❑ MN101C78 Series

Type	MN101C78A	MN101CF78A
Internal ROM type	Mask ROM	FLASH
ROM (byte)	32K	
RAM (byte)	1.5K	
Package (Lead-free)	TQFP048-P-0707B	
Minimum Instruction Execution Time	0.100 µs (at 3.0 V to 3.6 V, 10 MHz) 0.118 µs (at 2.7 V to 3.6 V, 8.5 MHz) 0.235 µs (at 1.8 V to 3.6 V, 4.25 MHz)* 62.5 µs (at 1.8 V to 3.6 V, 32 kHz)* *: The lower limit for operation guarantee for flash memory built-in type is 2.2 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). Serial 1 (2 systems). Serial 3. Serial 4. A/D conversion finish

■ Timer Counter

8-bit timer × 5

Timer 0 .....Square-wave/8-bit PWM output. Event count. Remote control carrier output. Simple pulse width measurement. Added pulse (2-bit) type PWM output. Real time output control. Square-wave/PWM output to large current terminal P50 possible

Timer 1 .....Square-wave output. Event count. Synchronous output event

Timer 2 .....Square-wave output. Added pulse (2-bit) type PWM output. PWM output. Serial transfer clock output. Real time output control. Event count. Synchronous output event. Simple pulse width measurement. Square-wave/PWM output to large current terminal P52 possible

Timer 3 .....Square-wave output. Event count. Remote control carrier output. Serial 0 baud rate timer

Timer 6 .....8-bit freerun timer

Timer 0, 1 can be cascade-connected

Timer 2, 3 can be cascade-connected

16-bit timer × 2

Timer 7 .....Square-wave output. 16-bit PWM output (cycle/duty continuous variable). Event count. Synchronous output event. Pulse width measurement. Input capture. Real time output control. High performance IGBT output. Square-wave/PWM output to large current terminal P51 possible

Timer 8 .....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

Timer 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

Watchdog timer × 1

■ Serial interface

Synchronous type/UART (full-duplex) × 2: Serial 0, 1

Synchronous type/Single-master I^2C × 1: Serial 3

I^2C slave × 1: Serial 4

Serial 4.....I^2C high-speed transfer mode. 7-bit/10-bit address setting. General call

■ I/O Pins

I/O 39 : Common use. Specified pull-up resistor available. Input/output selectable (bit unit)

■ A/D converter

10-bit × 7 channels (with S/H)

■ Display control function

LCD: 12 segments × 4 commons (Static, 1/2, 1/3, or 1/4 duty)

Usable if VLCD ≤ VDD

■ Special Ports

Buzzer output. Inverted buzzer output. Remote control carrier output. High-current drive port

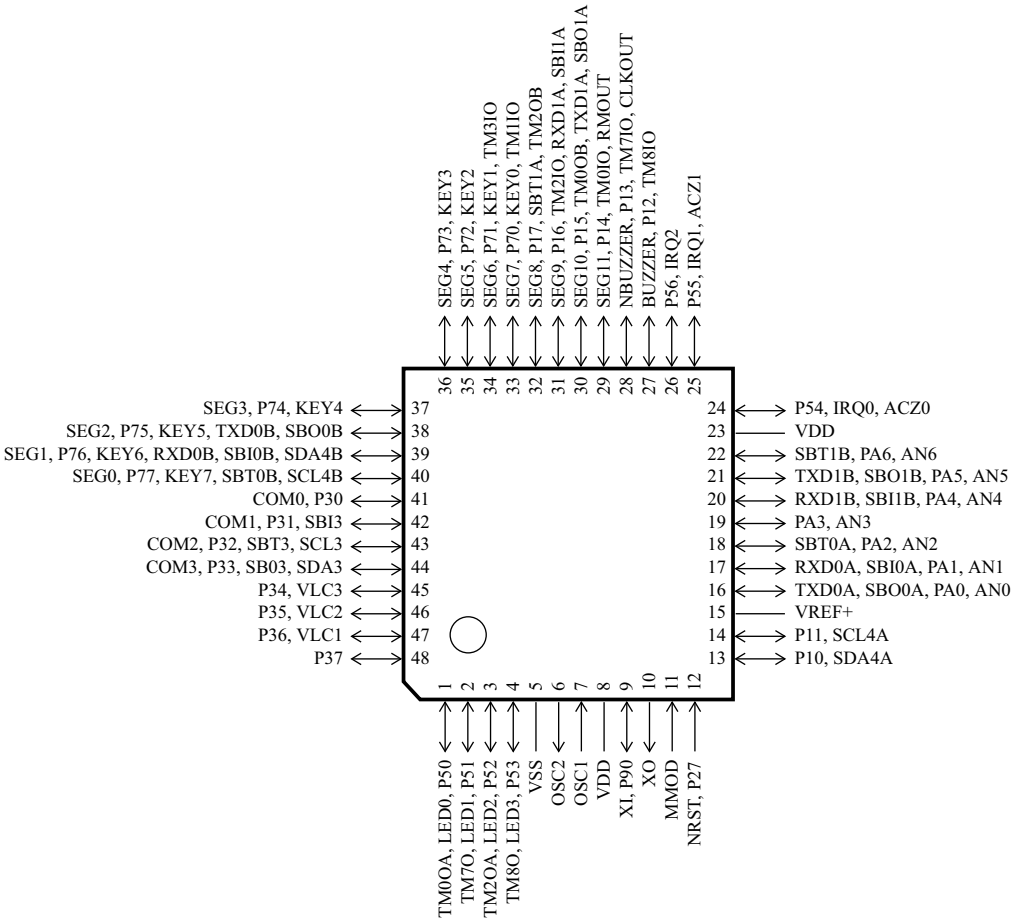
■ Electrical Charactreistics (Supply current)

Parameter	Symbol	Condition	Limit			Unit
			min	typ	max	
Operating supply current	IDD1	fosc = 4.25 MHz (fs = fosc/2). VDD = 3 V		0.6(1.3)	1.1(2.2)	mA
	IDD2	fx = 32 kHz (fs = fx/2). VDD = 3 V		4(46)	15(90)	µA
Supply current at HALT	IDD3	fx = 32 kHz. VDD = 3 V. Ta = 25 °C		2(3)	5(13)	µA
	IDD4	fx = 32 kHz. VDD = 3 V. Ta = -40 °C to +85 °C			10(40)	µA
Supply current at STOP	IDD5	VDD = 3 V. Ta = 25 °C			2(3)	µA
	IDD6	VDD = 3 V. Ta = -40 °C to +85 °C			8(30)	µA

Note) ( ): Flash memory built-in type

■ Pin Assignment

TQFP048-P-0707B



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