Generator, Synchronous Serial Clock Generator, DRAM Reflesh Timing Generator)
Clock Source 1/(1 to 256) of System Clock, External Clock
Interrupt Source Underflow of Timer Counter 2

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, External Clock
Interrupt Source Underflow of Timer Counter 3

Connectable Timer Counter 0, 1

Serial Interface

Serial 0 : 7,8-Bit × 1 (Common use with UART, Transfer direction of MSB/LSB selectable)
Clock Source . . 1/8 of Timer Counter 2, 1/8 of Timer Counter 3, External Clock

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

UART × 2 (Common use with Serial 0, 1)

I/O Pins	**I/O**	**51**	• Common use 51 (35 by-bit, 16 by-byte) (MN1020219 / 0419 / 0819), 21 (All individual bit control) (MN1020019)
	Input	**1**	• Common use 1

A/D Inputs — 8-Bit × 4ch (with S/H)

Notes — DRAM Reflesh Controller

Package — QFH064-P-1414B

Electrical Characteristics

A/D, D/A Characteristics

Parameter	Symbol	Condition	Limit min	Limit typ	Limit max	Unit
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

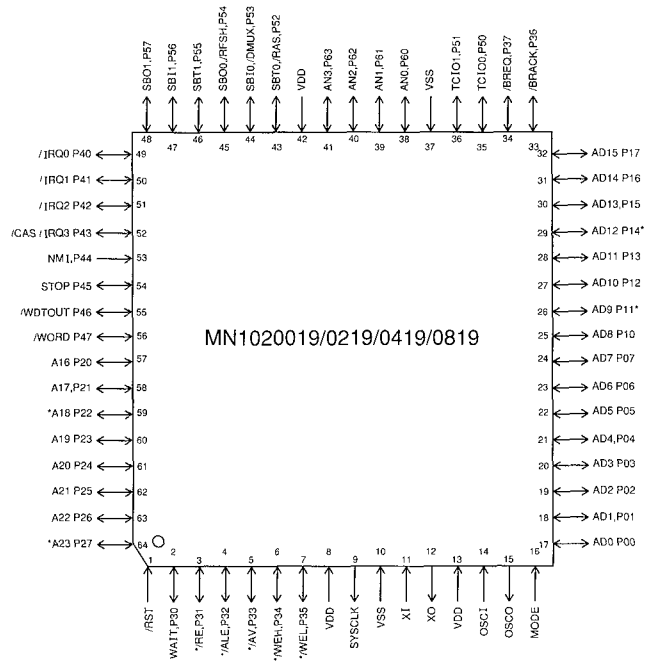
(Ta = 25 °C, VDD = 5.0 V, VSS = 0 V)

Support Tool

In-Circuit Emulator

PX-ICE102LOO + PX-PRB1020019

Pin Assignment



QFH064-P-1414B

* Use of these ports are disabled for MN1020019