❑ MN101C84A

Type	MN101C84A	MN101CF84D
Internal ROM type	Mask ROM	FLASH
ROM (byte)	32K	64K
RAM (byte)	1K	2K
Package (Lead-free)	LQFP064-P-1414	
Minimum Instruction Execution Time	0.1 µs (at 4.5 V to 5.5 V, 20 MHz) 0.25 µs (at 2.7 V to 5.5 V, 8 MHz) 62.5 µs (at 2.0 V to 5.5 V, 32 kHz)* * The lower limit for operation guarantee for flash memory built-in type is 2.5 V.	

■ Interrupts

RESET, Watchdog, External 0 to 2, External 4 (key interrupt dedicated), Timer 0 to 3, Timer 6, Timer 7 (2 systems), Timer 8 (2 systems), Time base, Serial 0 (2 systems), A/D conversion finish

■ Timer Counter

Timer counter 0 : 8-bit × 1
(square-wave/8-bit PWM output, event count, generation of remote control carrier, simple pulse width measurement)
(square-wave/PWM output to large current terminal P50 possible)
Clock source..... 1/2, 1/4 of system clock frequency; 1/1, 1/4, 1/16, 1/32, 1/64, 1/128, 1/256, 1/512 of OSC oscillation clock frequency; 1/1 of XI oscillation clock frequency; external clock input
Interrupt source ..... coincidence with compare register 0

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, $1/2^{13}$, $1/2^{15}$, 1/32, 1/64, 1/128, 1/256 of OSC oscillation clock frequency; 1/1 of XI oscillation clock frequency; external clock input
Interrupt source ..... coincidence with compare register 1

Timer counter 0, 1 can be cascade-connected.

Timer counter 2 : 8-bit × 1
(square-wave output, additional pulse type 10-bit PWM output, event count, synchronous output event, simple pulse width measurement)
(square-wave/PWM output to large current terminal P52 possible)
Clock source..... 1/2, 1/4 of system clock frequency; 1/1, 1/4, 1/16, 1/32, 1/64, 1/128, 1/256, 1/512 of OSC oscillation clock frequency; 1/1 of XI oscillation clock frequency; external clock input
Interrupt source ..... coincidence with compare register 2

Timer counter 3 : 8-bit × 1
(square-wave output, event count, generation of remote control carrier, serial 0 baud rate timer)
Clock source..... 1/2, 1/8 of system clock frequency; 1/1, 1/4, 1/16, 1/64, 1/128, 1/256, 1/512 of OSC oscillation clock frequency; 1/1 of XI oscillation clock frequency; external clock input
Interrupt source ..... coincidence with compare register 3

Timer counter 2, 3 can be cascade-connected.

Timer counter 6 : 8-bit freerun timer
Clock source..... 1/1 of system clock frequency; $1/1$, $1/2^{12}$, $1/2^{13}$ of OSC oscillation clock frequency; $1/1$, $1/2^{12}$, $1/2^{13}$ of XI oscillation clock frequency
Interrupt source ..... coincidence with compare register 6

Timer counter 7 : 16-bit × 1
(square-wave output, IGBT/16-bit PWM output (cycle / duty continuous variable), event count, synchronous output evevt, pulse width measurement, input capture)
(square-wave/PWM output to large current terminal P51 possible)
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)

Timer counter 8 : 16 bit × 1
(square-wave/16-bit PWM output [duty continuous variable], event count, pulse width measurement, input capture)(square-wave/PWM output to large current terminal P53 possible)
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 8 (2 lines)

Timer counters 7, 8 can be cascade-connected.
(square-wave output, PWM, input capture, pulse width measurement is possible as a 32-bit timer.)

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, $1/2^{10}$, $1/2^{13}$, $1/2^{15}$ of clock source frequency

Watchdog timer
Interrupt source ..... 1/65536, 1/262144, 1/1048576 of system clock frequency

■ 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 3; 1/2, 1/4, 1/16, 1/64 of OSC oscillation clock frequency

■ I/O Pins

I/O	53	Common use , Specified pull-up resistor available, Input/output selectable (bit unit)
Input	3	Common use , Specified pull-up resistor available

■ A/D converter

10-bit × 8-ch. (with S/H)

■ Display control function

LCD
32 segments × 4 commons (static, 1/2, 1/3, or 1/4 duty)
LCD power supply separated from VDD (usable if VLCD ≤ VDD ≤ 5.5 V)
LCD power shunt resistance contained

■ Special Ports

Buzzer output, remote control carrier signal output, high-current drive port

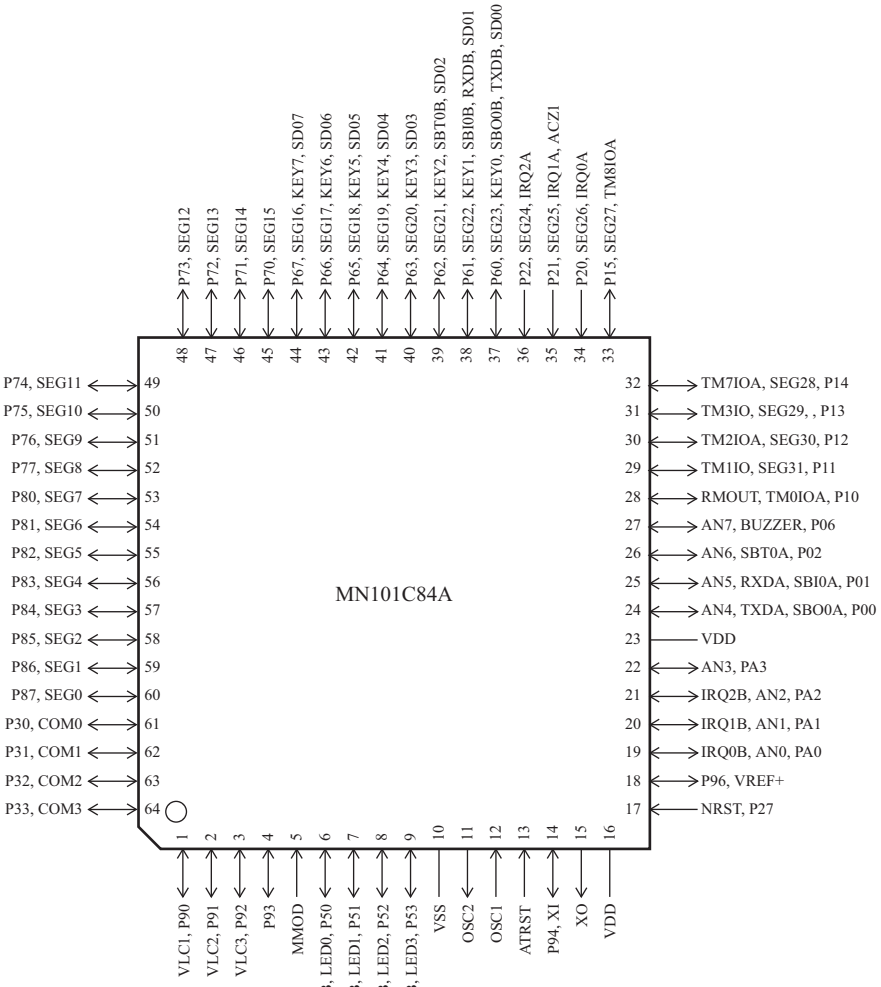
■ Electrical Charactreistics (Supply current)

Parameter	Symbol	Condition	Limit			Unit
			min	typ	max	
Operating supply current	IDD1	fosc = 20 MHz , VDD = 5 V		15	30	mA
	IDD2	fosc = 8 MHz , VDD = 5 V		8	16	mA
	IDD3	fx = 32 kHz , VDD = 3 V		30	60	µA
Supply current at HALT	IDD4	fx = 32 kHz , VDD = 3 V, Ta = 25°C		4	8	µA
	IDD5	fx = 32 kHz , VDD = 3 V , Ta = –40°C to +85°C			30	µA
Supply current at STOP	IDD6	VDD = 5 V , Ta = 25°C			2	µA
	IDD7	VDD = 5 V , Ta = –40°C to +85°C			50	µA

■ Development tools

In-circuit Emulator
PX-ICE101C/D+PX-PRB101C84-LQFP064-P-1414-M

■ Pin Assignment



LQFP064-P-1414

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