

# □ MN101C309 , MN101C30A

<b>Type</b>	MN101C309	MN101C30A
<b>ROM (×8-bit)</b> External memory can be expanded	24 K	32 K
<b>RAM (×8-bit)</b> External memory can be expanded	1 K	1.5 K
<b>Package (Conventional Package)</b>	LQFP064-P-1414 *Lead-free, SDIP064-P-0750C *Lead-free (under planning) (SDIP064-P-0750)	
<b>Minimum Instruction Execution Time</b>	0.10 μs (at 4.5 V to 5.5 V, 20 MHz) 0.238 μs (at 2.7 V to 5.5 V, 8.39 MHz) 1.00 μs (at 2.0 V to 5.5 V, 2 MHz)* 125 μs (at 2.0 V to 5.5 V, 32.768 kHz)*	
<b>Interrupts</b>	* The lower limit for operation guarantee for EPROM built-in type is 2.7 V. • RESET • Watchdog • External 0 • External 1 • External 2 • External 3 • External 4 • Timer 0 • Timer 1 • Timer 2 • Timer 3 • Timer 4 • Timer 5 • Time Base • Serial 0 • Serial 1 • Automatic transfer finish • A/D conversion finish	
<b>Timer Counter</b>	<p>Timer counter 0 : 8-bit × 1 (square-wave/8-bit PWM output, event count, generation of remote control carrier) Clock source ..... 1/1, 1/4 of system clock frequency; 1/1 of OSC oscillation clock frequency; external clock input Interrupt source ..... coincidence with compare register 0</p> <p>Timer counter 1 : 8-bit × 1 (square-wave output, event count, synchronous output event) Clock source ..... 1/16, 1/64 of system clock frequency; 1/1 of XI oscillation clock frequency; external clock input Interrupt source ..... coincidence with compare register 1</p> <p>Timer counter 0, 1 can be cascade-connected.</p> <p>Timer counter 2 : 8-bit × 1 (square-wave/8-bit PWM output, event count, synchronous output event) Clock source ..... 1/1, 1/4 of system clock frequency; 1/1 of XI oscillation clock frequency; external clock input Interrupt source ..... coincidence with compare register 2</p> <p>Timer counter 3 : 8-bit × 1 (square-wave output, event count, generation of remote control carrier, serial 0 baud rate timer) Clock source ..... 1/4, 1/16 of system clock frequency; 1/1 of OSC oscillation clock frequency; external clock input Interrupt source ..... coincidence with compare register 3</p> <p>Timer counter 2, 3 can be cascade-connected.</p> <p>Timer counter 4 : 16-bit × 1 (square-wave/16-bit PWM output, event count, synchronous output event, input capture) Clock source ..... 1/4, 1/16 of system clock frequency; 1/1 of OSC oscillation clock frequency; external clock input Interrupt source ..... coincidence with compare register 4</p> <p>Time base timer (one-minute count setting, independently operable 8-bit timer counter 5) Clock source ..... 1/4 of system clock frequency; 1/1, 1/8192 of OSC oscillation clock frequency; 1/1, 1/8192 of XI oscillation clock frequency Interrupt source ..... coincidence with compare register 5; 1/8192 prescaler overflow</p> <p>Watchdog timer Interrupt source ..... 1/65536, 1/262144, 1/1048576 of system clock frequency (ROM option)</p>	

<b>Serial Interface</b>		Serial 0 : synchronous type/simple UART (half-duplex) × 1 Clock source ..... 1/2, 1/4, 1/16 of system clock frequency; 1/2 of timer counter 3 frequency	
		Serial 1 : synchronous type × 1 Clock source ..... 1/2, 1/8, 1/64 of system clock frequency; output of timer counter 3	
<b>I/O Pins</b>	<b>I/O</b>	41	• Common use • Specified pull-up resistor available • Input/output selectable (bit unit)
	<b>Input</b>	13	• Common use • Specified pull-up resistor available
<b>A/D Inputs</b>		10-bit × 8-ch. (with S/H)	
<b>Special Ports</b>		Buzzer output, remote control carrier signal output, high-current drive port	

**Electrical Characteristics**

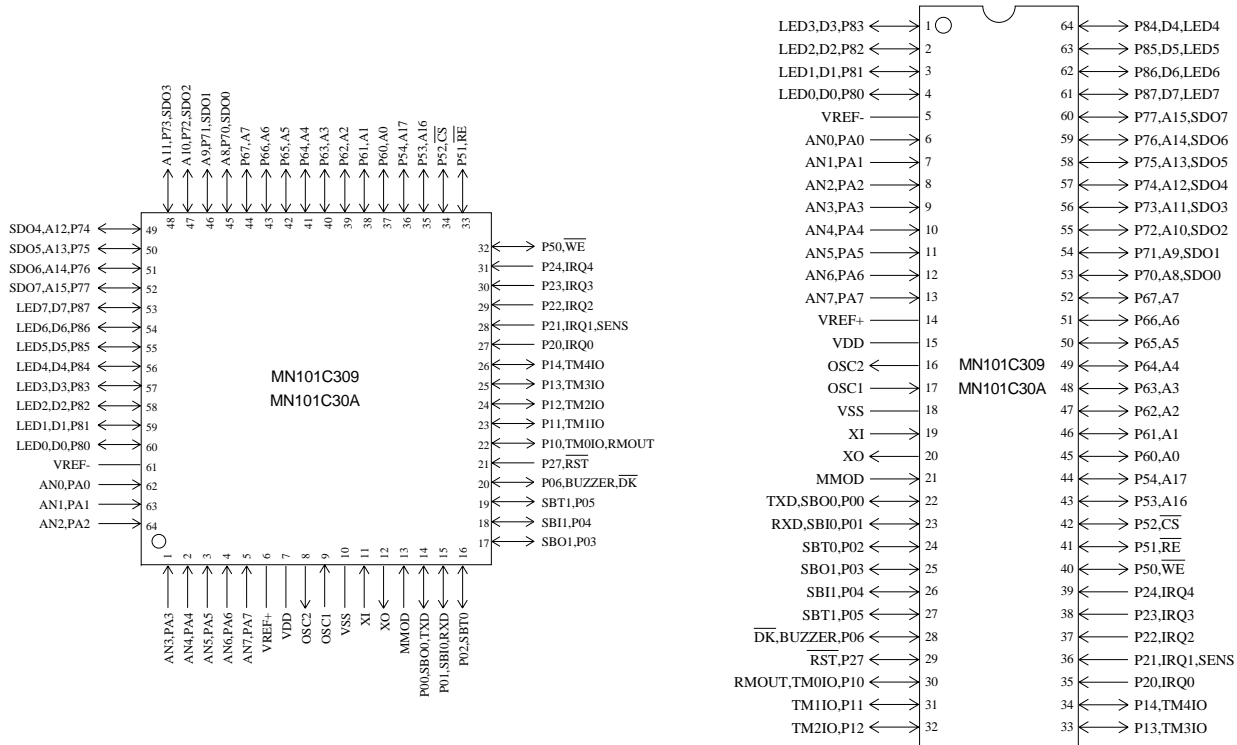
**Supply current**

Parameter	Symbol	Condition	Limit			Unit
			min	typ	max	
Operating supply current	IDD1	fosc = 20 MHz, VDD = 5 V		25	60	mA
	IDD2	fx = 32.768 kHz, VDD = 3 V		30	100	μA
Supply current at HALT	IDD3	fx = 32.768 kHz, VDD = 3 V, Ta = 25°C		4	8	μA
		fx = 32.768 kHz, VDD = 3 V, Ta = 85°C			18	μA
Supply current at STOP	IDD4	VDD = 5 V, Ta = 25°C			2	μA
		VDD = 5 V, Ta = -40°C to +85°C			20	μA

See the next page for pin assignment and support tool.

## Pin Assignment

( ) : Old Package



LQFP064-P-1414 \*Lead-free

SDIP064-P-0750C \*Lead-free (under planning)  
(SDIP064-P-0750)

## Support Tool

<b>In-circuit Emulator</b>	PX-ICE101C/D+PX-PRB101C30-LQFP064-P-1414	
<b>EPROM Built-in Type</b>	Type	MN101CP30ABL
	ROM (× 8-bit)	32 K
	RAM (× 8-bit)	1.5 K
	Minimum instruction execution time	0.10 μs (at 4.5 V to 5.5 V, 20 MHz) 0.238μs (at 2.7 V to 5.5 V, 8 MHz)
	Package	LQFP064-P-1414 *Lead-free, SDIP064-P-0750C *Lead-free (under planning)
	(Conventional Package)	(SDIP064-P-0750)



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