

MN101C61D, MN101C61G

Type	MN101C61D (under development)		MN101C61G	
ROM (×8-bit)	64 K		128 K	
RAM (×8-bit)	3 K		12 K	
Package	TQFP080-P-1212D *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)* 125 μs (at 1.8 V to 3.6 V, 32 kHz)* Double speed: 0.1 μs (at 2.5 V to 3.6 V, 10 MHz) 0.2 μs (at 2.1 V to 3.6 V, 5 MHz) 0.5 μs (at 1.8 V to 3.6 V, 2 MHz)* 62.5 μs (at 1.8 V to 3.6 V, 32 kHz)*		
* The operation guarantee range for flash memory built-in type is 2.2V to 3.0 V or 2.7V to 3.6 V.				
Interrupts	• RESET • Watchdog • External 0 • External 1 • External 2 • External 3 • External 4 • External 5 • Timer 0 • Timer 1 • Timer 2 • Timer 3 • Timer 4 • Timer 5 • Timer 6 • Time base • Serial 0 reception • Serial 0 transmission • Serial 1 reception • Serial 1 transmission • Serial 2 • Serial 3 • Automatic transfer finish • A/D conversion finish • 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 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) 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) 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 3 : 8-bit × 1 (square-wave output, event count, generation of remote control carrier) 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 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 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			

Timer Counter (Continue)		<p>Timer counter 6 : 8-bit freerun timer</p> <p>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</p> <p>Interrupt source coincidence with compare register 6</p> <p>Timer counter 7 : 16-bit × 1</p> <p>(square-wave/16-bit PWM output, cycle / duty continuous variable, event count, synchronous output event, pulse width measurement, input capture)</p> <p>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</p> <p>Interrupt source coincidence with compare register 7 (2 lines)</p> <p>Time base timer (one-minute count setting)</p> <p>Clock source 1/1 of OSC oscillation clock frequency; 1/1 of XI oscillation clock frequency</p> <p>Interrupt source 1/128, 1/256, 1/512, 1/1024, 1/8192, 1/32768 of clock source frequency</p> <p>Watchdog timer</p> <p>Interrupt source 1/65536, 1/262144, 1/1048576 of system clock frequency</p> <p>DMA controller (automatic data transfer)</p> <p>Max. Transfer cycles 255</p> <p>Starting factor external request, various types of interrupt, software</p> <p>Transfer mode 1-byte transfer, word transfer, burst transfer</p>	
Serial Interface		<p>Serial 0 : synchronous type / UART (full-duplex) × 1</p> <p>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</p> <p>Serial 1 : synchronous type / UART (full-duplex) × 1</p> <p>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</p> <p>Serial 2 : synchronous type × 1</p> <p>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</p> <p>Serial 3 : synchronous type/single-master I²C × 1</p> <p>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</p>	
I/O Pins	I/O	62	• Common use • Specified pull-up resistor available • Input/output selectable (bit unit)
	Input	6	• Common use • Specified pull-up resistor available
A/D Inputs		10-Bit × 6-ch. (with S/H)	
Special Ports		Buzzer output, remote control carrier signal output, high-current drive port	

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

Electrical Characteristics

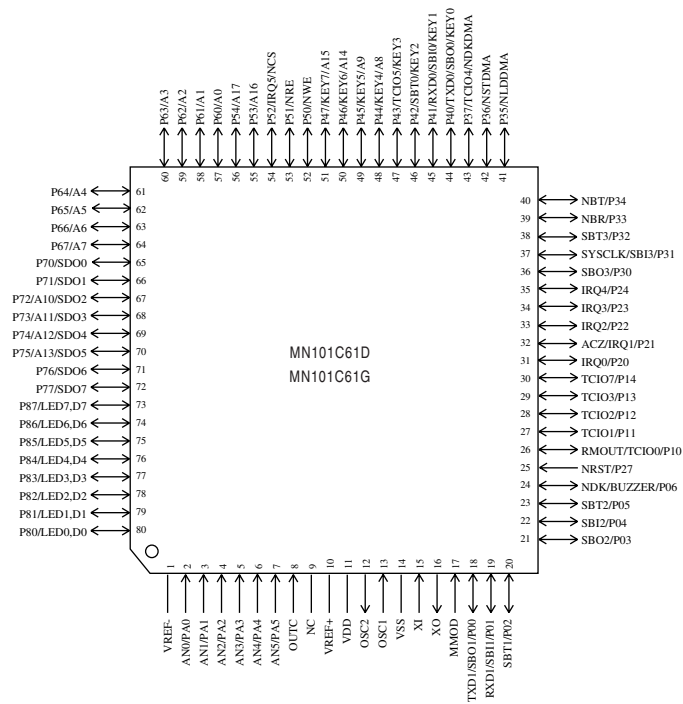
Supply current

Parameter	Symbol	Condition	Limit			Unit
			min	typ	max	
Operating supply current	IDD1	fosc = 20 MHz, VDD = 3 V, (fs = fosc/2)		5	12	mA
	IDD2	fosc = 8.39 MHz, VDD = 3 V, (fs = fosc/2)		2	5	mA
	IDD3	fx = 32.768 kHz, VDD = 3 V, (fs = fx/2)			40	μA
Supply current at HALT	IDD4	fx = 32.768 kHz, VDD = 3 V, Ta = 25°C		4	8	μA
	IDD5	fx = 32.768 kHz, VDD = 3 V			30	μA
Supply current at STOP	IDD6	VDD = 3 V, Ta = 25°C			2	μA
	IDD7	VDD = 3 V			20	μA

Ta = -40°C to +85°C, VDD = 1.8 V to 3.6 V, VSS = 0 V

Note) Ta = -20°C to +70°C for a flash memory built-in version. Supply voltage range and supply current ratings are also different from the values mentioned above. Refer to Chapter 18 “Flash EEPROM” for details

Pin Assignment



TQFP080-P-1212D *Lead-free

NC serves as the VPP pin in the MN101CF61G, and cannot be used as a user pin.

Support Tool

■	In-circuit Emulator		PX-ICE101C / D + PX-PRB101C61-TQFP080-P-1212-M
	Flash Memory Built-in Type		
	Type	MN101CF61G	
	ROM (× 8-bit)	128 K	
	RAM (× 8-bit)	12 K	
	Minimum instruction execution time	0.1 μs (at 2.7 V to 3.6 V, 20 MHz)	
		0.2 μs (at 2.7 V to 3.6 V, 10 MHz)	
		0.5 μs (at 2.7 V to 3.6 V, 4 MHz)	
		125 μs (at 2.7 V to 3.6 V, 32 kHz)	
	Package	TQFP080-P-1212D *Lead-free	
	Type	MN101CF60G	
	ROM (× 8-bit)	128 K	
	RAM (× 8-bit)	12 K	
	Minimum instruction execution time	0.1 μs (at 2.5 V to 3.0 V, 20 MHz)	
		0.2 μs (at 2.2 V to 3.0 V, 10 MHz)	
		0.5 μs (at 2.2 V to 3.0 V, 4 MHz)	
		125 μs (at 2.2 V to 3.0 V, 32 kHz)	
	Package	TQFP080-P-1212D *Lead-free	

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