❑ MN101C70C , MN101C70G

Type	MN101C70C	MN101C70G (under planning)
ROM (×8-bit)	48 K	128 K
RAM (×8-bit)	2 K	10 K
Package	LQFP080-P-1414A *Lead-free, TQFP080-P-1212D *Lead-free (under planning)	
Minimum Instruction Execution Time	0.1 µs (at 3.0 V to 3.6 V, 10 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)	
Interrupts	• RESET • Watchdog • External 0 • External 1 • External 2 • External 4 (key interrupt dedicated) • Timer 0 • Timer 1 • Timer 2 • Timer 3 • Timer 6 • Time base • Timer 7 (2 systems) • Timer 8 (2 systems) • Serial 0 (2 systems) • Serial 2 • A/D conversion finish • Automatic transfer 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, added pluse (2-bit) system PWM output, real time output control) (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 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 output, added pluse (2-bit) system 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)
- 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, serial transfer clock)
- 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 6 : 8-bit freerun timer
- Clock source ····· 1/1 of system clock frequency; 1/1, 1/128, 1/8192 of OSC oscillation clock frequency; 1/1, 1/128, 1/8192 of XI oscillation clock frequency
- Interrupt source ····· coincidence with compare register 6

Timer counter 7 : 16-bit × 1
(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 (Cycle/Duty can be changed constantly)) (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), input capture register

Timer Counter (Continue)

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), input capture register

Timer counters 7, 8 can be cascade-connected.
(square-wave output, PWM 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, 1/1024, 1/8192, 1/32768, 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 2 or 3;
1/2, 1/4, 1/16, 1/64 of OSC oscillation clock frequency, external clock

Serial 2 : synchronous type/single-master I^2C × 1
Clock source ····· 1/2, 1/4 of system clock frequency; pulse output of timer counter 2 or 3;
1/2, 1/4, 1/16, 1/32 of OSC oscillation clock frequency, external clock

I/O Pins	**I/O**	66	• Common use • Specified pull-up resistor available • Input/output selectable (bit unit)

A/D Inputs

10-bit × 16-ch. (with S/H)

LCD

32 segments × 4 commons (static, 1/2, 1/3, or 1/4 duty)
LCD power supply separated from VDD (usable if VDD ≤ VLCD ≤ 3.6 V)
LCD power step-up circuit contained (3/2, 2 and 3 times)
LCD power shunt resistance contained LCD reference voltage is contained.

Special Ports

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

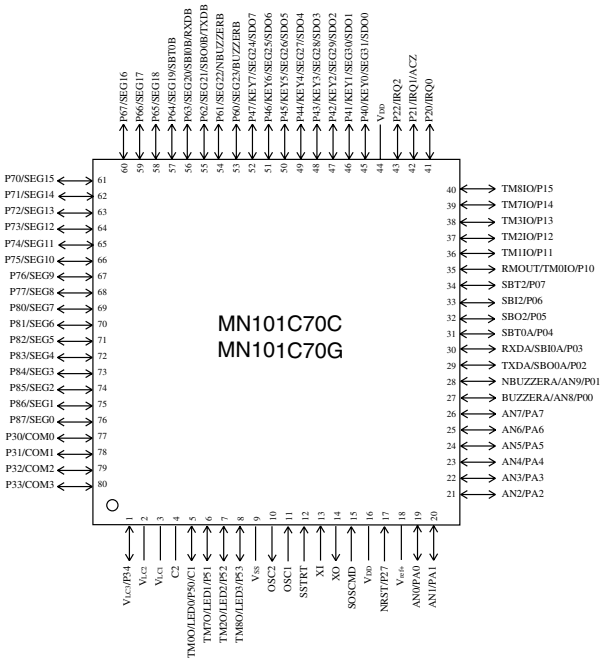
Electrical Characteristics

Supply current

Parameter	Symbol	Condition	Limit			Unit
			min	typ	max	
Operating supply current	IDD1	fosc = 4 MHz, VDD = 3 V		1	2	mA
	IDD2	fx = 32 kHz, VDD = 3 V		4	15	µA
Supply current at HALT	IDD3	fx = 32 kHz, VDD = 3 V, Ta = 25°C		2	10	µA
	IDD4	fx = 32 kHz, VDD = 3 V, Ta = −40°C to +85°C			40	µA
Supply current at STOP	IDD5	VDD = 3 V, Ta = 25°C			2	µA
	IDD6	VDD = 3 V, Ta = −40°C to +85°C			30	µA

See the next page for pin assignment and support tool.

Pin Assignment



LQFP080-P-1414A *Lead-free

TQFP080-P-1212D *Lead-free

Support Tool

In-circuit Emulator

PX-ICE101C / D + PX-PRB101C70-LQFP080-P-1414A-M (under development)
PX-ICE101C / D + PX-PRB101C70-TQFP080-P-1212-M (under planning)

Flash Memory Built-in Type

Type	MN101CF70G (under development)
ROM (× 8-bit)	128 K
RAM (× 8-bit)	10 K
Minimum instruction execution time	0.1 µs (at 3.0 V to 3.6 V, 10 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)
Package	LQFP080-P-1414A *Lead-free, TQFP080-P-1212D *Lead-free (under planning)

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