❑ MN101C12D , MN101C12F , MN101C12G

Type	**MN101C12D , MN101C12F , MN101C12G**
ROM (×8-Bit)	64 K / 96 K / 128 K (External memory can be expanded)
RAM (×8-Bit)	2 048 / 4 096 / 4 096 (External memory can be expanded)

Minimum Instruction Execution Time

Standard: **0.10 μs (at 4.5 V to 5.5 V, 20 MHz)**
0.25 μs (at 2.7 V to 5.5 V, 8 MHz)
125 μs (at 2.0 V to 5.5 V, 32 kHz)*

Double speed: 0.12 μs (at 4.5 V to 5.5 V, 8.38 MHz)
0.25 μs (at 3.0 V to 5.5 V, 4 MHz)
62.5 μs (at 2.0 V to 5.5 V, 32 kHz)*

*** The lower limit for operation guarantee for EPROM built-in version is 2.7 V.**

Interrupts

• RESET • Watchdog • External 0 • External 1 • External 2 • External 3 • External 4 • Timer 0 • Timer 1 • Timer 2 • Timer 3 • Timer 4 • Timer 6 • Time Base • Serial 3 • Serial 1 • Serial 2 • Automatic Transfer finish • A/D Conversion finish • External 5 • Timer 7 (2 systems) • Key Interrupts (8 lines)

Timer Counter

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, 1/1, 1/4, 1/16, 1/32, 1/64 of OSC Oscillation Clock, 1/1 of XI Oscillation Clock, 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, 1/1, 1/4, 1/16, 1/64, 1/128 of OSC Oscillation Clock, 1/1 of XI Oscillation Clock, 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/8-Bit PWM Output, Event Count, Synchronous Output Event, Pulse Width Measurement)
Clock Source: 1/2, 1/4 of System Clock, 1/1, 1/4, 1/16, 1/32, 1/64 of OSC Oscillation Clock, 1/1 of XI Oscillation Clock, 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)
Clock Source: 1/2, 1/8 of System Clock, 1/1, 1/4, 1/16, 1/64, 1/128 of OSC Oscillation Clock, 1/1 of XI Oscillation Clock, External Clock Input
Interrupt Source: Coincidence with Compare Register 3

Timer Counter 2, 3 can be cascade-connected.

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, 1/1, 1/4, 1/16, 1/32, 1/64 of OSC Oscillation Clock, 1/1 of XI Oscillation Clock, 1/1 of External Clock Input
Interrupt Source: Coincidence with Compare Register 4

Timer Counter 6 : 8-Bit Freerun Timer
Clock Source: 1/1 of System Clock, 1/1, 1/4096, 1/8192 of OSC Oscillation Clock, 1/1, 1/4096, 1/8192 of XI Oscillation Clock
Interrupt Source: Coincidence with Compare Register 6

Timer Counter (Continue)

Timer Counter 7 : 16-Bit × 1 (Square-Wave/16-Bit PWM Output, Cycle / Duty continuous variable, Event Count, Synchronous Output Evevt, Pulse Width Measurement, Input Capture)

Clock Source	1/1, 1/2, 1/4, 1/16 of System Clock, 1/1, 1/2, 1/4, 1/16 of OSC Oscillation Clock, 1/1, 1/2, 1/4, 1/16 of External Clock Input
Interrupt Source .	Coincidence with Compare Register 7 (2 lines)

Time Base Timer (One-Minute Count Setting)

Clock Source	1/1 of OSC Oscillation Clock, 1/1 of XI Oscillation Clock
Interrupt Source	1/128, 1/256, 1/512, 1/1024, 1/8192, 1/32768, of Clock Source

Watchdog Timer

Interrupt Source	1/65536, 1/262144, 1/1048576 of System Clock

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 1 : 8-Bit × 1 (Synchronous Type/Simple UART[Half-Duplex])

Clock Source	1/2, 1/4 of System Clock Pulse Output of Timer Counter 4 1/2, 1/4, 1/16, 1/64 of OSC Oscillation Clock

Serial 2 : 8-Bit × 1 (Synchronous Type)

Clock Source	1/2, 1/4 of System Clock Pulse Output of Timer Counter 3 1/2, 1/4, 1/16, 1/32 of OSC Oscillation Clock

Serial 3 : 8-Bit × 1 (Synchronous Type/Simple I²C)

Clock Source	1/2, 1/4 of System Clock Pulse Output of Timer Counter 3 1/2, 1/4, 1/16, 1/32 of OSC Oscillation Clock

I/O Pins

I/O Pins	I/O	73	• Common use • Specified pull-up Resistor available • Input / Output selectable (bit unit)
	Input	15	• Common use • Specified pull-up Resistor available

A/D Inputs

10-Bit × 8ch (with S/H)

D/A Inputs

8-Bit × 4ch

Special Ports

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

Package

QFP100-P-1818B

Electrical Characteristics

Supply Current

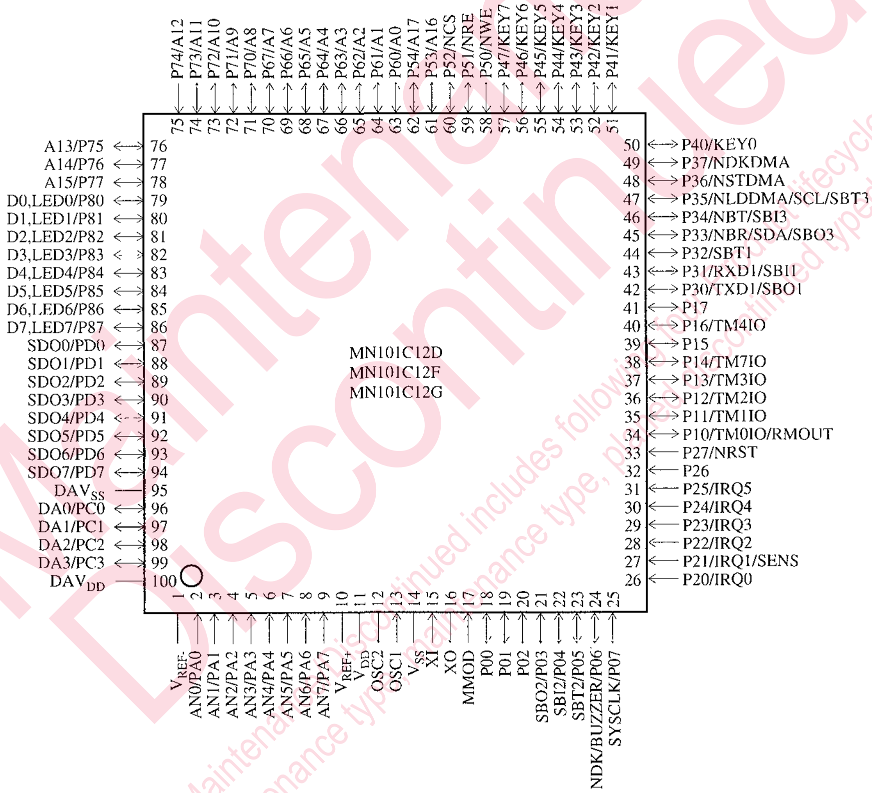
Parameter	Symbol	Condition	Limit min	Limit typ	Limit max	Unit
Operating Supply Current	IDD1	fosc = 20 MHz, VDD = 5 V			60	mA
	IDD2	fosc = 8 39 MHz, VDD = 5 V			25	mA
	IDD3	fx = 32 768 kHz, VDD = 3 V			100	µA
Supply Current at HALT	IDD4	fx = 32 kHz, VDD = 3 V			8	µA
	IDD5	fx = 32 768 kHz, VDD = 3 V, Ta = -40 °C to +85 °C			20	µA
Supply Current at STOP	IDD6	VDD = 5 V, Ta = 25 °C			1	µA
	IDD7	VDD = 5 V, Ta = -40 °C to +85 °C			30	µA

See the next page for support tool and pin assignment.

Support Tool

In-Circuit Emulator	PX-ICE101C / D + PX-PRB101C12-C / D		
EPROM built-in Type	**Type**	MN101CP12GAF	
	ROM (× 8-Bit)	128 K	
	RAM (× 8-Bit)	4 096	
	Minimum Instruction Execution Time	Standard	0 10 µs (at 4 5 V to 5 5 V, 20 MHz) 0 25 µs (at 2 7 V to 5 5 V, 8 MHz)
		Double speed	0 12 µs (at 4 5 V to 5 5 V, 8 38 MHz) 0 25 µs (at 3 0 V to 5 5 V, 4 MHz)
	Package	QFP100-P-1818B	

Pin Assignment



QFP100-P-1818B

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