

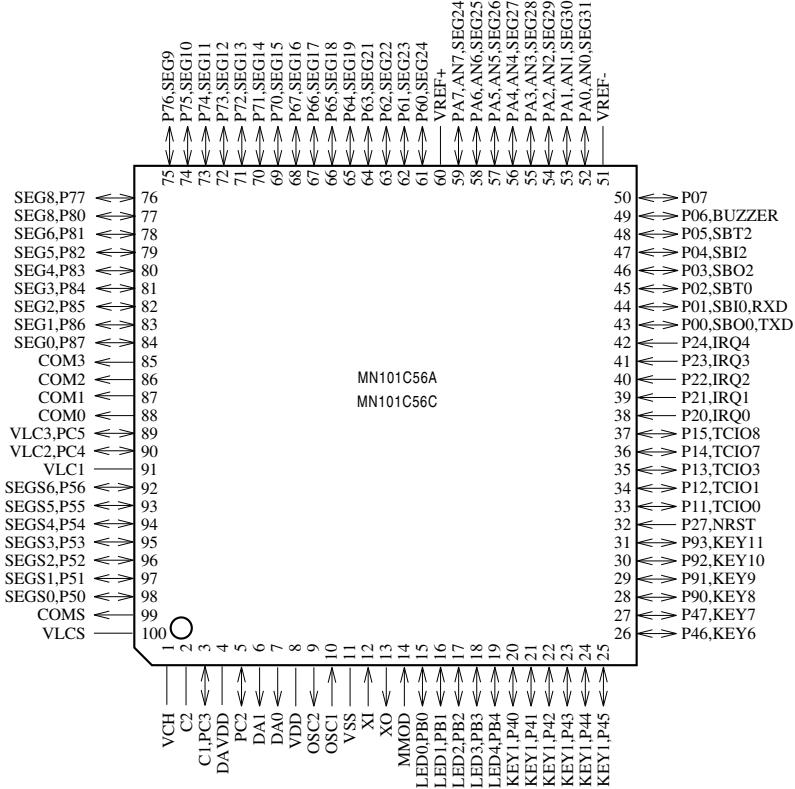
□ MN101C56A, MN101C56C

Type	MN101C56A (under planning)	MN101C56C
ROM (x8-bit) External memory can be expanded	32 K	48 K
RAM (x8-bit) External memory can be expanded	1.5 K	1.79 K
Package	TQFP100-P-1414E *Pb free	
Minimum Instruction Execution Time	0.1 μ s (at 4.5 V to 5.5 V, 20 MHz) 0.25 μ s (at 2.7 V to 5.5 V, 8 MHz) 62.5 μ s (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	Timer counter 0 : 8-bit \times 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 \times 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 Timer counter 0, 1 can be cascade-connected. Timer counter 3 : 8-bit \times 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 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 Timer counter 7 : 16-bit \times 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) Timer counter 8 : 16-bit \times 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 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	

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	<table border="1"> <tr> <td>I/O</td><td>65</td><td>• Common use • Specified pull-up resistor available • Input/output selectable (bit unit)</td></tr> <tr> <td>Input</td><td>13</td><td>• Common use • Specified pull-up resistor available</td></tr> </table>	I/O	65	• Common use • Specified pull-up resistor available • Input/output selectable (bit unit)	Input	13	• Common use • Specified pull-up resistor available
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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	

See the next page for pin assignment and support tool.

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 (x 8-bit)	48 K
	RAM (x 8-bit)	1.79 K
	Minimum instruction execution time	0.1 μ s (at 4.5 V to 5.5 V, 20 MHz) 0.25 μ s (at 2.7 V to 5.5 V, 8 MHz) 125 μ s (at 2.3 V to 5.5 V, 32 kHz)
Package	TQFP100-P-1414E *Pb free	

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