

# MN1872423 / 3223 / 4023 / 4823

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



## Electrical Characteristics

### Supply Current

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