❑ MN101E16G, MN101E16K, MN101E16M

Type	MN101E16G	MN101E16K	MN101E16M	MN101EF16N
Internal ROM type	Mask ROM			FLASH
ROM (byte)	128K	256K	384K	512K
RAM (byte)	4K	12K	20K	30K
Package (Lead-free)	QFP100-P-1818B (Under planning)		QFP100-P-1818B	
Minimum Instruction Execution Time	0.0588 µs (at 2.7 V to 3.6 V, 17 MHz at internal 2, 4, 8 times oscillation)) 0.1 µs (at 2.7 V to 3.6 V, 20 MHz) 30.6 µs (at 2.7 V to 3.6 V, 32.768 kHz)			0.0588 µs (at 2.7 V to 3.6 V, 17 MHz)

■ Interrupts

RESET, Watchdog, External 0 to 5, Timer 0 to 3, Timer 6, Timer 7 (2 systems), Timer A to E, Time base, Serial 0 (2 systems), Serial 1 (2 systems), Serial 2, Serial 3 (2 systems), Serial 4 (2 systems), Automatic transfer finish (2 systems), A/D conversion finish, Key interrupts

■ Timer Counter

Timer counter 0 : 8-bit × 1
(square-wave/8-bit PWM output, event count, simple pulse width measurement, real time output control)
- 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

Timer counter 1 : 8-bit × 1
(square-wave output, event count, synchronous output event, 16-bit timer with casscade connection (Timer 0 and connection), serial clocke output)
- 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

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, real time output control, serial 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; external clock input
- Interrupt source ..... coincidence with compare register 2

Timer counter 0, 1, 2 can be cascade-connected.

Timer counter 3 : 8-bit × 1 (square-wave output, event count, serial baud rate timer)
- 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 3

Timer counter 2, 3 can be cascade-connected.

Timer counter 0, 1, 2, 3 can be cascade-connected.

Timer counter 6 : 8-bit freerun timer , time base 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 generating cycle.... 1/128, 1/256, 1/512, 1/1024, 1/8192 1/32768 of OSC oscillation clock frequency; 1/128, 1/256, 1/512, 1/1024, 1/8192, 1/32768 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 evevt, 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)

Timer counter A, B, C, D, E : 8-bit × 5

Clock source..... 1/2, 1/4 of system clock frequency; 1/1, 1/2, 1/4, 1/8, 1/16. 1/32 of OSC oscillation clock frequency

Interrupt source ..... coincidence with compare register A, B, C, D, E

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, 1/4194304 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 2, A; 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 3, B; 1/2, 1/4, 1/8, 1/16, 1/64 of OSC oscillation clock frequency

Serial 2 : synchronous type/single-master I²C × 1

Clock source..... 1/2, 1/4 of system clock frequency; pulse output of timer counter 3, C; 1/2, 1/4, 1/16, 1/32 of OSC oscillation clock frequency

Serial 3 : synchronous type/ I²C × 1

Clock source..... 1/2, 1/4 of system clock frequency; pulse output of timer counter 2, D; 1/2, 1/4, 1/16, 1/32 of OSC oscillation clock frequency

Serial 4 : synchronous type/UART (full-duplex) × 1

Clock source..... 1/2, 1/4 of system clock frequency; pulse output of timer counter 2, E ; 1/2, 1/4, 1/16, 1/64 of OSC oscillation clock frequency

■ DMA controller

Nomber of channels : 2

Max. Transfer cycles : 255

Starting factor : external request, various types of interrupt, software

Transfer mode : 1-byte transfer, word transfer, burst transfer

■ I/O Pins

I/O	22	(5 V IF port) Common use , Specified pull-up resistor available, Input/output selectable (bit unit)
	62	(3 V IF port) Common use , Specified pull-up resistor available, Input/output selectable (bit unit)
	1	(3 V IF port) Common use

■ A/D converter

10-bit × 8-ch. (with S/H)

■ Special Ports

Buzzer output, high-current drive port

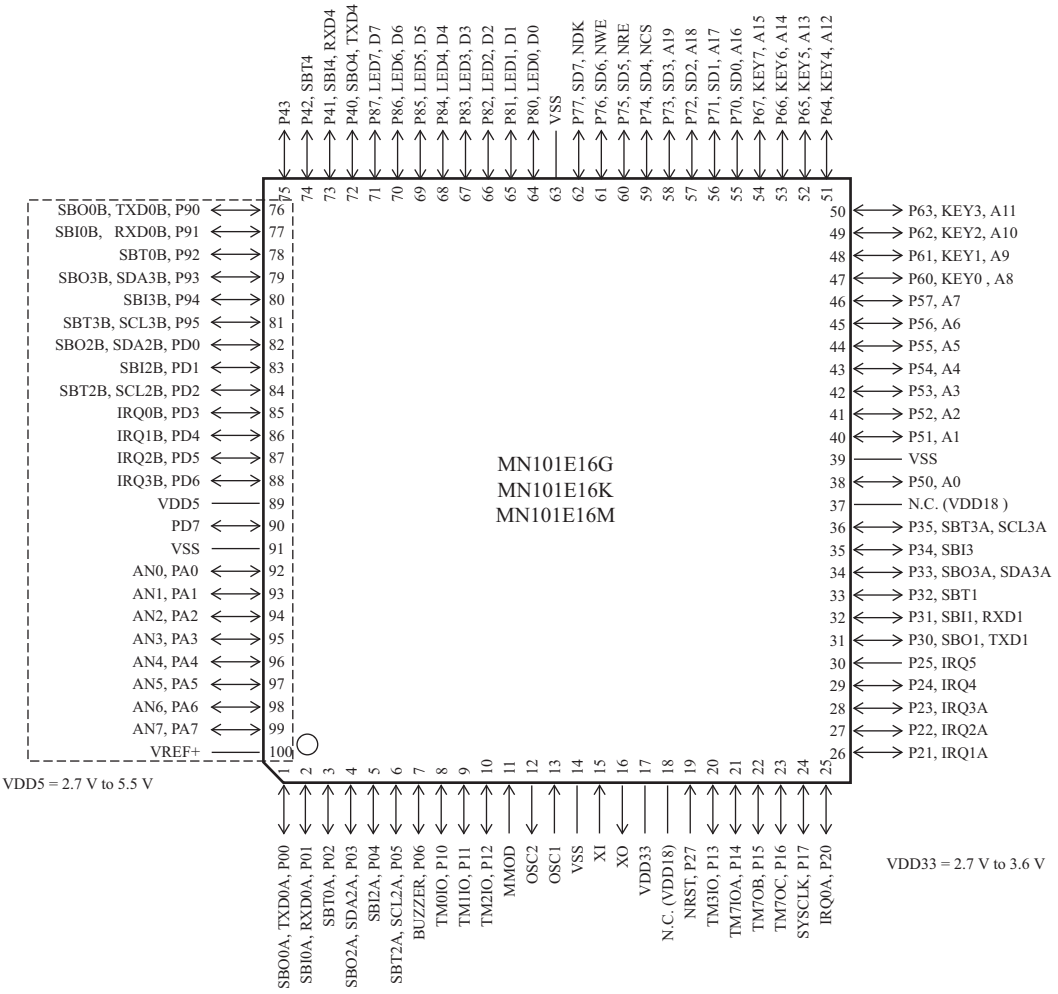
■ ROM Correction

Correcting address designation : up to 7 addresses possible

■ Development tools

In-circuit Emulator (under development)

■ Pin Assignment



QFP100-P-1818B

Note) ( ): Flash memory built-in type.

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