

# MN101C15C , MN101C15D, MN101C15F

<b>Type</b>		MN101C15C , MN101C15D , MN101C15F	
<b>ROM (×8-Bit)</b>		48 K / 64 K / 96 K (External memory can be expanded)	
<b>RAM (×8-Bit)</b>		2 048 / 2 048 / 4 096 (External memory can be expanded)	
<b>Minimum Instruction Execution Time</b>		0.10 μs (at 4.5 V to 5.5 V, 20 MHz) 0.25 μs (at 2.6 V to 5.5 V, 8 MHz) 0.33 μs (at 2.3 V to 5.5 V, 6 MHz) 1.00 μs (at 2.0 V to 5.5 V, 2 MHz)* 125 μs (at 2.0 V to 5.5 V, 32 kHz)*	
* The lower limit for operation guarantee for EPROM built-in version is 2.3 V.			
<b>Interrupts</b>		<ul style="list-style-type: none"> <li>• RESET • Watchdog • External 0 • External 1 • External 2 • External 3 • External 4 • Timer 0</li> <li>• Timer 1 • Timer 2 • Timer 3 • Timer 4 • Timer 5 • Time Base • Serial 0 • Serial 1 • Serial 2</li> <li>• Automatic Transfer finish • A/D Conversion finish</li> </ul>	
<b>Timer Counter</b>		<p><b>Timer Counter 0 : 8-Bit × 1</b> (Square-Wave/8-Bit PWM Output, Event Count, Generation of Remote Control Carrier)</p> <p>Clock Source            1/1, 1/4 of System Clock, 1/1 of OSC Oscillation Clock, External Clock Input</p> <p>Interrupt Source        Coincidence with Compare Register 0</p> <p><b>Timer Counter 1 . 8-Bit × 1</b> (Square-Wave Output, Event Count, Synchronous Output Event)</p> <p>Clock Source            1/16, 1/64 of System Clock, 1/1 of XI Oscillation Clock, External Clock Input</p> <p>Interrupt Source        Coincidence with Compare Register 1</p> <p><b>Timer Counter 0, 1 can be cascade-connected.</b></p> <p><b>Timer Counter 2 : 8-Bit × 1</b> (Square-Wave/8-Bit PWM Output, Event Count, Synchronous Output Event)</p> <p>Clock Source            1/1, 1/4 of System Clock, 1/1 of XI Oscillation Clock, External Clock Input</p> <p>Interrupt Source        Coincidence with Compare Register 2</p> <p><b>Timer Counter 3 : 8-Bit × 1</b> (Square-Wave Output, Event Count, Generation of Remote Control Carrier, Serial 0 Baud Rate Timer)</p> <p>Clock Source            1/4, 1/16 of System Clock, 1/1 of OSC Oscillation Clock, External Clock Input</p> <p>Interrupt Source        Coincidence with Compare Register 3</p> <p><b>Timer Counter 2, 3 can be cascade-connected.</b></p> <p><b>Timer Counter 4 : 16-Bit × 1</b> (Square-Wave/16-Bit PWM Output, Event Count, Synchronous Output Event, Input Capture)</p> <p>Clock Source            1/4, 1/16 of System Clock, 1/1 of OSC Oscillation Clock, External Clock Input</p> <p>Interrupt Source        Coincidence with Compare Register 4</p> <p><b>Time Base Timer</b> (One-Minute Count Setting, Independently operable 8-Bit Timer Counter 5)</p> <p>Clock Source            1/4 of System Clock, 1/1, 1/8192 of OSC Oscillation Clock, 1/1, 1/8192 of XI Oscillation Clock</p> <p>Interrupt Source        Coincidence with Compare Register 5, 1/8192 Prescaler Overflow</p> <p><b>Watchdog Timer</b></p> <p>Interrupt Source        1/65536, 1/262144, 1/1048576 of System Clock (ROM Option)</p>	
<b>Serial Interface</b>		<p><b>Serial 0 : 8-Bit × 1</b> (Synchronous Type/Simple UART[Half-Duplex])</p> <p>Clock Source            1/2, 1/4, 1/16 of System Clock 1/2 of Timer Counter 3</p> <p><b>Serial 1 : 8-Bit × 1</b> (Synchronous Type)</p> <p>Clock Source            1/2, 1/8, 1/64 of System Clock 1/2 of Timer Counter 3</p> <p><b>Serial 2 : 8-Bit × 1</b> (Synchronous Type/Simple I<sup>2</sup>C)</p> <p>Clock Source            1/1, 1/2, 1/4 of System Clock 1/2 of Timer Counter 0</p>	
<b>I/O Pins</b>	I/O	57	• Common use • Specified pull-up Resistor available • Input/Output selectable (bit unit)
	Input	13	• Common use • Specified pull-up Resistor available

**A/D Inputs** 10-Bit × 8ch (with S/H)

**Special Ports** Buzzer Output, Remote Control Carrier Signal Output, High-Current Drive Port

**Package** LQFP080-P-1414A

**Electrical Characteristics**

**Supply Current**

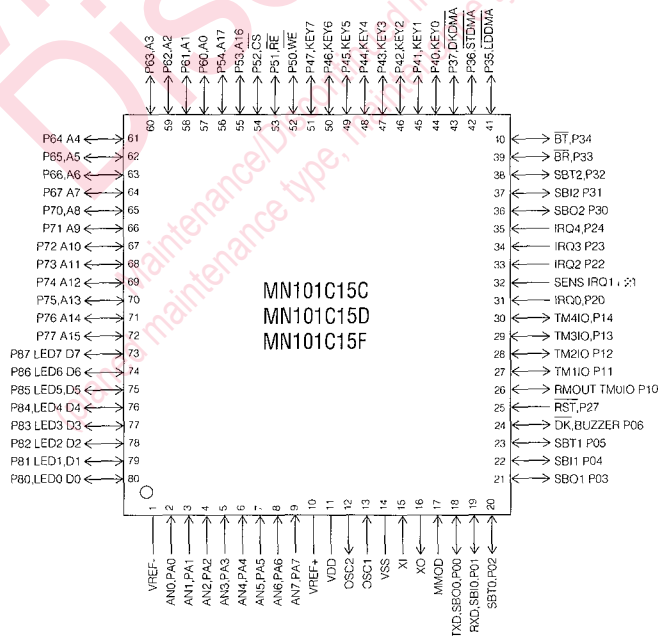
Parameter	Symbol	Condition	Limit			Unit
			min	typ	max	
Operating Supply Current	IDD1	fosc = 20 MHz, VDD = 5 V			60	mA
	IDD2	fx = 32 kHz, VDD = 3 V			100	μA
Supply Current at HALT	IDD3	fx = 32 kHz, VDD = 3 V, Ta = 25 °C			8	μA
		fx = 32 kHz, VDD = 3 V, Ta = 85 °C			20	μA
Supply Current at STOP	IDD4	VDD = 5 V, Ta = 25 °C			1	μA
		VDD = 5 V, Ta = 85 °C			30	μA

**Support Tool**

**In-Circuit Emulator** PX-ICE101C / D + PX-PRB101C15-C / D

<b>EPROM built-in Type</b>	Type	MN101CP15FAL
	ROM (× 8-Bit)	96 K
	RAM (× 8-Bit)	4 096
	Minimum Instruction Execution Time	0.10 μs (at 4.5 V to 5.5 V, 20 MHz) 0.25 μs (at 2.6 V to 5.5 V, 8 MHz) 0.33 μs (at 2.3 V to 5.5 V, 6 MHz)
	Package	LQFP080-P-1414A

**Pin Assignment**



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