

□ MN101C77A, MN101C77C, MN101C77D

Type	MN101C77A	MN101C77C	MN101C77D (under development)
ROM (×8-bit)	32 K	48 K	64 K
RAM (×8-bit)	1.5 K	3 K	6 K
Package	LQFP064-P-1414 *Lead-free	LQFP064-P-1414 *Lead-free TQFP064-P-1010C *Lead-free	LQFP064-P-1414 *Lead-free

Minimum Instruction Execution Time	Standard:	0.1 μs (at 2.5 V to 3.6 V, 20 MHz)* 0.2 μs (at 2.1 V to 3.6 V, 10 MHz)* 0.5 μs (at 1.8 V to 3.6 V, 4 MHz)* 62.5 μs (at 1.8 V to 3.6 V, 32 kHz)*
	Double speed:	0.119 μs (at 2.5 V to 3.6 V, 8.39 MHz)*

* The operation guarantee range for flash memory built-in type is 2.7 V to 3.6 V.

Interrupts	<ul style="list-style-type: none"> • RESET • Watchdog • External 0 • External 1 • External 2 • External 3 • External 4 • Timer 0 • Timer 1 • Timer 4 • Timer 5 • Timer 6 • Time base • Serial 0 reception • Serial 0 transmission • Serial 1 reception • Serial 1 transmission • Serial 3 • Serial 4 • Automatic transfer finish • A/D conversion finish • Timer 7 (2 systems) • Key interrupts (8 lines)
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Timer Counter	<p>Timer counter 0 : 8-bit × 1 (square-wave/8-bit PWM output, event count, generation of remote control carrier, pulse width measurement) Clock source 1/2, 1/4 of system clock frequency; 1/1, 1/4, 1/16, 1/32, 1/64 of OSC oscillation clock frequency; 1/1 of XI 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 1/2, 1/8 of system clock frequency; 1/1, 1/4, 1/16, 1/64, 1/128 of OSC oscillation 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 4 : 8-bit × 1 (square-wave/8-bit PWM output, event count, pulse width measurement, serial 1 baud rate timer) Clock source 1/2, 1/4 of system clock frequency; 1/1, 1/4, 1/16, 1/32, 1/64 of OSC oscillation clock frequency; 1/1 of XI oscillation clock frequency; 1/1 of external clock input frequency Interrupt source coincidence with compare register 4</p> <p>Timer counter 5 : 8-bit × 1 (square-wave/8-bit PWM output, event count, pulse width measurement, serial 0 baud rate timer) Clock source 1/2, 1/4 of system clock frequency; 1/1, 1/4, 1/16, 1/32, 1/64 of OSC oscillation clock frequency; 1/1 of XI oscillation clock frequency; 1/1 of external clock input frequency Interrupt source coincidence with compare register 5</p>
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Timer Counter (Continue)	Timer counter 6 : 8-bit freerun timer
	Clock source 1/1 of system clock frequency; 1/1, 1/4096, 1/8192 of OSC oscillation clock frequency; 1/1, 1/4096, 1/8192 of XI oscillation clock frequency
	Interrupt source coincidence with compare register 6
	Timer counter 7 : 16-bit × 1 (square-wave/16-bit PWM output, cycle / duty continuous variable, event count, synchronous output event, pulse width measurement, input capture)
	Clock source 1/1, 1/2, 1/4, 1/16 of system clock frequency; 1/1, 1/2, 1/4, 1/16 of OSC oscillation clock frequency; 1/1, 1/2, 1/4, 1/16 of external clock input frequency
	Interrupt source coincidence with compare register 7 (2 lines)
	Time base timer (one-minute count setting)
	Clock source 1/1 of OSC oscillation clock frequency; 1/1 of XI oscillation clock frequency
	Interrupt source 1/128, 1/256, 1/512, 1/1024, 1/8192, 1/32768 of clock source frequency
	Watchdog timer
	Interrupt source 1/65536, 1/262144, 1/1048576 of system clock frequency
DMA Controller (Automatic Data Transfer)	Max. Transfer cycles : 255 Starting factor : external request, various types of interrupt, software Transfer mode : 1-byte transfer, word transfer, burst transfer
Serial Interface	Serial 0 : synchronous type / UART (full-duplex) × 1 Clock source 1/2, 1/4 of system clock frequency; pulse output of timer counter 5; 1/2, 1/4, 1/16, 1/64 of OSC oscillation clock frequency
	Serial 1 : synchronous type / UART (full-duplex) × 1 Clock source 1/2, 1/4 of system clock frequency; pulse output of timer counter 4; 1/2, 1/4, 1/16, 1/64 of OSC oscillation clock frequency
	Serial 3 : synchronous type/single-master I ² C × 1 Clock source 1/2, 1/4 of system clock frequency; pulse output of timer counter 3; 1/2, 1/4, 1/16, 1/32 of OSC oscillation clock frequency
	Serial 4 : I ² C slave × 1 Applicable for I ² C high-speed transfer mode, 7 bit/10bit address setting, general call
I/O Pins	I/O 53 • Common use • Specified pull-up resistor available • Input/output selectable (bit unit)
A/D Inputs	10-bit × 7-ch. (with S/H)
D/A Outputs	8-bit × 2-ch. (Serves as AD pin, as well)
Special Ports	Buzzer output, remote control carrier signal output, high-current drive port
ROM Correction	Correcting address designation : up to 3 addresses possible

See the next page for electrical characteristics, pin assignment and support tool.

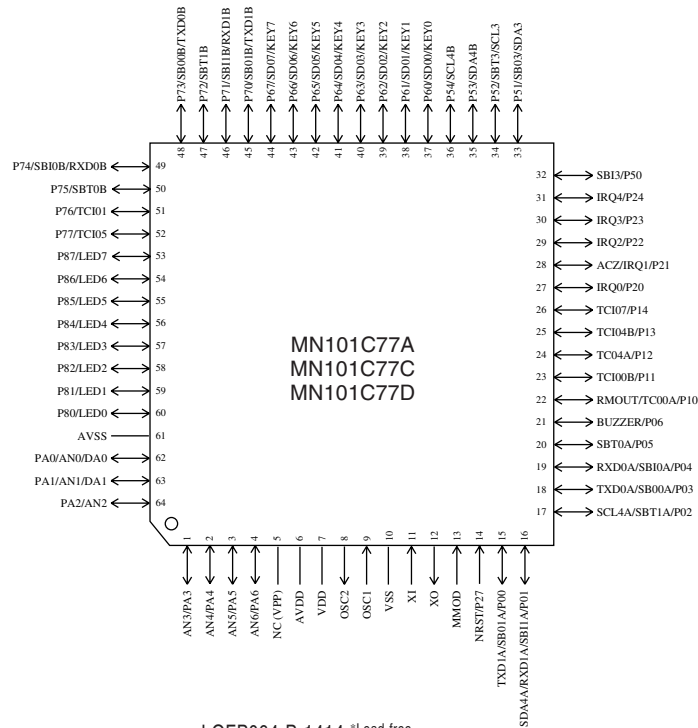
Electrical Characteristics

Supply current

Parameter	Symbol	Condition	Limit			Unit
			min	typ	max	
Operating supply current	IDD1	$f_{osc} = 20 \text{ MHz}$, $V_{DD} = 3.3 \text{ V}$, ($f_s = f_{osc}/2$)		6	12	mA
	IDD2	$f_{osc} = 8.39 \text{ MHz}$, $V_{DD} = 3.3 \text{ V}$, ($f_s = f_{osc}/2$)		3	6	mA
	IDD3	$f_x = 32.768 \text{ kHz}$, $V_{DD} = 3.3 \text{ V}$, ($f_s = f_x/2$)			40	μA
Supply current at HALT	IDD4	$f_x = 32.768 \text{ kHz}$, $V_{DD} = 3.3 \text{ V}$, $T_a = 25^\circ\text{C}$		5	10	μA
	IDD5	$f_x = 32.768 \text{ kHz}$, $V_{DD} = 3.3 \text{ V}$			40	μA
Supply current at STOP	IDD6	$V_{DD} = 3.3 \text{ V}$, $T_a = 25^\circ\text{C}$		0	2	μA
	IDD7	$V_{DD} = 3.3 \text{ V}$, $T_a = 85^\circ\text{C}$			30	μA

$T_a = -40^\circ\text{C}$ to $+85^\circ\text{C}$, $V_{DD} = 1.8 \text{ V}$ to 3.6 V , $V_{SS} = 0 \text{ V}$

Pin Assignment



LQFP064-P-1414 *Lead-free

TQFP064-P-1010C *Lead-free [MN101C77C]

NC serves as the VPP pin in the MN101CF77G, and cannot be used as a user pin.

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Support Tool

■ In-circuit Emulator	PX-ICE101C/D;PX-PRB101C77-TQFP064-P1010C	
	PX-ICE101C/D;PX-PRB101C77-LQFP064-P1414	
■ Flash Memory Built-in Type	Type	MN101CF77G
	ROM (× 8-bit)	128 K
	RAM (× 8-bit)	6 K
	Minimum instruction execution time	Standard: 0.1 μs (at 2.7 V to 3.6 V, 20 MHz)
	Package	LQFP064-P-1414 *Lead-free
		TQFP064-P-1010C *Lead-free

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