

MN101C56A , MN101C56C

Type	MN101C56A (under planning)	MN101C56C
ROM (×8-bit) External memory can be expanded	32 K	48 K
RAM (×8-bit) External memory can be expanded	1.5 K	1.79 K
Package	TQFP100-P-1414E *Pb free	
Minimum Instruction Execution Time	0.1 μs (at 4.5 V to 5.5 V, 20 MHz) 0.25 μs (at 2.7 V to 5.5 V, 8 MHz) 62.5 μs (at 2.0 V to 5.5 V, 32 kHz)*	
	* The lower limit for operation guarantee for flash memory built-in type is 2.3 V.	
Interrupts	• RESET • Watchdog • External 0 • External 1 • External 2 • External 3 • External 4 • Timer 0 • Timer 1 • Timer 3 • Timer 6 • Timer 7 • Timer 8 (2 systems) • Time base • Serial 0 (2 systems) • Serial 2 • A/D conversion finish	
Timer Counter	<p>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</p> <p>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; external clock input Interrupt source coincidence with compare register 1</p> <p>Timer counter 0, 1 can be cascade-connected.</p> <p>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</p> <p>Timer counter 6 : 8-bit freerun 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 source coincidence with compare register 6</p> <p>Timer counter 7 : 16-bit × 1 (square-wave/16-bit PWM output, cycle/duty continuous variable, event count, synchronous output event, 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)</p> <p>Timer counter 8 : 16-bit × 1 (square-wave/16-bit PWM output, event count, 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 8</p> <p>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</p>	

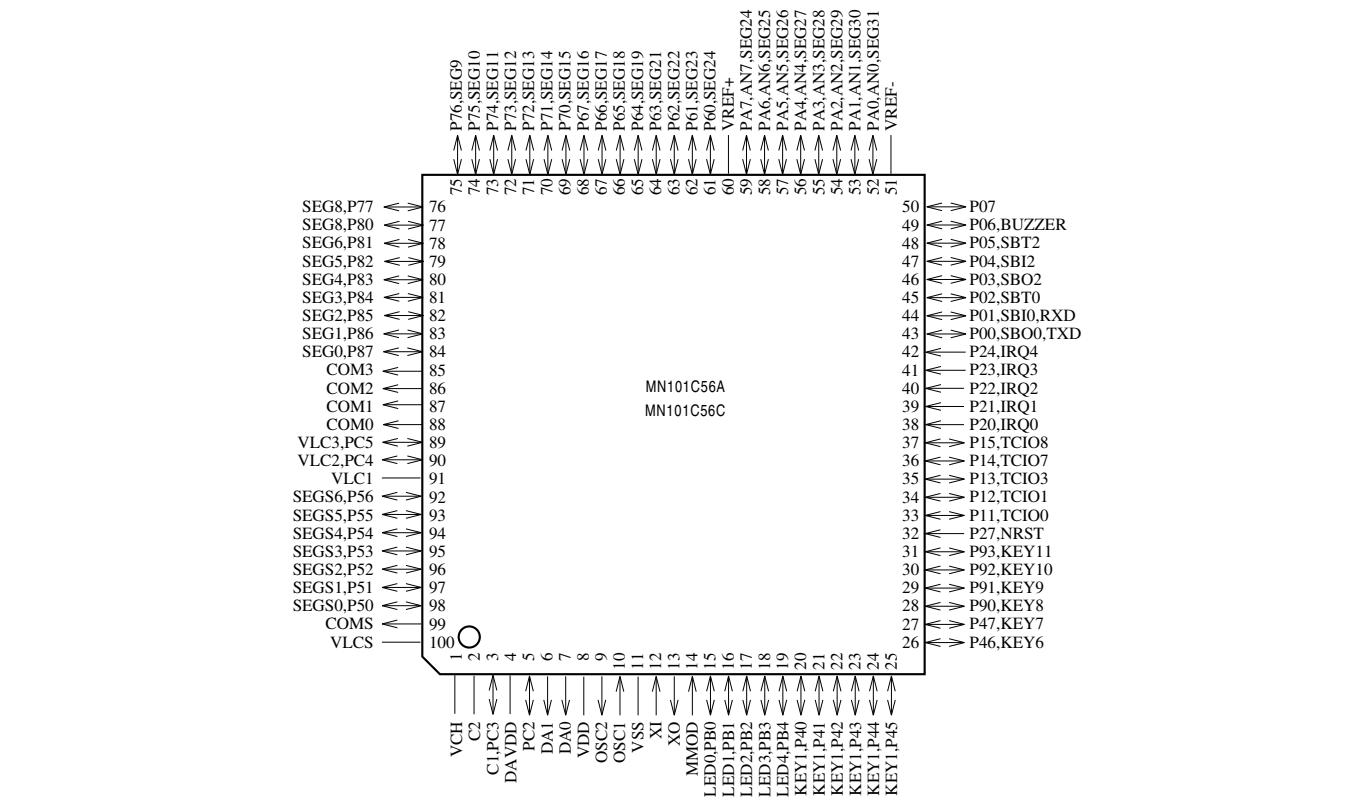
Timer Counter (continue)		Watchdog timer Interrupt source 1/65536, 1/262144, 1/1048576 of system clock frequency	
Serial Interface		Serial 0 : synchronous type / UART (full-duplex) × 1 Clock source 1/2, 1/4 of system clock frequency; pulse output of timer counter 3; 1/2, 1/4, 1/16, 1/32 of OSC oscillation clock frequency Serial 2 : synchronous type × 1 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	
I/O Pins	I/O	65	• Common use • Specified pull-up resistor available • Input/output selectable (bit unit)
	Input	13	• Common use • Specified pull-up resistor available
A/D Inputs		10-bit × 8-ch. (with S/H)	
D/A Inputs		8-bit × 2-ch. (independent 2 systems)	
LCD		Function1 • 39 segments (Max.) • 4 Commons • Static • 1/2, 1/3, or 1/4 duty Function2 • 7 segments • 1 Common • Independent static (operational independently of function 1) LCD step-up power usable LCD power step-up circuit contained (step-up to twice larger, reference voltage VLCS externally supplied, 1/2 VDD ≤ VLCS ≤ 2.75 V usable) LCD power shunt resistance contained	
Special Ports		Buzzer Output, remote control carrier signal output, high-current drive port (N-ch open-drain type)	

Electrical Characteristics

Supply current

Parameter	Symbol	Condition	Limit			Unit
			min	typ	max	
Operating supply current	IDD1	fosc = 20 MHz, VDD = 5 V		25	60	mA
	IDD2	fosc = 8 MHz, VDD = 5 V		10	25	mA
	IDD3	fx = 32.768 kHz, VDD = 3 V		30	100	μA
Supply current at HALT	IDD4	fx = 32.768 kHz, VDD = 3 V, Ta = 25°C			8	μA
	IDD5	fx = 32.768 kHz, VDD = 3 V, Ta = -40°C to +85°C			30	μA
Supply current at STOP	IDD6	VDD = 5 V, Ta = 25°C			2	μA
		VDD = 5 V, Ta = -40°C to +85°C			50	μA

Pin Assignment

TQFP100-P-1414E ^{*}Pb free

Support Tool

In-circuit Emulator	PX-ICE101C / D + PX-PRB101C56-TQFP100-P-1414E	
EPROM Built-in Type	Type	MN101CP56C [ES (Engineering Sample) available]
	ROM (× 8-bit)	48 K
	RAM (× 8-bit)	1.79 K
	Minimum instruction execution time	0.1 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 2.3 V to 5.5 V, 32 kHz)
	Package	TQFP100-P-1414E *Pb free

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