

MN150404 / 0804

Type		MN150404 / 0804	
ROM (x8-bit)		4K / 8K	
RAM (x4-bit)		256 / 384	
Number of Instructions		101 / 104	
Minimum Instruction Execution Time		With Main Clock operated	1/8 dividing 1.91µs (at 2.6 to 5.5V, 4.19MHz)
			1/8 dividing 4.0µs (at 2.2 to 5.5V, 2MHz)
		With Sub-clock operated	1/8 dividing 244µs (at 2.2 to 5.5V, 32.768kHz)
Interrupts		• RESET • External • Timer • Serial	
Timer Counter		Timer Counter 1 : 8-bit x 1 (Event Count)	
		Clock Source1/2, 1/8, 1/32, 1/128 of System Clock, 1/1, 1/4, 1/16, 1/64 of XI Oscillation Clock	
		Interrupt SourceOverflow of Timer Counter	
		Timer Counter 2 : 8-bit x 1 (Timer Output, Event Count)	
		Clock Source1/2 of System Clock, 1/16384 of OSC Oscillation Clock,	
		1/1, 1/64 of XI Oscillation Clock	
Serial Interface		Serial : 8-bit x 1 (Synchronous Type)	
		Clock SourceSystem Clock, $\overline{\text{SBT}}$ Pin Input	
I/O Pins	I/O	8	• Common use : 2 • Specified pull-up Resistor available : 8 (Software Programmable)
	Input	8	• Common use : 7 • Specified pull-up Resistor available : 8 (Software Programmable)
	High Voltage Output	4	• Nch Open-drain (Breakdown Voltage 10V) : 4
	Output	12	• Common use : 8
Zero-cross Inputs		1	
A/D Inputs		8-bit x 8ch (with S/H)	
LCD		24 Segment • 3 Common • 1/3 Duty	
Special Ports		Comparator (2)	
Package		QFP064-P-1414	

Electrical Characteristics

Supply Current

Parameter	Symbol	Condition	Limit			Unit
			min	typ	max	
Operating Supply Current	IDD1	fosc=4MHz, VDD=5V		2.0	5.0	mA
	IDD2	fosc=32.768kHz, VDD=3V		80	200	μA
Supply Current at STOP	IDD5	XI=32kHz, VDD=3V		7	13	μA
	IDD6	XI=OPEN, VDD=3V		4	8	μA
Supply Current at HALT	IDD3	fosc=4MHz, VDD=3V		0.5	1.2	mA
	IDD4	fosc=32.768kHz, VDD=3V		40	100	μA

(Ta= -20 to +85°C, VDD=5.0V, VSS=0V)

A/D Converter Characteristics

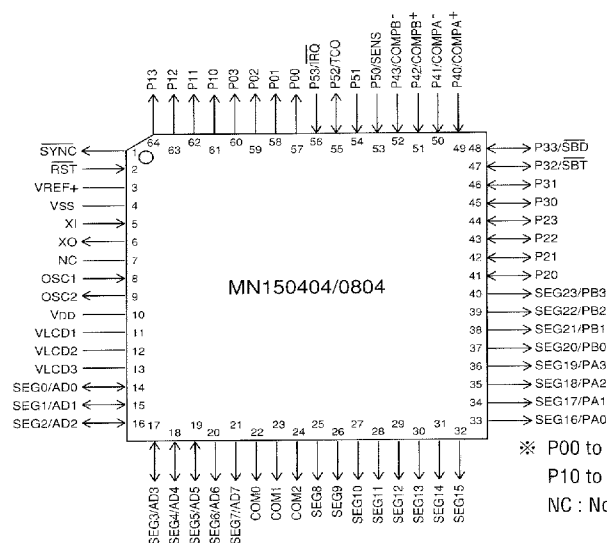
Parameter	Symbol	Condition	Limit			Unit
			min	typ	max	
A/D Conversion Absolute Error		VDD=5.0V, VSS=0V, VREF+=VDD			±3	LSB
A/D Conversion Relative Error					±2	LSB
A/D Conversion Time		fosc=4MHz	18		18	μs
Reference Input Voltage	Vref+		VSS		VDD	V
Analog Input Voltage	VAD		VSS		Vref+	V

(Ta= -20 to +85°C, VDD=5.0V, VSS=0V)

Support Tool

In-Circuit Emulator	PX-ICE1500 + PX-PRB150404 / 0804
EPROM built-in Type	Use MN15P0804 in QFP064-P-1414 package.

Pin Assignment



QFP064-P-1414

Note : Use with on-chip MN15P0804 pull-up resistor open.