

MN150413 / 0813

Type		MN150413 / 0813	
ROM (x8-bit)		4K/8K	
RAM (x4-bit)		256/432	
Number of Instructions		103	
Minimum Instruction Execution Time		At 1/4 frequency dividing	2μs (at 1.8 to 5.5V, 2MHz)
		At 1/4 frequency dividing	0.94μs (at 2.7 to 5.5V, 4.24MHz)
		At 1/8 frequency dividing	2μs (at 1.8 to 5.5V, 4MHz)
Interrupts		• RESET • External (Key Interrupt is available) • 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, XI Oscillation Clock	
		Remote Control Carrier Output	
		1/1, 1/4, 1/16, 1/64 of Time Base 8Hz Dividing Signal	
		Interrupt SourceOverflow of Timer Counter 1	
		Time Counter 2 : 8-bit x 1	
		Clock Source.....1/1, 1/16, 1/32, 1/64 of OSC Oscillation Clock,	
		1/1, 1/16, 1/32, 1/64 of XI Oscillation Clock,	
		1/1, 1/16, 1/32, 1/64 of TCI2 Pin Input	
		Interrupt Source.....Overflow of Timer Counter 2	
		Possible cascade connection with timer counter 1	
		Time Base Counter	
		Clock Source1/8 of XI Oscillation Clock	
		Watchdog Timer	
Serial Interface		Serial : 8-bit x 1 (Synchronous Type)	
		Clock SourceSBT Pin Input, System Clock	
I/O Pins	I/O	16	• Common use : 10 • Specified pull-up Resistor available : 16 (Software Programmable) • SEG output selectable : 8 (Software Programmable)
	Input	9	• Common use : 5 • Specified pull-up Resistor available : 9 (Software Programmable)
	Output	1	• Common use : 1
LCD		33 Segments • 2 Common • 1/2 Duty, 33 Segments • 3 Common • 1/3 Duty, 32 Segments • 4 Common • 1/4 Duty	
Special Ports		Buzzer Output, Remote Control Transmission	
Notes		Built-in Carrier Generator Circuit for Remote Controller	
Package		QFP064-P-1414	

Electrical Characteristics

Supply Current

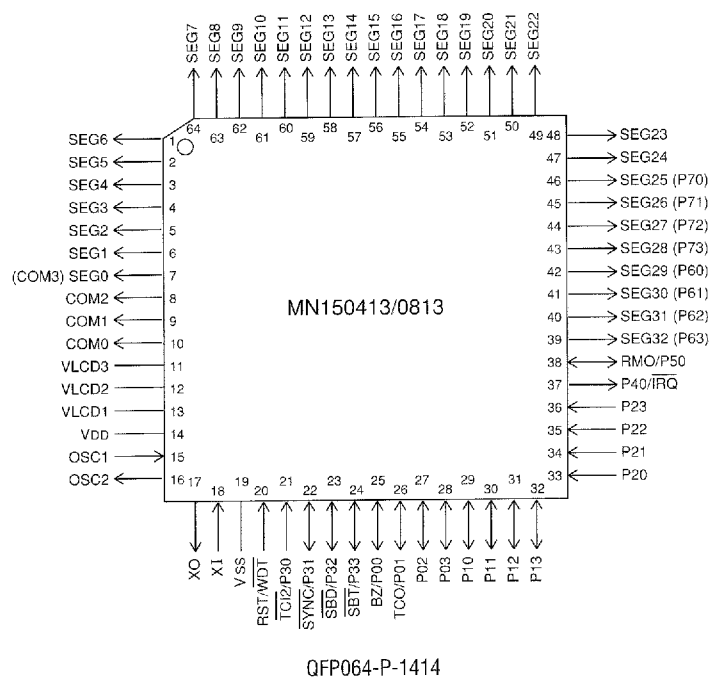
Parameter	Symbol	Condition	Limit			Unit
			min	typ	max	
Operating Supply Current	IDD1	fosc=4MHz, 1/8 dividing		1.0	3.0	mA
Supply Current at STOP	IDD8	fxi=32.768kHz		4.0	10	μA
	IDD9	Oscillation halt			2.0	μA
Supply Current at HALT	IDD4	fosc=4MHz		0.6	1.2	mA

(Ta= -40 to +85°C. VDD=3.0V. VSS=0V)

Support Tool

■ In-Circuit Emulator	PX-ICE1500 + PX-PRB150413/0813
■ EPROM built-in Type	Use MN15P0813 in QFP064-P-1414 package.

Pin Assignment



※ P30 to P33 : Input only when used as the port 3.

P60 to P63, P70 to P73 : I/O when used as the port 6 or 7.