

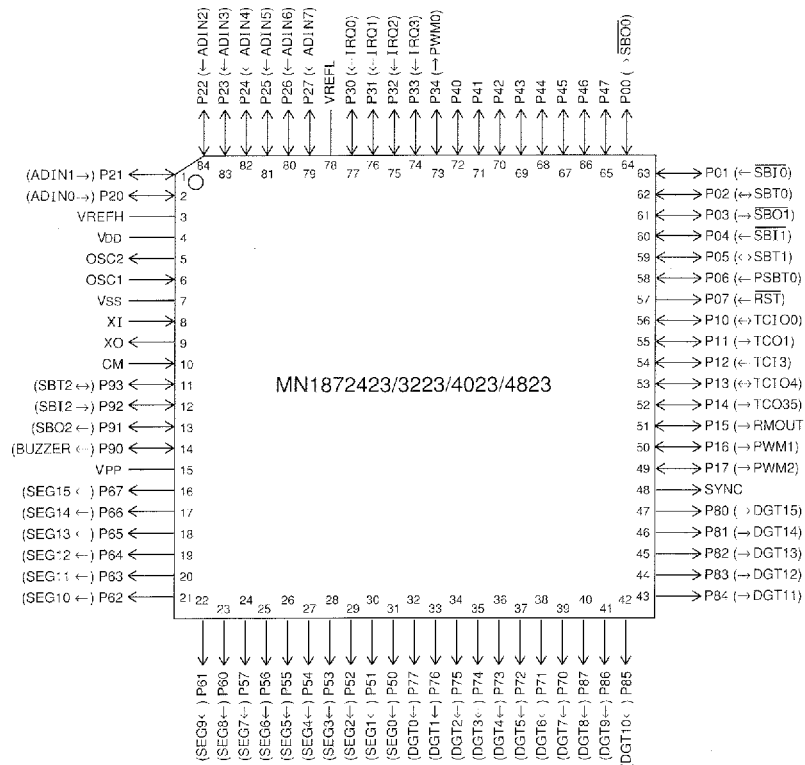
□ MN1872423 / 3223 / 4023 / 4823

Type	MN1872423 / 3223 / 4023 / 4823
ROM (x8-bit)	24K / 32K / 40K / 48k
RAM (x8-bit)	512 / 1024 / 1024 / 1024
Minimum Instruction Execution Time	With Main Clock operated 0.477μs (at 4.3 to 5.5V, 8.38MHz) With Sub-clock operated 122μs (at 2.2 to 5.5V, 32.768kHz)* * The lower limit for operation guarantee for EPROM built-in version is 2.7V.
Interrupts	<ul style="list-style-type: none"> • RESET • External 0 • External 1 • External 2 • External 3 • Timer 0 • Timer 1 • Timer 2 • Timer 3 • Timer 4 • Timer 5 • Serial 0 • Serial 1 • Serial 2 • Key Scan • Auto RAM Data Transmission • Reserve
Timer Counter	<p>Timer Counter 0 : 8-bit x 1 (Timer Output, Event Count, Synchronous Serial Clock Generator, Pulse Width Measurement)</p> <p>Clock Source1/1, 1/4, 1/16, 1/64 of System Clock, 1/1, 1/4, 1/16, 1/64 of Timer 2 (Clock Flag), 1/1, 1/4, 1/16, 1/64 of XI Oscillation Clock, 1/1, 1/4, 1/16, 1/64 of External Clock Input</p> <p>Interrupt SourceOverflow of Timer Counter 0</p> <p>Timer Counter 1 : 8-bit x 1 (Timer Output)</p> <p>Clock Source1/16, 1/64, 1/256 of System Clock, OSC Oscillation Clock, Overflow of Timer 0</p> <p>Interrupt SourceOverflow of Timer Counter 1</p> <p>Timer Counter 2 : 8-bit x 1 (Clock function, Time Base)</p> <p>Clock Source1/4096 of System Clock, 1/128 of XI Oscillation Clock</p> <p>Interrupt Source1/1, 1/2, 1/4, 1/8 of Timer Counter 2</p> <p>Timer Counter 3 : 8-bit x 1 (Timer Output, Event Count, PWM Output, Synchronous Output (1-bit x 1ch))</p> <p>Clock Source1/4, 1/16 of System Clock, External Clock Input</p> <p>Interrupt SourceOverflow of Timer Counter 3</p> <p>Timer Counter 4 : 8-bit x 1 (Timer Output, Event Count)</p> <p>Clock Source1/4, 1/16 of System Clock, OSC Oscillation Clock, External Clock Input</p> <p>Interrupt SourceOverflow of Timer Counter 4</p> <p>Timer Counter 5 : 8-bit x 1 (Timer Output, Synchronous Output (1-bit x 1ch))</p> <p>Clock Source1/1, 1/4, 1/16, 1/64 of System Clock, 1/1, 1/4, 1/16, 1/64 of XI Oscillation Clock, 1/1, 1/4, 1/16, 1/64 of Overflow of Timer Counter 4</p> <p>Interrupt SourceOverflow of Timer Counter 5</p> <p>Watchdog</p> <p style="text-align: center;">(Connectable) Timer Counter 0 + Timer Counter 2, Timer Counter 4 + Timer Counter 5</p>
Serial Interface	<p>Serial 0 : 8-bit x 1 (Synchronous Type) (Transmission/Reception of variable bit length, MSB/LSB selectable, Clock Polarity selectable, Start Condition function, DMA function)</p> <p>Clock Source1/1, 1/8, 1/16 of System Clock, Timer Output Clock, $\overline{\text{SBT0}}$ Pin Input, PSBT0 Input</p> <p>Serial 1 : 8-bit x 1 (Synchronous Type) (Transmission/Reception of variable bit length, MSB/LSB selectable, Start Condition function, DMA function)</p> <p>Clock Source1/1, 1/8, 1/16 of System Clock, Timer Output Clock, $\overline{\text{SBT1}}$ Pin Input</p> <p>Serial 2 : 8-bit x 1 (Synchronous Type) (Transmission/Reception of variable bit length, MSB/LSB selectable, Clock Polarity selectable, Start Condition function, DMA function)</p> <p>Clock Source1/1, 1/8, 1/16 of System Clock, Timer Output Clock, $\overline{\text{SBT2}}$ Pin Input</p> <p style="text-align: center;">(Connectable) Serial 0 + Serial 1</p>

I/O Pins	I/O	41	<ul style="list-style-type: none"> • Common use : 33 • Specified pull-up Resistor available : 33 (Software Programmable) • Specified pull-down Resistor available : 8 (Software Programmable)
	High Voltage Output	32	<ul style="list-style-type: none"> • Pch Open-drain (Breakdown Voltage -30V) : FL Driver : 32 • Specified pull-down Resistor available : 16 (Mask Option)
A/D Inputs		8-bit x 8ch (with S/H)	
FLP		16 Segments x 16 Columns	
PWM		14-bit x 1ch (Repetition Cycle 15.6ms, at 4.19MHz), 8-bit x 2ch (Repetition Cycle 244µs, at 4.19MHz)	
Special Ports		Buzzer Output, 1 (Synchronous Output), Remote Control Transmission	
Notes		Carrier Generator Circuit for Remote Controller built-in	
Package		QFP084-P-1818	

Support Tool	
In-Circuit Emulator	PX-ICE1870 / 80 + PX-PRB1876423
Piggyback	Use EP1876423 as piggy in QFP084-P-1818 package. EP1876423 is corresponded to MN1872423 .
EPROM built-in Type	Use MN18P76423 (under development) in QFP084-P-1818 package.

Pin Assignment



QFP084-P-1818E

See the next page for electrical characteristics.

Electrical Characteristics

Supply Current

Parameter	Symbol	Condition	Limit			Unit
			min	typ	max	
Operating Supply Current	IDD1	fosc=8.38MHz, VDD=5V			20	mA
	IDD2	f _{xl} =32kHz, VDD=3V		50	100	μA
Supply Current at STOP	IDD3	f _{xl} =32kHz, VDD=3V			10	μA

(Ta= -20 to +70°C, VSS=0V)

A/D Converter Characteristics

Parameter	Symbol	Condition	Limit			Unit
			min	typ	max	
A/D Conversion Absolute Error		VrefH=5V, VrefL=0V			±3	LSB
A/D Conversion Relative Error					±3	LSB
A/D Conversion Time		fosc=4.19 / 8.38MHz			8.82	μs
Reference Input Voltage	VrefH		VrefL		VDD	V
	VrefL		VSS		VrefH	V
Analog Input Voltage	VADIN		VrefL		VrefH	V

(Ta= -20 to +70°C, VDD=5.0V, VSS=0V)